November 2024 Volume 79 Supplement 2

Thorax

AN INTERNATIONAL JOURNAL OF RESPIRATORY MEDICINE

British Thoracic Society Winter Meeting 2024

QEII Centre
Broad Sanctuary
Westminster
London SW1P 3EE

27 to 29 November 2024

Programme and Abstracts

thorax.bmj.com

BMJ Group

Chiesi

The only 3-in-1 ICS/LABA/LAMA combination licensed as both a medium and high dose in adult asthma[1–3]

(see full licences below)

The only extrafine formulation ICS/LABA/LAMA combination[1–3]
Designed to reach the large and small airways[1,2,4,5]

Think triple (ICS/LABA/LAMA), think Trimbow

Find out more at
ChiesiAir.co.uk

Trimbow®

beclometasone/formoterol/
glycopyrronium 87/5/9 & 172/5/9
Extrafine formulation

Trimbow pMDI 87/5/9 is indicated for maintenance treatment of asthma, in adults not adequately controlled with a maintenance combination of a long-acting β_2-agonist and medium dose of inhaled corticosteroid, and who experienced one or more asthma exacerbations in the previous year.[1]

Trimbow pMDI 172/5/9 is indicated for maintenance treatment of asthma, in adults not adequately controlled with a maintenance combination of a long-acting β_2-agonist and high dose of inhaled corticosteroid, and who experienced one or more asthma exacerbations in the previous year.[2]

Certified B Corporation

To find out more visit ChiesiAir.co.uk

Prescribing Information and Adverse Event reporting can be found below.

UK-TRI-2400033 April 2024

ICS: inhaled corticosteroid; **LABA:** long-acting β_2-agonist; **LAMA:** long-acting muscarinic antagonist; **pMDI:** pressurised metered dose inhaler.

References: 1. Trimbow pMDI 87/5/9 Summary of Product Characteristics. Chiesi Limited. **2.** Trimbow pMDI 172/5/9 Summary of Product Characteristics. Chiesi Limited. **3.** MIMS online. 2024. Available at: www.mims.co.uk **4.** Scichilone N, *et al. J Asthma Allergy.* 2013; 6: 1–11. **5.** Usmani OS, et al. J Aerosol Med Pulm Drug Deliv. 2022; 35(4): 179–185

Trimbow 87/5/9 and 172/5/9 Pressurised Metered Dose Inhaler (pMDI) & Trimbow 88/5/9 NEXThaler Prescribing Information

Please refer to the Summary of Product Characteristics (SPC) before prescribing.

Presentation: Each Trimbow 87/5/9 pMDI delivered dose contains 87micrograms (mcg) of beclometasone dipropionate (BDP), 5mcg of formoterol fumarate dihydrate (formoterol) and 9mcg of glycopyrronium. Each Trimbow 88/5/9 NEXThaler delivered dose contains 88 micrograms of BDP, 5 micrograms of formoterol and 9 micrograms of glycopyrronium. These are both the equivalent to a metered dose of 100mcg BDP, 6mcg formoterol and 10mcg glycopyrronium. Each Trimbow 172/5/9 pMDI delivered dose contains 172mcg of BDP, 5mcg of formoterol and 9mcg of glycopyrronium. This is equivalent to a metered dose of 200mcg BDP, 6mcg formoterol and 10mcg glycopyrronium. **Indication:** ***COPD*** *(Trimbow 87/5/9 pMDI and Trimbow 88/5/9 NEXThaler only):* Maintenance treatment in adult patients with moderate to severe chronic obstructive pulmonary disease (COPD) who are not adequately treated by a combination of an inhaled corticosteroid and a long-acting beta2-agonist or a combination of a long-acting beta2-agonist and a long-acting muscarinic antagonist (for effects on symptoms control and prevention of exacerbations see section 5.1 of the SPC). ***Asthma (Trimbow 87/5/9):*** Maintenance treatment of asthma, in adults not adequately controlled with a maintenance combination of a long-acting beta2-agonist and medium dose of inhaled corticosteroid, and who experienced one or more asthma exacerbations in the previous year. ***Asthma (Trimbow 172/5/9):*** Maintenance treatment of asthma, in adults not adequately controlled with a maintenance combination of a long-acting beta2-agonist and high dose of inhaled corticosteroid, and who experienced one or more asthma exacerbations in the previous year. **Dosage and administration:** For inhalation in adult patients (≥18 years). ***COPD*** *&* ***Asthma:*** 2 inhalations twice daily. Maximum dose 2 inhalations twice daily. Trimbow pMDI can be used with the AeroChamber Plus® spacer device. Patients should be advised to take Trimbow every day even when asymptomatic. If symptoms arise in the period between doses, an inhaled, short-acting beta2-agonist should be used for immediate relief. When choosing the starting dose strength of Trimbow in asthma patients, the patients' disease severity, their previous asthma therapy including the inhaled corticosteroid (ICS) dose as well as the patients' current control of asthma symptoms and risk of future exacerbation should be considered. Patients should be regularly reassessed by a doctor, so that their doses of Trimbow remain optimal and are only changed on medical advice. The doses should be titrated to the lowest doses at which effective control of asthma symptoms is maintained. The aerosol particles of Trimbow are characterised by an extrafine particle size distribution. For BDP this results in a more potent effect than formulations of BDP with a non-extrafine particle size distribution (100mcg of BDP extrafine in Trimbow are equivalent to 250mcg of BDP in a non-extrafine formulation). **Contraindications:** Hypersensitivity to the active substances or to any of the excipients. **Warnings and precautions:** Not for acute use in treatment of acute episodes of bronchospasm or to treat an acute disease exacerbation. Discontinue immediately if hypersensitivity or paradoxical bronchospasm occur. Deterioration of disease: Trimbow should not be stopped abruptly. Cardiovascular effects: Due to the presence of a long-acting beta2-agonist and a long-acting muscarinic antagonist, use with caution in patients with cardiac arrhythmias, idiopathic subvalvular aortic stenosis, hypertrophic obstructive cardiomyopathy, severe heart disease, occlusive vascular diseases, arterial hypertension and aneurysm. Caution should also be used when treating patients with known or suspected prolongation of the QTc interval (QTc > 450 milliseconds for males, or > 470 milliseconds for females) either congenital or induced by medicinal products. Limited data in asthmatic patients with cardiovascular co-morbidities or risk-factors suggest that these patients are also at higher risk of adverse reactions like local fungal infections or dysphonia. Trimbow should not be administered for at least 12 hours before the start of anaesthesia as there is a risk of cardiac arrhythmias. Caution in patients with thyrotoxicosis, diabetes mellitus, pheochromocytoma and untreated hypokalaemia. Increase in pneumonia and pneumonia hospitalisation in COPD patients receiving ICS observed. Clinical features of pneumonia may overlap with symptoms of COPD exacerbations. Systemic effects of ICS may occur, particularly at high doses for long periods, but are less likely than with oral steroids. The daily dose of both Trimbow 87/5/9 & 88/5/9 correspond to a medium dose of ICS and the daily dose of Trimbow 172/5/9 corresponds to a high dose of ICS. Possible systemic effects include Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation, decrease in bone mineral density and, more rarely, a range of psychological or behavioural effects including psychomotor hyperactivity, sleep disorders, anxiety, depression and aggression. Patients on Trimbow should be reviewed regularly and the dose of ICS is reduced to the lowest dose at which effective control of asthma is maintained. Use with caution in patients with pulmonary tuberculosis or fungal/viral airway infections. Potentially serious hypokalaemia may result from beta2-agonist therapy (particular caution with severe disease). Formoterol may cause a rise in blood glucose levels. Glycopyrronium should be used with caution in patients with narrow-angle glaucoma, prostatic hyperplasia or urinary retention. Use in patients with severe hepatic impairment (classified as having Child-Pugh class C) or severe renal impairment (glomerular filtration rate [GFR] <30mL/min/1.73m^2), should only be considered if benefit outweighs the risk. Consider referral of patients reporting blurred vision or visual disturbances to an ophthalmologist as causes may include cataract, glaucoma or rare diseases such as central serous chorioretinopathy. To reduce risk of oropharyngeal candida infection, patients should be advised to rinse mouth or gargle with water without swallowing or brush teeth after inhaling prescribed dose. Trimbow 88/5/9 NEXThaler contains lactose. Lactose includes small amounts of milk proteins, which may cause allergic reactions. **Interactions:** Since glycopyrronium is eliminated via renal route, interactions could occur with medicinal products affecting renal excretion mechanisms e.g. with cimetidine (an inhibitor of OCT2 and MATE1 transporters in the kidney) co-administration, glycopyrronium showed a slight decrease in renal clearance (20%) and a limited increase in total systemic exposure (16%). Possibility of systemic effects with concomitant use of strong CYP3A inhibitors (e.g. ritonavir, cobicistat) cannot be excluded and therefore caution and appropriate monitoring is advised. *Related to formoterol:* Non-cardioselective beta-blockers (including eye drops) should be avoided as reduces effect of formoterol. Concomitant administration of other beta-adrenergic drugs may have potentially additive effects. Concomitant treatment with quinidine, disopyramide, procainamide, antihistamines, monoamine oxidase inhibitors (MAOIs), tricyclic antidepressants and phenothiazines can prolong the QTc interval and increase the risk of ventricular arrhythmias. L-dopa, L-thyroxine, oxytocin and alcohol can impair cardiac tolerance towards beta2-sympathomimetics. Hypertensive reactions may occur following co-administration with MAOIs including drugs with similar properties (e.g. furazolidone, procarbazine). Risk of arrhythmias in patients receiving concomitant anaesthesia with halogenated hydrocarbons. Concomitant treatment with xanthine derivatives, steroids or diuretics may potentiate a possible hypokalaemic effect of beta2-agonists. Hypokalaemia may increase the likelihood of arrhythmias in patients receiving digitalis glycosides. *Related to glycopyrronium:* Co-administration with other anticholinergic-containing medicinal products is not recommended. *Excipients:* Presence of ethanol in Trimbow 87/5/9 and 172/5/9 pMDI may cause theoretical potential interaction in sensitive patients taking metronidazole or disulfiram. **Fertility, pregnancy and lactation:** No studies have been performed in regards to safety in human fertility, but animal studies show impaired fertility. Should only be used during pregnancy if the expected benefits outweigh the potential risks. If treatment during pregnancy is necessary, the lowest effective dose should be used. Children born to mothers receiving substantial doses should be observed for adrenal suppression. Glucocorticoids and metabolites are excreted in human milk. It is unknown whether formoterol or glycopyrronium (including their metabolites) pass into human breast-milk but they have been detected in the milk of lactating animals. Anticholinergics like glycopyrronium could suppress lactation. A decision must be made whether to discontinue breastfeeding or to discontinue/abstain from therapy. **Effects on driving and operating machinery:** None or negligible. **Side effects:** *Common:* pneumonia (in COPD patients), pharyngitis, oral candidiasis, urinary tract infection, nasopharyngitis, headache, dysphonia. *Uncommon:* influenza, oral fungal infection, oropharyngeal candidiasis, oesophageal candidiasis, fungal oropharyngitis, sinusitis, rhinitis, gastroenteritis, vulvovaginal candidiasis, granulocytopenia, dermatitis allergic, hypokalaemia, hyperglycaemia, restlessness, tremor, dizziness, dysgeusia, hypoaesthesia, otosalpingitis, atrial fibrillation, electrocardiogram QT prolonged, tachycardia, tachyarrhythmia, palpitations, hyperaemia, flushing, hypertension, asthmatic crisis, cough, productive cough, throat irritation, epistaxis, pharyngeal erythema, diarrhoea, dry mouth, dysphagia, nausea, dyspepsia, burning sensation of the lips, dental caries, aphthous stomatitis, rash, urticaria, pruritus, hyperhidrosis, muscle spasms, myalgia, pain in extremity, musculoskeletal chest pain, fatigue, C-reactive protein increased, platelet count increased, free fatty acids increased, blood insulin increased, blood ketone body increased, cortisol decreased. *Rare:* Lower respiratory tract infection (fungal), hypersensitivity reactions, including erythema, lips, face, eye and pharyngeal oedema, decreased appetite, insomnia, hypersomnia, angina pectoris (stable and unstable), extrasystoles (ventricular and supraventricular), nodal rhythm, sinus bradycardia, blood extravasation, paradoxical bronchospasm, exacerbation of asthma, oropharyngeal pain, pharyngeal inflammation, dry throat, angioedema, dysuria, urinary retention, nephritis, asthenia, blood pressure increased, blood pressure decreased. *Very rare:* thrombocytopenia, adrenal suppression, glaucoma, cataract, dyspnoea, growth retardation, peripheral oedema, bone density decreased. *Frequency not known:* psychomotor hyperactivity, sleep disorders, anxiety, depression, aggression, behavioural changes, blurred vision. (Refer to SPC for full list of side effects). **Legal category:** POM. **Price and Pack:** £44.50 1x120 actuations. **Marketing authorisation (MA) No(s):** PLGB 08829/0193 (GB), EU/1/17/1208/002 (UKNI), PLGB 08829/0199 (GB), EU/1/17/1208/007 (UKNI), PLGB 08829/0200 (GB), EU/1/17/1208/010 (UKNI). **GB MA holder/ UKNI Distributor:** Chiesi Limited, 333 Styal Road, Manchester, M22 5LG, United Kingdom. **Date of Preparation:** Jan 2022.

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store. Adverse events should also be reported to Chiesi Limited on 0800 0092329 (UK) or PV.UK@Chiesi.com.

PROGRAMME

AND

ABSTRACTS

Thorax

British Thoracic Society
Winter Meeting 2024

QEII Centre
Broad Sanctuary
Westminster
London SW1P 3EE

Wednesday 27 to Friday 29
November 2024
Programme and Abstracts

Approved by the Federation of the
Royal Colleges of Physicians of the UK
for 18 category 1 (external) credits
(6 credits per day).
Code: 149460

Vitalograph®

Whatever your PFT needs are, Vitalograph has a solution.

Available directly via the NHS Supply Chain

Vitalograph has recently launched the **VitaloPFT** Series which delivers versatile respiratory diagnostic solutions to hospitals and other community based diagnostic centres that demand advanced pulmonary function testing. Making the move to VitaloPFT couldn't be easier due to its Existing Database Migration feature.

As well as lab-based and point-of-care pulmonary testing devices, we also offer a host of other solutions for PFT laboratories including:

Spirometers | CPET devices | Workflow & Interpretation tools | EMR Connectivity

Scan Here

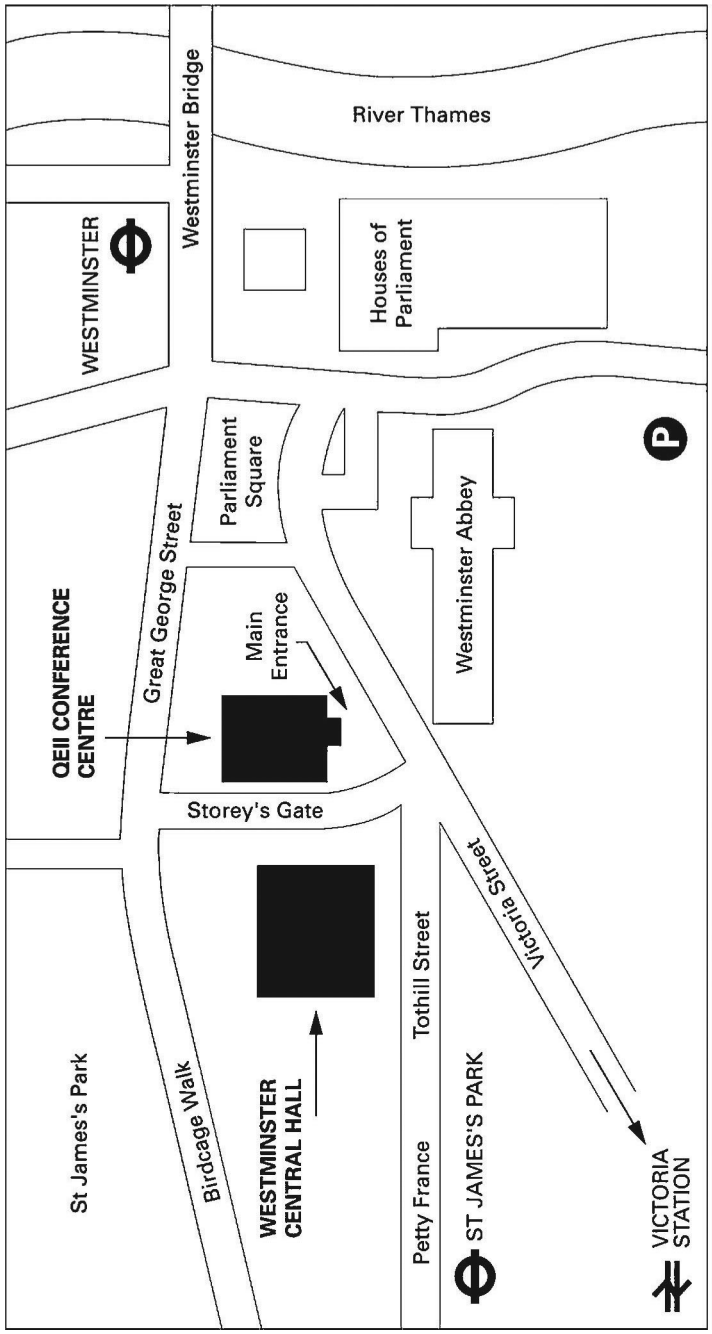
Order today via the **NHS Supply Chain**. **Select Lot 2** of the Cardiac Diagnostic Equipment, Technologies and Related Equipment and Services framework.

Discover more about our PFT solutions by speaking with our team today.

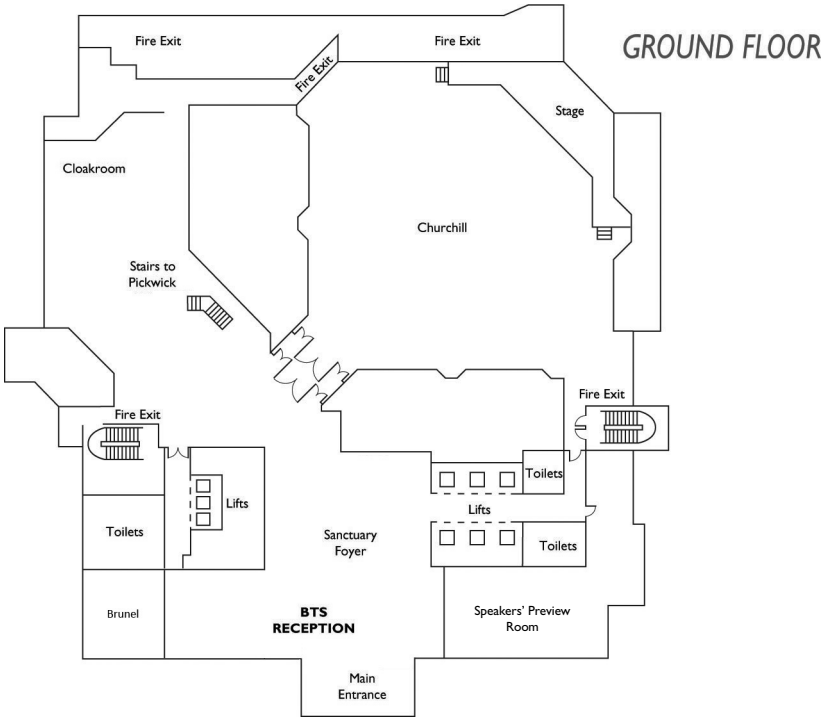
01280 827110 sales@vitalograph.co.uk www.vitalograph.com

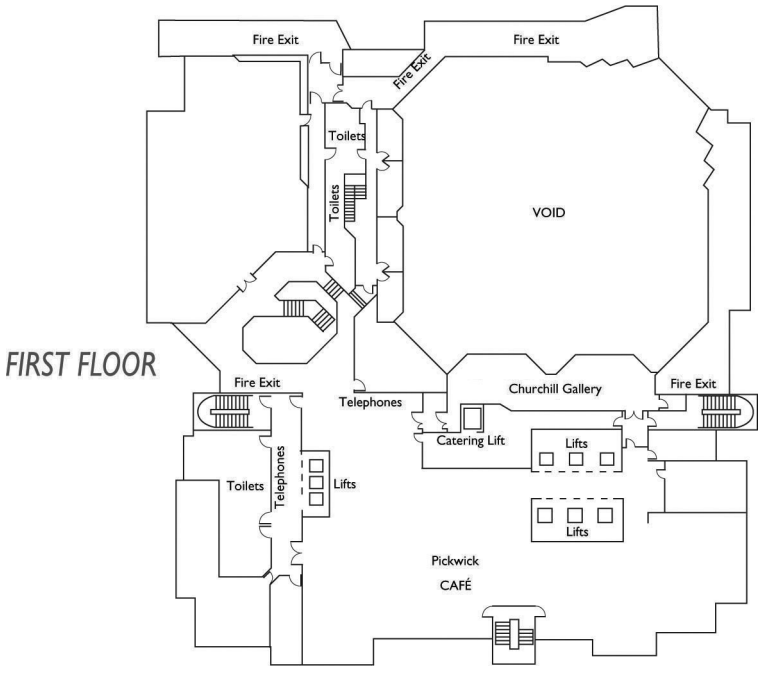
Map to the QEII Centre

PowerPoint preview facilities will be available throughout the three days of the Meeting on the ground floor of the Centre. All presenters and chairs should report to the Speakers' section of the Registration Desks on arrival.



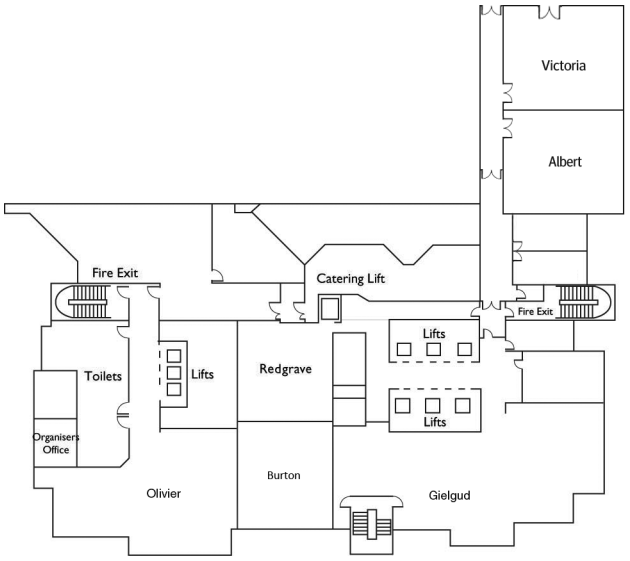
The QEII Centre - Ground and First Floors



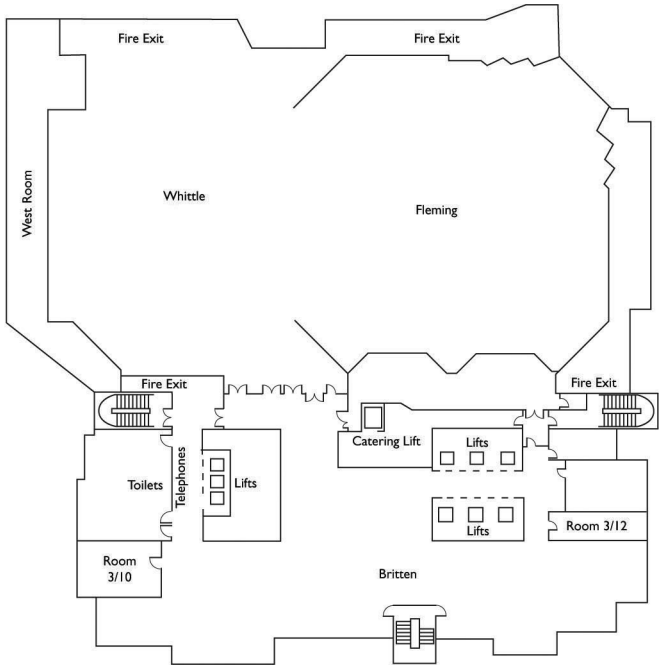


Full café facilities will be open in the Pickwick on the 1st floor from 8.00am to 4.00pm on Wednesday 27 and Thursday 28 November and from 8.00am to 2.30pm on Friday 29 November. A snack bar, serving hot and cold drinks, sandwiches and confectionery only, will be open at the same times in the Whittle & Fleming on the 3rd floor.

The QEII Centre - Second and Third Floors



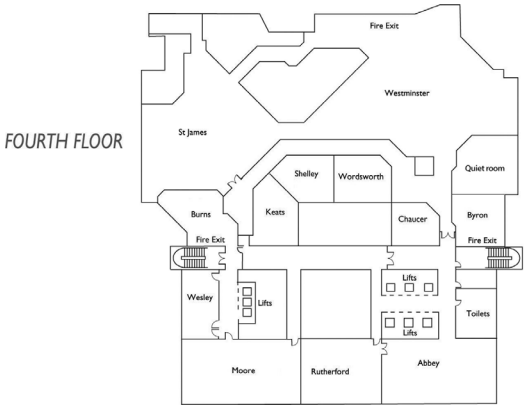
SECOND FLOOR

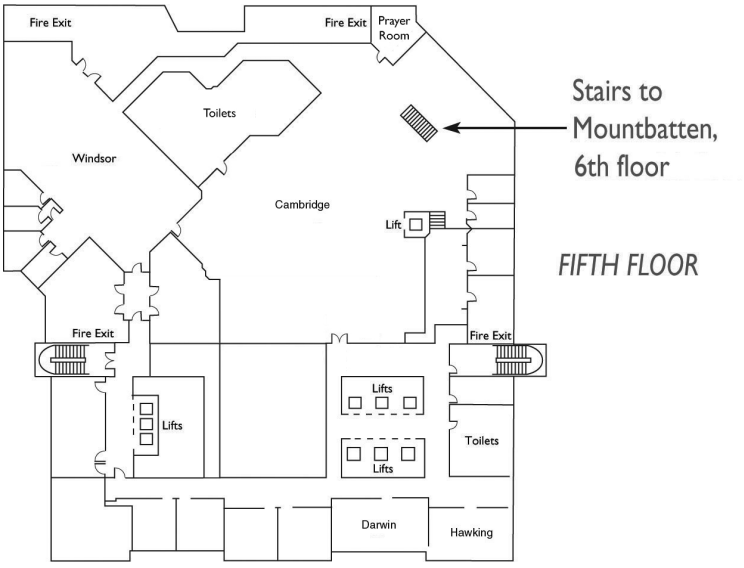


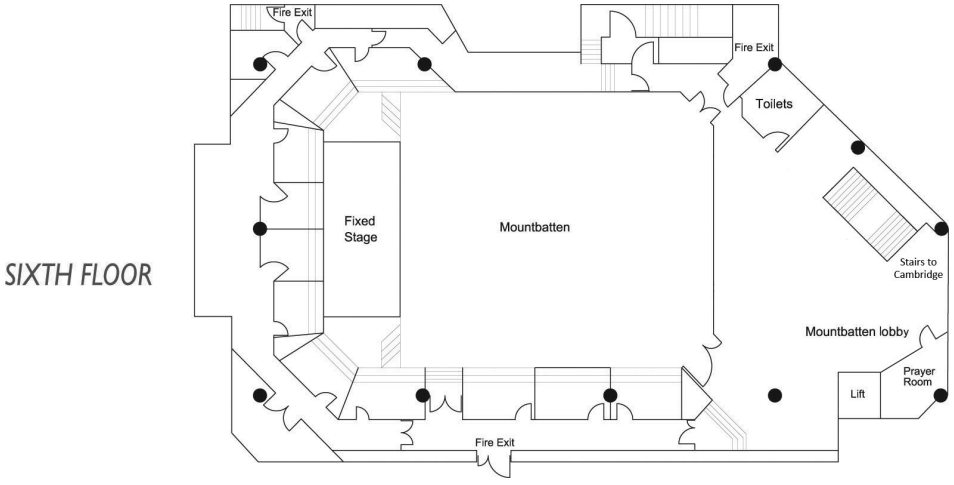
THIRD FLOOR

Full café facilities will be open in the Pickwick on the 1st floor from 8.00am to 4.00pm on Wednesday 27 and Thursday 28 November and from 8.00am to 2.30pm on Friday 29 November. A snack bar, serving hot and cold drinks, sandwiches and confectionery only, will be open at the same times in the Whittle & Fleming on the 3rd floor.

The QEII Centre - Fourth, Fifth and Sixth Floors







Full café facilities will be open in the Pickwick on the 1st floor from 8.00am to 4.00pm on Wednesday 27 and Thursday 28 November and from 8.00am to 2.30pm on Friday 29 November. A snack bar, serving hot and cold drinks, sandwiches and confectionery only, will be open at the same times in the Whittle & Fleming on the 3rd floor.

DAILY PROGRAMME

WEDNESDAY 27 NOVEMBER 2024

Time	Details			Location/Floor
8.00am-9.00am	COFFEE/TEA			Whittle & Fleming/3rd
8.45am-4.00pm	Poster viewing	P1-P14	"The CAP in the Hat" – Pneumonia in 2024	Whittle & Fleming/3rd
10.00am-11.00am	Authors present	P15-P27	"George's Marvellous Medicine" – Biologics, biologics, biologics	
		P28-P41	"Sleeping Beauty" – Monitoring and managing sleep disordered breathing	
		P42-P55	"Alice's Adventures in Inhalerland" – Considering the device and the environment in asthma	
		P56-P68	"Into the Void" – ILD and sarcoid	
8.45am-4.00pm	Moderated poster viewing	M1-M14	"Into Thin Air" – From primary care to biologics	Cambridge/5th
8.00am-8.30am	BTS Journal Club		Occupational lung disease	Albert/2nd
8.30am-10.30am	Joint BTS/BALR symposium (part I)		Joining the dots: internal interactions	Windsor/5th
8.45am-9.50am	Spoken session	S1-S4	"The Catcher in the MRI" – Functional imaging in lung disease	Rutherford/4th
8.45am-10.05am	Spoken session	S5-S9	"Topic of Cancer" – Lung cancer diagnosis and treatment	St James/4th
8.45am-10.15am	Symposium		At the revolution in COPD health: enter biologics	Churchill/Ground
8.45am-10.15am	Symposium		Measurement and monitoring in PR – using the mind, body and soul	Mountbatten/6th
8.45am-10.20am	Spoken session	S10-S15	"The Taming of the T2" – T2 inflammation in asthma	Westminster/4th
8.45am-10.20am	Spoken session	S16-S21	"Lungs Labours Lost" – Occupational lung disease	Moore/4th
8.45am-10.20am	Spoken session	S22-S27	"This is Going to Hurt" – Pleural interventions	Abbey/4th
10.00am-11.00am	COFFEE/TEA			Whittle & Fleming and Britten/3rd
10.45am-12.00pm	Symposium		Highlights from *Thorax* and *Lancet Respiratory Medicine*	St James/4th
10.45am-12.05pm	Spoken session	S28-S32	"Crime and Punishment" in pulmonary vascular disease	Rutherford/4th
10.45am-12.15pm	Symposium		Pleural interventions: the how, why and when	Churchill/Ground
10.45am-12.15pm	Symposium		Tobacco dependence: giving up is easy, I've done it a thousand times …	Mountbatten/6th
10.45am-12.15pm	Open session		NRAP: understanding what good respiratory care looks like	Gielgud/2nd
10.45am-12.20pm	Spoken session	S33-S38	"Harry Potter and the Sorcerer's Biologic" – Asthma biologics (1)	Westminster/4th
10.45am-12.20pm	Spoken session	S39-S44	"Where the Wild Things Are" – Infection and inflammation in bronchiectasis and NTM	Moore/4th
10.45am-12.20pm	Spoken session	S45-S50	"The Wind in the Willows" – Home mechanical ventilation	Abbey/4th

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

DAILY PROGRAMME (cont.) WEDNESDAY 27 NOVEMBER 2024

Time	Details			Location/Floor
11.00am-12.00pm	SAG open meeting		Cough	Albert/2nd
11.00am-12.00pm	SAG open meeting		Occupational and Environmental Lung Disease	Victoria/2nd
11.00am-1.00pm	Joint BTS/BALR symposium (part 2)		Joining the dots: external interactions	Windsor/5th
12.00pm-2.00pm	LUNCH	*Not included in the delegate fee. Card payments only*		Pickwick / 1st and Whittle & Fleming/3rd
12.30pm-1.30pm	Open meeting		Joint BTS/ARTP	Albert/2nd
12.30pm-1.30pm	SAG open meeting		Pharmacist	Victoria/2nd
1.15pm-2.00pm	BTS Grand Challenge Guest Lecture		A Series of Fortunate Events - What will it take to improve lung health outcomes a decade from now?	Churchill/Ground
2.00pm-3.00pm	SAG open meeting		COPD	Albert/2nd
2.00pm-3.00pm	SAG open meeting		Lung Cancer and Mesothelioma	Victoria/2nd
2.15pm-3.45pm	Symposium		Medicines-use behaviour change: translating asthma trial evidence into clinical practice	Churchill/Ground
2.15pm-3.45pm	Joint BTS/BPRS symposium		Reducing the burden of lung disease throughout the life course: we need to start early!	Mountbatten/6th
2.15pm-3.45pm	Award symposium	T1-T6	BTS/BALR/A+LUK Early Career Investigator Award Symposium	Windsor/5th
2.15pm-4.00pm	Moderated Poster discussion	M1-M14	"Into Thin Air" – From primary care to biologics	Cambridge/5th
2.15pm-4.00pm	Poster discussion	P1-P14	"The CAP in the Hat" – Pneumonia in 2024	St James/4th
2.15pm-3.50pm	Poster discussion	P15-P27	"George's Marvellous Medicine" – Biologics, biologics, biologics	Westminster/4th
2.15pm-4.00pm	Poster discussion	P28-P41	"Sleeping Beauty" – Monitoring and managing sleep disordered breathing	Moore/4th
2.15pm-4.00pm	Poster discussion	P42-P55	"Alice's Adventures in Inhalerland" – Considering the device and the environment in asthma	Abbey/4th
2.15pm-3.50pm	Poster discussion	P56-P68	"Into the Void" – ILD and sarcoid	Rutherford/4th
3.15pm-4.10pm	SAG open meeting		Pleural Disease	Gielgud/2nd
3.15pm-4.10pm	SAG open meeting		Pulmonary Embolism and other Pulmonary Vascular Diseases	Albert/2nd
3.30pm-4.15pm	COFFEE/TEA			Whittle & Fleming and Britten/3rd
4.15pm-4.45pm	Award presentations			Churchill/Ground
4.45pm-5.30pm	The BTS President's Address		"Trials, training and tyres …!"	Churchill/Ground
5.35pm-6.05pm	BTS AGM		BTS Annual General Meeting (BTS members only)	Churchill/Ground

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

DAILY PROGRAMME

THURSDAY 28 NOVEMBER 2024

Time	Details			Location/Floor
8.00am-9.00am	COFFEE/TEA			Whittle & Fleming/3rd
8.45am-4.00pm	Poster viewing	P69-P80	"Diary of a Wheezy Kid" – Paediatric asthma diagnostics	Whittle & Fleming/3rd
10.00am-11.00am	Authors present	P81-P93	"Subtle Knife" – Lung cancer management	
		P94-P106	"The God of Small Things" – Hot topics in paediatrics	
		P107-P120	"The Man in the Iron Mask" – Acute respiratory support	
		P121-P130	"The Hitchhiker's Guide to Coughing"	
		P131-P141	"The Vapes of Wrath" – Tobacco dependency and smoking cessation	
		P142-P154	"Call of the ILD"	
		P155-P168	"A Fine Balance" – Lung cancer screening	
8.45am-4.00pm	Moderated poster viewing	M15-M28	"Through the Looking Glass" – Airway disease therapies in the real world	Cambridge/5th
8.00am-8.30am	BTS Journal Club		Pulmonary embolism	Albert/2nd
8.45am-9.45am	SAG open meeting		Tobacco Dependency	Victoria/2nd
8.45am-10.05am	Spoken session	S51-S55	"The Thursday Meso Club" – Pleural malignancy	Westminster/4th
8.45am-10.05am	Spoken session	S56-S60	"The Nurse of Monte Cristo" – Nurse-led respiratory care	Albert/2nd
8.45am-10.15am	Symposium		BTS/SIGN/NICE Joint Guideline for the Diagnosis, Monitoring and Management of Chronic Asthma	Churchill/Ground
8.45am-10.15am	Symposium		Breaking the barriers in bronchiectasis: cutting edge from clinical trials	Windsor/5th
8.45am-10.20am	Spoken session	S61-S66	"Firestarter" – Inflammation, mechanisms and biomarkers in COPD	St James/4th
8.45am-10.20am	Spoken session	S67-S72	"Foundation's Edge" (1) – Next generation discovery science	Moore/4th
8.45am-10.20am	Spoken session	S73-S78	"Midsummer Night's Dream" – Ventilation in motor neurone disease	Abbey/4th
8.45am-10.20am	Spoken session	S79-S84	"The Never-Ending Story" (of long-COVID)	Rutherford/4th
9.00am-10.30am	Symposium		Advances in the world of pulmonary hypertension	Mountbatten/6th
10.00am-11.00am	COFFEE/TEA			Whittle & Fleming and Britten/3rd
10.45am-11.45am	SAG open meeting		Global Lung Health	Rutherford/4th
10.45am-11.45am	SAG open meeting		Cystic Fibrosis	Albert/2nd
10.45am-11.45am	SAG open meeting		Nurse	Victoria/2nd
10.45am-12.05pm	Spoken session	S85-S89	"The Very Breathless Caterpillar" – Paediatric diagnostics	Westminster/4th
10.45am-12.30pm	Symposium		Plenary scientific symposium	Churchill/Ground

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

DAILY PROGRAMME (cont.) THURSDAY 28 NOVEMBER 2024

Time	Details			Location/Floor
12.00pm-2.00pm	LUNCH	*Not included in the delegate fee. Card payments only*		Pickwick /1st and Whittle & Fleming/3rd
1.00pm-1.45pm	BTS Scientific Guest Lecture		Understanding mechanisms of oxygen sensing	Churchill/Ground
2.00pm-2.45pm	Open session		The top 10 joint patient and clinician research priorities for breathlessness: a UK James Lind Alliance Priority Setting Partnership	Albert/2nd
2.00pm-3.00pm	SAG open meeting		Pulmonary Rehabilitation	Victoria/2nd
2.15pm-3.45pm	Symposium		Transforming specialist respiratory services: what does 'good' look like and how do we deliver and monitor?	Churchill/Ground
2.15pm-3.45pm	Symposium		Current complexities in cystic fibrosis	Mountbatten/6th
2.15pm-3.45pm	Symposium		BTS STAG scientific symposium – Biography of a lung	Windsor/5th
2.15pm-3.45pm	Poster discussion	P69-P80	"Diary of a Wheezy Kid" – Paediatric asthma diagnostics	Abbey/4th
2.15pm-3.50pm	Poster discussion	P81-P93	"Subtle Knife" – Lung cancer management	Moore/4th
2.15pm-3.50pm	Poster discussion	P94-P106	"The God of Small Things" – Hot topics in paediatrics	Rutherford/4th
2.15pm-3.50pm	Spoken session	S90-S95	"A Tale of Two Biologics" – Monoclonal antibodies in COPD and asthma	St James/4th
2.15pm-4.00pm	Poster discussion	P107-P120	"The Man in the Iron Mask" – Acute respiratory support	Westminster/4th
2.15pm-4.00pm	Moderated Poster discussion	M15-M28	"Through the Looking Glass" – Airway disease therapies in the real world	Cambridge/5th
3.30pm-4.15pm	COFFEE/TEA			Whittle & Fleming and Britten/3rd
4.15pm-5.15pm	Award Symposium		Joint BTS/A+LUK/BALR Mid-Career Lecture Awards	Churchill/Ground
4.15pm-5.15pm	SAG open meeting		Specialty Trainee	Victoria/2nd
4.15pm-5.30pm	Poster discussion	P121-P130	"The Hitchhiker's Guide to Coughing"	Albert/2nd
4.15pm-5.35pm	Spoken session	S96-S100	"War and Peace" – Neutrophil responses across diseases	Westminster/4th
4.15pm-5.40pm	Poster discussion	P131-P141	"The Vapes of Wrath" – Tobacco dependency and smoking cessation	Abbey/4th
4.15pm-5.45pm	Joint BTS/BPRS symposium		Infection and the lung: a new world order	Mountbatten/6th
4.15pm-5.45pm	Symposium		Evidence-informed nurse-led practice	Windsor/5th
4.15pm-5.50pm	Spoken session	S101-S106	"Harry Potter and the Goblet of Monoclonals" – Asthma biologics (2)	St James/4th
4.15pm-5.50pm	Poster discussion	P142-P154	"Call of the ILD"	Rutherford/4th
4.15pm-6.00pm	Poster discussion	P155-P168	"A Fine Balance" – Lung cancer screening	Moore/4th
5.45pm-7.00pm	The President's Reception – All welcome!			Britten/3rd

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

DAILY PROGRAMME

FRIDAY 29 NOVEMBER 2024

Time	Details			Location/Floor
8.00am-9.00am	COFFEE/TEA			Whittle & Fleming/3rd
8.45am-2.00pm	Poster viewing	P169-P180	"Coming up for Air" – Severe asthma, from pollution to service delivery	Whittle & Fleming/3rd
10.00am-11.00am	Authors present	P181-P192	"Catching Fire" – Measuring and targeting inflammation in COPD	
		P193-P204	"Lord of the Tracheal Rings" – Interventional bronchoscopy	
		P205-P217	"The (Richard) Light Fantastic" – Pleural disease diagnosis and outcomes	
		P218-P231	"The TB Manager" – Clinical problems in TB	
		P232-P240	"The Number One Asthma Detective Agency" – Asthma diagnostics	
		P241-P253	"The Fellowship of the Fit" – Exercise and rehabilitation	
		P254-P267	"Great Expectorations" – Cystic fibrosis and bronchiectasis	
8.45am-5.00pm	Moderated poster viewing	M29-M42	"The Importance of Breathing Earnest" – Clinical COPD	Cambridge/5th
8.00am-8.30am	BTS Journal Club		Physiology	Albert/2nd
8.30am-9.50am	Spoken session	S107-S111	"The Famous Five" – Emerging clinical trial data	St James/4th
8.30am-10.00am	Symposium		Transforming respiratory diagnosis: the art of the possible	Churchill/Ground
8.30am-10.00am	Symposium		Updates in thoracic malignancy	Mountbatten/6th
8.30am-10.00am	Symposium		State of the art: cough therapeutics	Windsor/5th
8.30am-10.05am	Spoken session	S112-S117	"Jane Air" – Pneumothorax management	Westminster/4th
8.30am-10.05am	Spoken session	S118-S123	"Brave New World" – Asthma in the new era	Moore/4th
8.30am-10.05am	Spoken session	S124-S129	"Of Mice and Men" – On the road to translation	Abbey/4th
9.00am-10.00am	SAG open meeting		Acute and Complex Pulmonary Infections	Rutherford/4th
9.00am-10.00am	SAG open meeting		Critical Care, Respiratory Failure and Mechanical Ventilation	Albert/2nd
9.00am-10.00am	SAG open meeting		TB and NTM	Victoria/2nd
10.00am-11.00am	COFFEE/TEA			Whittle & Fleming and Britten/3rd
10.30am-11.30am	SAG open meeting		Bronchiectasis	Rutherford/4th
10.30am-11.30am	SAG open meeting		Sleep Apnoea	Victoria/2nd
10.30am-11.50am	Spoken session	S130-S134	"The Road Not Taken" – Optimising rehabilitation in COPD	Westminster/4th
10.30am-11.55am	Open session		Respiratory Translational Research Collaboration	Windsor/5th
10.30am-12.00pm	Symposium		The changing paradigm of asthma in the biologics era	Churchill/Ground

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

DAILY PROGRAMME (cont.) FRIDAY 29 NOVEMBER 2024

Time	Details			Location/Floor
10.30am-12.00pm	Symposium		Advances in TB: from diagnosis to prognosis	Mountbatten/6th
10.30am-12.05pm	Spoken session	S135-S140	"Fifty Shades of Grey" – Targeted lung health check	St James/4th
10.30am-12.05pm	Spoken session	S141-S146	"A Winter's Tale" – Mechanisms of viral infection	Moore/4th
10.30am-12.05pm	Spoken session	S147-S152	"The Signalman" – Mechanisms of lung disease	Abbey/4th
11.45am-12.30pm	Open session		Supporting women in respiratory medicine	Rutherford/4th
12.00pm-2.00pm	LUNCH	*Not included in the delegate fee. Card payments only. Exhibition closes at 2.00pm*		Pickwick / 1st and Whittle & Fleming/3rd
12.30pm-1.15pm	BTS Clinical Guest Lecture		Academic medicine: trials and tribulations	Churchill/Ground
1.30pm-2.30pm	SAG open meeting		Asthma	Albert/2nd
1.30pm-2.30pm	SAG open meeting		Interstitial and Rare Lung Disease	Victoria/2nd
1.30pm-3.00pm	Symposium		Fighting fungus: advances against pulmonary aspergillosis	Churchill/Ground
1.30pm-3.00pm	Symposium		Innovative ventilation technology: from hospital to home	Mountbatten/6th
1.30pm-3.00pm	Symposium		BTS Audit and Quality Improvement	Windsor/5th
1.30pm-3.00pm	Poster discussion	P169-P180	"Coming up for Air" – Severe asthma, from pollution to service delivery	St James/4th
1.30pm-3.00pm	Poster discussion	P181-P192	"Catching Fire" – Measuring and targeting inflammation in COPD	Westminster/4th
1.30pm-3.00pm	Poster discussion	P193-P204	"Lord of the Tracheal Rings" – Interventional bronchoscopy	Moore/4th
1.30pm-3.05pm	Poster discussion	P205-P217	"The (Richard) Light Fantastic" – Pleural disease diagnosis and outcomes	Abbey/4th
1.30pm-3.15pm	Poster discussion	P218-P231	"The TB Manager" – Clinical problems in TB	Rutherford/4th
2.30pm-3.15pm	COFFEE/TEA			Britten/3rd
3.15pm-4.25pm	Poster discussion	P232-P240	"The Number One Asthma Detective Agency" – Asthma diagnostics	St James/4th
3.15pm-4.45pm	Symposium		New developments in sarcoidosis	Churchill/Ground
3.15pm-4.45pm	Symposium		Sleep latest: endotyping, AF and something REMarkably different	Mountbatten/6th
3.15pm-4.50pm	Spoken session	S153-S158	"Foundation's Edge" (2) – Role of genetics in IPF	Windsor/5th
3.15pm-4.50pm	Poster discussion	P241-P253	"The Fellowship of the Fit" – Exercise and rehabilitation	Moore/4th
3.15pm-5.00pm	Poster discussion	P254-P267	"Great Expectorations" – Cystic fibrosis and bronchiectasis	Westminster/4th
3.15pm-5.00pm	Moderated Poster discussion	M29-M42	"The Importance of Breathing Earnest" – Clinical COPD	Cambridge/5th

Please see page Axii for a complete list of the days and times of BTS Specialist Advisory Group open meetings.

Coffee and tea are complimentary ONLY during the coffee/tea break times shown. Outside these times, drinks may be purchased from the café in the Pickwick (1st floor), or the snack bar in the Whittle & Fleming (3rd floor).

OPEN MEETINGS OF THE BTS SPECIALIST ADVISORY GROUPS

Open meetings of the British Thoracic Society Specialist Advisory Groups (SAGs) will take place during the Winter Meeting. All participants are welcome to attend and hear more about the work of the SAGs and be involved in planning symposia for future Summer and Winter Meeting programmes.

WEDNESDAY 27 NOVEMBER

Time	SAG	Location
11.00am-12.00pm	Cough	Albert, 2nd floor
11.00am-12.00pm	Occupational and Environmental Lung Disease	Victoria, 2nd floor
12.30pm-1.30pm	Joint BTS/ARTP	Albert, 2nd floor
12.30pm-1.30pm	Pharmacist	Victoria, 2nd floor
2.00pm-3.00pm	COPD	Albert, 2nd floor
2.00pm-3.00pm	Lung Cancer and Mesothelioma	Victoria, 2nd floor
3.15pm-4.10pm	Pleural Disease	Gielgud, 2nd floor
3.15pm-4.10pm	Pulmonary Embolism and other Pulmonary Vascular Diseases	Albert, 2nd floor

THURSDAY 28 NOVEMBER

Time	SAG	Location
8.45am-9.45am	Tobacco Dependency	Victoria, 2nd floor
10.45am-11.45am	Global Lung Health	Rutherford, 4th floor
10.45am-11.45am	Cystic Fibrosis	Albert, 2nd floor
10.45am-11.45am	Nurse	Victoria, 2nd floor
2.00pm-3.00pm	Pulmonary Rehabilitation	Victoria, 2nd floor
4.15pm-5.15pm	Specialty Trainee	Victoria, 2nd floor

FRIDAY 29 NOVEMBER

Time	SAG	Location
9.00am-10.00am	Acute and Complex Pulmonary Infections	Rutherford, 4th floor
9.00am-10.00am	Critical Care, Respiratory Failure and Mechanical Ventilation	Albert, 2nd floor
9.00am-10.00am	TB and Non-Tuberculous Mycobacteria	Victoria, 2nd floor
10.30am-11.30am	Bronchiectasis	Rutherford, 4th floor
10.30am-11.30am	Sleep Apnoea	Victoria, 2nd floor
1.30pm-2.30pm	Asthma	Albert, 2nd floor
1.30pm-2.30pm	Interstitial and Rare Lung Disease	Victoria, 2nd floor

BTS MEDAL AND AWARD PRESENTATIONS

Wednesday 27 November at 4.15pm in the Churchill, Ground floor

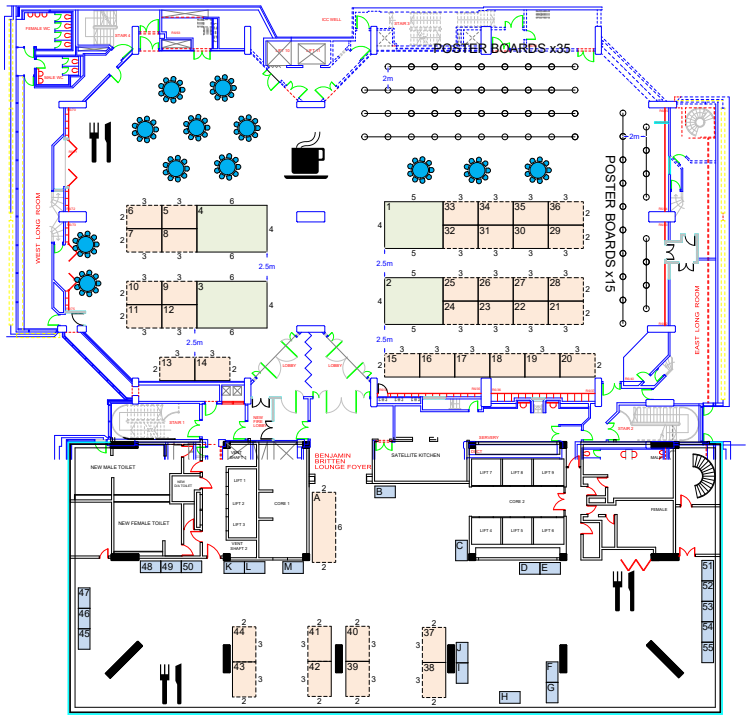
The presentations will be made just before the BTS President's Address, for the annual BTS Medal, BTS Award for Meritorious Service, BTS President's Award, BTS/BALR/A+LUK Early Career Investigator Awards, BTS Medical Student Awards and BTS/A+LUK/BALR/Lecture Awards.
Please come along to this session to congratulate the winners.

THE BTS PRESIDENT'S RECEPTION

Thursday 28 November from 5.45pm to 7.00pm in the Britten, 3rd floor

All participants are warmly invited to join us for this social occasion.

FLOOR PLAN OF THE EXHIBITION STANDS



Exhibitors and stand numbers

29	Abbott Rapid Diagnostics
5	Aerogen
23	Ambu
15	APR Medtech
2 & 30	AstraZeneca
35	BD
20	Broncus Medical Inc/Uptake Medical Inc
3	Chiesi
43	Cipla EU Ltd
14	Creo Medical
10 & 11	Erbe Medical UK Ltd
18	Fannin
24	Fisher & Paykel Healthcare
4 & 38	GSK
8	Guardant Healthcare
6	Healthcare21 Group (Aquilant)
19	ICU Medical
41	Inogen + Physio-Assist
9, 31 & 32	Insmed
16	Inspire Sleep
45	Kenvue
34	It's Interventional
7	Medtronic
27 & 28	MSD
37	Niox Healthcare Ltd
13	Olympus
12	Orion Pharma
25	Richard Wolf UK Ltd
42	Roche
36	Rocket Medical
1, 21 & 22	Sanofi
33	Stirling Anglian Pharmaceuticals
26	Thornton & Ross (STADA Group)
17	Tidal Sense
44	Vitalograph

Charity/non-commercial organisation

D	Action for Pulmonary Fibrosis
F	Association of Chartered Physiotherapists in Respiratory Care (ACPRC)
I	Association of Respiratory Nurses (ARNS)
47	Asthma and Lung UK
J	Association for Respiratory Technology & Physiology (ARTP)
G	British Association for Lung Research (BALR)
A	British Thoracic Society
E	DC Action
50	ILD Interdisciplinary Network (ILD-IN)
39	The Limbic
40	LifeArc
K	Mesothelioma UK
B	National Respiratory Audit Programme (NRAP)
M	NTM Patient Care UK The NTM Network
49	PCD Support UK
C	Pulmonary Rehabilitation Services Accreditation Scheme (PRSAS)
H	Royal College of Speech & Language Therapists
L	SarcoidosisUK

8.00am-9.00am
Whittle & Fleming, 3rd floor
COFFEE/TEA

8.45am-4.00pm
Whittle & Fleming, 3rd floor
POSTER VIEWING
Authors present: 10.00am-11.00am

P1-P14
"The CAP in the Hat" – Pneumonia in 2024
Discussion of abstracts will take place from 2.15pm to 4.00pm in the St James, 4th floor

P15-P27
"George's Marvellous Medicine" – Biologics, biologics, biologics
Discussion of abstracts will take place from 2.15pm to 3.50pm in the Westminster, 4th floor

P28-P41
"Sleeping Beauty" – Monitoring and managing sleep disordered breathing
Discussion of abstracts will take place from 2.15pm to 4.00pm in the Moore, 4th floor

P42-P55
"Alice's Adventures in Inhalerland" – Considering the device and the environment in asthma
Discussion of abstracts will take place from 2.15pm to 4.00pm in the Abbey, 4th floor

P55-P68
"Into the Void" – ILD and sarcoid
Discussion of abstracts will take place from 2.15pm to 3.50pm in the Rutherford, 4th floor

---

8.45am-4.00pm
Cambridge, 5th floor
MODERATED POSTER VIEWING

M1-M14
"Into Thin Air" – From primary care to biologics
Discussion of abstracts will take place from 2.15pm to 4.00pm in the Cambridge, 5th floor

---

8.00am-8.30am
Albert, 2nd floor
JOURNAL CLUB
OCCUPATIONAL LUNG DISEASE

Dr Johanna Feary (London)

Learning objectives

1) To review the latest publications and evidence in the field of occupational lung disease.

8.30am-10.30am
Windsor, 5th floor
JOINT BTS/BALR SYMPOSIUM PART 1
JOINING THE DOTS – INTERNAL INTERACTIONS

Chaired by: Dr Alison John (London) and Dr Brintha Selvarajah (London)

8.30am	More than just a barrier – endothelial-epithelial cross-talk Dr Andreas Wack (London)
9.10am	A long distance relationship? Molecular pathways underlying lung-brain axis signalling Dr Claire Laubacher (Wisconsin)
9.50am	Putting it all together – multimodal analysis of cell circuits in lung ageing and disease Professor Herbert Schiller (Munich)

Learning objectives

1) To give an overview of the interaction between these cell types in the lung and how this interaction affects responses to respiratory infection.

2) To give an overview of the interaction between the lung and the brain and how this is modulated by respiratory disease.

3) To give an overview of how multiple cell types can be analysed in an integrated way to inform our understanding of lung biology.

8.45am-9.50am
Rutherford, 4th floor
SPOKEN SESSION: S1-S4
"The Catcher in the MRI" – Functional imaging in lung disease

Chaired by: Professor Salman Siddiqui (London) and Dr Neil Stewart (Sheffield)

8.50am	**S1** Postural position of pulmonary function testing and relationship with oxygen enhanced MRI in cystic fibrosis

C Efthyvoulou, C Short, M Tibiletti, GJM Parker, JC Davies

9.05am **S2**

Evaluation of lung transplant function and detection of CLAD using 129Xe-MRI and LCI

M Driskel, H Marshall, A Biancardi, L Smith, D Capener, J Bray, A Zalewska, S Fazal, L Saunders, R Munro, O Rodgers, K Santhanakrishnan, R Venkateswaran, J Blaikley, J Wild, A Horsley

9.20am **S3**

Predicting longitudinal decline in gas exchange in asthma and/or COPD using Xenon-129 MRI and explainable machine learning techniques

JR Astley, H Marshall, LJ Smith, R Hughes, BA Tahir, JM Wild

9.35am **S4**

Treatment response mapping using 19F-MRI in patients with asthma and COPD

BJ Pippard, M Neal, C Holland, R Lawson, J Wild, AJ Simpson, P Thelwall

8.45am-10.05am
St James, 4th floor
SPOKEN SESSION: S5-S9

"Topic of Cancer" – Lung cancer diagnosis and treatment

Chaired by: Professor Sam Janes (London) and Dr Richard Lee (London)

8.50am **S5**

Real-world evidence on the journey of lung cancer patients in England: delays in diagnosis and treatment

ML Mullin, XL Marston, J Lavin, R Thakrar

9.05am **S6**

Robotic assisted bronchoscopy implementation within a UK tertiary referral centre

R Dunwoody, M Mullin, R Shea, D Estenor, A Ahmed, R Khiroya, P Gorur, N Navani, R Thakrar

9.20am **S7**

Impact of frailty and comorbidities on treatment decisions and outcomes in patients with lung cancer: a retrospective cohort study

KP Yip, HK Dhillon, P Chandrasekaran, A Ode, IS Chin, B Adizie

9.35am **S8**

Comparative evaluation of clinical frailty scale and WHO performance status for predicting 90-day mortality in people with lung cancer

V Kumar, S Sultan, T Ward, R Sudhir, M Majid, S Mohammad, S Agrawal, J Bennett

9.50am **S9**

Utility of PET CT in CT stage IA non-small cell lung cancer: the New Zealand Te Whatu Ora Northern Region experience

RJ Kelly, GD Anderson, BJ Joshi, JJ Donald

8.45am-10.15am
Churchill, ground floor
SYMPOSIUM

AT THE REVOLUTION IN COPD HEALTH: ENTER BIOLOGICS

Chaired by: Dr Lydia Finney (London) and Dr Neil Greening (Leicester)

8.45am Translating the pathway in COPD
Professor Guy Brusselle (Ghent)

9.15am What have the biologics P3 trials shown?
Professor Surya Bhatt (Alabama)

9.45am Using biologics at the time of an acute exacerbation
Professor Mona Bafadhel (London)

Learning objectives

1) To understand the background and development to personalised treatment using biologics for exacerbations of COPD.

2) To provide an update on the latest evidence for biologics in COPD.

3) To review possible usage of biologics at the time of an exacerbation of COPD.

8.45am-10.15am
Mountbatten, 6th floor
SYMPOSIUM

MEASUREMENT AND MONITORING IN PULMONARY REHABILITATION – USING THE MIND, BODY AND SOUL

Chaired by: Dr Matthew Armstrong (Durham) and Professor Rachael Evans (Leicester)

8.45am The mind – Can we use brain imaging to predict improvement in breathlessness improvement experienced during PR?
Dr Kyle Pattinson (Oxford)

9.15am The body – Physiological measurement and testing in COPD: should this impact how we do PR?
Professor Harry B Rossiter (Los Angeles)

9.45am The soul – Musical interventions: an effective adjunct for PR?
Dr Adam Lewis (Southampton)

Learning objectives

1) To understand the potential usefulness of brain imaging in the management of breathlessness.

2) To explore the usefulness of physiological measurement and testing in those with respiratory conditions.

3) To discuss the potential of musical interventions as an adjunct to PR.

8.45am-10.20am
Westminster, 4th floor
SPOKEN SESSION: S10-S15

"The Taming of the T2" – T2 inflammation in asthma

Chaired by: Dr Rory Chan (Dundee) and Professor Ramesh Kurukulaaratchy (Southampton)

8.50am **S10**
The effect of the oral contraceptive pill on the risk of asthma exacerbations in women: a population cohort study
AR Rafati Fard, B Lee, C Bloom

9.05am **S11**
The different mechanisms of inhaled and oral corticosteroids in T2-high asthma. For those established on inhaled steroids additional effects from oral steroids may lie in access to the small airways
J Melhorn, C Pelaia, G Hynes, R Shrimanker, L Bermejo-Sanchez, C Borg, M Mahdi, S Couillard, G Lavoie, I Howell, H Xu, ID Pavord, TSC Hinks

9.20am **S12**
Association between disease duration and FEV1 in severe asthma phenotypes and endotypes
F Yang, N Zounemat-Kermani, P Dixey, IM Adcock, CI Bloom, KF Chung

9.35am **S13**
Increased variability of peak flow reflect T2 inflammation more than ACT or change in FEV1
C Ottewill, V Brennan, P Kerr, E MacHale, G Greene, RW Costello

9.50am **S14**
Loss of membrane IL-5 receptor is a marker for eosinophil activation
J Luo, J Van Heerden, S Barden, J Melhorn, T Hinks, I Pavord

10.05am **S15**
IL-5Rα is lost from the sputum eosinophils of eosinophilic asthmatics at steady state: potential implications for asthma control
J Melhorn, C Pelaia, M Mahdi, J Luo, D Oliver, G Lavoie, H Ferry, ID Pavord, TSC Hinks

---

8.45am-10.20am
Moore, 4th floor
SPOKEN SESSION: S16-S21

"Lungs Labours Lost" – Occupational lung disease

Chaired by: Dr Jennifer Hoyle (Manchester) and Professor Joanna Szram (London)

8.50am **S16**
HANDS-ON ASTHMA (health and social factors and their influence on asthma symptoms at work). A cross-sectional study to evaluate the influence of bio-psycho-social and cultural factors on the presence of work-exacerbated asthma
N Kongsupon, GI Walters, RL Adams, RE Jordan, P Adab

9.05am **S17**

The diagnostic accuracy of chest X-ray for the diagnosis of silicosis and how this relates to silica exposure

A Durairaj, P Howlett, J Feary

9.20am **S18**

Fifty years of the Great Britain Asbestos Workers' Survey (AWS): past, present and future

G Nicholls, L Darnton, C Young, D Fishwick, A Curran

9.35am **S19**

Respiratory health hazards in the wind industry: a scoping review

T McLay, V Turner, J Hoyle, D Fishwick, H Badri, R Wiggans, M Van-Tongeren

9.50am **S20**

Lessons learnt from a combined screening and research programme for silicosis and tuberculosis amongst a small-scale mining population

PJ Howlett, BN Said, E Mwanga, A Amaral, J Feary, SG Mpagama

10.05am **S21**

Epidemiology of silicosis in the UK: an update from the SWORD scheme 2018-2023

R Wiggans, L Byrne, D Fishwick, M Van-Tongeren, CM Barber

8.45am-10.20am
Abbey, 4th floor
SPOKEN SESSION: S22-S27

"This is Going to Hurt" – Pleural interventions

Chaired by: Dr Eihab Bedawi (Sheffield) and Dr Rachel Mercer (Portsmouth)

8.50am **S22**

The role of erector spinae plane blocks in medical thoracoscopy: a safe and effective way of providing analgesia

T Wijayaratne, A Yousuf, R Samarasinghe, A Mavilakandy, H Yusuff, S Hanna-Jumma, S Ajmal, R Sudhir, R Panchal

9.05am **S23**

Adjusting to life with an indwelling pleural catheter – assessing and improving written information for patients

F Vivian, J Liang, O Kadwani, J Zhang

9.20am **S24**

The case for a NCEPOD review into harm from pleural interventions

A Aujayeb

9.35am **S25**

Local anaesthetic use in pleural procedures: time to reconsider the guidelines?

I Mechie, C Mounsey, D Addala, E Smith, Z Small, B Gould, R Suribhatla, G Annetts, D Krouzkova, N Rahman

9.50am **S26**

Feasibility and effectiveness of the Passio™ digital drainage system in reducing chest pain during IPC pleural drainage

T Wijayaratne, F Hinchcliffe, S Rizvi, A Mavilakandy, S Johnstone, R Sudhir, R Panchal

10.05am **S27**

UK local anaesthetic thoracoscopy services in 2024

D de Fonseka, A Aujayeb, R Bhatnagar

10.00am-11.00am
Whittle & Fleming and Britten, 3rd floor

COFFEE/TEA BREAK

10.45am-12.00pm
St James, 4th floor
SYMPOSIUM

HIGHLIGHTS FROM THORAX AND LANCET RESPIRATORY MEDICINE

Chaired by: Dr Emma Grainger (Lancet Respiratory Medicine) and Professor Cecilia O'Kane (Thorax)

10.45am Introduction to Thorax
Professor Cecilia O'Kane (*Thorax*)

10.50am Introduction to Lancet Respiratory Medicine
Dr Emma Grainger (*Lancet Respiratory Medicine*)

10.55am Presentation from *Thorax*: Monocyte NLRP3 inflammasome and interleukin-1β activation modulated by alpha-1 antitrypsin therapy in deficient individuals
Professor Emer Reeves (Dublin)

11.15am Presentation from *Lancet Respiratory Medicine*: Mirtazapine to alleviate severe breathlessness in patients with COPD or interstitial lung diseases (BETTER-B): an international, multicentre, double-blind, randomised, placebo-controlled, phase 3 mixed-method trial
Professor Irene Higginson OBE (London)

11.35am Editors' discussion

Session overview

Meet the editors of *Thorax* and *Lancet Respiratory Medicine* in this session, in which the editors select a paper from each journal, invite the authors to present, and discuss why they chose these papers for their journal. The session will highlight high quality respiratory research and help attendees understand the peer review and editorial decision-making processes.

10.45am-12.05pm
Rutherford, 4th floor
SPOKEN SESSION: S28-S32

"Crime and Punishment" in pulmonary vascular disease

Chaired by: Dr Jennifer Rossdale (Bath) and Dr Ioana Preston (Boston)

10.50am **S28**
Semaglutide added to anticoagulation in acute intermediate-risk pulmonary embolism is safe and downregulates immunometabolic glycoproteins
C Samaranayake, M Fang, Y Chen, S Song, F Sabrin, A Ashek, C Rhodes, J Pinguel, L Howard, K Breen, L Price, B Mukherjee, K Bonnici, T Rudd, S Wort, L Zhao, C McCabe

11.05am **S29**
Low-probability transthoracic echocardiography in CTEPH – a missed diagnostic opportunity?
J Page, H Wong, P Charters, C Wild, R Mackenzie-Ross, JG Coghlan, D Augustine, J Rodrigues, J Suntharalingam

11.20am **S30**
Quantitative assessment of pulmonary artery blood volume in chronic thromboembolic pulmonary hypertension-using CTPA and machine learning
H Ghani, A Ruggiero, E Bussell, J Weir-McCall, M Graves, S Walsh, M Thillai, J Pepke-Zaba

11.35am **S31**
Pulmonary AVM ischaemic stroke risk: 5HT pathway genes and variants relevant to variability mediated by iron deficiency
M Iyer, CL Shovlin

11.50am **S32**
Elective cardiothoracic surgical resections for pulmonary arteriovenous malformations – a 16 year single-centre experience
M Al-Sahaf, J Anderson, J Nandi, A Alsafi, CL Shovlin

10.45am-12.15pm
Churchill, ground floor
SYMPOSIUM

PLEURAL INTERVENTIONS: THE HOW, WHY AND WHEN

Chaired by: Professor Kevin Blyth (Glasgow) and Dr Duneesha de Fonseka (Sheffield)

10.45am Outcome and complications post pleural intervention: results of the PROSPECT study
Dr Anand Sundaralingam (Oxford)

11.15am Predicting time to next pleural procedure: results of the REPEAT study
Professor Eleanor Mishra (Norwich)

11.45am Combining indwelling pleural catheter with thoracoscopic talc poudrage: results of the TACTIC trial
Dr Alexandra Dipper (Bristol)

Learning objectives

1) To examine the results of the UK's first prospective multi-centre study examining clinical, radiological and patient reported outcomes after pleural intervention.

2) To learn about the factors and biomarkers predictive of re-accumulation rate of malignant pleural effusions.

3) To discuss the results of the first RCT to compare a combined thoracoscopic talc pleurodesis and indwelling pleural procedure early in the patient pathway against standard care.

10.45am-12.15pm
Mountbatten, 6th floor
SYMPOSIUM

TOBACCO DEPENDENCE: GIVING UP IS EASY, I'VE DONE IT A THOUSAND TIMES…

Chaired by: Professor Sanjay Agrawal (Leicester) and Ms Jacqueline Pollington (Rotherham)

10.45am Quitting smoking as a crucial component of cancer care: clinical and biological benefits
Dr Mahdi Sheikh (Lyon)

11.15am Vaping explained
Professor Caitlin Notley (Norwich)

11.45am Update on the BTS Clinical Statement on the Medical Management of Inpatients with Tobacco Dependency
Professor Matthew Evison (Manchester)

Learning objectives

1) To explore the science of treating tobacco addiction.

2) To evaluate the current evidence for the use of vapes in treating dependence.

3) To understand the recently updated tobacco clinical statement.

10.45am-12.15pm
Gielgud, 2nd floor
OPEN SESSION

NRAP: UNDERSTANDING WHAT GOOD RESPIRATORY CARE LOOKS LIKE

Chaired by: Professor Tom Wilkinson (Southampton)

10.45am Introduction

10.55am Organisational audit
Dr Irem Patel (London) and Professor Ian Sinha (Liverpool)

11.15am Healthcare Improvement Programme
Professor Alice Turner (Birmingham)

11.35am NRAP research
Professor James Dodd (Bristol) and Professor Jennifer Quint (London)

11.55am Q&A

Learning objectives

1) To understand the NRAP organisation audit 2024 recommendations.

2) To understand the NRAP healthcare improvement education programme and strategy, linked to HI goals.

3) Discuss the aims and objectives for the NRAP research committee. Understand data access requests and governance for NRAP research. Discuss the future direction and priorities of the NRAP research programme.

10.45am-12.20pm
Westminster, 4th floor
SPOKEN SESSION: S33-S38

"Harry Potter and the Sorcerer's Biologic" – Asthma biologics (1)

Chaired by: Dr Pujan Patel (London) and Dr Laura Wiffen (Portsmouth)

10.50am **S33**
Real-world effectiveness of biologic therapies in severe asthma patients ineligible for phase 3 randomised controlled trials (RCTs)
PE Pfeffer, J Karaj, T Brown, H Burhan, R Chaudhuri, S Siddiqui, LG Heaney, DJ Jackson, M Patel, P Patel, J Busby

11.05am **S34**
Reduced mucus plugging with tezepelumab is spatially associated with reduced air trapping in a broad population of patients with moderate to severe asthma
CE Brightling, Å Hellqvist, S Diver, C Porsbjerg, E Israel, JD Newell Jr, S Peterson, JM Sepena, AW Lindsley, A Megally, LH Nordenmark

11.20am **S35**
Dupilumab effect on exacerbations and lung function despite withdrawal of inhaled corticosteroids/long-acting beta agonists
ME Wechsler, P Pfeffer, DJ Jackson, KF Rabe, ID Pavord, JC Virchow, R Katial, E Israel, C Xia, N Pandit-Abid, M Soliman, PJ Rowe, Y Deniz, H Sacks, JA Jacob-Nara

11.35am **S36**
Using nasal gene expression profiling and DNA methylation to identify mechanisms underlying clinical response to Mepolizumab in severe asthma

Y AlZahrani, YL Pang, K Rakkar, R Hall, P Rajasekar, RL Clifford, MA Portelli, D Shaw, I Sayers

11.50am **S37**

Attenuation of mannitol airway hyper-responsiveness by dupilumab in uncontrolled severe type 2 high asthma

BJ Lipworth, KE Stewart, CR Kuo, R Chan

12.05pm **S38**

New onset EGPA in patients on biologics for severe asthma- a multi-centre case series

H Rupani, AT Bansal, S Sergejeva, A Nanzer, M Caminati, P Kopac, Z Csoma, S Skrgat, B Milenkovic, K Bieksiene, E Zervas, E Weersink, P Kuna, V Yasinka, V Sedlak, P Dennison, S Rink, G Anderson, C Porsbjerg

10.45am-12.20pm
Moore, 4th floor
SPOKEN SESSION: S39-S44

"Where the Wild Things Are" – Infection and inflammation in bronchiectasis and NTM

Chaired by: Dr Emma Johnson (Dundee) and Dr Inderpaul Sehgal (Delhi)

10.50am **S39**

Patient reported outcome measures using AWESCORE in patients with bronchiectasis

C Wood, L Speight, C Lane, L Torres, J Duckers

11.05am **S40**

Radiological bronchiectasis vs outcomes in alpha-1 antitrypsin deficiency

J De Soyza, P Ellis, L Rickard, M Newnham, AM Turner

11.20am **S41**

Investigation of novel biomarkers of immune dysregulation for the improvement of endotyping in bronchiectasis

AM Matthaiou, N Bizymi, G Pitsidianakis, E Vasarmidi, C Skiadas, N Tzanakis, KM Antoniou

11.35am **S42**

Pseudomonas aeruginosa genetic variants associated with increased exacerbations in bronchiectasis

RC Hull, N Harrington, A Gilmour, MB Long, J Stobo, A Kottara, K Cagney, PC Goeminne, C Haworth, JL Fothergill, M Brockhurst, S Paterson, JD Chalmers

11.50am **S43**

The lung mycobiome in nontuberculous mycobacterial pulmonary disease

K Kumar, A Nastase, L Cuthbertson, HC Ellis, C Churchward, J Ish-Horowicz, N Lambie, B Phillimore, N Matthews, MR Loebinger, MF Moffatt, WOC Cookson

12.05pm **S44**

Outcomes and characteristics of patients treated with nebulised amikacin liposome inhalation suspension (Arikayce®): report from a tertiary centre

GM Housley, MR Loebinger

10.45am-12.20pm
Abbey, 4th floor
SPOKEN SESSION: S45-S50

"The Wind in the Willows" – Home mechanical ventilation

Chaired by: Dr Rebecca D'Cruz (London) and Dr Ben Messer (Newcastle upon Tyne)

10.50am **S45**

The changing demographics of home mechanical ventilation (HMV) set-ups following acute hypercapnic respiratory failure (AHRF)

JW Goh, PL Lee, D Mukherjee, S Wallbanks, A Krishnan, S Abid, A Oakes, R Mukherjee

11.05am **S46**

A comparative study evaluating the clinical characteristics and patient related outcomes between inpatient versus outpatient domiciliary non-invasive ventilation (D-NIV) trials

AB Huda, A Khan, A Dwarakanath

11.20am **S47**

Pneumococcus and influenza vaccinations in patients with COPD established on long-term non-invasive ventilation

E Croft, B Csoma, A Chai, T Felton, A Bentley, A Bikov

11.35am **S48**
Frailty and multimorbidity in patients treated with domiciliary NIV for obesity-related sleep disordered breathing: a single centre experience at a district general hospital
R Chapman, J Bourne, G Tinson, N Hussain, J Coffey, J Loft, K Spurling, I Moonsie

11.50am **S49**
Treatment considerations for long term tracheal ventilation in progressive or post-acute neurological disease
A Evans-Tomlinson, P Byrne, M Ramsay, L Bradley

12.05pm **S50**
Effect of pulse oximetry accuracy on timing of long-term oxygen assessments in people with darker skin tones
WAKT Chua, JMR Ruanto, S Williams, N Gardiner, A Fogarty, D Shaw, T Ward

---

11.00am-12.00pm
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Cough

11.00am-12.00pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Occupational and Environmental Lung Disease

11.00am-1.00pm
Windsor, 5th floor
JOINT BTS/BALR SYMPOSIUM PART 2
JOINING THE DOTS – EXTERNAL INTERACTIONS

Chaired by: Ms Chloe Hughes (Dundee) and Professor Karl Staples (Southampton)

11.00am Climate crisis – impact of rising temperatures on pulmonary particulate matter responses
Dr Lareb Dean (Southampton)

11.40am A dirty environment? Interactions between pollution and microbes
Professor Christopher Carlsten (Vancouver)

12.20pm Unintended consequences – harms of e-cigarettes
Dr Aaron Scott (Birmingham)

Learning objectives

1) To provide an update on the impact of particulate pollution on lung biology and how this is impacted by climate change.

2) To provide an update on our current understanding of how pollution impacts on the respiratory microbiome and how this interaction impacts on lung health.

3) To provide an update on our current understanding of the impact of e-cigarette constituents on lung cell biology.

12.00pm-2.00pm
Pickwick, 1st floor and Whittle & Fleming, 3rd floor
LUNCH (Lunch is not included in the delegate fee. Card payments only)

12.30pm-1.30pm
Albert, 2nd floor
OPEN MEETING
Joint BTS/ARTP

12.30pm-1.30pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Pharmacist

1.15pm-2.00pm
Churchill, ground floor
BTS GRAND CHALLENGE GUEST LECTURE
A Series of Fortunate Events - What will it take to improve lung health outcomes a decade from now?

Sarah Woolnough (London)
Introduced by: Dr Paul Walker (Liverpool)

2.00pm-3.00pm
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

COPD

2.00pm-3.00pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

Lung Cancer and Mesothelioma

2.15pm-3.45pm
Churchill, ground floor
SYMPOSIUM

MEDICINES-USE BEHAVIOUR CHANGE: TRANSLATING ASTHMA TRIAL EVIDENCE INTO CLINICAL PRACTICE

Chaired by: Ms Gráinne d'Ancona (London) and Professor Adel Mansur (Birmingham)

2.15pm Guideline development: from clinical trials to medicines optimisation
Ms Lynn Elsey (Manchester)

2.45pm Clinician behavioural change: overcoming entrenched behaviours
Professor Robert Horne (London)

3.15pm Patient behavioural change: are shared decision making and digital innovations the answer?
Dr Samantha Walker (London)

Learning objectives

1) Recognise the challenges of effectively implementing new guidelines in clinical practice.

2) Appreciate the interventions needed to change the behaviour of healthcare professionals in delivering innovation.

3) Understand what factors influence patient medicine taking behaviours (adherence) and what can facilitate long term behaviour change.

2.15pm-3.45pm
Mountbatten, 6th floor
JOINT BTS/BPRS SYMPOSIUM

REDUCING THE BURDEN OF LUNG DISEASE THROUGHOUT THE LIFE COURSE – WE NEED TO START EARLY!

Chaired by: Dr Caroline Harris (Newcastle upon Tyne) and Dr Anna Moore (London)

2.15pm CF in the era of modulators – too early to talk about remission?
Professor Jane Davies OBE (London)

2.45pm Do children really "grow out" of asthma?
Professor Francine Ducharme (Montreal)

3.15pm How can paediatricians improve adult lung health?
Professor Stephen Turner (Aberdeen)

Learning objectives

1) To discuss social structural factors and early life influences that impact respiratory health throughout the life course.

2) To understand how remission may differ across age groups and disease types.

3) To discuss whether current therapies can lead to disease modification.

2.15pm-3.45pm
Windsor, 5th floor
SYMPOSIUM: T1-T6

JOINT BTS/BALR/A+LUK EARLY CAREER INVESTIGATOR AWARDS

Chaired by: Professor Jonathan Bennett (Leicester)

Judged by: Professor Mona Bafadhel (London), Professor James Chalmers (Dundee) and Professor Karl Staples (Southampton)

2.15pm **T1**
Exploring the tumour stroma in pleural mesothelioma using single-cell and single-nucleus transcriptomics
N Veale, JA Valer, J Obacz, A Lewis-Wade, G Aresu, A Peryt, A Coonar, J Hogan, A Patterson, RC Rintoul, SJ Marciniak

2.30pm **T2**
SARS-CoV-2 infection of nasal epithelial cells from children results in greater neutrophil trans-epithelial migration, but a more activated neutrophil phenotype emerges in older adults
T Masonou, M Woodall, AM Cubja, A Eddaoudi, TD McHugh, C Butler, M Nikolic, RL Smyth, CM Smith

2.45pm **T3**

Immunomodulatory effects of the dipeptidyl peptidase-1 inhibitor brensocatib in patients with bronchiectasis: data from the phase 2 WILLOW trial

ED Johnson, MB Long, L Perea, A Gilmour, VH Shih, C Fernandez, A Teper, D Cipolla, YH Giam, C Hughes, HR Keir, E McIntosh, R Galloway, Z Eke, M Shuttleworth, RC Hull, T Pembridge, A Spinou, A De Soyza, FC Ringshausen, P Goeminne, N Lorent, C Haworth, MR Loebinger, F Blasi, M Schteinberg, S Aliberti, E Polverino, O Sibila, A Shoemark, K Mange, JTJ Huang, A Condliffe, J Stobo, JD Chalmers

3.00pm **T4**

Integrated plasma proteomics identifies tuberculosis-specific biomarkers

HF Schiff, NF Walker, C Ugarte-Gil, M Tebruegge, A Manousopoulou, SD Garbis, S Mansour, PH Wong, G Rockett, P Piazza, M Niranjan, A Vallejo, CH Woelk, RJ Wilkinson, PT Elkington

3.15pm **T5**

Genomics of dry cough unravels neurological pathways

K Coley, C John, J Ghouse, DJ Shepherd, N Shrine, AG Izquierdo, S Kanoni, EF Magavern, R Packer, L McGarvey, JA Smith, H Bundgaard, SR Ostrowski, C Erikstrup, OBV Pedersen, DA van Heel, W Hennah, M Marttila, RC Free, EJ Hollox, LV Wain, MD Tobin, C Batini

3.30pm **T6**

Exhaled nitric oxide (FeNO) predicts clinical and anti-inflammatory response to prednisolone for breakthrough attacks in anti-IL5/IL5R treated asthma

I Howell, M Mahdi, HR Mahmood, L Bermejo-Sanchez, C Borg, S Ramakrishnan, J Melhorn, G Lavoie, N Petousi, TSC Hinks, M Bafadhel, ID Pavord

2.15pm-4.00pm
Cambridge, 5th floor
MODERATED POSTER DISCUSSION: M1-M14

"Into Thin Air" – From primary care to biologics

Chaired by: Dr Simon Brill (London) and Mrs Leanne Jo Holmes (Manchester)

M1 Breathing easy at 80: the power of biologics in elderly asthma patients

A Howell, I Mechie, G Lavoie, A Chadwick

M2 Real world effectiveness of tezepelumab for adolescents and young adults with severe asthma

L Thomson, L Green, C Roxas, M Fernandes, J Lam, F Haris, J Gates, G D'Ancona, A Gupta, J Dhariwal, DJ Jackson, AM Nanzer

M3 The symptomatic benefit from asthma biologics is not sustained throughout the dosing schedule

R Mittal, M Pantaleon, C Eames, S Kerley, C Whitfield, J Mccreery, P Cook, A Freeman, HM Haitchi, RJ Kurukulaaratchy, P Dennison, H Rupani

M4 Distribution of type-2 biomarkers of asthma in a healthy adult population – a cross-sectional study

CGO Doyle, H Xu, D Fleming-Brown, B Langford, I Pavord, H Ashdown, N Petousi

M5 Severe asthma biologics: a need to increase use and reduce inequity in England

H Rupani, D Subramanian, S Walker, B Bostock

M6 Understanding patient perception of asthma biologic treatment response

S Khan, E Lyng, M Sheego, S Gilbey, L White, J Sullivan, AH Mansur, A Pillai

M7 What do patients really think of oral steroids for asthma attacks? A discrete choice experiment

I Howell, J Noble, C Morgan, A Howell, J Logan, S Miller, R Chaudhuri, R Russell, M Bafadhel, R Beasley, I Pavord, J Buckell

M8 Machine learning to predict symptomatic asthma: insight from Zoe App

WWE Ee, M Antonelli, R Russell, M Bafadhel

M9 The impact of an asthmatic maternal environment in pregnancy (MEP) on mediators predisposing to development of early-life asthma

R Abadalkareem, F Walbridge, M Corcoles Fernandez, L Lau, N Vaughan-Spickers, C Brown, R Hampton, K Raney, J Forbes,

A Kermack, MA Coleman, HM Haitchi

M10 The cost-effectiveness and cost-utility of using the connected inhaler system (CIS) for preventing asthma exacerbations among adult severe asthma patients: payer perspective
M Almutairi, J Marriott, Z Jalal, J Okon, LG Heaney, S Gilbey, A Mansur

M11 Evaluation of the quality of maintenance and reliever therapy (MART) prescribing in a large UK primary care asthma cohort
MG Crooks, L Pitel, C Huang, H Cummings, J Cohen, J Turgoose, S Faruqi

M12 Management of asthma on a virtual ward may provide sustained improvement in asthma control through rationalising prescribing and improving adherence to inhaled corticosteroids
J Priestley, KL Jackson, O Umerah, AC Murphy, RH Green

M13 Disease burden in patients with eosinophilic granulomatosis with polyangiitis (EGPA) in England: a retrospective cohort study
S Siddiqui, P Dolin, A Shavit, J Rowell, C Edmonds, D Kielar, A Lacetera, P Suárez-Sánchez, C Ariti, B Podmore, A Kitchin Velarde, SY Chen

M14 Assessment of primary care coding accuracy for EGPA in the UK
F Haris, M Fernandes, L Green, L Thomson, C Roxas, J Lam, G d'Ancona, J Gates, J Dhariwal, AM Nanzer, DJ Jackson

2.15pm-4.00pm
St James, 4th floor
POSTER DISCUSSION: P1-P14

"The CAP in the Hat" – Pneumonia in 2024

Chaired by: Dr Felicity Liew (London) and Dr Catherine Hyams (Bristol)

P1 Host risk factors determining severity in respiratory viral infections (RVIs): preliminary data from UNIVERSAL a multicentre prospective observational study
T Morelli, M Purcell, P Lee, N Greening, S Marciniak, M Crooks, C Daneshvar, J Myerson, M Pavitt, M Gil, P Mitchelmore, JD Chalmers, S Siddiqui, A Freeman, T Clark, T Wilkinson

P2 Respiratory syncytial virus (RSV) infection in hospitalised adults: who should be vaccinated?
T Morelli, M Purcell, P Lee, N Greening, S Marciniak, M Crooks, S Siddiqui, C Daneshvar, J Myerson, M Pavitt, M Gil, P Mitchelmore, JD Chalmers, T Clark, A Freeman, T Wilkinson

P3 Respiratory syncytial virus (RSV) associated admissions and relevant co-morbidities in adults: data from two NHS Trusts
J Panaguiton, R Patel, S Denny, G Rolph, T Hill, T Lewis, D Wiseman

P4 ABSTRACT WITHDRAWN

P5 ABSTRACT WITHDRAWN

P6 The clinical outcomes in patients hospitalised with respiratory syncytial virus (RSV) infection
S Weinberg, G Hulston, E Davies, R Robey, E Melon, H Siy-Yap, I Saidy, R Lord, H Ellis

P7 The hidden burden of respiratory syncytial virus (RSV) on adult respiratory admissions and potential benefits of national vaccination programme
N Mooney, A Wight

P8 The incidence and impact of influenza, RSV and SARS-CoV2 on a Scottish Health Board between 2022 and 2024
M Martin, J Woods, V Austin, J Shone, D Connell

P9 The presentation and outcome of community acquired pneumonia requiring hospitalisation in patients of South Asian ethnicity
B Chakrabarti, T Jenks, A Khalid, J Higgins, D Wootton

P10 Predictors of outcomes including re-admission in community acquired pneumonia
KM Heenan, R Crooks, M Drain, P Minnis

P11 Ten years review of novel "virtual' pneumonia follow-up clinic
M White, M Ahmed, F Elliot, R Chatterji, Y Choudhury, E Lyons, A Joshi, B Marshall

P12 Risk factors influencing mortality and morbidity in community-acquired pneumonia: a multivariable analysis
SE Weinberg, T Fleck, G Kourounis, M Injety, H Melvin, M Ullah, S Qayum, A Bikov

P13 The UNIVERSAL study: a description of adults hospitalised with Mycoplasma pneumoniae in an epidemic winter year and a comparison to adults with and without respiratory viral infection

M Purcell, P Lee, T Morelli, C Roberts, L Marouzet, A Gavi, A Olojede, A Begum, N Greening, J Myerson, M Pavitt, C Daneshvar, SJ Marciniak, T Clark, A Freeman, T Wilkinson

P14 Clinician's opinions on starting treatment for opportunistic infection prevention in ILD (STOP-ILD study)
J Evans, N Weatherley, S Bianchi

2.15pm-3.50pm
Westminster, 4th floor
POSTER DISCUSSION: P15-P27

"George's Marvellous Medicine" – Biologics, biologics, biologics

Chaired by: Dr Anna Freeman (Southampton) and Dr George Nava (Bristol)

P15 How far can we trust the SOURCE? Real world maintenance OCS reduction outcomes in complex severe asthmatics on tezepelumab
I Berrar Torre, V Brennan, E Campbell, B Wright, S Mamo, E McHugh, PH Patel

P16 Clinical and biological remission of severe asthma with tezepelumab
J Gates, F Haris, L Green, J Lam, M Fernandes, L Thomson, C Roxas, G d'Ancona, J Dhariwal, AM Nanzer, DJ Jackson

P17 Real-world effectiveness of dupilumab 200mg dose in oral corticosteroid reduction and exacerbation in patients with severe asthma: findings from the EU-ADVANTAGE study
H Rupani, P Pfeffer, A Bourdin, GW Canonica, JC Virchow, J Jacob-Nara, K Borsos, RH Stanford, O Ledanois, Z Wang, M Soliman, L Huynh, S Kalia, MS Duh, W-H Cheng

P18 Real-world experience of dupilumab for the treatment of severe asthma in the United Kingdom: a retrospective study
PE Pfeffer, PH Patel, DJ Jackson, LG Heaney, H Burhan, ID Pavord, N Sehgal, R Gore, AH Mansur, R Thomas

P19 5-year outcomes of asthma patients on monoclonal antibodies
G Lavoie, I Howell, J Melhorn, C Tiedeman, C Borg, L Bernejo-Sanchez, J Seymour, MF Jabeen, A Fries, G Hynes, ID Pavord, TSC Hink, N Petousi

P20 Effectiveness of benralizumab in patients with severe asthma previously treated with mepolizumab in the United Kingdom; a BPAP study post-hoc analysis
DJ Jackson, H Burhan, PE Pfeffer, IJ Clifton, S Faruqi, AM Nanzer, J Dhariwal, T Morris, C Lupton, M Watt, J Hickey, H Rupani

P21 The impact of socioeconomic status on biologic uptake at 2 tertiary severe asthma services
R Burton, L Shilito, A Shams, K Prior, H Burhan

P22 Biomarkers and phenotyping: a holistic approach to asthma treatment with tezepelumab
DJ Jackson, G Brusselle, ME Wechsler, S Couillard, JC Virchow, J-P Llanos, G Hunter, SL Roseti, N Martin, ID Pavord

P23 Asthma exacerbation rates as a function of biomarker levels 4 weeks after initiation of tezepelumab treatment: an analysis of the NAVIGATOR study
E Israel, GL Chupp, NL Lugogo, J-P Llanos, NL Martin, N Martin, CS Ambrose, DJ Jackson

P24 Reduction in background asthma medication following initiation of biologic therapy
J Phillips, S Pantaleon, W Soe, C Eames, S Kerley, C Whitfield, J McCreery, P Cook, A Freeman, HM Haitchi, R Kurukulaaratchy, P Dennison, H Rupani

P25 Assessment of an oral corticosteroid withdrawal pathway for severe asthma patients receiving biologic therapies
H Aung, R Russell, C Boddy, K Balasundaram, E Hampson, M Mark, L Parnell, MA Bonnington, S Mohammad, M Levy, K Meeran, S Siddiqui, S Naveed, P Bradding

P26 The influence of adherence to inhaled corticosteroids (ICS) on treatment response to mepolizumab treatment in severe eosinophilic asthma
M Almutairi, Z Jalal, J Marriott, L Wood, B Almoosawi, S Caddick, B Rajkumari, S Renwick, S Wilkinson, C Gallagher, T Duffin, A Mansur

P27 Real world immunogenicity of benralizumab in asthma using a specific GloBody immunoassay
OAM Neunie, W Rabbania, I El Abidi, HK Patel, ES Chambers, D Bakers, PE Pfeffer, AS Kang

---

2.15pm-4.00pm
Moore, 4th floor
POSTER DISCUSSION: P28-P41

"Sleeping Beauty" – Monitoring and managing sleep disordered breathing

Chaired by: Dr Nikesh Devani (London) and Dr Sophie West (Newcastle upon Tyne)

P28 Unveiling disparities in diagnosis and management of obstructive sleep apnoea in England: a comprehensive analysis of patient characteristics and treatment pathways
A Ali, M Deger, A Ghildiyal, N Alpert, F Saberi Hosnijeh, S Boult

P29 Considering the environmental impact of current home sleep study pathways and novel home testing devices
S Askar, SD West

P30 The effect of continuous positive airway pressure on the urine metabolomic profile in those with obstructive sleep apnoea hypopnoea syndrome
S O'Rourke, C Lewis, L Mur, KE Lewis

P31 Exploration of health inequalities in patients with continuous positive airway pressure (CPAP) therapy for obstructive sleep apnoea (OSA) – A retrospective, single centre study
T Gill, E James-Morley, W Rajaratnam, AS Patel, KK Lee

P32 A comparison of long-term outcomes and costs between patients with good and poor initial CPAP adherence
A Beverly, LH Buckley

P33 Utility of a multidisciplinary approach utilising telemonitoring in improving adherence to continuous positive airways pressure (CPAP) in obstructive sleep apnoea (OSA)
D Mukherjee, E Green, S Wallbanks, A Oakes, R Mukherjee

P34 Positional obstructive sleep apnoea (POSA) – is this the elephant in the room with automated systems for OSA treatment: a real world study
S Wickramasinghe, S Hettiarachchi, J Crossland, H Singh

P35 Comparing continuous positive airway pressure adherence in bariatric surgery and non-surgery patients with obstructive sleep apnoea
S Gill, U Nanda, D Wiseman, S Singh

P36 Sleep-disordered breathing in patients with interstitial lung disease: long-term prognostic implications
AS Haque, S Banerjee, K Brignall, L Vincent-Smith

P37 The impact of comorbid asthma on obstructive sleep apnoea outcomes
A Bulbul, N Ramchander, P Senior, A Bikov

P38 Decongestants in obstructive sleep apnoea (DOSA): randomised controlled trial of nasal decongestants versus placebo to prolong treatment-free periods from continuous positive airway pressure therapy in mild to moderate obstructive sleep apnoea
JWS Davidson, CD Turnbull, EL Hedley, JR Stradling, NM Rahman, JCT Pepperell

P39 The placebo effect of mandibular advancement devices
MA Pittman, DA Amran

P40 Access to NHS funded mandibular advancement splints for OSA
SD West, T Quinnell, B Cooper, G Gibbons

P41 Phenotypes and clinical outcomes of patients with central sleep apnoea. A single centre service evaluation project
J Croydon, H Bandara, M Mascareno Ponte, A Bentley, A Bikov

2.15pm-4.00pm
Abbey, 4th floor
POSTER DISCUSSION: P42-P55

"Alice's Adventures in Inhalerland" – Considering the device and the environment in asthma

Chaired by: Dr Hannah Durrington (Manchester) and Dr Anna Murphy (Leicester)

P42 Sustainable care: which people with asthma are offered a lower carbon inhaler device by clinicians and what stops them wanting to switch?
G d'Ancona, L Piggott, A Francis, A Cumella, S Walker, BD Kent

P43 Greenhouse gas emissions associated with severe asthma along the care pathway in the United Kingdom
TN Tran, A Wilkinson, M Khezrian, E Rapsomaniki, S Patel, K Rhodes, A Menzies-Gow, H Rupani, JK Quint

P44 Sustainable care: what are the characteristics of people with asthma who successfully switch to low carbon inhaler devices?
G d'Ancona, L Piggott, A Francis, A Cumella, S Walker, BD Kent

P45 Moving towards "greener" inhalers: are patients willing to change?
R Wollerton, A Abdelaziz, A Crapnell, DJ Waine, S Cleary, D Derry

P46 In vitro performance of a combination beclomethasone dipropionate/salbutamol sulphate pressurised metered dose inhaler formulated with a low global warming potential propellant
S Dissanayake, R Muller-Walz, A Brindley

P47 Inhaler device use and carbon footprint disparities in Nordic countries and the UK
V Vartiainen, C Janson, H Hisinger-Mölkänen, S Lähelmä, L Lehtimäki, A Wilkinson

P48 Pay to puff green: can NHS incentives change the prescribing practices?
A Howell, A McGrogan, M Jones

P49 Digital monitoring of inhaler use is associated with reduced short-acting beta-agonist use in airways disease
S Ananth, S Alpi, T Antalffy

P50 Developing a validated e-inhaler technique competency test for healthcare professionals
A Hakim, C Chen, P Elston, P Pfeffer

P51 Peak inspiratory flow via Easyhaler dry powder inhaler in adults before methacholine challenge test and during bronchoconstriction
V Vartiainen, A Tikkakoski, J Karjalainen, LP Malmberg, L Vuotari, S Lähelmä, U Sairanen, M Vahteristo, L Lehtimäki

P52 Peak inspiratory flow rate measurement pre and post inhaler technique optimisation across inhaler devices
RE De Vos, J Longstaff, M Sanders, LG D'Cruz, M Lomax, T Brown, AJ Chauhan

P53 An acoustic flow-rate guidance signal coupled with a real-time feedback smartphone application (Clip-Tone System) improves inhaler technique in pMDI users
CS Murray, N Brooke, M Sanders

P54 Exacerbation reduction and improved quality of life in asthma with extrafine formulation single-inhaler triple therapy (efSITT): six-month results of the TriMaximize Study
F Trinkmann, V Bogoevska, D Nachtigall, R Russell, C Suppli Ulrik, W Pohl, V Plaza, A Bourdin, C Fritz, C Gessner

P55 Why do people with lung conditions buy inhalers online? Findings from a large UK survey
A Cumella, A Francis, M Zawieja, S Walker

2.15pm-3.50pm
Rutherford, 4th floor
POSTER DISCUSSION: P56-P68

"Into the Void" – ILD and sarcoid

Chaired by: Professor Seamas Donnelly (Dublin) and Dr Richard Hewitt (London)

P56 UK tertiary ILD centre experience of antifibrotic related abnormal liver function and impact on patient care
J Bradley, A Boland, TJT Sutherland, P Beirne

P57 Perspectives on screening and early treatment for pulmonary fibrosis
L Fabbri, L Doran, M Bains, RG Jenkins

P58 Prevention of progression in early fibrosing interstitial lung disease patients: using economic modelling to inform evidence generation
M Baldwin, ES White, L Hubbert, A Wright, S Langham, P Rivera-Ortega

P59 Remote specialist advice frequently changes the diagnosis and management of patients with acute presentations of interstitial lung disease (ILD)
P Dobson, N Badat, S Bax, F Chua, S Desai, A Devaraj, G Jenkins, M Kokosi, V Kouranos, P Molyneaux, E Renzoni, A Wells, P George, R Hewitt

P60 Application of clinical prioritisation in a pharmacy technician-led interstitial lung disease outpatient clinic
N Leung, T Wilson, H Hawkes, H Adamali, SL Barratt, J Hardy, G Dixon, S Mulholland

P61 Time to diagnosis and impact of early diagnosis on initiation of antifibrotic treatment in patients with idiopathic fibrosis in the US: a retrospective cohort study
P Pimple, AA Londhe, MC Penaloza Ramos, S Langham, M Lavallee, Y Fan, T Cork, J Quint, AH Limper

P62 GORD and PPI therapy in pulmonary fibrosis
KM Heenan, P Gorman, L Graham, E Murtagh, P Minnis

P63 Assessment of the idiopathic pulmonary fibrosis patient reported outcome measure (IPF-PROM) scale in idiopathic pulmonary fibrosis patients in relation to depression symptoms and quality of life
M Tziraki, KM Antoniou, M Linardakis, A Zouraraki, AM Matthaiou, N Bizymi, D Papagiannis, F Malli, Z Daniil, AM Russell, EK Symvoulakis

P64 Glucocorticoid therapy in sarcoidosis warrants routine blood glucose monitoring in high risk patients
R Harkness, J Cross, C Mumby, E Bradley, SO Brij

P65 Vitamin D status and supplementation in sarcoidosis: a retrospective observational study in a tertiary centre
A Leadley, S Patel, D Woods, RK Coker

P66 Relationship of disease severity and activity to QoL in sarcoidosis
A Mahmood, M Bailey, P Minnis

P67 Phenotyping pulmonary sarcoidosis with CT descriptors using BTS ILD Registry data
R Crooks, M McCall, P Minnis, A Achaiah, L Casimo, R Hewitt, C Hodkinson, F Khan, H Morris, E Palmer, I Stewart, G Thomas, M Loughenbury, M Souto, SV Fletcher, N Chaudhuri

P68 Characterising airflow obstruction in sarcoidosis
S Agrawal, J Kavanagh, AS Patel, S Birring, K Myall

Wednesday 27 November 2024

3.15pm-4.10pm
Gielgud, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Pleural Disease

3.15pm-4.10pm
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Pulmonary Embolism and other Pulmonary Vascular Diseases

3.30pm-4.15pm
Whittle & Fleming and Britten, 3rd floor
COFFEE/TEA BREAK

4.15pm-4.45pm
Churchill, ground floor
AWARD PRESENTATIONS
Presentation of the BTS Medal, BTS President's Award, BTS Award for Meritorious Service, BTS/BALR/A+LUK Early Career Investigator Awards, BTS/A+LUK/BALR Lecture Awards and BTS Medical Student Awards.

4.45pm-5.30pm
Churchill, ground floor
BTS PRESIDENT'S ADDRESS
"Trials, training and tyres …!"
Professor Nicholas Maskell (Bristol)
Introduced by: Professor Jonathan Bennett (Leicester)

5.35pm-6.05pm
Churchill, ground floor
BTS ANNUAL GENERAL MEETING
British Thoracic Society members only

Thursday 28 November 2024

8.00am-9.00am
Whittle & Fleming, 3rd floor
COFFEE/TEA

8.45am-4.00pm
Whittle & Fleming, 3rd floor
POSTER VIEWING
Authors present: 10.00am-11.00am

P69-P80
"Diary of a Wheezy Kid" – Paediatric asthma diagnostics
Discussion of abstracts will take place from 2.15pm to 3.45pm in the Abbey, 4th floor

P81-P93
"Subtle Knife" – Lung cancer management
Discussion of abstracts will take place from 2.15pm to 3.50pm in the Moore, 4th floor

P94-P106
"The God of Small Things" – Hot topics in paediatrics
Discussion of abstracts will take place from 2.15pm to 3.50pm in the Rutherford, 4th floor

P107-P120
"The Man in the Iron Mask" – Acute respiratory support
Discussion of abstracts will take place from 2.15pm to 4.00pm in the Westminster, 4th floor

P121-P130
"The Hitchhiker's Guide to Coughing"
Discussion of abstracts will take place from 4.15pm to 5.30pm in the Albert, 2nd floor

P131-P141
"The Vapes of Wrath" – Tobacco dependency and smoking cessation
Discussion of abstracts will take place from 4.15pm to 5.40pm in the Abbey, 4th floor

P142-P154
"Call of the ILD"
Discussion of abstracts will take place from 4.15pm to 5.50pm in the Rutherford, 4th floor

P155-P168
"A Fine Balance" – Lung cancer screening
Discussion of abstracts will take place from 4.15pm to 6.00pm in the Moore, 4th floor

---

8.45am-4.00pm
Cambridge, 5th floor
MODERATED POSTER VIEWING

M15-M28
"Through the Looking Glass" – Airway disease therapies in the real world
Discussion of abstracts will take place from 2.15pm to 4.00pm in the Cambridge, 5th floor

---

8.00am-8.30am
Albert, 2nd floor
JOURNAL CLUB
PULMONARY EMBOLISM

Dr Melanie Brewis (Glasgow)

Learning objectives

1) To review the latest publications and evidence in the field of pulmonary embolism.

8.45am-9.45am
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Tobacco Dependency

8.45am-10.05am
Westminster, 4th floor
SPOKEN SESSION: S51-S55
"The Thursday Meso Club" – Pleural malignancy

Chaired by: Dr Avinash Aujayeb (Northumbria) and Dr Selina Tsim (Glasgow)

8.50am **S51**
Staging by thoracoscopy in potentially radically treatable lung cancer associated with minimal pleural effusion (STRATIFY): results of a prospective, multicentre, observational study
J Ferguson, S Tsim, C Kelly, L Alexander, S Shad, M Neilly, M Tate, B Zahra, M Saleh, G Cowell, E Banks, S Grundy, J Corcoran, N Downer, N Rahman, N Maskell, M Evison, KG Blyth

9.05am **S52**
EXTRA-Meso feasibility – a randomised feasibility study of EXercise TheRApy in mesothelioma
S Tsim, KG Blyth, J Moore, A Marcu, Z Merchant, C MacRae, M Evison

9.20am **S53**
Upfront surgery improves outcomes over neoadjuvant chemotherapy in resectable mesothelioma
M Lee, A Dhanji, A Paul, R Baranowski, J Hargrave, D Waller

9.35am **S54**
The impact of underlying cancer type on survival in malignant pleural effusion
C Mounsey, N Kanellakis, D Addala, WM Chew, B Iqbal, E Alguili, A Saad, N Kaushal, N Russell, J Cabildo, R Hallifax, N Rahman

9.50am **S55**
The relationship between pleural fluid exposure and survival in malignant pleural effusion: insights from randomised trials
DN Addala, C Mounsey, B Iqbal, A Elshiekh, WM Chew, A Sundaralingam, R Hallifax, JM Wrightson, EOM Bedawi, A Dipper, E Mishra, R Bhatnagar, N Maskell, NM Rahman

---

8.45am-10.05am
Albert, 2nd floor
SPOKEN SESSION: S56-S60

"The Nurse of Monte Cristo" – Nurse-led respiratory care

Chaired by: Mrs Alison Armstrong (Newcastle upon Tyne) and Professor Nicola Roberts (Edinburgh)

8.50am **S56**
Using ABC (adherence, biomarkers and co-morbidity) in the nurse-led asthma clinic to reduce inappropriate use of steroids and antibiotic in patients with breathlessness
C Eames, S Kerley, M Pantaleon, C Whitfield, A Freeman, HM Haitchi, RJ Kurukulaaratchy, H Rupani

9.05am **S57**
A national survey of specialist pleural nurses: successes, challenges and priorities for workforce development
J Rees, H Collins

9.20am **S58**
A retrospective analysis of lung cancer nurse specialist-initiated meet-and-greet service during CT scans for optimal lung cancer pathway
ZA Aung, LCNS team, S Agrawal, M Majid, I Das, J Bennett, R Sudhir

9.35am **S59**
The role and impact of an interstitial lung disease specialist nurse in the secondary care setting
N Hosking, C Fiddler, R Moore, D Jones, J Hartley, M Najafi, S Rees, T Lush, H Parfrey, R Badiger

9.50am **S60**
Outcomes of the community based; nurse delivered interventions to improve paediatric asthma care in an inner-city area in the UK
T Evans, S Frost, L Morris, T Ninan, P Nagakumar, S Rao

8.45am-10.15am
Churchill, ground floor
SYMPOSIUM

BTS/SIGN/NICE JOINT GUIDELINE FOR THE DIAGNOSIS, MONITORING AND MANAGEMENT OF CHRONIC ASTHMA

Chaired by: Professor Adam Hill (BTS), Professor Angela Timoney (HIS) and Dr Martin Allaby (NICE)

8.45am Joint introduction from the three organisations

8.55am The collaborative guideline – adults
Professor Stephen Fowler (Manchester)

9.15am The collaborative guideline – children and young people
Professor Ian Sinha (Liverpool)

9.35am The collaborative guideline – primary care
Dr Matthew Doyle (St Saviour, Jersey)

9.55am Questions and closing comments
Professor Adam Hill (BTS), Professor Angela Timoney (HIS) and Dr Martin Allaby (NICE)

8.45am-10.15am
Windsor, 5th floor
SYMPOSIUM

BREAKING THE BARRIERS IN BRONCHIECTASIS: CUTTING EDGE FROM CLINICAL TRIALS

Chaired by: Professor Anthony De Soyza (Newcastle upon Tyne) and Dr Fiona Mosgrove (Aberdeen)

8.45am Airway clearance in 2024
Dr Arietta Spinou (London)

9.15am Pathophysiology and treatment of mucus dysfunction in distal airways in bronchiectasis
Professor Felix Ringshausen (Hannover)

9.45am Tackling inflammation as a target in bronchiectasis: recent trials update
Professor James Chalmers (Dundee)

Learning objectives

1) To review recent data from large registries into the use of airway clearance in bronchiectasis.

2) To understand the role of mucins and airway mucus in the pathophysiology of bronchiectasis.

3) To review the results from recent clinical trials of anti-inflammatory treatments in bronchiectasis.

8.45am-10.20am
St James, 4th floor
SPOKEN SESSION: S61-S66

"Firestarter" – Inflammation, mechanisms and biomarkers in COPD

Chaired by: Dr Surya Bhatt (Alabama) and Professor Guy Brusselle (Ghent)

8.50am **S61**
Frequent productive cough associates with an increased risk of cardiopulmonary outcomes in a real-life cohort of patients with COPD (NOVELTY study)
E Rapsomaniki, H Müllerová, R Hughes, J Marshall, A Papi, H Reddel, M Patel

9.05am **S62**
Extracellular matrix (ECM) remodelling in COPD
AKCW Kong, JMBS Sand, DJL Leeming, SRR Rønnow, CMS Spalluto, KS Staples, KO Ostridge, AP Platt, TW Wilkinson

9.20am **S63**
Eosinophilic inflammation at exacerbations of COPD is associated with less dynamic troponin rises in the 30 days post exacerbation
P Dobson, W Ee, J Baker, S Cass, S Ramakrishnan, M Bafadhel, R Russell

9.35am **S64**
Eosinophil peroxidase and IL-5 as biomarkers of eosinophilic airway inflammation in COPD
F Baraldi, JSY Mah, MA MacLeod, SWJ Bartlett-Pestell, A Braddy-Green, R Lopez, ANJM Marion, LA Moreira, H Shahbakhti, JP Allinson, A Papi, JA Wedzicha, LJ Finney

9.50am **S65**
A multi-omics-based evaluation of the effects of valaciclovir on the sputum proteome, microbiome and metabolome of COPD patients
RJ Delaney, GG Einarsson, SJS Cameron, JC Kidney, MM Tunney, CC Taggart, DA Linden

10.05am **S66**
Multi-ancestry genome-wide gene–age interaction study for lung function and COPD
AG Izquierdo, N Shrine, J Chen, MD Tobin, AL Guyatt

8.45am-10.20am
Moore, 4th floor
SPOKEN SESSION: S67-S72

"Foundation's Edge" (1) – Next generation discovery science

Chaired by: Dr Merete Long (Dundee) and Professor Herbert Schiller (Munich)

8.50am **S67**
Increased senescent and exhausted immune cells in older severe asthma patients impairs antigen-specific immunity
Y Huang, J Sikora, W Cai, PE Pfeffer, ES Chambers

9.05am **S68**
The effect of hydrogen sulfide supplementation on the pro-fibrotic profile of monocytes in idiopathic pulmonary fibrosis
E Leonova, X Dun, SL Barratt, MA Lindsay, MA Gibbons, M Whiteman, CJ Scotton

9.20am **S69**
2.7 Å Cryo-EM structure of the ERAD checkpoint complex and substrate interaction studies show how misfolding variants are prepared for degradation in alpha1-antitrypsin deficiency
CJ Hitchman, A Lia, G Tax, C Savva, E Hesketh, R Jukes-Jones, P Roversi, B Gooptu

9.35am **S70**
Advanced fluorescence and cryo-electron microscopy studies define a membrane protein supercomplex linking pro-inflammatory and pro-fibrotic pathways in acute exacerbations of interstitial lung disease (AE-ILD)
CJ Hitchman, J Birch, H Cheruvara, SR Needham, BM Davis, DJ Rolfe, P Harrison, A Quigley, B Gooptu

9.50am **S71**
Acute endothelial stresses identify microRNA let-7b and non-coding SLC11A2 (NRAMP2/ DMT1) exon as biomarkers that overlap with those detected in chronic respiratory diseases
AM Bielowka, D Patel, D Li, ME Bernabeu-Herrero, L Game, MA Aldred, IG Mollet, CL Shovlin

10.05am **S72**
Proteomic evaluation of a human lung model of fibrosis for novel therapeutic target selection
C Maxwell, P Stylianou, P Bradding, DJL Jones, KM Roach

8.45am-10.20am
Abbey, 4th floor
SPOKEN SESSION: S73-S78

"Midsummer Night's Dream" – Ventilation in motor neurone disease

Chaired by: Dr Georgios Kaltsakas (London) and Dr Michelle Ramsay (London)

8.50am **S73**
Factors contributing to failure of domiciliary non-invasive ventilation in patients with motor neurone disease
G Cox, E Johnstone, J Davidson, D Shrikrishna

9.05am **S74**
Improved NIV adherence with intelligent volume assured pressure support with automatic expiratory positive airway pressure (iVAPS-AE) in amyotrophic lateral sclerosis (ALS)
ED Parkes, J Shakespeare, A Ali

9.20am **S75**
Feasibility and outcomes of ambulatory initiation of non-invasive ventilation in patients with motor neurone disease
F Fyles, N Shafiqa, K Elhadd, H Ashcroft-Kelso, L Campbell, C Unsworth, J Walsh, K Ward, S Wordingham-Baker, R Angus, B Chakrabarti, N Duffy, N Nwosu, R Parker, PK Plant, A Manuel

9.35am **S76**
An evaluation of the use of laryngeal endoscopy in the implementation of non-invasive ventilation in patients with motor-neurone disease
NZ Eastwood, B Messer, L Stephenson

9.50am **S77**
Patient reported outcome measures of mouthpiece ventilation in neuromuscular conditions: a pilot study
AM Chowdhury, D Draicchio, C Goodin, P Smith, J Treesa, S Byers, B Rosser, M Sovani

10.05am **S78**
An investigation into medical, nursing and allied health professional experiences of elective withdrawal of non-invasive ventilation in a motor neurone disease cohort: a qualitative service evaluation
GE Cox

Thursday 28 November 2024

8.45am-10.20am
Rutherford, 4th floor
SPOKEN SESSION: S79-S84

"The Never-Ending Story" (of long-COVID)

Chaired by: Professor Rachael Evans (Leicester) and Dr Emily Fraser (Oxford)

8.50am **S79**
BAL lymphocytosis is associated with a higher predicted FVC in patients with persistent residual lung abnormalities after COVID-19
SC Stanel, DJF Smith, P Mehta, E Denneny, LP Ho, RC Chambers, J Porter, PL Molyneaux, RG Jenkins, N Chaudhuri, P Rivera-Ortega, KP Hanley, JF Blaikley

9.05am **S80**
The post-COVID lung microbiome resembles that of healthy volunteers. Insights from the POST COVID-19 interstitial lung disease (POSTCODE) study
DJF Smith, NMY Teng, EK Denneny, P Mehta, SC Stanel, JF Blaikley, RC Chambers, N Chaudhuri, PM George, OM Kon, JC Porter, P Rivera-Ortega, LN Segal, I Stewart, RG Jenkins, PL Molyneaux

9.20am **S81**
Innovative methodology to assess regional quadriceps muscle oxygenation during exercise in post-hospitalised patients with long COVID and healthy participants
D Megaritis, E Hume, C Alexiou, L Bernert, E Daynes, R Evans, S Singh, C Echevarria, I Vogiatzis

9.35am **S82**
Persistently raised serum amyloid A in never-hospitalised long-COVID patients without association with lung or coagulation abnormalities: the EXPLAIN study (hyperpolarised xenon magnetic resonance pulmonary imaging in patients with long-COVID)
KL Ng, L Saunders, G Collier, J Grist, I Dunstan, R Evans, M Lachut, J Ablott, S Strickland, L Gustafsson, L Smith, S Thomas, J Rodgers, G Vuddamalay, N Kainth, A Laws, E Hedley, S Jones, P Hughes, T Newman, M Plowright, L Dryhurst-Pearce, A Elbehairy, K Jacob, A McIntyre, D Capener, J Bray, M Durrant, K Yeung, H Walters, L Watson, B Johnson, O Rodgers, R Munro, V Madhusudhan Stisova, M Cox, D Jakymelen, V Harris, V Matthews, G Abu-Eid, N Mulvey, W Hickes, D Parramon, N Rahman, A Horsley, H Davies, J Wild, F Gleeson, E Fraser, AAR Thompson, S Shapiro

9.50am **S83**
An online breathing and wellbeing programme (ENO Breathe) for people with long COVID breathlessness: results from 1433 participants
KEJ Philip, H Owles, S McVey, T Pagnuco, K Bruce, H Brunjes, J Mollica, A Lound, S Zumpe, AM Abrahams, V Padmanaban, TH Hardy, A Lewis, A Lalvani, S Elkin, NS Hopkinson

10.05am **S84**
Post-hospital COVID-19 rehabilitation (PHOSP-R): a randomised controlled trial
E Daynes, RA Evans, MM Baldwin, NJ Greening, A Singapuri, C Echevarria, I Vogiatzis, LV Wain, CE Brightling, SJ Singh, On behalf of the PHOSP collaborative group

9.00am-10.30am
Mountbatten, 6th floor
SYMPOSIUM

ADVANCES IN THE WORLD OF PULMONARY HYPERTENSION

Chaired by: Dr Colin Church (Glasgow) and Ms Rachel Crackett (Newcastle upon Tyne)

9.00am What's new in the world of pulmonary vascular medicine: updates from the world symposium
Dr Ioana Preston (Boston)

9.30am Finding new drugs for pulmonary hypertension: the challenges and thoughts about solutions
Professor Martin Wilkins (London)

10.00am The emerging role of artificial intelligence in the diagnosis of pulmonary embolism
Professor Jay Suntharalingam (Bath)

Learning objectives

1) To describe relevant updates for general physicians from the World Symposium on PH.

2) To update on emerging therapies and clinical trial designs in pulmonary hypertension.

3) To describe the potential for AI to improve diagnosis of pulmonary embolism.

10.00am-11.00am
Whittle & Fleming and Britten, 3rd floor
COFFEE/TEA BREAK

10.45am-11.45am
Rutherford, 4th floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Global Lung Health

10.45am-11.45am
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Cystic Fibrosis

10.45am-11.45am
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Nurse

10.45am-12.05pm
Westminster, 4th floor
SPOKEN SESSION: S85-S89
"The Very Breathless Caterpillar" – Paediatric diagnostics

Chaired by: Dr Louise Fleming (London) and Dr Francis Gilchrist (Keele)

10.50am **S85**
Clinically phenotyping childhood lung function trajectories
RM Scott, GW Nava, J Grenville, J Dodd

11.05am **S86**
Revolutionizing paediatric asthma diagnosis with a point-of-care breath test utilizing deep neural networks and volatile organic compounds
H Ahmed,V Higgs, JA Flavier

11.20am **S87**
Contactless and automated monitoring to study changes in nocturnal parameters before and after asthma attacks in children
P Nagakumar, W Do, O Carr, M Udani, L Fleming, S Saglani

11.35am **S88**
PARS study: paediatric advanced respiratory service study – an observational diagnostic feasibility study of novel accelerometer-based respiratory sensor for sleep diagnostics
H Vennard, E Buchan, N Gibson, P Davies, DJ Lowe, B Henderson, O Meredith, J Miller, C Cowan, R Langley

11.50am **S89**
Complications of paediatric flexible bronchoscopy with 6-lobe bronchoalveolar lavage performed under general anaesthesia
M van Veelen, CWA Jolley, K Bakewell, R Kumar, FJ Gilchrist

10.45am-12.30pm
Churchill, ground floor
SYMPOSIUM
PLENARY SCIENTIFIC

Chaired by: Professor James Chalmers (Dundee) and Professor Elizabeth Sapey (Birmingham)

10.45am Unleashing the potential of routine health data for respiratory health
Professor Jennifer Quint (London)

11.11am Impact of haemophilus infection in the airways
Professor Karl Staples (Southampton)

11.37am Translational research in malignant mesothelioma
Professor Kevin Blyth (Glasgow)

12.03pm Microbial dysbiosis and disease progression in fibrotic lung disease
Professor Philip Molyneaux (London)

Learning objectives

1) To understand the role of electronic medical records and other routine health data in research.

2) To understand the in-vitro and in-vivo evidence for the effects of chronic bacterial infection on the airway.

3) To review latest research into malignant mesothelioma.

4) To understand the role of the microbiome in fibrotic lung disease.

12.00pm-2.00pm
Pickwick, 1st floor and Whittle & Fleming, 3rd floor

LUNCH (Lunch is not included in the delegate fee. Card payments only)

1.00pm-1.45pm
Churchill, ground floor
BTS SCIENTIFIC GUEST LECTURE

UNDERSTANDING MECHANISMS OF OXYGEN SENSING

Professor Sir Peter Ratcliffe FRS (Oxford)

Introduced by: Professor James Chalmers (Dundee)

2.00pm-2.45pm
Albert, 2nd floor
OPEN SESSION

The top 10 joint patient and clinician research priorities for breathlessness: a UK James Lind Alliance Priority Setting Partnership

Please see the conference App for full details.

2.00pm-3.00pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

Pulmonary Rehabilitation

2.15pm-3.45pm
Churchill, ground floor
SYMPOSIUM

TRANSFORMING SPECIALIST RESPIRATORY SERVICES: WHAT DOES 'GOOD' LOOK LIKE AND HOW DO WE DELIVER AND MONITOR?

Chaired by: Dr Charlotte Addy (Cardiff) and Dr Paul Walker (Liverpool)

2.15pm Transformation of specialist respiratory services
Dr Jonathan Fuld (NHSE)

2.37pm Service transformation and delivery of specialist services in Scotland
Dr Tom Fardon (Dundee)

2.59pm How the patient voice can shape clinical pathways
Mr Bradley Price (Action for Pulmonary Fibrosis)

3.21pm Using data to understand population need and deliver improvement in severe asthma
Dr Hitasha Rupani (Southampton)

Learning objectives

1) To outline current and future specialist respiratory services in England and in Scotland and how this may apply to the four nations.

2) To highlight the role of patients in developing clinical care pathways.

3) To underline the importance of data to service improvement using the example of severe asthma services.

2.15pm-3.45pm
Mountbatten, 6th floor
SYMPOSIUM

CURRENT COMPLEXITIES IN CYSTIC FIBROSIS

Chaired by: Professor Andrew Jones (Manchester) and Professor Kevin Southern (Liverpool)

2.15pm CF: is it or isn't it? Diagnostic complexities
Professor Nicholas Simmonds (London)

2.45pm Lessons from compassionate use programmes in rare CF mutations
Professor Pierre-Régis Burgel (Paris)

3.15pm Complex treatment decisions: using pharmacogenetics in CF to guide prescribing
Professor Jennifer Guimbellot (Little Rock, Arkansas)

Learning objectives

1) To review the diagnostic approach to complex cases of possible CF.

2) To review the role of modulator treatment in rare CF mutations.

3) To review the role of pharmacogenetics in treatment decisions.

2.15pm-3.45pm
Windsor, 5th floor
SYMPOSIUM

BTS STAG SCIENTIFIC SYMPOSIUM – BIOGRAPHY OF A LUNG

Chaired by: Dr Frances Grudzinska (Nottingham) and Dr Anthony Martinelli (Cambridge)

2.15pm "Genesis" – Exploiting lung development in treating disease
Dr Amanda Goodwin (Nottingham)

2.37pm "Midnight's Children" – Early life and its impact on lung health
Dr Sormeh Salehian (London)

2.59pm "Rabbit, Run" – Exercise testing and novel biomarkers from CF to ILD
Dr Owen Tomlinson (Exeter)

3.21pm "The Remains of the Day" – Ageing and inflammation in respiratory pathology
Dr Wezi Sendama (Newcastle upon Tyne)

Learning objectives

1) Tell the story of the lung from its initial development, through growth and adulthood, to ageing, highlighting the biological changes that occur at each stage and how these impact disease.

2) Cover novel science pertaining to a range of respiratory diseases (asthma to ILD) so both specialist and disease-agnostic respiratory physicians will be able to divine benefit from the seminar.

3) Showcase the work of early career UK academics forging paths through respiratory research and aim to inspire trainees, AHPs, nurses, and even senior BTS members, to pursue research in all forms.

2.15pm-3.45pm
Abbey, 4th floor
POSTER DISCUSSION: P69-P80

"Diary of a Wheezy Kid" – Paediatric asthma diagnostics

Chaired by: Dr Kenneth Mcleod (Edinburgh) and Professor Ian Sinha (Liverpool)

P69 Point-of-care blood eosinophils to predict preschool wheeze attacks
K Hillson, S Fontanella, H Almeida, B Pavlou, K Lajunen, S Irving, I Testa, Y Bingham, K Mayoral Oritz, S Lacbay, S Hay, M Gore, E Scotney, E Paraskakis, S Sonnappa, L Fleming, A Bush, S Saglani

P70 Utility of forced oscillation technique in the management of preschool wheeze
S Kadam, S Irving, N Orr, L Fleming, S Saglani, S Sonnappa

P71 Testing the proposed NICE/BTS/SIGN diagnostic algorithm in children and young people under investigation for asthma in the Leicester Paediatric Asthma Diagnostic Pathway Study
EA Gaillard, DKH Lo, V Rai, L Ryan, I Ahmed, N Blyth, P Patel, J Madge

P72 Real-world effectiveness of annual asthma reviews, asthma management plans and inhaler technique checks in UK children with asthma
Z Khalaf, S Sejal, CI Bloom

P73 Video directly observed therapy (v-DOT) for achieving and sustaining mastery of inhaler and nasal spray technique in children and young people: a randomised pilot study
K Ferris, P McCrossan, M Shields, J Paton, D O'Donoghue

P74 Evaluation of the Leicester Children's Difficult Asthma Adherence Monitoring Pathway
A Claydon, L Pawlick, E Trim, D Lo, M Ramphul, E Gaillard

P75 How common is non-atopic severe asthma in children? Analysis from a regional severe asthma centre
M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar

P76 Revealing the hidden: food allergen sensitization in children with severe asthma
M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar

P77 Short-term impacts of airborne particulate metals on cognitive and sensorimotor function in primary school-aged children
RE Dove, H Hajmohammadi, L Sartori, A Hall, HE Wood, M Wood, M Mon-Williams, CJ Griffiths, IS Mudway

P78 A novel approach to the introduction of post asthma/wheeze attack 'as required' salbutamol advice in an ethnically diverse paediatric population using virtual wards
R Lees, S Harris, J Colley, P Watson, S Frost, M Atkinson, P Nagakumar

P79 Risk factors for sleep disordered breathing in children with Prader-Willi syndrome

M Sahibqran, A Lucas-Herald, R Lennon, E Buchan, P Burns, P Davies, R Langley

P80 Sleep disordered breathing and its management in Scottish children with achondroplasia
L Doran, E Buchan, P Burns, R Langley, N Gibson, P Davies

2.15pm-3.50pm
Moore, 4th floor
POSTER DISCUSSION: P81-P93

"Subtle Knife" – Lung cancer management

Chaired by: Dr Sinan Eccles (Glamorgan) and Dr Anand Sundaralingam (Oxford)

P81 Performance status evaluation and treatment outcomes by multidisciplinary specialties along the lung cancer pathway
P Thet, W Soe, N Khine, P Arkar, T San, AK Banerjee

P82 Post operative outcomes for lung cancer patients with lung fibrosis
S Holland, SF Enam, D Seeboruth, D Fernando, G Aresu, D Meek, L Succony

P83 Sublobar resection or lobectomy for stage 1a non-small cell lung cancer: a meta-analysis
LK Dixon, E Barber, A Cook, J Boudour, J Conibear, D West, N Navani, D Cromwell

P84 Surgical resections of non-malignant nodules: are our MDT processes robust?
M Nugent, S Childs, H Watchorn, S Saha, J Edwards, J Rao, S Tenconi, S Iyer

P85 Outcomes for patients with lung cancer and ILD: a retrospective review of cases discussed at a regional ILD-MDT
C Rafique, D Mitchell, J Ewart, I Forrest, W Funston, E Palmer, W Sendama, AJ Simpson, S Wiscombe

P86 Introduction of a direct telephone booking service for PET-CT scan for lung cancer staging across Greater Manchester
J Yung, J Brown, H Williams, T Westwood, T Thornber, S Grundy, L Brown, J Lane, S Hulme, L Galligan-Dawson, M Evison

P87 Interventions to improve adherence to clinical guidelines for the management of pulmonary nodules and their follow-up: a systematic review
JA Aunger, KP Yip, K Dosanjh, M Newnham, AM Turner

P88 Survival outcomes of very elderly lung cancer patients: a comparison between standard treatment and hospice care
HR Kang, YJ Lee

P89 Radiological follow up after surgical resection of non-small cell lung cancer: outcomes from a North West service
R Naveed, HP Bennett, A Rego, P Deus, K Hughes, R Manning, TS FitzMaurice, AG Wight

P90 Surgical outcomes after neoadjuvant Nivolumab and platinum-based chemotherapy in resectable non-small cell lung cancer
M Nardini, J Lodhia, A Muthiverula, S Dixon, K Clarke, P Bhatnagar, K Franks, N Brown, A Conn, G Jeyasangar, N Chaudhuri, R Milton, K Papagiannopoulos, P Tcherveniakov, E Teh, A Brunelli

P91 What do we do when incidental nodules grow? Experiences from a virtual nodule clinic
V Thakrar, J Yates, A Falolu, Y Duong, C Ridgeon, J Park, A Moore, F McLeod, FV Gleeson, R Benamore, A Talwar

P92 Curative treatment for early stage non-small cell lung cancer: why are we not treating everyone?
N Smith, V Masani

P93 Surgery in lung cancer pathway patients: differences between lung health screening and traditional sources of referral
V Surendrakumar, R Bassi, H Winterburn, M Ahmed, H Walji, E Martin, J Drought, D Desai, M Kolokotroni, L Hernandez, A Martin-Ucar

2.15pm-3.50pm
Rutherford, 4th floor
POSTER DISCUSSION: P94-P106

"The God of Small Things" – Hot topics in paediatrics

Chaired by: Professor Andrew Bush (London) and Dr Anna Selby (Southampton)

P94 Exploring parents' views and experiences in management for pre-school wheeze (PSW): a qualitative study
LMA Wajid, S Saglani, P Nagakumar, G Heath

P95 Oxygen pulse response in children with cystic fibrosis – is there a cardiac problem?
SC Tart, CJ Carden, RJ Langley, PL Davies, PD Burns

P96 Feasibility of FeNO, spirometry and methacholine challenges in children under the age of 6 years
A Davis, A Simpson, L Healy, S Drake, R Wang, M Bennett, L Lowe, L Whipday, L Wilmore, S Fowler, C Murray

P97 Setting up a new service: virtual ward techniques and remote concordance data to initiate non-invasive ventilation in children in an outpatient setting
CTC Edwards, S Georgiades, S Sloan, E Reid, E Savage

P98 Respiratory outcomes in premature babies with chronic lung disease. A retrospective study
S Kenny, H Tan, R Pabary, SB Carr

P99 The clinical assessment of children with dysphagia: the case for an MDT approach
M May, N Allen-Hernandez, S Kansra, J Shaw, S Sharma, R Thevasagayam, K Krawczyk

P100 Investigating the impact of London's Ultra Low Emission Zone (ULEZ) on children's health: the Children's Health in London and Luton (CHILL) prospective parallel cohort study
HE Wood, J Chavda, G Colligan, L Cross, RE Dove, H Kalsi, J Scales, I Tsocheva, G Randhawa, IS Mudway, CJ Griffiths

P101 Paediatric bronchiectasis – disparity in care? A retrospective cohort study of children and young people (CYP) with bronchiectasis in a regional centre
T Telford, H Smith, J Prashant Andharia, R Sharma, P Nagakumar, P Kenia, C Hine

P102 Does the presence of paediatric respiratory virtual wards impact the risk of hospital readmission for asthma in children and young people (CYP)?
A Gawlik-Lipinski, AJ Adamson, JK Quint, T Wilkinson, I Sinha

P103 Exploring health professionals' views of management for pre-school wheeze (PSW): a qualitative study
LMA Wajid, S Saglani, P Nagakumar, G Heath

P104 Characteristics of aeroallergen sensitization in severe paediatric asthmatics across ethnic groups
M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar

P105 The feasibility and acceptability of video directly observed therapy (v-DOT) for achieving mastery of inhaler and nasal spray technique: a qualitative exploration
K Ferris, P McCrossan, M Shields, J Paton, L Storey, D O'Donoghue

P106 Feasibility of a novel accelerometer-based respiratory sensor in neonatal respiratory monitoring
H Vennard, E Buchan, N Gibson, P Davies, DJ Lowe, N Patel, B Henderson, O Meredith, J Miller, C Cowan, R Langley

2.15pm-3.50pm
St James, 4th floor
SPOKEN SESSION: S90-S95

"A Tale of Two Biologics" – Monoclonal antibodies in COPD and asthma

Chaired by: Professor James Dodd (Bristol) and Dr Alexandra Nanzer (London)

2.20pm **S90**
FRONTIER-3: a randomized, phase 2a study to evaluate the efficacy and safety of tozorakimab (an anti-interleukin-33 monoclonal antibody) in early-onset asthma
J Corren, F Reid, R Moate, E Jimenez, MW Sadiq, A Williams, M Rytelewski, D Muthas, D Brooks, E Lindqvist, C Kell, A Platt, MG Belvisi, HC Pandya

2.35pm **S91**
Tozorakimab (anti-IL-33 mAb) reduces mucus plugging in COPD: an imaging sub-study in the FRONTIER-4 phase 2a COPD trial
LH Nordenmark, P Guller, F Reid, S Doffman, U Seppälä, I Psallidas, R Moate, R Smith, J Kiraga, C Kell, MG Belvisi, HC Pandya, D Singh

2.50pm **S92**
FRONTIER-4: a phase 2a study to investigate tozorakimab (anti-IL-33 mAb) in COPD
D Singh, P Guller, F Reid, S Doffman, U Seppälä, I Psallidas, R Moate, R Smith, J Kiraga, E Jimenez, D Brooks, A Kelly, MW Sadiq, C Kell, MG Belvisi, HC Pandya

3.05pm **S93**

Phase 3 NOTUS trial: dupilumab efficacy and safety in patients with moderate-to-severe chronic obstructive pulmonary disease and type 2 inflammation
SP Bhatt, KF Rabe, NA Hanania, CF Vogelmeier, M Bafadhel, SA Christenson, A Papi, D Singh, E Laws, P Dakin, J Maloney, X Lu, D Bauer, A Bansal, RM Abdulai, LB Robinson

3.20pm **S94**

Dupilumab improves quality of life in patients with moderate-to-severe COPD and type 2 inflammation in phase 3 BOREAS trial
A Papi, SP Bhatt, KF Rabe, NA Hanania, CF Vogelmeier, M Bafadhel, SA Christenson, D Singh, E Laws, J Maloney, X Lu, D Bauer, A Bansal, LB Robinson, RM Abdulai

3.35pm **S95**

Effect of dupilumab treatment on mucus plugging and mucus volume in type 2 asthma: the phase 4 VESTIGE trial
C Porsbjerg, EM Dunican, NL Lugogo, M Castro, A Papi, V Backer, CE Brightling, A Bourdin, JC Virchow, M Zhang, X Soler, PJ Rowe, Y Deniz, L de Prado Gómez, H Sacks, JA Jacob-Nara

2.15pm-4.00pm
Westminster, 4th floor
POSTER DISCUSSION: P107-P120

"The Man in the Iron Mask" – Acute respiratory support

Chaired by: Ms Verity Ford (Liverpool) and Dr Nicholas Lane (Newcastle upon Tyne)

P107 Vascular endothelial growth factor and acute respiratory distress syndrome: a Mendelian randomisation study
E Suarez-Pajes, N Shrine, E Tosco-Herrera, T Hernandez-Beeftink, LA Rubio-Rodríguez, MI García-Laorden, A Corrales, M Prieto González, A Rodríguez-Pérez, D Carriedo, J Blanco, A Ambrós, E González Higueras, E Espinosa, A Muriel-Bombin, D Domínguez, A García de Lorenzo, JM Añon, M Soro, J Villar, MD Tobin, L Wain, C Flores, OC Leavy, B Guillen-Guio

P108 The role of proprotein convertase subtilisin-kexin type 9 in the acute respiratory distress syndrome
E Crossley, PK Hamilton, JA Silversides, DF McAuley, CM O'Kane

P109 One-lung ventilation during oesophagectomy promotes upregulation of proinflammatory mediators Cyclophilin A and soluble CD147
A Zachariadis, RF Baldi, J Stephens, S Soni, M Takata, MR Wilson

P110 A modification of a domiciliary ventilator which reduces oxygen consumption in mechanically ventilated patients; in vivo assessment
TO Jenkins, TM Sutton, PG Griffen, Y Mebrate, MI Polkey

P111 An educational tool to improve time to initiating non-invasive ventilation in acute hypercapnic respiratory failure
A Sheikhnoor, A Yap, R Gladwin, S Srivastava

P112 Risk stratification and prognostic patterns in patients receiving acute non-invasive ventilation for type two respiratory failure
P Cawley, AH Tee, M Thiri, CPK Matharu, S Dias, S Lutchegadoo, D Sagar

P113 'Inspiring change' in acute NIV care: a quality improvement project
MLB Jacobs, S Tharayil, T Altarazi, N Sharma, A Aggarwal, M Sovani

P114 The impact of a newly established respiratory support unit (RSU) on acute non-invasive ventilation (NIV) outcomes outside critical care
A Brookmyre, KP Yip, E Pinto, A Sivaramakrishnan, K Filby, N Folland, S Madathil, S Huq

P115 High flow nasal oxygen (HFNO) use in a post-COVID pandemic era: an acute respiratory care unit (ARCU) experience
J Weatherley, M Dawson, S Bhandari, M Wirima, R Badiger

P116 Use of high flow oxygen at the end of life in a tertiary care centre
S Nisar, G Mortimore, A Wilcock, L Havers, E Wardell, N Sumanam

P117 Revisiting long term mortality in chronic obstructive pulmonary disease (COPD) patients after the first non-invasive ventilation (NIV) episode for acute hypercapnic respiratory failure (AHRF)

SA Abid, A Krishnan, D Mukherjee, P Kissoonsingh, JW Goh, PL Lee, A Oakes, R Mukherjee

P118 NIVO score performs better than NEWS to predict outcome from acute NIV for COPD exacerbation
R Eric, S Tharayil, M Sovani

P119 Oxygen application in patients at increased risk of type 2 respiratory failure, within a tertiary centre
N Yonan, C Echevarria, B Messer

P120 Outcomes from mild acute hypercapnic respiratory failure
A El-Nayal, G Raynes, C Aday, S Lutchegadoo, S Iyer

2.15pm-4.00pm
Cambridge, 5th floor
MODERATED POSTER DISCUSSION: M15-M28

"Through the Looking Glass" – Airway disease therapies in the real world

Chaired by: Dr Steve Holmes (Shepton Mallet) and Dr Fiona Mosgrove (Aberdeen)

M15 Poor adherence to inhaled corticosteroids associated with asthma-related intensive care admissions
N Khine, P Dennison, H Rupani

M16 Real-world outcomes from use of Enerzair inhalers with propeller monitor connected inhaler system in a regional severe asthma adherence clinic
A Dewshi, C Chen, J Tay, FR Ali, S Quantrill, PE Pfeffer

M17 Effectiveness of biologic agents in severe asthma patients: retrospective study of 275 cases in tier 3 centre
A Attia, M Shan, A Cooper, E Idris

M18 The Cretan reallife experience of the use of biologics in the management of respiratory diseases
N Bizymi, AM Matthaiou, A Trachalaki, S Vizirianaki, G Liva, E Vasarmidi, E Bibaki, A Karatzanis, N Tzanakis, KM Antoniou

M19 Real world effectiveness of tezepelumab in severe asthma with fungal sensitisation
C Roxas, F Haris, J Gates, M Fernandes, L Green, L Thomson, J Lams, G d'Ancona, AM Nanzer, DJ Jackson, J Dhariwal

M20 Effectiveness of tezepelumab in patients with difficult-to-treat severe asthma: early insights from the Tezepelumab Patient Access Programme
P Patel, H Rupani, P Pfeffer, A Mansur, J Lipworth, C Lupton, M Watt, C Clewes, T Bailey, O Rajkovic-Hooley, H Burhan

M21 The effect of dupilumab on asthma exacerbation frequency including patients on maintenance oral steroids
S Case, A Pugh, L Partridge, K Pink

M22 COPD: can we use the blood eosinophil counts to predict the risk and severity of exacerbation
M Nayyar, S Lanka

M23 Identification of asthma-COPD overlap using a novel hand-held capnometer and interpretable machine learning
T Leeran, C Dogan, RH Lim, H Broomfield, D Neville, L Wiffen, G Lambert, A Selim, G Hayward, HF Ashdown, T Brown, E Vijaykumar, A Chauhan, AX Patel

M24 A global systematic literature review to investigate the humanistic and economic burden of severe chronic obstructive pulmonary disease (COPD)
I Vlachaki, S Donhauser, RK Hyderboini, J Nabi, A Madoni

M25 Prediction of lung hyperinflation in advanced COPD from spirometry and demographics
EF Alharbi, M Steiner, S Corkill, N Greening, T Ward

M26 Targeted Lung Health Check – A missed opportunity to confirm COPD diagnoses?
N Smallcombe, S Uys, R Singh, K Patel

M27 Providers perceptions and use of behaviour change interventions for physical activity in people with chronic respiratory disease: a survey
C Hanrahan, JG McVeigh, TM O'Connor, T Troosters, J Broderick

M28 How common is Aspergillus sensitisation in COPD and is it related to frequent exacerbations?
S Bartlett-Pestell, F Baraldi, MA MacLeod, A Braddy-Green, JSY Mah, R Lopez, ANJ Marrion, LA Moreira, H Shahbakhti, JP Allinson, JA Wedzicha, LJ Finney

3.30pm-4.15pm
Whittle & Fleming and Britten, 3rd floor

COFFEE/TEA BREAK

4.15pm-5.15pm
Churchill, ground floor
SYMPOSIUM

JOINT BTS/A+LUK/BALR MID-CAREER LECTURE AWARDS

Chaired and judged by: Professor Mona Bafadhel (London), Professor James Chalmers (Dundee) and Professor Karl Staples (Southampton)

4.15pm Inflammation and genetic mutations in pulmonary vascular disease
Dr Elaine Soon (Cambridge)

4.45pm Respiratory viral infections: susceptibility, severity and sequelae
Dr Aran Singanayagam (London)

4.15pm-5.15pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

Specialty Trainee

4.15pm-5.30pm
Albert, 2nd floor
POSTER DISCUSSION: P121-P130

"The Hitchhiker's Guide to Coughing"

Chaired by: Mrs Jennifer Butler (Northumbria) and Dr Imran Satia (Ontario)

P121 Single day cough recording does not reflect true cough frequence
AH Morice, M Alge, S Hart, A Rigby, D Elkayam

P122 Exploring the burden of chronic cough: insights from a single respiratory centre in Sri Lanka
M Witharamalage

P123 Responder analysis of Leicester Cough Questionnaire domains from phase 3 trials of gefapixant (COUGH-1/COUGH-2)
SS Birring, P Dicpinigaitis, L McGarvey, AH Morice, JA Smith, Q Li, C La Rosa, A Martin Nguyen

P124 Cough in occupational lung disease
L Paul, R Gundass, J Haque, J Shaw, R Haung, R Wiggans, JL Hoyle, JA Smith, R Dockry, H Badri

P125 Loss of nerves in both airway and skin in CANVAS-associated chronic cough
B Hirons, K Rhatigan, E Mackay, H Kesavan, W McNulty, R Turner, J Hull, CJ Jolley, R D Hadden, J Serra, A Cortese, PSP Cho, S Al-Sarraj, P Bannister, C Smith, M Drake, SS Birring

P126 Prevalence and impact of chronic cough in patients with stress urinary incontinence
PSP Cho, A Rantell, R Mohammed-Ahmed, C Davis, H Langerman, H Ding, M Silvey, C Atkinson, T Dewar, G Castellano, B Boggs, SS Birring

P127 Depression and anxiety symptoms in chronic respiratory disease-associated cough
B Hirons, K Rhatigan, E Mackay, H Kesavan, RD Turner, JH Hull, CJ Jolley, S Butler, KJ Myall, SS Birring, PSP Cho

P128 Suicidal ideation, depression and anxiety following treatment of chronic cough
B Hirons, K Rhatigan, E Mackay, H Kesavan, G Lavelle, RD Turner, JH Hull, CJ Jolley, S Butler, KJ Myall, SS Birring, PSP Cho

P129 Survey of speech and language therapy provision for chronic cough across the UK
S Ludlow, P Marsden, C Slinger, S Parker

P130 The development of a joint medical and speech and language therapist (SLT) 'one stop' cough clinic
C Hunter, J Butler, L Peace, L Green, J Sharp, S Parker

4.15pm-5.35pm
Westminster, 4th floor
SPOKEN SESSION: S96-S100

"War and Peace" – Neutrophil responses across diseases

Chaired by: Professor Elizabeth Sapey (Birmingham) and Professor Charlotte Summers (Cambridge)

4.20pm **S96**
Circulating neutrophils in idiopathic pulmonary fibrosis have a distinct biomechanical phenotype of systemic activation that correlates with disease severity
KM Lodge, S Nakanishi, L Yazbeck, J Guck, PL Molyneaux, AS Cowburn

4.35pm **S97**
Hospitalised older adults with community acquired pneumonia and sepsis have dysregulated neutrophil function but preserved glycolysis
FS Grudzinska, AA Faniyi, KB Belchamber, C Chen, R Stockley, A Jasper, D Parekh, E Sapey, A Scott, DR Thickett

4.50pm **S98**
Investigating the role of neutrophils in pleural infection: preliminary data from the PIRATE study
A Gilmour, L Marshall, H Lind, K Viligorska, H Liddicoat, M Crichton, R Galloway, MB Long, JD Chalmers, P Short

5.05pm **S99**
Pleural fluid proteomics from patients with pleural infection shows signatures of diverse neutrophilic responses: The Oxford Pleural Infection Endotyping Study (TORPIDS 2)
NI Kanellakis, K Cano-Gamez, E Antoun, J Chu, N Manoharan, G Betteridge, I Vemdrell, J Corcoran, E Alguili, T Dong, R Fischer, JC Knight, J Whalley, NM Rahman

5.20pm **S100**
Alpha-1 antitrypsin deficiency – an accelerated form of non-deficient chronic obstructive pulmonary disease largely driven by proteinase 3?
CH Chen, E Sapey, RA Stockley, A Scott

4.15pm-5.40pm
Abbey, 4th floor
POSTER DISCUSSION: P131-P141

"The Vapes of Wrath" – Tobacco dependency and smoking cessation

Chaired by: Dr Mahdi Sheikh (Lyon) and Dr Parris Williams (London)

P131 Prevalence and types of vaping in UK schoolchildren in 2024
S Cass, GR Davies, KE Lewis

P132 Availability and affordability of smoking cessation medications in low- and middle-income countries
C Plum, M Stolbrink, K Mortimer, D Halpin

P133 Quitting smoking and quality of life in lung cancer survivors over time
KE Lewis, J Scoberg, C Newman, L Phillips

P134 The impact of the outpatient CURE Service on treating tobacco dependency in lung cancer patients
K Sivabalah, M Taylor, M Evison

P135 A pilot to embed dedicated smoking cessation support in a pre-operative assessment clinic
PR Rodrigues, M Rossiter, S Glazebrook, P Orme, S Hargreaves, GH Jones

P136 Exploring patient perspectives on tobacco dependency management: a comparative thematic analysis of physical and mental health inpatients
M Yardley

P137 Early reduction in respiratory readmissions following implementation of a hospital-based stop smoking service
JHP Ting, R Singh

P138 Evaluating the role of lung function physiologists in delivering support to tobacco dependent patients
C Curnick, J Burt, S Mandal, N Devani

P139 Assessing smoking status documentation and nicotine replacement therapy prescribing on the acute admissions ward
E Donnelly, D Hiestermann, N Thoppuram

P140 Impact of smoking on hospitalization duration in patients with cardiovascular diseases: a retrospective analysis at a district general hospital
C Hsu, M Thin

P141 Smoking cessation in medical inpatients – we need to get it right!
R Haider, C Beckett, A Dhawan, N Sayeed

4.15pm-5.45pm
Mountbatten, 6th floor
SYMPOSIUM

JOINT BTS/BPRS SYMPOSIUM INFECTION AND THE LUNG: A NEW WORLD ORDER

Chaired by: Dr Julian Legg (Southampton) and Dr Samantha Sonnappa (London)

4.15pm RSV post COVID – a cloud with a silver lining
Dr Conall Watson (UKHSA)

4.45pm Fungal infection and ABPA in non-CF bronchiectasis
Dr Deepa Patel (Leicester)

5.15pm Group A strep empyema – just a blip or here to stay?
Dr Matthew Thomas (Newcastle upon Tyne)

Learning objectives

1) To understand the epidemiology of respiratory infections and changes post COVID.

2) To discuss novel approaches to diagnostics for respiratory infections.

3) To consider the evidence gaps in the management of respiratory infections.

4.15pm-5.45pm
Windsor, 5th floor
SYMPOSIUM

EVIDENCE-INFORMED NURSE LED PRACTICE

Chaired by: Ms Aleksandra Gawlik-Lipinski (Leicester) and Ms Joanne King (Frimley)

4.15pm The evidence for nurse led care out of hospital
Sarah Kearney (Isle of Wight)

4.45pm The role of the nurse in lung volume reduction surgery
Dr Sara Buttery (London) and Ms Sally Bustin (Frimley)

5.15pm The role of the nurse in leading research
Professor Lynn Calman (Southampton)

Learning objectives

1) To celebrate the respiratory nursing contribution to holistic, advanced, out of hospital care.

2) To explore new areas where respiratory nurses can take the lead.

3) To explore the role of the nurse in leading research and encourage interest in undertaking research projects.

4.15pm-5.50pm
St James, 4th floor
SPOKEN SESSION: S101-S106

"Harry Potter and the Goblet of Monoclonals" – Asthma biologics (2)

Chaired by: Dr Katherine Cahill (Nashville) and Professor David Jackson (London)

4.20pm **S101**
ABSTRACT WITHDRAWN

4.35pm **S102**
Effect of dupilumab on airway oscillometry, ventilation/perfusion, and mucus plugging in moderate-to-severe asthma: the VESTIGE Trial
GR Washko, BJ Lipworth, D Saralaya, M Zhang, X Soler, H Sacks, Y Deniz, PJ Rowe, L de P Gómez, JA Jacob-Nara

4.50pm **S103**
Clinical effectiveness of tezepelumab on upper and lower respiratory symptoms in patients with asthma and co-morbid nasal polyposis
J Gates, F Haris, L Green, J Lam, M Fernandes, L Thomson, C Roxas, G d'Ancona, J Dhariwal, AM Nanzer, C Hopkins, DJ Jackson

5.05pm **S104**
Study of asthma exacerbations in patients on the IL-5 receptor blocker, Benralizumab – the BenRex Study
J Logan, K Wetherall, L Gillespie, A McConnachie, WTN Lee, H Burhan, T Brown, S Faruqi, DJ Jackson, R Kurukulaaratchy, AH Mansur, D Saralaya, SJ Fowler, P Patel, J Brown, J Lordan, S Siddiqui, SJ Smith, V Mistry, V Brown, PA Shah, R Djukanovich, ID Pavord, LG Heaney, CE Brightling, R Chaudhuri

5.20pm **S105**
Impact of socioeconomic status on monoclonal outcomes in severe asthma: a two-year retrospective analysis
F Fyles, R Burton, A Nuttall, H Joplin, H Burhan, L Watkins

5.35pm **S106**
Do older people with severe asthma respond to asthma biologics?
W Soe, R Mittal, P Cook, C Eames, S Kerley, C Whitfield, M Pantaleon, J Mccreery, A Freeman, H Haitchi, R Kurukulaaratchy, P Dennison, H Rupani

4.15pm-5.50pm
Rutherford, 4th floor
POSTER DISCUSSION: P142-P154
"Call of the ILD"

Chaired by: Dr Joseph Bell (Southampton) and Dr Puja Mehta (London)

P142 High flow nasal oxygen (HFNO) increases exercise tolerance in patients with fibrosing interstitial lung diseases during a constant work rate cycle test (CWRCT) in comparison with conventional oxygen through a nasal cannula
J Jimenez, N Hirani, H Pinnock, R Rabinovich

P143 Real-world multicentre evaluation of liver function monitoring in patients with idiopathic or progressive pulmonary fibrosis receiving anti-fibrotic therapy in the United Kingdom
C Masey, G Dixon, M Naqvi, A Behrendt, A Lawrence, H Stone, S Bikmalla, R Muthusami, K Rajalingam, A Crawshaw, A Ahmer, L Crowley, A Fahim, A Zahid, G Saini, E Butcher, H Gorensweigh, K Brennan, F Khan, A Murphy, S Hira, S Yasir, L Spencer, V Randles, M McCaffrey, E Gillison, H Edwards, S Hart, A Muthusami, S Naureen, L Nicol, M Cartlidge, H Parfrey, I Mobein, N Khine, W Soe, SV Fletcher, N Chaudhuri, H Adamali, A West, M Gibbons, S Barratt

P144 The use of clinical parameters to differentiate between rare cystic lung diseases
M Avoseh, YL Pang, SJ Marciniak, ID Stewart, SR Johnson

P145 Characterising antifibrotic treatment patterns in patients with idiopathic pulmonary fibrosis in the US: a retrospective cohort study
MC Penaloza Ramos, AA Londhe, P Pimple, S Langham, M Lavallee, Y Fan, T Cork, AH Limper, J Quint

P146 Nintedanib and concomitant antidepressant usage is associated with no bleeding risk: retrospective observational data
H Stone, S Bikmalla, R Muthusami, L Bowyer, V Mhlanga, D Desai

P147 BPF-GILD study: an observational cohort study of UK pigeon fanciers
RJ Allen, J Wellens-Mensah, OC Leavy, S Bourke, W Henderson, H Smith, E Johnson, D Marks, Y Myat, C Rafique, G Parcesepe, T Hernandez-Beeftink, B Guillen-Guio, E Cheng, C Chan, S Henderson, M Embley, P Lynch, G Boyd, B Gooptu, C McSharry, LV Wain, M Spears

P148 Telomere assessment in pulmonary sarcoidosis
R Crooks, M Watson, R Gilpen, P Logue, D Linden, P Minnis

P149 Gender differences in breathlessness in idiopathic pulmonary fibrosis
SP Manivarmane, AB Clark, AM Wilson

P150 Exploration of sex-related differences in ventilator-induced fibrotic signalling
D Gersht, RF Baldi, C Thomas, N Jawhar, M Takata, MR Wilson

P151 The role of the endothelial glycocalyx in fibrotic interstitial lung disease
G Dixon, JCL Rodrigues, K Tsaneva-Atanasova, CJ Scotton, MA Gibbons, SL Barratt

P152 Idiopathic pulmonary fibrosis related expression of cell extrusion genes within epithelial cell types
K Bhatti, D Wang, I Uwagboe, C Dean, J Rosenblatt, M Parsons, G Jenkins, AE John, ID Stewart

P153 Insights into the biological mechanisms of signals from a genome-wide association study of susceptibility to idiopathic pulmonary fibrosis using alternative genetic models
T Hernandez-Beeftink, D Chin, L Donoghue, B Guillen-Guio, OC Leavy, P Cullinan, C Reynolds, F Martinez, I Noth, HL Booth, WA Fahy, IP Hall, SP Hart, MR Hill, N Hirani, RB Hubbard, TM Maher, RJ McAnulty, AB Millar, PL Molyneaux, V Navaratnam, E Oballa, H Parfrey, G Saini, I Sayers, MD Tobin, MKB Whyte, A Adegunsoye, C Flores, N Kaminski, SF Ma, JM Oldham,

ME Strek, Y Zhang, TE Fingerlin, DA Schwartz, M Molina-Molina, A Stockwell, M Neighbors, XR Sheng, M McCarthy, BL Yaspan, RG Jenkins, RJ Allen, LV Wain

P154 Exploration of mitochondrial-targeted hydrogen sulfide donors as novel therapeutics for fibroproliferative lung disease
X Dun, R Torregrossa, M Whiteman, C Scotton

4.15pm-6.00pm
Moore, 4th floor
POSTER DISCUSSION: P155-P168

"A Fine Balance" – Lung cancer screening

Chaired by: Professor Matthew Callister (Leeds) and Dr Liz Fuller (Newcastle upon Tyne)

P155 Interobserver variability in cause of death in a lung cancer screening trial: a pilot method study
DO Cheng, CR Khaw, A Bhamani, R Prendecki, P Verghese, A Creamer, M Mullin, H Hall, JL Dickson, C Horst, S Tisi, K Gyertson, A Hacker, L Farrelly, J McCabe, A Nair, J Jacob, N Navani, A Hackshaw, SM Janes

P156 Assessing the impact of an educational intervention on prioritisation of CT reporting in lung cancer screening
K Desai, L Anandan, SB Naidu, A Bhamani, T Patrick, S Coe, A Nair, S Patel, R Thakrar, N Navani, S Janes

P157 Maximising the opportunities in lung cancer screening: uptake of consent to contact for research
T Patrick, SB Naidu, L Anandan, K Desai, V Marshman, P Robinson, S Patel, A Nair, R Thakrar, N Navani, JR Hurst, SM Janes, A Bhamani

P158 Exploring differences across age groups in those diagnosed with lung cancer through the Targeted Lung Health Check
R Wollerton, C Pearce, B Probyn, O Mole, A Iyer, C Daneshvar

P159 Lung function in those with suspected lung cancer: is there a difference between those referred via TLHC screening and those referred via other methods?
VC Moore, K Alsabbagh, A Kan, A Harrison, JV Drought

P160 Optimising management of thoracic aortic dilatation identified through lung cancer screening
K Desai, L Anandan, S Kim, SB Naidu, T Patrick, A Sirker, A Nair, S Patel, R Thakrar, N Navani, S Janes, A Bhamani

P161 Recruitment from lung cancer screening to a COPD clinical trial
T Patrick, A Aboelhassan, M Parenti, A Mugambwa, J Moody, N Voase, A Macwan, SB Naidu, A Bhamani, K Scully, S Cano, S Doffman, MG Belvisi, SM Janes, JR Hurst

P162 Incidental interstitial lung abnormalities identified within a lung cancer screening programme: initial experience within a pilot UK site
J Naftel, E Hunter, B Marshall, R Limbrey, K Spinks, S Fletcher, J Shambrook, T Wallis, J Dunbar, M Jones

P163 Extending TLHC age limits: a path to more early lung cancer cures?
C Sprules, L Searle, N Davies, A Nasimudeen, M Kyi

P164 Assessing the progression of interstitial lung abnormalities on CT
U Sivakumar, RJ Hewitt, PM George, EC Bartlett, JL Garner, LT Chan, A Devaraj

P165 Outcomes of a hospital-based investigative pathway for emphysema incidentally identified through a lung cancer screening programme in the UK
T Macdonald, H Greetham, C O'Leary, B Green, D Neville, A Wallis, P McParland, S Ramachandraiah, A Hughes, A Hicks

P166 Three-month follow-up for consolidation identified in lung cancer screening
SB Naidu, T Patrick, L Anandan, K Desai, A Nair, S Patel, V Marshman, R Thakrar, N Navani, S Janes, A Bhamani

P167 Lung cancer diagnosis at emergency admission: will TLHC help?
RL Johnson, A Moore, A Talwar, J Park

P168 Outcomes for individuals with aortic valve calcification incidentally identified during lung cancer screening
SB Naidu, T Patrick, L Anandan, K Desai, C Jacklin, A Nair, S Patel, V Marshman, R Thakrar, A Sirker, N Navani, S Janes, A Bhamani

5.45pm-7.00pm
Britten, 3rd floor

BTS PRESIDENT'S RECEPTION

All registered participants are warmly invited to attend this social occasion

---

8.00am-9.00am
Whittle & Fleming, 3rd floor

COFFEE/TEA

8.45am-2.00pm
Whittle & Fleming, 3rd floor

POSTER VIEWING

Authors present: 10.00am-11.00am

P169-P180

"Coming up for Air" – Severe asthma, from pollution to service delivery

Discussion of abstracts will take place from 1.30pm to 3.00pm in the St James, 4th floor

P181-P192

"Catching Fire" – Measuring and targeting inflammation in COPD

Discussion of abstracts will take place from 1.30pm to 3.00pm in the Westminster, 4th floor

P193-P204

"Lord of the Tracheal Rings" – Interventional bronchoscopy

Discussion of abstracts will take place from 1.30pm to 3.00pm in the Moore, 4th floor

P205-P217

"The (Richard) Light Fantastic" – Pleural disease diagnosis and outcomes

Discussion of abstracts will take place from 1.30pm to 3.05pm in the Abbey, 4th floor

P218-P231

"The TB Manager" – Clinical problems in TB

Discussion of abstracts will take place from 1.30pm to 3.15pm in the Rutherford, 4th floor

P232-P240

"The Number One Asthma Detective Agency" – Asthma diagnostics

Discussion of abstracts will take place from 3.15pm to 4.25pm in the St James, 4th floor

P241-P253

"The Fellowship of the Fit" – Exercise and rehabilitation

Discussion of abstracts will take place from 3.15pm to 4.50pm in the Moore, 4th floor

P254-P267

"Great Expectorations" – Cystic fibrosis and bronchiectasis

Discussion of abstracts will take place from 3.15pm to 5.00pm in the Westminster, 4th floor

---

8.45am-5.00pm
Cambridge, 5th floor
MODERATED POSTER VIEWING

M29-M42

"The Importance of Breathing Earnest" – Clinical COPD

Discussion of abstracts will take place from 3.15pm to 5.00pm in the Cambridge, 5th floor

---

8.00am-8.30am
Albert, 2nd floor
JOURNAL CLUB

PHYSIOLOGY

Professor William Man (London)

Learning objectives

1) To review the latest publications and evidence in the field of respiratory physiology.

8.30am-9.50am
St James, 4th floor
SPOKEN SESSION: S107-S111

"The Famous Five" – Emerging clinical trial data

Chaired by: Professor James Chalmers (Dundee) and Professor Tom Wilkinson (Southampton)

8.35am **S107**
Molgramostim improves pulmonary gas exchange in patients with autoimmune pulmonary alveolar proteinosis (aPAP): results from the IMPALA-2 phase 3 clinical trial
C McCarthy, BC Trapnell, Y Inoue, F Bonella, T Wang, B Robinson, R Fleming, Y Wasfi, R Pratt

8.50am **S108**
At-risk registers integrated into primary care to stop asthma crises in the UK (ARRISA-UK)
AM Wilson, S Musgrave, P-A Ashford, M Noble, JR Smith, AB Clark, S Stirling, G Barton, A Sheikh, H Pinnock, D Price

9.05am **S109**
Treating eosinophilic exacerbations of asthma and COPD with benralizumab: a double blind, double dummy, active-placebo controlled randomised trial (ABRA)
S Ramakrishnan, REK Russell, HR Mahmood, K Krassowska, J Melhorn, C Mwasuku, ID Pavord, L Bermejo-Sanchez, I Howell, M Mahdi, S Peterson, T Bengtsson, M Bafadhel

9.20am **S110**
The effect of PCV13 and PPV23 on nasopharyngeal colonisation following human pneumococcal challenge with serotype 3 and serotype 6b: the PNEUMO 2 study
K Liatsikos, A Hyder-Wright, K Davies, D El Safadi, M Farrar, A Goncalves, SB Gordon, A Howard, M Lesosky, E Mitsi, C Myerscough, TK Nyazika, J Reine, RE Robinson, C Solorzano-Gonzalez, B Urban, E Begier, J Catusse, BD Gessner, M Lahuerta, C Theilacker, I Kanevsky, Y Tan, AM Collins, DM Ferreira, PNEUMO 2 study group

9.35am **S111**
Effectiveness and cost effectiveness of low dose oral modified release morphine versus placebo on patient-reported worst breathlessness in people with chronic breathlessness: a multi-site, parallel group, double-blind, randomised, placebo-controlled trial (MABEL)
MJ Johnson, RA Evans, C Keerie, S Tuck, J Norrie, J Cohen, B Williams, P Hall, M Atter, N Chaudhuri, S Bajwah, I Higginson, M Pearson, DC Currow, MT Fallon

8.30am-10.00am
Churchill, ground floor
SYMPOSIUM

TRANSFORMING RESPIRATORY DIAGNOSIS: THE ART OF THE POSSIBLE

Chaired by: Professor Chris Brightling (Leicester) and Dr Catherine Kettleborough (LifeArc)

8.30am Experience from the front line
Dr Helen Ashdown (Oxford)

9.00am Evolution or revolution: the past, present and future of asthma diagnosis
Professor Stephen Fowler (Manchester)

9.30am Improving the quantification of lung damage
Dr Joseph Jacob (London)

Learning objectives

1) To review the current evidence and utility of diagnostics in respiratory clinical practice.

2) To review current diagnostics in asthma and areas for future development.

3) To review the role of new imaging techniques and modalities in improving respiratory diagnosis and phenotyping.

8.30am-10.00am
Mountbatten, 6th floor
SYMPOSIUM

UPDATES IN THORACIC MALIGNANCY

Chaired by: Dr Anna Bibby (Bristol) and Dr Emma O'Dowd (Nottingham)

8.30am Identifying radically treatable disease: nodal staging and pathway management of NSCLC in the neoadjuvant era
Dr John Maclay (Glasgow)

9.00am Cutting edge diagnostics in pre-mesothelioma states and mesothelioma
Dr Beth Sage (Highland & Aberdeen)

9.30am The state of surgery in mesothelioma
Professor Eric Lim (London)

Learning objectives

1) To recognise the clinical and practical challenges in diagnostic work-up of locally advanced, operable NSCLC.

2) Review of novel diagnostics in the work-up of mesothelioma.

3) To review the evidence behind the surgical management of mesothelioma, including results of MARS 2 trial.

8.30am-10.00am
Windsor, 5th floor
SYMPOSIUM

STATE OF THE ART: COUGH THERAPEUTICS

Chaired by: Ms Jemma Haines MBE (Manchester) and Dr Barnaby Hirons (London)

8.30am New antitussive drugs
Professor Surinder Birring (London)

9.00am The placebo effect and designing the ideal clinical trial for cough
Dr Imran Satia (Ontario)

9.30am Treating cough without drugs: the future of non-pharmacological cough suppression therapy
Ms Siobhan Ludlow (Manchester)

Learning objectives

1) Outline mechanisms and impact of placebo effects in cough (both impact on routine practice and on designing clinical trials).

2) What should cough clinical trials look like given the marked placebo effects seen in recent trials? What is a clinically meaningful response?

3) Overview of 'state of the art' in cough therapeutics, covering both drug and non-drug approaches and how this will impact on routine clinical practice and service development.

8.30am-10.05am
Westminster, 4th floor
SPOKEN SESSION: S112-S117

"Jane Air" – Pneumothorax management

Chaired by: Professor Stefan Marciniak (Cambridge) and Dr Steven Walker (Bristol)

8.35am **S112***
CT features associated with contralateral recurrence of spontaneous pneumothorax
LA Burn, MTA Wetscherek, PD Pharoah, SJ Marciniak

8.50am **S113**
The CLAMP project: a national evaluation of intercostal chest drain removal
N Veale, AW Martinelli, D Sethi, P De Souza, KZ Mon, JOI Cheng, D Morrow, M Sam, I Saleem, KP Yip, J Kerks, DE Henshall, T Smitherman-Cairns, K Smith, D Mitchell, K Jackson, B Pippard, S Paul, W Mohammad, J Hyman, B Rowlands, S Bosence, C Pearce, B Probyn, R Thorley, M Mitchell, A Griffiths, R Westley, A Huda, A Mehmood, A Khan, V Tee, R Crooks, P Minnis, L Standing, WH Ong, MS Rashid, A Salih, EL Koh, CK Ho, M Hayes, C Holmes, A Saad, B Iqbal, E Barton, A Sundaralingam, O Kankam, J Quinn, JP Corcoran, SP Walker, A Aujayeb, J Herre, A Jha, SJ Marciniak, NM Rahman, RJ Hallifax

9.05am **S114**
Preliminary result of a Dutch multicenter study shows high prevalence of BHD in SP patients. Time to change pneumothorax guidelines
BPC Hoppe, JWK van den Berg, W Thijs, SE Smulders, NJM Claessens, SRS Ramai, FMNH Schramel, D Schippers, WJB Blox, M Nagtegaal, RN van Rossem, LJM Kroft, JL Stöger, FAT de Vries, CJ van Asperen, CL Klop, PE Postmus

9.20am **S115**
Association of polygenic risk score for height with pneumothorax risk
C John, J Chen, N Shrine, SJ Marciniak, MD Tobin

9.35am **S116**
When is tension pneumothorax, not tension?
E Vecchi, B Iqbal, N Bentley, C Middlemass, RJ Hallifax

9.50am **S117**
CT guided biopsy – a review of a large interventional service regarding pneumothorax rates
J Sutanto, G Mussell, D Mitchell, WH Ong, A Aujayeb

***S112 – BTS Medical Student Prize Winner**

Friday 29 November 2024

8.30am-10.05am
Moore, 4th floor
SPOKEN SESSION: S118-S123

"Brave New World" – Asthma in the new era

Chaired by: Dr Chloë Bloom (London) and Dr Ernie Wong (London)

8.35am **S118**
Young-adults (16-25) with severe asthma have worse outcomes when compared to other age-groups in the UK Severe Asthma Registry
LJ Holmes, C Redmond, P Pfeffer, LG Heaney, T Brown, J Busby, R Chaudhuri, DJ Jackson, G Jones, AH Mansur, AM Nanzer, S Naveed, M Patel, H Rupani, D Subramanian, SF Fowler

8.50am **S119**
Increasing the use of asthma biologics and FeNO in asthma diagnosis and improving outcomes for Core20PLUS communities
LA De Freitas, B Elgerray, E Idris

9.05am **S120**
Post-hoc analysis of transcriptomic and clinical predictors of remission in the ATLANTIS cohort
AA Kumar, TM Kole, MC Nawijn, KF Rabe, A Papi, C Brightling, D Singh, T van der Molen, JW Kocks, IM Adcock, N Zounemat-Kermani, M van den Berge, M Kraft, S Siddiqui

9.20am **S121**
Sputum bacterial pathogens and antibiotic resistance patterns among asthma patients in Oxfordshire: a 27-year longitudinal study
J Shen, C Tiedeman, D Eyre, I Pavord, S Walker, T Hinks

9.35am **S122**
Does the asthma best practice tariff affect 30- and 90-day readmission?
AJ Adamson, JK Quint, T Wilkinson, J Dodd

9.50am **S123**
Will you regret dumping your X? Sex as a biological variable in asthma genomics
P Rajasekar, O Iberi, S El-Toukhy, RL Clifford

8.30am-10.05am
Abbey, 4th floor
SPOKEN SESSION: S124-S129

"Of Mice and Men" – On the road to translation

Chaired by: Professor Christopher Carlsten (Vancouver) and Dr Claire Laubacher (Wisconsin)

8.35am **S124**
Single-cell transcriptomics identifies unique pathways regulating airway hyperresponsiveness via circadian regulator Rev-erba in airway epithelium
A Chakraborty, J Cain, R Maidstone, V Deugi, K Krakowiak, N Begley, J Gibbs, H Durrington

8.50am **S125**
Anti-inflammatory effects of tanimilast in two murine house dust mite (HDM)-driven models of asthma
AR Pisano, D Fragni, M Tondelli, N Rangwani, A Allen, A Pappani, M Civelli, G Villetti, D Miglietta

9.05am **S126**
Testing anti-ADAM33 oligonucleotides in complex mouse and human lung tissue as a novel disease-modifying asthma therapy
M Kousetti, C Teh, G Brazhnikov, IL Chan, R Abadalkareem, CH Ottensmeier, A Alzetani, JK Watts, HM Haitchi

9.20am **S127**
Analysis of rare exome sequenced variants in UK Biobank to discover causal genes and fine-map causal variants for lung function
N Shrine, J Chen, AG Izquierdo, A Williams, AL Guyatt, C John, RJ Packer, LV Wain, IP Hall, MD Tobin

9.35am **S128**
Elucidating transcriptomic and functional differences between basal cells with a low and high mutational burden from tobacco smoke exposure in the normal human airway epithelium
S Clarke, K Gowers, K Yoshida, M Przybilla, D Osuna de la Pena, H Selway, A Pennycuick, P Campbell, S Janes

9.50am **S129**
How can gene editing of human pluripotent stem cells help understand the effect of genetics on respiratory diseases?
S Cuevas Ocaña, JY Yang, M Aushev, G Schlossmacher, CE Bear, NRF Hannan, ND Perkins, J Rossant, AP Wong, MA Gray

9.00am-10.00am
Rutherford, 4th floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Acute and Complex Pulmonary Infections

9.00am-10.00am
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Critical Care, Respiratory Failure and Mechanical Ventilation

9.00am-10.00am
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
TB and Non-Tuberculous Mycobacteria

10.00am-11.00am
Whittle & Fleming and Britten, 3rd floor
COFFEE/TEA BREAK

10.30am-11.30am
Rutherford, 4th floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Bronchiectasis

10.30am-11.30am
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING
Sleep Apnoea

10.30am-11.50am
Westminster, 4th floor
SPOKEN SESSION: S130-S134
"The Road Not Taken" – Optimising rehabilitation in COPD

Chaired by: Dr Enya Daynes (Leicester) and Dr Thomas Ward (Leicester)

10.35am **S130**
SPACE for COPD self-management programme delivered as a maintenance programme on pulmonary rehabilitation discharge: a randomised controlled trial
L Houchen-Wolloff, A Hong, K Alqhatani, C Gerlis, NY Gardiner, CM Nolan, WDC Man, M Richardson, A Khan, A Gumber, A Szczepura, SJ Singh

10.50am **S131**
The effect of pulmonary rehabilitation on extracellular matrix protein expression in vastus lateralis muscle in atrophic and non-atrophic patients with COPD
E Kritikaki, G Terzis, M Soundararajan, I Vogiatzis, DCM Simoes

11.05am **S132**
Lower limb sensorimotor function explains a greater proportion of balance impairment in people with COPD compared to people without COPD
SL Harrison, KJ Loughran, D Martin, C Fernandes-James, J Symm, A Fisher, E Kaner, T Rapley, JS McPhee

11.20am **S133**
The effect of pulmonary rehabilitation design on outcomes in COPD: a systematic review and component network meta-analysis
TJC Ward, L Latimer, E Daynes, S Freeman, S Ward, M Haris, M Bakali, S Reap, M Iqbal, L Wang, A Mavilakandy, A Olaiya, H Aung, T Harvey-Dunstan, SJ Singh, NJ Greening, RA Evans, MC Steiner, A Sutton

11.35am S134
Minimal clinical important difference of quadriceps maximal voluntary contraction in patients with respiratory conditions following pulmonary rehabilitation
Z Mussa, J Zatloukal, E Daynes, E Chaplin, S Ward, SJ Singh

10.30am-11.55am
Windsor, 5th floor
OPEN SESSION

RESPIRATORY TRANSLATIONAL RESEARCH COLLABORATION

Chaired by: Professor Alexander Horsley (Manchester) and Professor Tom Wilkinson (Southampton)

10.30am An overview of the Respiratory Translational Research Collaboration
Professor Alexander Horsley (Manchester)

10.45am COPD National Research Strategy Group (NRSG)
Professor Tom Wilkinson (Southampton)

10.55am Asthma NRSG
Professor Salman Siddiqui (London)

11.05am Cystic Fibrosis NRSG
Professor Jane Davies OBE (London)

11.15am Early ILD NRSG
Professor Joanna Porter (London)

11.25am Acute Respiratory Infections NRSG
Professor Wei Shen Lim KBE (Nottingham)

11.35am Pleural Diseases NRSG
Professor Nick Maskell (Bristol)

11.45am BIOREME
Professor Bindi Brook (Nottingham)

Learning objectives

1) To learn about the NIHR Respiratory Translational Research Collaboration, including National Research Strategy Groups in key respiratory disease areas.

2) To learn how to contribute to these groups, to work with them, or to get their input and support in order to maximise the impact of translational research initiatives and delivery of early phase clinical trials.

10.30am-12.00pm
Churchill, ground floor
SYMPOSIUM

THE CHANGING PARADIGM OF ASTHMA IN THE BIOLOGICS ERA

Chaired by: Dr Jane McDowell (Belfast) and Dr Paul Pfeffer (London)

10.30am Asthma endotypes: are they static or fluid?
Dr Brian Lipworth (Dundee)

11.00am How are exacerbations changing in the era of biologics?
Professor Rekha Chaudhuri (Glasgow)

11.30am Obesity in asthma: is it about weight or inflammation?
Professor Katherine Cahill (Nashville)

Learning objectives

1) Discuss our evolving understanding of T2-high and T2-low disease in asthma and how this can be used to optimise patient management.

2) Showcase our latest understanding of the inflammatory cascade in asthma and how it relates to exacerbations in patients already on biologic therapy.

3) Understand how obesity impacts asthma symptoms and airway inflammation and get novel insights into the potential role of a weight loss drug in obese patients with asthma.

10.30am-12.00pm
Mountbatten, 6th floor
SYMPOSIUM

ADVANCES IN TB: FROM DIAGNOSIS TO PROGNOSIS

Chaired by: Dr Pranabashis Haldar (Leicester) and Dr Jamilah Meghji (London)

10.30am Molecular diagnostics for pulmonary and extrapulmonary TB – what have we learned and what is on the horizon?
Dr Esther Robinson (UKHSA)

11.00am Treatment shortening – how can this be achieved for drug sensitive, drug resistant disease and latent TB infection?
Professor Gerry Davies (Liverpool)

11.30am Post-tuberculosis disease – how big is the problem and what can be done?
Dr Celso Khosa (Maputo)

Learning objectives

1) Understand developments in use of whole genomic sequencing to guide clinical and public health management of tuberculosis.

2) Understand the importance of shorter treatment options to the patient and the development of such regimens across the infection spectrum to support TB elimination.

3) Appreciate the significance of post-tuberculous morbidity, the burden of this health problem and how health systems should address this often poorly met need.

10.30am-12.05pm
St James, 4th floor
SPOKEN SESSION: S135-S140

"Fifty Shades of Grey" – Targeted lung health check

Chaired by: Professor David Baldwin (Nottingham) and Dr Emma O'Dowd (Nottingham)

10.35am **S135**
Comparing changes in solid component diameter and mass for detecting invasive adenocarcinoma in sub-solid pulmonary nodules (SSNs): the SUMMIT Study
CR Khaw, DO Cheng, A Creamer, H Hall, A Bhamani, P Verghese, R Prendecki, M Mullin, JL Dickson, C Horst, S Tisi, A Pennycuick, H Selway-Clarke, Z Frazer, KEJ Davies, C Percival, K Gyertson, A Hacker, L Hughes, S Galani, L Farrelly, J McCabe, W Ricketts, J Jacob, A Hackshaw, A Nair, SM Janes

10.50am **S136**
Prevalence of frailty and comorbidity and its association with LCS invitation response and LDCT uptake
A Almatrafi, R Gabe, RJ Beeken, RD Neal, A Clegg, KE Best, S Relton, M Brown, HZ Tam, N Hancock, PAJ Crosbie, MEJ Callister

11.05am **S137**
Machine learning multi-modal algorithm for prediction of new primary lung cancer versus metastasis in patients with previous cancer
HS Kalsi, S Hindocha, K Linton-Reid, B Hunter, M Chen, E Alemu, V Crowe, RW Lee, D Gibeon, A Procter, M Hajhosseiny, C Owens, E Bartlett, S Doran, B Sharma, E Aboagye, A Devaraj, A Nair, S Mahboobani

11.20am **S138**
Multiparametric investigation and stratification of indeterminate lung nodules (MISIL1)
C Harris, A Surani, S Østrip Jensen, W Cooper, D Shcherbo, H Thomas, P Bradley, K Ashurst, J Selley, D Knight, A Bisquera, J Nathan, S Rashid, J Felce, C Dive, R Unwin, N Rosenfeld, P Crosbie, F McCaughan

11.35am **S139**
Frailty, comorbidity, and survival differences between the USPSTF 2021 risk criteria and PLCOm2012 and LLPv2 risk models
A Almatrafi, R Gabe, RJ Beeken, RD Neal, A Clegg, KE Best, S Relton, M Brown, HZ Tam, D Vulkan, N Hancock, PAJ Crosbie, MEJ Callister

11.50am **S140**
Adherence in a community-based lung cancer screening programme – results from the Yorkshire Lung Screening Trial
SQ Ahmad, F Pesola, PAJ Crosbie, R Gabe, N Hancock, MPT Kennedy, C Marshall, SL Quaife, S Rogerson, I Simmonds, MEJ Callister

10.30am-12.05pm
Moore, 4th floor
SPOKEN SESSION: S141-S146

"A Winter's Tale" – Mechanisms of viral infection

Chaired by: Dr Aran Singanayagam (London) and Dr Emily Swindle (Southampton)

10.35am **S141***
Novel in vitro influenza mucosal vaccination model by co-culture of air liquid interface human nasal epithelium and PBMC
J Cheng, K Ito, S Hassibi

10.50am **S142**
Nasal cells from older adults exhibit early pro-fibrotic responses to SARS-CoV-2, which facilitates viral replication and spread

M Woodall, A Cujba, K Worlock, T Masonou, S Teichmann, K Meyer, M Nikolić, C Smith

11.05am **S143**

Elevated neutrophil MPO and NE following reverse migration across RSV-infected co-cultures, replicate levels seen in the blood of infants with RSV bronchiolitis

M Palor, AI Jacobs, S Ray, P De Coppi, RE Hynds, RL Smyth, CM Smith

11.20am **S144**

Viral infection modulates bronchial epithelial cell metabolism in COPD

LJ Finney, P Fenwick, E Calamita, SV Kemp, LE Donnelly, JA Wedzicha, AJ Byrne

11.35am **S145**

SARS-CoV-2 infection and pro-fibrotic signaling in the lung – defining the role of αvβ6

E Lopez-Jimenez, Y Zhang, J Calver, S Ramadurai, Y Liu, F Monduzzi, TP Peacock, W Barclay, RG Jenkins

11.50am **S146**

Integrating spatial transcriptomics, high-plex protein and single cell RNA sequencing highlights the CXCR6-CXCL16 axis in recruiting dysregulated monocytes in idiopathic pulmonary fibrosis

L Pearmain, E Jokl, N Scott, P Rivera-Ortega, J Blaikley, S Murtuza Baker, ER Mann, K Piper Hanley

***S141 – BTS Medical Student Prize Highly Commended**

10.30am-12.05pm
Abbey, 4th floor
SPOKEN SESSION: S147-S152

"The Signalman" – Mechanisms of lung disease

Chaired by: Dr Jodie Ackland (Southampton) and Professor Karl Staples (Southampton)

10.35am **S147**

Understanding the role of endothelial senescence and endothelial to mesenchymal transition in development of atherosclerosis in patients with chronic lung disease

D Gresham, J Dong, K Lodge, M Macleod, A Braddy-Green, R Lopez, J Sidhu, V Ho, A Randi, L Donnelly, PJ Barnes, AW Wells, P George, W Wedzicha, C Pericleous, K Paschalaki

10.50am **S148**

Differential effects of TSLP, IL-33 and IL-25 alone or in combination on murine airway smooth muscle (ASM) responsiveness

A Mengash, Y Amrani

11.05am **S149**

Antifibrotic mechanisms of treprostinil

J May, JA Mitchell, RG Jenkins

11.20am **S150**

Effects of putative senotherapies, fisetin and navitoclax, on senescent small airway fibroblasts in COPD

KL Cox, PS Fenwick, JV Devulder, PJ Barnes, LE Donnelly

11.35am **S151**

Investigating the interaction between Hemicentin-1 and TGF-beta in idiopathic pulmonary fibrosis

H Yao, H Ding, B Liu, E Lopez, D Wang, G Jenkins, I Stewart, AE John

11.50am **S152**

Extracellular vesicles mediate macrophage functional impairment in idiopathic pulmonary fibrosis

C Mafham, KL Spencer, E Jenkins, LE Crowley, DR Thickett, D Parekh, A Scott, RY Mahida

---

11.45am-12.30pm
Rutherford, 4th floor
OPEN SESSION

SUPPORTING WOMEN IN RESPIRATORY MEDICINE

Chaired by: Dr Hitasha Rupani (Southampton) and facilitated by Dr Hilary Tedd (Newcastle upon Tyne)

The Society is committed to encouraging and supporting women in all roles across the respiratory team. While we are making good progress as an organisation with more women now engaging in membership and leadership roles, as well as on event programmes and panels, there is more work to be done.

The aim of this session is to hear your views on what more could and should be done going forward to support all women contributing to respiratory healthcare, while also allowing for some informal networking opportunities. The session will inform ongoing discussion with our Board.

12.00pm-2.00pm
Pickwick, 1st floor and Whittle & Fleming, 3rd floor

LUNCH (Lunch is not included in the delegate fee. Card payments only)

Exhibition closes at 2.00pm

12.30pm-1.15pm
Churchill, ground floor
BTS CLINICAL GUEST LECTURE

ACADEMIC MEDICINE: TRIALS AND TRIBULATIONS

Professor Stuart Elborn CBE (Belfast)
Introduced by: Professor Nick Maskell (Bristol)

1.30pm-2.30pm
Albert, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

Asthma

1.30pm-2.30pm
Victoria, 2nd floor
BTS SPECIALIST ADVISORY GROUP OPEN MEETING

Interstitial and Rare Lung Disease

1.30pm-3.00pm
Churchill, ground floor
SYMPOSIUM

FIGHTING FUNGUS: ADVANCES AGAINST PULMONARY ASPERGILLOSIS

Chaired by: Professor Jeremy Brown (London) and Dr Sara Gago (Manchester)

1.30pm Aspergillus, asthma and the airway: why do fungi trigger inflammatory lung diseases?
Dr Peter Cook (Exeter)

2.00pm Chronic pulmonary aspergillosis: who and when to treat and how long for
Dr Inderpaul Sehgal (Delhi)

2.30pm Immunophenotyping responses to aspergillus in post-lung transplant patients
Professor Anna Reed (London)

Learning objectives

1) To learn about the differences in presentation and treatment of the various subtypes of chronic pulmonary aspergillosis (CPA) and how these are influenced by the immune status and comorbidities of the patient.

2) To understand and explore how aspergillus triggers our immune response to mediate chronic airway allergic diseases such as asthma and how ABPA pathogenesis determines the roles of corticosteroids and biologics used for treatment. A mechanistic understanding of asthmatic immunopathology will radically improve therapeutic strategies for all asthmatics.

3) To appreciate the immune responses to aspergillus in the post-transplant patient and how this enables personalised treatment plans.

1.30pm-3.00pm
Mountbatten, 6th floor
SYMPOSIUM

INNOVATIVE VENTILATION TECHNOLOGY: FROM HOSPITAL TO HOME

Chaired by: Ms Pearlene Antoine-Pitterson (Birmingham) and Dr Katie Burke (Sunderland)

1.30pm Acute respiratory failure: artificial intelligence in critical care
Dr Annemijn Jonkman (Rotterdam)

2.00pm Chronic respiratory failure: telemedicine in home ventilation
Professor Christopher Carlin (Glasgow)

2.30pm Complex home ventilation: auto-titrating modes
Dr Rebecca D'Cruz (London)

Learning objectives

1) To understand the emerging diverse role of digital technology for optimising ventilation in critical care and in the community.

2) To understand the role artificial intelligence can have in the detection of respiratory deterioration and management of respiratory condition, in both acute and long-term care.

3) To explore how advancements in monitoring have improved clinical and patient reported outcomes.

Friday 29 November 2024

1.30pm-3.00pm
Windsor, 5th floor
SYMPOSIUM

BTS AUDIT AND QUALITY IMPROVEMENT

Chaired by: Dr Mark Juniper (Swindon)

1.30pm	2024 overview of BTS QI and Audit Programme Dr Mark Juniper (Swindon)
1.45pm	BTS Model of Care for Complex Home Ventilation Dr Ben Messer (Newcastle upon Tyne)
2.05pm	Implications of the BTS National Respiratory Support Audit 2023 Dr Michael Davies (Cambridge)
2.25pm	NIV QI collaborative in the West of England Dr Rebecca Mason (Bath)
2.45pm	Closing comments Dr Mark Juniper (Swindon)

Learning objectives

1) Learn about the practical implications on local services of the BTS National Respiratory Audit.

2) Gain insight on collaborating to improve mortality in NIV.

3) Familiarise yourself with the new BTS Model of Care for Complex Home Ventilation.

1.30pm-3.00pm
St James, 4th floor
POSTER DISCUSSION: P169-P180

"Coming up for Air" – Severe asthma, from pollution to service delivery

Chaired by: Dr Sarah Diver (Leicester) and Dr Katie Pink (Cardiff)

P169 ESMENA: a patient-centred education programme for improving asthma control
L Wiffen, T Brown, R Harvey, R De Vos, J Micklam, A Munns, M Chauhan, L DCruz, AJ Chauhan

P170 Does a digitised referral form improve the referral pathway for patients with uncontrolled asthma?
S Prigmore, C Fitz-Avon, R Stone

P171 The association between 7-day hospital working and delivery of best practice in adult asthma care
AJ Adamson, J Dodd, T Wilkinson, J Quint

P172 Video supported spirometry in severe asthma – are high quality remote sessions possible?
J Logan, K Wetherall, G Sowman, F Keane, J O'Keeffe, J Ibarra, H Wilson, L Gillespie, A McConnachie, WTN Lee, T Brown, H Burhan, R Kurukulaaratchy, DJ Jackson, P Patel, S Faruqi, D Saralaya, SJ Fowler, AH Mansur, J Brown, J Lordan, S Siddiqui, ID Pavord, LG Heaney, CE Brightling, R Chaudhuri

P173 Clinical utility of sputum cell count in severe asthma
S Khan, S Gilbey, A Cass, H Stephens, J Shingler, A Pillai, AH Mansur

P174 A service evaluation of digital assessment of lung function and ICS/LABA treatment among Irish severe asthma centres
A Allami, O Smith, C Ottewill, E MacHale, G O'Donnell, B Kent, M Mokoka, D Murphy, D Ryan, O Mikulich, M Harrison, B McCullagh, A Scott, A O'Brien, RW Costello

P175 Severe asthma healthcare resource utilisation (HRU) pre and post mepolizumab in the UK and Italy – REALITI-A at 2 years
B Egan, J Weir, A Smith, I Clifton, P Pfeffer, P Howarth, R Chaudhuri

P176 After weight loss: two-year outcomes following a weight management programme in difficult-to-treat asthma and obesity
V Sharma, HC Ricketts, L McCombie, N Brosnahan, L Crawford, L Slaughter, A Goodfellow, F Steffensen, R Chaudhuri, MEJ Lean, DC Cowan

P177 Prevalence of respiratory viruses in stable and acute asthma: a systematic review and meta-analysis
S Ananth, GS Alimani, C Boccabella, E Khaleva, G Roberts, NG Papadopoulos, C Kosmidis, J Vestbo, E Papageorgiou, A Beloukas, AG Mathioudakis

P178 A global systematic literature review to investigate the impact of environmental factors on the prevalence, control and severity of severe or difficult-to-treat asthma
I Vlachaki, S Donhauser, M Chakarwarthy, P Agrawal, A Madoni

P179 Relationship between pollution levels and outcomes of biological therapies among patients with severe asthma
F Fyles, R Burton, A Nuttall, H Joplin, H Burhan, L Watkins

P180 Red blood cells transport inhaled traffic-derived carbonaceous particulate matter in vivo
NM Liu, L Miyashita, J Grigg

1.30pm-3.00pm
Westminster, 4th floor
POSTER DISCUSSION: P181-P192

"Catching Fire" – Measuring and targeting inflammation in COPD

Chaired by: Dr Steven Cass (London) and Dr Marie Fisk (Cambridge)

P181 Bactericidal/permeability-increasing protein is present in plasma of stable and exacerbating COPD patients
YY Wong, SP Cass, S Ramakrishnan, M Bafadhel, REK Russell

P182 COPD and heart failure insights in a real-world population initiating triple therapy from the United States
M Pollack, E Rapsomaniki, J Marshall, H Mullerova

P183 Relationship between quantitative CT and cardiac function in patients with severe COPD exacerbations (ECOPD)
G Mussell, J Kibbler, M Bennett, T Wilkinson, D Ripley, SC Bourke, J Steer

P184 Defining trajectories in health status with chronic airways assessment test (CAAT) in a real-life cohort of patients with asthma and/or COPD (NOVELTY)
A Ritchie, S Franzen, A Agusti, R Beasley, R Hughes, C Janson, B Make, A Papi, H Mullerova, H Reddel

P185 Promptly escalating to budesonide/glycopyrronium/formoterol from dual therapy reduces exacerbations and cardiopulmonary events in patients with COPD (MITOS EROS + Cardiopulmonary Study)
H Mullerova, J Tkacz, J Schinkel, B Agatep, E Portillo, H Germack, M Crooks, C Strange, J Marshall

P186 Prompt initiation of budesonide/glycopyrronium/formoterol reduces exacerbations and cardiopulmonary events in patients with COPD (MITOS EROS + Cardiopulmonary Study)
M Pollack, J Tkacz, J Schinkel, B Agatep, E Portillo, H Germack, M Crooks, C Strange, J Marshall, H Mullerova

P187 Lung exposure bioequivalence with budesonide/glycopyrronium/formoterol fumarate dihydrate with the next generation propellant hydrofluoroolefin-1234ze versus hydrofluoroalkane-134a in healthy adults: a charcoal block study
A Bednarczyk, M Aurivillius, I Raphiou, D Petullo, J Xu, M Kokot, K Sychowicz, K Collison, C Silva, J Reddy, R Goldwater, M Gillen, M Patel

P188 Systemic exposure bioequivalence of budesonide/glycopyrronium/formoterol fumarate dihydrate with the potential next generation propellant hydrofluoroolefin-1234ze versus hydrofluoroalkane-134a in healthy adults
A Bednarczyk, M Aurivillius, M Shah, I Raphiou, D Petullo, J Xu, M Kokot, K Sychowicz, K Collison, C Silva, J Reddy, D Han, M Gillen, M Patel

P189 Dupilumab reduces exacerbations and improves lung function in patients with chronic obstructive pulmonary disease and emphysema
SP Bhatt, KF Rabe, NA Hanania, CF Vogelmeier, M Bafadhel, S Christenson, A Papi, D Singh, E Laws, P Dakin, J Maloney, X Lu, D Bauer, A Bansal, LB Robinson, RM Abdulai

P190 Dupilumab improves patient-reported respiratory symptoms in non-exacerbators with moderate-to-severe COPD and type 2 inflammation: phase 3 BOREAS trial
KF Rabe, CF Vogelmeier, SP Bhatt, NA Hanania, M Bafadhel, SA Christenson, A Papi, D Singh, E Laws, J Maloney, X Lu, D Bauer, A Bansal, LB Robinson, RM Abdulai

P191 Blood eosinophil subgroups and sputum culture in COPD patients from a community service
A Beech, J Thomas, G Traynor, A Betterton, C Pownall, B Kane, D Singh

P192 From development to deployment: actionable AI models that accurately predict admissions and exacerbations in patients with COPD
N Fernando, K Goldsmith, A Cushing, A Taylor, S Burns, DJ Lowe, C Carlin

Friday 29 November 2024

1.30pm-3.00pm
Moore, 4th floor
POSTER DISCUSSION: P193-P204

"Lord of the Tracheal Rings" – Interventional bronchoscopy

Chaired by: Professor Mohammed Munavvar (Preston) and Professor Neal Navani (London)

P193 Day-case deep sedation bronchoscopy with target-controlled sedation (TCS) and high-flow nasal oxygen (HFNO) in the bronchoscopy suite
T Wijayaratne, Z Aung, P Thiagarajan, R Annamaneni, R Sudhir, R Panchal

P194 Endobronchial ultrasound-guided transbronchial cryobiopsy (cryoEBUS): a novel technique which offers a higher diagnostic yield in our EBUS toolbox
T Wijayaratne, C Richards, R Sudhir, R Panchal

P195 Is PET-CT essential prior to mediastinal staging of lung cancer with EBUS?
H OBrien, L Piggott, F OConnell, P Nadarajan

P196 Evaluating the diagnostic sensitivity of rapid on-site examination (ROSE) in EBUS-TBNA sampling of possible granulomatous pathology
O Hatem, A Hamilton-Shield, M Park, G Satta, J Nanan, B Tomas-Cordero, M Coleman, L Martin, K Manalan, A Datta, A Whittington, M Loebinger, H Burgess, L Castle, H Kunst, R Breen, A Dunleavy, T Gorsuch, S Khan, M Lipman, P Haldar, OMK Kon

P197 Endobronchial valve management of persistent air leak from pneumothorax: a Western Australian audit
SJ O'Riordan, N Setty, D Thakkar, T Huseini, R Shrestha, L Yagnik, M Salamonsen, R Thomas, YCG Lee

P198 Radial EBUS with electromagnetic navigation bronchoscopy: real world UK experience
AR Teagle, FR Millar, S Giavedoni, JB McCafferty, ADL Marshall

P199 Our experience with endobronchial ultrasound-guided transbronchial mediastinal transbronchial cryobiopsy
EJ Soto Hurtado, E Salcedo Lobera, Y Rodríguez Gallego

P200 The role of rapid on-site evaluation (ROSE) in diagnostic EBUS-TBNA (endobronchial ultrasound transbronchial needle aspiration) procedures for isolated mediastinal and hilar lymphadenopathy (IMHL)
H Yousif, M Almadhi, A Rajai, M Evison, H Balata, H Al-Najjar

P201 Evaluating and supporting community care of patients with indwelling pleural catheters in Inner London
N Thoppuram, J Liang, O Kadwani, J Zhang

P202 Local anaesthetic thoracoscopy: a decade of experience at a single UK centre
HF Schiff, G Sreejith, A Sachdev, S Cooper, S Gunatilake

P203 Clinical importance of surgical emphysema (SE) post local anaesthetic thoracoscopy (LAT)
S Misra, L Waller, S Kiran, R Naseem, M Haris, R Reddy, Y Dhary, V Oakden, E Turnbull, A Aujayeb

P204 Does physician led ultrasound guided pleural biopsy have a role in the diagnosis of malignant pleural effusion?
MER Shuvo, M Burton, YH Man

1.30pm-3.05pm
Abbey, 4th floor
POSTER DISCUSSION: P205-P217

"The (Richard) Light Fantastic" – Pleural disease diagnosis and outcomes

Chaired by: Ms Laura McNaughton (Glasgow) and Dr Philip Short (Dundee)

P205 Identifying key requirements for bacterial growth in pleural fluid
DK Sethi, L Sims, H Felgate, EK Mishra, MA Webber

P206 Exploring patients' perception following management of pleural infection at Oxford University Hospitals NHS Foundation Trust. A qualitative study
A Elsheikh, B Iqbal, A Sundaralingam, N Kaushal, A Saad, WM Chew, D Addala, R Hallifax, NM Rahman

P207 Outcomes in microbiology positive vs negative pleural infection: results from the MIST-2 dataset
M Bhatnagar, NI Kanellakis, A Elsheikh, B Iqbal, D Addala, A Sundaralingam, NM Rahman

P208 Use of SHOX2 methylation as a diagnostic biomarker in malignant pleural effusion: a diagnostic test accuracy meta-analysis
M Smail Aissani, M Hendawy, K Mahrous Gerges, M Abouzid, M Hossam El Din Moawad, R Mohamed Rakha, AAR Mohamed Hussein, IH Yousef

P209 A retrospective study of the incidence of post cardiovascular operative pleural complications
CS Pearce, BJ Probyn, R Wollerton, JP Corcoran, AA Bashir, CJ Daneshvar

P210 Federated learning for differentiation of rare causes of pneumothorax: Birt-Hogg-Dubé Syndrome (BHD) and lymphangioleiomyomatosis (LAM)
T Cowan, MT Wetscherek, JD Kaggie, The Rare Pulmonary Diseases Imaging Consortium, SJ Marciniak

P211 Qualitative study on patient views of prognostic information in the malignant pleural effusion
C Mounsey, N Kanellakis, D Addala, MW Chew, B Iqbal, E Alguili, A Saad, N Kaushal, N Russell, J Cabildo, R Hallifax, N Rahman

P212 Evaluating the treatment and outcomes of transudative pleural effusions: a tertiary centre experience
D Hiestermann, J Zhang, A Graham, N Thoppuram, F Vivian, D Stein, O Kadwani

P213 Discordant exudates: a diagnostic dilemma
H OBrien, J Ulm, L Gleeson

P214 Pleura-peritoneum cross-talk: a retrospective study of malignant pleural effusions and ascites in gynaecological cancers
B Iqbal, K Goh, X Hartwig, I Mechie, K Bhullar, NM Rahman

P215 Virtual reality headsets: an innovative tool to minimise pleural procedural-related pain and anxiety
T Wijayaratne, R Samarasinghe, S Johnstone, F Hinchcliffe, R Sudhir, R Panchal

P216 Unravelling pain in malignant pleural mesothelioma: a longitudinal study
CR Mayland, M Collinson, S Ahmedzai, J Lucas, J Gath, L Darlison, D De Fonseka, B Laird, H Stanley, C Gardiner, S Danson, A Bibby

P217 Teaching pleural procedural skills with augmented reality – a pilot study
TJ Davies, A Amprapala, A Chapman, A D'Souza, K Dhas, H Sajjad, R Murphy-Lonergan, O Orhan, B Bartholomew

1.30pm-3.15pm
Rutherford, 4th floor
POSTER DISCUSSION: P218-P231

"The TB Manager" – Clinical problems in TB

Chaired by: Dr Celso Khosa (Maputo) and Dr Michaela Reichmann (Southampton)

P218 Pulmonary tuberculosis treatment delays: has the COVID-19 pandemic caused delays in patients presenting to health care professionals?
SJ Davis, S Aslam, S Menzies

P219 Urogenital tuberculosis (TB), a rare manifestation of extrapulmonary TB, a retrospective study
K Boza, N Smallcombe, S Dart, R Bamford, V White, H Kunst, A Malhotra

P220 Chemoprophylaxis for latent tuberculosis in the UK: changing trends across three cohorts over 13 years
A Patankar, C Aydemir, M Raza

P221 Cutaneous adverse drug reactions to anti-tubercular drugs
S Ahmed Bokhari, G Haque, A Hamud, JL Potter

P222 Mapping the cascade of care for people with positive IGRA results: a descriptive single-centre analysis
A O'Reilly, V Tobert, J Hoy, E Bateman, S Dubey, A McCallum

P223 Interferon-gamma release assays used in the diagnostic work-up for active tuberculosis
K Baker, JL Potter

P224 Impact of tuberculosis (TB) trained pharmacist for medicines optimisation in a multidisciplinary TB clinic
C Chen, S Dart, A Paton, A Dewshi, I Isman, M Yusuff, P George, E Hanzaree, S Monaghan, V White, N Smallcombe, H Kunst

P225 Retrospective analysis of multi-drug resistant tuberculosis (MDR-TB) diagnosis among contacts in East London: insights and implications
S Joseph, C Chen, N Smallcombe, V White, H Kunst

P226 The Impact of COVID-19 on tuberculosis case presentation – the BHRUT experience. A comparative analysis of pre-and post-pandemic trends
S Kumar Singh, S Rajesh, A Ainley

P227 Qualitative exploration of healthcare-seeking experience of patients diagnosed with active tuberculosis in Leicestershire, UK
N Grolmusova, JW Kim, M Gogoi, J Lee, I Novsarka, P Haldar

P228 Uptake, effectiveness and acceptability of routine screening of pregnant migrants for latent tuberculosis infection in antenatal care: a feasibility study
A Rahman, S Thangaratinam, A Copas, D Zenner, PJ White, C Griffiths, I Abubakar, C McCourt, H Kunst

P229 Prevalence and impact of incidental findings on research PET-CT scans among recent TB contacts participating in a prospective observational study
JW Kim, A Kamil, J Lee, I Novsarka, W Branchett, A O'Garra, P Haldar

P230 Isoniazid mono-resistant pulmonary tuberculosis and its clinical outcomes: a prospective multicenter cohort study in Korea
J Min, JM Lee, HW Kim, JS Kim

P231 The TBC3 Study: a mixed methods investigation of the factors that influence successful tuberculosis contact tracing in low prevalence settings
HL Perez, PJ Collini

2.30pm-3.15pm
Britten, 3rd floor

COFFEE/TEA BREAK

3.15pm-4.25pm
St James, 4th floor
POSTER DISCUSSION: P232-P240

"The Number One Asthma Detective Agency" – Asthma diagnostics

Chaired by: Dr Katherine Hickman (Bradford) and Dr Lola Loewenthal (London)

P232 The diagnosis of asthma: sensitivity and specificity of different diagnostic test thresholds
AJ Simpson, S Drake, R Wang, L Healy, H Wardman, M Bennett, CS Murray, SJ Fowler, A Simpson

P233 Can we predict positive bronco-reversibility test using blood eosinophils?
E Taylor, E Dickinson, R Yadavilli

P234 Clinical implications of persistent T2 inflammation in patients with severe asthma treated with tezepelumab
F Haris, J Gates, C Roxas, L Thomson, L Green, J Lam, M Fernandes, G d'Ancona, J Dhariwal, AM Nanzer, DJ Jackson

P235 The diagnostic journey of patients with eosinophilic granulomatosis with polyangiitis (EGPA) in England: a retrospective observational cohort study
S Siddiqui, P Dolin, A Shavit, J Rowell, C Edmonds, D Kielar, A Lacetera, P Suárez-Sánchez, C Ariti, B Podmore, A Kitchin Velarde, SY Chen

P236 Primary care treatment patterns and healthcare events preceding identification of severe asthma: a retrospective cohort study in the United Kingdom
BT Blak, TS Morris

P237 Community diagnostic and treatment hubs reduce misdiagnosis and improve guideline directed prescribing of asthma and COPD
JW Scriven, G Woods, A Scarlett, K Parvin, M Davies, D Menzies

P238 Clinical characteristics of patients reviewed in a community respiratory diagnostic hub to inform referral criteria: an extended report
S Khan, J Aigbirior, R Ramachandram, B Cooper, M Cotter, Y Khan, AH Mansur

P239 Quantification of small airways disease in severe asthma using a novel, fast-response capnometer and interpretable machine learning
H Broomfield, RH Lim, L Talker, C Dogan, A Selim, G Lambert, D Neville, L Wiffen, G Hayward, HF Ashdown, T Brown, A Chauhan, AX Patel

P240 Phenotyping inducible laryngeal obstruction in a tertiary asthma and airways service
C Slinger, K Prior, B Tidmarsh

3.15pm-4.45pm
Churchill, ground floor
SYMPOSIUM

NEW DEVELOPMENTS IN SARCOIDOSIS

Chaired by: Dr Anjali Crawshaw (Birmingham) and Dr Ahmed Fahim (Wolverhampton)

3.15pm Fibrotic pulmonary sarcoidosis: mechanisms and management
Professor Ling-Pei Ho (Oxford)

3.45pm Biological predictors of disease behaviour and response to treatment
Professor Seamas Donnelly (Dublin)

4.15pm Sarcoidosis associated PH: when it goes bad
Dr Laura Price (London)

Learning objectives

1) To understand the latest diagnostic recommendations and advances in treatment of sarcoidosis, including the recent approval of infliximab for treatment of refractory sarcoidosis.

2) To understand the possible mechanisms, subtypes and management of fibrotic pulmonary sarcoidosis.

3) Understanding of pathogenesis of sarcoidosis associated PH including PVOD and vasculopathy.

3.15pm-4.45pm
Mountbatten, 6th floor
SYMPOSIUM

SLEEP LATEST: ENDOTYPING, AF AND SOMETHING REMarkably DIFFERENT

Chaired by: Dr Akshay Dwarakanath (Wakefield) and Dr Swapna Mandal (London)

3.15pm Endotyping in OSA: is personalised care possible yet?
Professor Danny Eckert (Adelaide)

3.45pm OSA and AF: what do we know and what should we do?
Dr Eduard Shantsila (Liverpool)

4.15pm REM sleep behaviour disorder, biomarkers and the Holy Grail – neuroprotection
Dr Karolien Groenewald (Oxford)

Learning objectives

1) To be updated on the latest research into endotyping and phenotyping in OSA and to understand this area's potential to enable large scale, personalised and effective treatment.

2) To be updated on evidence of the existence and nature of the link between OSA and AF, and to explore the case for screening for OSA in AF and vice versa.

3) To understand the nature and relevance of REM sleep behaviour disorder as a prodrome of Parkinson's disease, with a focus on biomarkers of phenotypic conversion and their role in neuroprotective research.

3.15pm-4.50pm
Windsor, 5th floor
SPOKEN SESSION: S153-S158

"Foundation's Edge" (2) – Role of genetics in IPF

Chaired by: Dr Rachel Clifford (Nottingham) and Dr Deborah Morris-Rosendahl (London)

3.20pm **S153**
Clinical and genetic phenotyping of telomere dysfunction within a familial ILD cohort
I Mobein, H Parfrey, JA Dickens

3.35pm **S154**
The impact of the IPF-associated variant rs62025270 on AKAP13-mediated signalling and epithelial cell dysfunction in idiopathic pulmonary fibrosis
B Liu, SY Wang, E Pyman, A Vairon, M Zarcone, EL Lopez Jimenez, RG Jenkins, AE John

3.50pm **S155**
Radiological and genetic diversity of inherited ILDs revealed within a regional familial pulmonary fibrosis service
H Parfrey, C Fiddler, S Holden, JA Dickens

4.05pm **S156**
IPF associated DNA methylation and gene expression changes in lung fibroblasts: airway and parenchymal distinction and XY chromosome profiling
A Valand, P Rajasekar, AL Lagan, J Patel, B Barksby, RA Burgoyne, JL MacIsaac, DTS Lin, ST May, M Castellanos-Uribe, MS Kobor, TL Hackett, AJ Halayko, AJ Knox, A Fisher, L Borthwick, R Clifford

4.20pm **S157**
Exploring the function of PKN2 in idiopathic pulmonary fibrosis

CE McMullan, P Rajasekar, AJ Hall, P Stylianou, R Clifford, RJ Allen, LV Wain, KM Roach

4.35pm **S158**

Discovering links between idiopathic pulmonary fibrosis genetic risk and the human phenome to uncover genetically-influenced disease biology

S Moss, I Stewart, RJ Allen, G Parcesepe, R Packer, LV Wain, RG Jenkins

3.15pm-4.50pm
Moore, 4th floor
POSTER DISCUSSION: P241-P253

"The Fellowship of the Fit" – Exercise and rehabilitation

Chaired by: Mrs Lizzie Grillo (London) and Dr Karl Sylvester (Cambridge)

P241 Iron-related biomarkers and exercise capacity in hereditary haemorrhagic telangiectasia
SH Shah, SM Munshi, CL Shovlin

P242 More frequent exercise as adolescents is associated with better exercise tolerance in adulthood for patients with pulmonary arteriovenous malformations and hereditary haemorrhagic telangiectasia
H Das, H Ironton, NC Coote, J Cabuntug, J Ranger, A Alsafi, CL Shovlin

P243 Walking football for chronic breathlessness: a proof of concept study
CPJ Bradford, D Martin, KJ Loughran, N Robertson, SL Harrison

P244 What does physical activity intensity mean to people with chronic obstructive pulmonary disease (COPD)? A qualitative photovoice study
PHI Lloyd-Evans, D Malcolm, SJ Singh, A Rowlands, E Chaplin, S Ward, MW Orme

P245 The relationship of breathlessness with social isolation and loneliness: a nationally representative prospective cohort study of older adults in England
KEJ Philip, F Bu, SC Buttery, MI Polkey, NS Hopkinson, D Fancourt

P246 Evaluation of a novel digital self-management tool (BreathTec) to manage breathlessness, physical activity and mental health in patients with chronic respiratory diseases: an updated retrospective analysis
M Armstrong, K Heslop Marshall, G Burns

P247 The physiotherapy assessment of breathing pattern in patients with respiratory symptoms: a systematic review
LJF Grillo, J Kilduff, L Osman, CI Bloom, NS Hopkinson, H Shannon, AM Russell

P248 Characterisation of dysfunctional breathing using cardiopulmonary exercise testing
SF Mobus, CJ Harding, CL Taylor, KP Sylvester, JP Fuld

P249 Exploring the potential of cardiopulmonary exercise testing for individualised pulmonary rehabilitation in people with interstitial lung disease: a systematic review
B Bowhay, CA Williams, T Lacy-Kerr, MA Gibbons, CJ Scotton, OW Tomlinson

P250 Validation of the McRoberts MoveMonitor digital sensor for recording the six-minute walk test distance in COPD patients
PJ Williams, KEJ Philip, AM Perkins, SC Buttery, A Tana, L Chan, NS Hopkinson

P251 Validation of GPPAQ using accelerometer data
R Evans, L Wang, C Brightling, L Wain, C Lawson, T Yates, S Singh, E Daynes, G Mills, A Tziannou, T Plekhanova

P252 Evaluating small airway dysfunction in obstructive airway disease using oscillometry: a systematic review
WW Ee, C Mwasuku, G Kaltsakas, R Russell, M Bafadhel

P253 Association between a computed cardiopulmonography (CCP) ventilation-inhomogeneity index and conventional markers of small-airway function
H Xu, NMJ Smith, A Alamoudi, LS Petralia, D Sandhu, G Richmond, GAD Ritchie, NP Talbot, PA Robbins, ID Pavord, NP Petousi

3.15pm-5.00pm
Westminster, 4th floor
POSTER DISCUSSION: P254-P267

"Great Expectorations" – Cystic fibrosis and bronchiectasis

Chaired by: Dr Charlotte Addy (Cardiff) and Professor Robert Gray (Glasgow)

P254 Chronic pulmonary aspergillosis in patients with non-tuberculous mycobacterial disease
N Smallcombe, L Kabalan, A Malhotra, C Chen, S Joseph, K Boza, R Bamford, S Natarajan, H Kunst

P255 Variables limiting antibiotic choice in a cohort of patients with bronchiectasis and pseudomonas aeruginosa colonisation
C Dominic, S Drazich-Taylor, MC Pasteur, EK Mishra

P256 Bedaquiline for nontuberculous mycobacterial disease: insights from the largest national case series in the UK
K Kumar, AM Malhotra, S Capocci, B Hulance, M Dedicoat, H Kunst, E Bowman, TGD Capstick, J Duckers, C Foster, F Frost, E Whittaker, S Wilson, S Bryant, R Breen, CS Haworth, MCI Lipman, OM Kon

P257 The incidence of smoking and vaping rates amongst adults with primary ciliary dyskinesia in England
EA Shepherd, S Peake, C Webster, S Lightfoot, N Freitas

P258 Paediatric bronchiectasis quality of life questionnaire: what does the literature say?
H Smith, P Nagakumar, D Yates, P Kenia

P259 Pneumococcal vaccination rates in bronchiectasis patients younger than 65 years in the specialist clinic
H Upadhyay, L Marshall, K Hester, J Chalmers, A De Soyza

P260 Is patient choice considered with airway clearance technique prescription? A real-world live survey of patients with bronchiectasis from the European Lung Foundation
P McCallion, J Bradley, A De Soyza

P261 Presentation and recovery from pulmonary exacerbations in cystic fibrosis and comparison of those with and without CFTR modulators
H Siy-Yap, V Musgrave, E Looi, LE Wadsworth, PJ Barry, AM Jones, A Horsley

P262 LONGITUDE-QoL: an observational study of the long-term impact of elexacaftor/tezacaftor/ivacaftor on the quality of life in people aged ≥12 years with cystic fibrosis using data from the United Kingdom Cystic Fibrosis Registry
CA Baxter, G Vega-Hernandez, C Bost, H Wöhling, S Sokhi, SL Clarke, SC Charman, SB Carr

P263 Evolution of chronic Pseudomonas aeruginosa status in people with cystic fibrosis treated with ETI
S Shameem, A Azam, PJ Barry, AM Jones, HD Green

P264 Tolerability of nebulised medications in non-CF bronchiectasis patients
MS Wood, R Lord, R Bright-Thomas, AM Jones, HC Ellis

P265 Impaired exercise capacity and functional performance in youth with cystic fibrosis: a comparative analysis
M Kinaupenne, M De Craemer, S Van Biervliet, K Van Hoorenbeeck, H Schaballie, I Coomans, K Vandekerckhove, H Demeyer

P266 Nourishing young lungs: investigating the role of nutrition in childhood chronic suppurative lung disease
D Moore, S Unger, A Lyles, K Unger

P267 Spirometry quality in adults with cystic fibrosis: a four-year review on home spirometry in a large CF centre
A Azam, P Barry, A Jones

3.15pm-5.00pm
Cambridge, 5th floor
MODERATED POSTER DISCUSSION: M29-M42

"The Importance of Breathing Earnest"- Clinical COPD

Chaired by: Dr Matthew Pavitt (London) and Dr Rebecca D'Cruz (London)

M29 Overcoming the challenge of recruiting acutely hospitalised patients with AECOPD: lessons from screening in a single centre double blind placebo controlled RCT in Leicester, UK
CA Flynn, HJC McAuley, O Elneima, S Parish, M Bourne, CE Brightling, N Greening

M30 Spirometry thresholds for the prediction of chronic airflow obstruction: a longitudinal analysis
SA Alhajri, AHS Lam, B Knox-Brown, AFS Amaral

M31 Assessing the impact of a digital self-management service following severe chronic obstructive pulmonary disease (COPD) exacerbation: 3-month interim results vs a control cohort
A Cushing, J Thompson, A Pickering, T Hodgkins, MG Crooks

M32 Finding the hidden millions: identifying undiagnosed COPD among symptomatic Lung Health Check participants. Is pre-bronchodilator spirometry enough?

MG Crooks, K Brindle, K Watkins, L Gregory, J Shyamalee, J Thompson, S Faruqi, J Gilroy-Cheetham, C Maxted, S Niazi-Ali

M33 COPD treatment pathways in patients initiating dual bronchodilators or triple inhaled therapies in a real-world setting
A Papi, D Mannino, F Wen, D Stolz, J Wedzicha, W Henley, J Soriano, D Skinner, A Piraino, E Nudo, S Vezzoli, C Sanchez, A Gayle, D Galkin, U Argentina, V Carter, D Price

M34 Pharmacokinetics, safety and tolerability of tanimilast following single administrations in subjects with mild, moderate and severe hepatic impairment
A Emirova, PM Gloria, R Elisa, N Rangwani, B Pooja, P Annalisa, R Chiara, A Rabbab

M35 Pharmacokinetics, safety and tolerability of tanimilast following single administration in subjects with mild, moderate and severe renal impairment
E Aida, B Deborah, R Elisa, N Rangwani, B Pooja, R Chiara, P Annalisa

M36 Digital monitoring and intervention strategies for maintenance inhaler adherence in chronic obstructive pulmonary disease (COPD): a systematic review and meta-analysis
H Aung, R Tan, C Flynn, P Divall, A Wright, A Murphy, D Shaw, T Ward, N Greening

M37 Deploying live AI-based risk prediction models for use in a COPD MDT: acceptability, feasibility and utility data from the DYNAMIC-AI clinical trial
A Taylor, L Hickey, E Walker, N Fernando, K Goldsmith, A Cushing, S Burns, DJ Lowe, C Carlin

M38 RESPiRe (respiratory education, self-management and pulmonary rehabilitation): evaluating the impact of group education for COPD management in a primary care network (PCN)
R Horsley, G Hinson, M Mansoor, H Crocker, H McBain, M Jorgensen, M Humphries

M39 Exploring inhaler adherence in COPD: discrepant outcomes across measurement models
H Aung, P Novotny, K Balasundaram, H Evans, P Ashley, S Parker, S Edwards, M Bourne, S Sharda, M Iqbal, M Steiner, R Evans, C Brightling, A Wright, N Greening

M40 "I know this is on my chest, let's act": a qualitative study exploring the (self) management of acute exacerbations in COPD using a sputum colour chart to reduce unnecessary antibiotic use
RL Adams, M McKenna, K Allsopp, S Saleem, N Le Mesurier, ND Baker, AM Turner, NK Gale

M41 Reducing the 30-day readmission of patients with COPD exacerbation through the virtual ward
UO Agboje, R Carter

M42 Ramadan fasting for patients with chronic respiratory diseases: a systematic review and consensus recommendations for healthcare professionals
F Khan, S Toor, R Abdulqawi, H Adamali, J Chalmers, N Chaudhuri, N Ghouri, RG Jenkins, A Murphy, N Rahman, R Rashid, I Satia, S Siddiqui, S Waqar

Declarations of Interest

Please see page A297 onwards for declarations of interest relating to Spoken, Poster and Moderated Poster abstracts.

SPEAKERS' BIOGRAPHICAL DETAILS

Dr Charlotte Addy, a self-confessed Sputumologist, is a Respiratory Physician based in Cardiff, with specialist interests in cystic fibrosis and bronchiectasis. She has been privileged enough to work in England, Northern Ireland and Wales, in both NHS and academic roles.
Aside from her interests in lung infection, inflammation and clinical research, Charlie has keen interests in service development, education, training and workforce planning. She is a member of BTS Council, and BTS Education and Training Committee, Training Programme Director for South Wales and a member of the SAC. She is a Clinical Senior Lecturer at Cardiff University Medical School. She also chairs the Taskforce for Lung Health Workforce Group, focused on creating future multi-professional teams delivering a shared vision of respiratory care. Charlie has just taken on a new challenge, co-hosting the new Respiratory Futures podcast.

Professor Sanjay Agrawal is National Specialty Advisor for Tobacco Dependency at NHS England, RCP Special Advisor on Tobacco and a Consultant in Respiratory and Intensive Care Medicine. In 2023 he delivered the BTS Quality Improvement Programme in tobacco dependency and co-chaired the BTS Clinical Statement on the Medical Management of Tobacco Dependency, published in 2024. Sanjay chairs the RCP Tobacco Advisory Group publishing regular reports and recommendations on all aspects of tobacco control.

Pearlene Antoine-Pitterson is a Respiratory Physiotherapy Specialist with an interest in non-invasive ventilation. She has 13 years of experience working in the NHS at University Hospitals Birmingham, working in acute care with respiratory patients with both complex ventilation requirements and respiratory physiotherapy needs in her role of Acute NIV Lead Physiotherapist in Birmingham Heartlands Hospital. Alongside her clinical responsibilities, Pearlene has pursued academic interests including an NIHR MRes in Clinical Research and currently she is an Assistant Professor of Cardiorespiratory Physiotherapy at the University of Birmingham and Chair of the BTS Critical Care and Respiratory Failure and Mechanical Ventilation Specialist Advisory Group.

Dr Matthew Armstrong is an Assistant Professor in Sport and Exercise Science within the Department of Sport and Exercise Sciences at Durham University. Matthew completed his PhD in 2021 at Northumbria University titled 'Physical activity counselling alongside pulmonary rehabilitation in patients with COPD', which investigated a novel behavioural modification intervention to promote physical activity in patients with COPD while conducting standard care pulmonary rehabilitation. He has a strong involvement in the delivery of pulmonary rehabilitation and is currently developing an online self-management tool to support the maintenance of symptoms in those with chronic respiratory diseases.

Helen Ashdown is an academic GP at the University of Oxford, where she has both a clinical and research interest in primary care respiratory medicine. Her research focuses on early and accurate diagnosis of airways disease in primary care, particularly using biomarkers and novel technology to identify and phenotype disease at an earlier stage. She is Co-Lead of the Respiratory Theme of the NIHR HealthTech Research Centre in Community Healthcare, and leads programmes in collaboration with industry generating evidence for new technology in primary care. She is Research Lead of the Primary Care Respiratory Society. She is an Honorary GP at Beaumont Elms Practice in Oxford city.

Professor Mona Bafadhel is the Chair of Respiratory Medicine at King's College London (KCL) and works in the School of Immunology and Microbial Sciences, within the Faculty of Life Sciences and Medicine. Mona is the Director of the King's Centre for Lung Health and the Professor of Asthma+Lung UK. Mona is a Clinical Academic Researcher and Honorary Consultant Respiratory Physician working at Guy's and St Thomas' NHS Foundation Trust. Mona has both clinical and research interests in COPD and particularly the investigation of the mechanisms underlying exacerbations of COPD. She was the first to identify the utility of the peripheral blood eosinophil count in COPD and COPD exacerbations. This work has directly influenced international guidance and is now routinely used in the management of patients with COPD.

Dr Surya Bhatt is Professor of Medicine and Endowed Professor of Airways Disease in the Division of Pulmonary, Allergy and Critical Care Medicine at the University of Alabama at Birmingham, USA. He is the Director of the Centre for Lung Analytics and Imaging Research (CLAIR) and also serves as the Medical Director of the UAB Pulmonary Function Testing and Exercise Physiology Lab, as well as Medical Director of the Centre-based and Telehealth Pulmonary Rehabilitation Programmes. His primary clinical and

research interests are in COPD. He leads two research programmes: lung imaging and COPD clinical trials. His research is funded by the NHLBI with R and U grants.

Anna Bibby is an Associate Professor in Respiratory Medicine at the University of Bristol and Honorary Respiratory Consultant at North Bristol NHS Trust. Her clinical interests are lung cancer, mesothelioma, pleural disease and screening, and she is CD for the regional TLHC. Her academic interests align with this and she holds an NIHR Advanced Fellowship aiming to increase participation in TLHC and optimise adjunctive activities within TLHC.

Surinder Birring is Professor of Respiratory Medicine and Consultant Respiratory Physician at King's College Hospital, London. His research focuses on the assessment and treatment of cough and the development of patient reported outcome measures/ cough monitoring devices. He has published over 280 papers, reviews and book chapters and is author of ACCP, BTS and ERS cough clinical guidelines. He chairs the Scientific Committee of the ERS NeuroCough Registry. He has been the chief investigator of numerous multi-centre clinical trials. He was elected Fellow of the European Respiratory Society in 2023.

Kevin Blyth is Professor of Respiratory Medicine at the University of Glasgow. He splits his time between the School of Cancer Sciences/CRUK Scotland Institute and the Queen Elizabeth University Hospital, where he leads the Glasgow Pleural Disease Unit. He founded and is National Clinical Lead of the Macmillan Scottish Mesothelioma Network, which coordinates care and access to trials. He leads a translational mesothelioma research programme and is Chief Investigator of the CRUK-funded PREDICT-Meso International Accelerator Network. He is Chair of the European Respiratory Society Pleural Malignancy Group, Chair of the Mesothelioma UK Clinical Expert Panel and a Trustee of Mesothelioma UK.

Dr Melanie Brewis is a Consultant in Pulmonary Vascular and Respiratory Medicine. She is one of three consultants at the Scottish Pulmonary Vascular Unit in Glasgow, which is the National referral centre for patients with pulmonary hypertension in Scotland. She also works as a respiratory physician at the Queen Elizabeth University Hospital in Glasgow where she specialises in management of patients with thromboembolic disease, and has interests in respiratory education. Melanie has research interests in clinical pulmonary hypertension, completed an MD with the University of Glasgow in cardiac magnetic resonance imaging of the right ventricle in pulmonary hypertension, and is an Honorary Clinical Senior Lecturer. She is a Council member of the Scottish Thoracic Society and member of the West of Scotland Respiratory Speciality Training Committee.

Chris Brightling is a Fellow of the Academy of Medical Sciences, National Institute for Health Research Senior Investigator, Respiratory Theme Lead for Leicester NIHR Biomedical Research Centre, Director for the Institute for Lung Health, Director for the Institute for Precision Health and Honorary Consultant Respiratory Physician, Leicester, UK. He is Coordinator for the MRC Molecular Pathology Node EMBER, PHOSP-COVID and Respiratory Lead for the IMI 3TR. His main research focus is on improving the clinical management and understanding the immunopathogenesis of asthma, chronic cough, COPD and long-COVID. He is a member of the Global INitiative for Asthma – GINA Scientific Committee.

Professor Jeremy Brown is an Academic Respiratory Consultant at University College London where he leads a team investigating the pathogenesis of bacterial pneumonia, specifically the pathogens *Streptococcus pneumoniae* and *Acinetobacter baumannii*. In addition, he conducts translational research into patients with bronchiectasis and pneumonia. He has a subspecialty interest in lung infection, caring for patients with bronchiectasis, ABPA, aspergillosis, and pneumonia in immunocompromised patients. He is Co-Head of the UCL Respiratory Department, and a member of the UK Joint Committee on Vaccination and Immunisations since 2019. He recently co-chaired the BTS Clinical Statement Group on *Aspergillus*-related chronic lung disease.

Guy Brusselle received his medical degree (MD) at Ghent University in 1990. Investigating the functional role of cytokines interleukin-4 (IL-4) and interleukin-5 (IL-5) in allergic asthma, he obtained his PhD in 1997. As a respiratory physician with a keen clinical and scientific interest in asthma, severe asthma and COPD, he joined the Ghent University Hospital in 2002. Since 2008, he has been Professor of Medicine at Ghent University. Currently, he is Head of the Laboratory for Translational Research of Obstructive Pulmonary Diseases at Ghent University, and President of the Belgian Respiratory Society (BeRS).

SPEAKERS' BIOGRAPHICAL DETAILS

From 2012 to 2019, Guy served the European Respiratory Society (ERS) as Guidelines Director and Chair of the ERS Science Council. Since 2017, he has been a member of the Scientific Committee of the Global Initiative for Asthma (GINA) and has joined the Board of Directors of GINA.

Pierre-Régis Burgel, MD, PhD, FERS is Professor of Respiratory Medicine at Cochin Hospital/Université Paris Cité, France. He is the National Coordinator of the French Cystic Fibrosis (CF) Reference Centre Network (47 CF centres), the Vice-President of the French CF Society, and an Associate Editor of the Journal of Cystic Fibrosis and the European Respiratory Journal. He was awarded the 2022 Mid-Career Gold Medal in Cystic Fibrosis from the European Respiratory Society. He has published over 330 manuscripts in peer-reviewed journals, including Lancet Respir Med, Am J Respir Crit Care Med, Eur Respir J, Chest and Thorax. His main research interests include cystic fibrosis, bronchiectasis and COPD.

Katie Burke is a dual Respiratory and Intensive Care Medicine Registrar in her final year of training in the North East of England. She is a member of the British Thoracic Society's Critical Care, Respiratory Failure and Mechanical Ventilation Specialist Advisory Group and has contributed to the writing of joint British Thoracic Society and Intensive Care Society guidelines on specialist weaning units.

Sally Bustin serves as an Advanced Clinical Practitioner specialising in respiratory care at Frimley Health Foundation Trust, where she holds the position of Advanced COPD Lead for the Adult Integrated Respiratory (AIR) Service. In this role, she oversees the lung volume reduction programme and the non-ILD transplant referral pathway. Additionally, she manages the COPD services for both acute and virtual wards in East Berkshire. Sally actively contributes to regional health initiatives aimed at enhancing COPD care and regularly participates in advisory boards, bringing her expertise to the forefront of respiratory healthcare improvements.

Sara Buttery is a Clinical Specialist Physiotherapist at the Royal Brompton Hospital. She recently completed a PhD at the NHLI, Imperial College, focussing on improving outcomes and access to lung volume reduction therapies for people with severe emphysema. Sara's main research interests are pulmonary rehabilitation and chronic respiratory disease management with a particular focus on advanced COPD care, physical activity and patient experience.

Dr Katherine Cahill is an Assistant Professor of Medicine at Vanderbilt University Medical Centre, where she serves as the Medical Director of Clinical Asthma Research. Dr Cahill trained in Internal Medicine followed by a fellowship in Allergy and Immunology at Brigham and Women's Hospital and Harvard Medical School where she remained on faculty until 2018. Dr Cahill is a Fellow of the AAAAI, a member of *Collegium Internationale Allergologicum*, and an editorial board member of the *Journal of Allergy and Clinical Immunology*. Her research programme, sponsored by the National Institutes of Health, investigates the role of incretin receptor signaling in asthma.

Professor Lynn Calman is a registered adult and mental health nurse and experienced health services researcher at the University of Southampton. Over the last 20 years, Lynn's research has focused on understanding and responding to the needs of people living with and beyond cancer, in particular those living with lung cancer. She has led and collaborated on major research programmes in cancer survivorship/psychosocial oncology leading to widely published, practice-changing findings that have underpinned the development of services and policy to improve the outcomes of patients.

Chris Carlin is Clinical Lead and Honorary Professor of Respiratory Innovation in the West of Scotland Innovation Hub, and Clinical Lead for Respiratory Medicine, South Sector NHS Greater Glasgow and Clyde. His subspecialty, research and innovation work focuses on implementation and evaluation of assistive digital technologies to establish end-end pathway transformation and new service models for patients with COPD, severe respiratory failure and sleep disorders.

Chris Carlsten, MD, MPH is Professor and Division Head of Respiratory Medicine, Department of Medicine (University of British Columbia); Canada Research Chair in Occupational and Environmental Lung Disease; Director, Air Pollution Exposure Lab; Director, Legacy for Airway Health (VCHRI).
As a clinician-scientist, he focuses on how air pollution affects our lungs and immune system in a public health context. He leads a team of healthcare professionals, researchers, and trainees conducting human exposure studies to common air pollutants, such as diesel

exhaust. The team use clinical and laboratory techniques to understand how air pollution exposures impact lung diseases, and leverage this knowledge via integrated knowledge translation and stakeholder engagement to develop approaches that reduce health impacts in Canada and beyond.

Professor James D Chalmers is Asthma and Lung UK Chair of Respiratory Research at the University of Dundee, and a Consultant Respiratory Physician at Ninewells Hospital, Dundee. He is Chair of the European Bronchiectasis Network (EMBARC) and leads a "bench to bedside" translational research group focusing on developing novel treatments for bronchiectasis and other chronic inflammatory conditions.
James has held a number of senior positions within international respiratory societies and is currently Chief Editor of the *European Respiratory Journal* and Chair of the Science and Research Committee of the British Thoracic Society

Professor Rekha Chaudhuri leads the Asthma/ COPD Clinical Research Centre in Glasgow and has a major interest in new developments in severe asthma and COPD. She is an Honorary Professor with the University of Glasgow and Associate Specialist in Respiratory Medicine, working in Gartnavel General Hospital, Glasgow. She is involved in several national and international trials of new therapies in asthma and COPD and has over 150 publications in this field.

Dr Colin Church is a Consultant in Pulmonary Vascular and Respiratory Medicine. He trained in Glasgow, Cambridge, Papworth and Sydney. He has completed a PhD in understanding the basic mechanisms of inflammatory signalling in pulmonary vascular remodelling. He has a keen interest in both clinical and basic science research and is a principal investigator on a number of important clinical trials including looking at novel anti-inflammatory strategies to treat pulmonary hypertension. His basic science research focuses on the interplay of inflammation and hypoxia on the pulmonary vascular cells in particular the pulmonary artery fibroblast. He is one of three consultants in the Scottish Pulmonary Vascular Unit which is the national referral centre for the Scottish population. This unit investigates and manages all patients in Scotland with pulmonary hypertension. He is also one of the principal clinicians involved in management of venous thromboembolic disease in the Queen Elizabeth University Hospital and is Secretary of the Glasgow Thrombosis Committee. He is involved in the planning force for the International Society of Heart and Lung Transplantation (ISHLT) and Associate Editor for *BMC Pulmonary Medicine*. More recently he has become the Chair of the BTS Specialist Advisory Group on Pulmonary Embolism and Other Pulmonary Vascular Diseases.
X @acchurch1

Dr Peter Cook is a Wellcome Trust Sir Henry Dale Fellow at the MRC Centre for Medical Mycology (MRC CMM), University of Exeter. His group focuses on understanding how the spores of the ubiquitous environmental mould, *Aspergillus fumigatus*, triggers our immune response to mediate chronic airway allergic diseases such as asthma. Despite the huge clinical burden caused by fungi, the processes that elicit these responses are poorly understood. The broad goal of this work is to translate these mechanistic understandings to improve therapeutic strategies for asthmatic and fungal diseases.

Rachel Crackett has been a qualified nurse for over 30 years. Her nursing career includes experience within cardiothoracic surgery, medicine, transplantation and research. For the last 23 years, she has been the Lead Specialist Nurse working in the National Pulmonary Hypertension Service based at Freeman Hospital, Newcastle Upon Tyne. She is also a nurse practitioner, independent prescriber and has implemented nurse led clinics. She was the Northern Senate representative on the National Commissioning Reference Group, which advised on national policy. She has served on the planning committees and presented at both national and international conferences.

Anjali Crawshaw graduated from the University of Oxford and undertook specialist training via Melbourne, Leicester and Oxford. She was awarded a Wellcome Trust Clinical Training Fellowship and subsequently a DPhil from the University of Oxford in 2014 for research examining dysregulation of innate immune pathways in sarcoidosis.
Anjali has been a Consultant Respiratory Physician at University Hospitals Birmingham NHS Foundation Trust since 2017 where she is the ILD and Sarcoidosis Unit Lead. She runs a regional multidisciplinary sarcoidosis service and looks after patients with a broad range of interstitial lung diseases and leads clinical trials in both pulmonary fibrosis and sarcoidosis. She completed a research MSc in Medical

SPEAKERS' BIOGRAPHICAL DETAILS

Education at UCL in 2010 and is an undergraduate tutor for students at the University of Birmingham.

Gráinne d'Ancona is the Consultant Pharmacist for Respiratory Medicine at Guy's and St Thomas' NHS Foundation Trust and a Senior Lecturer at Kings College London. She has contributed to national guidelines and training programmes, was a Clinical Champion for the asthma biologics rapid uptake programme of the NHSE Accelerated Access Collaborative and holds several national committee seats, most notably on the NHSE and NHSI Inhaler Sustainability Delivery Board, the RCP National Respiratory Audit Programme, and chairs the BTS Pharmacist Specialist Advisory Group. An advocate for integrated respiratory care and value-based interventions, Gráinne's clinical roles include optimising care for patients with severe asthma, COPD, ILD and sleep disorders, in the hospital setting and also through virtual clinics in general practice. Her particular area of academic interest is medicines adherence.

Geraint Davies BM PhD FRCP DTM&H is Professor of Infection Pharmacology and Honorary Consultant in Infectious Diseases at the University of Liverpool. He is lead TB clinician for Liverpool and an advisor to the BTS MDR-TB Clinical Advice Service. Gerry ran a district TB programme in South Africa before undertaking research in Thailand, Peru and Malawi. He is a Cochrane TB Editor with extensive experience of clinical trials in tuberculosis in differing roles. He has been prominent in the PreDiCT-TB and UNITE4TB consortia and has served on numerous WHO taskforces, guidelines development and technical advisory groups over the last decade related to TB treatment.

Dr Michael Davies is a Consultant Respiratory Physician at the Respiratory Support and Sleep Centre, Royal Papworth Hospital, Cambridge. He specialises in the treatment of respiratory failure, including the provision of home mechanical ventilation and in the weaning of patients from invasive ventilation. He is the Clinical Lead for the British Thoracic Society's Respiratory Support Audit and the representative for ventilation on the NHSE Clinical Reference Group.

Dr Rebecca D'Cruz is a Consultant Respiratory Physician specialising in weaning, rehabilitation and complex ventilation. She joined the Lane Fox Respiratory Unit at Guy›s and St Thomas' NHS Foundation Trust in 2022. Rebecca undertook her NIHR funded PhD in home-based physiological monitoring of severe COPD exacerbation recovery and feasibility of home high-flow therapy, under the supervision of Professor Nick Hart and Dr Paddy Murphy. She currently sits on the BTS Council and Science and Research Committee.

Dr Duneesha de Fonseka is a Respiratory Consultant and Pleural Lead at Sheffield Teaching Hospitals NHS Foundation Trust. She is an NIHR Senior Clinical Practitioner and Researcher Award holder. She was a member of the 2023 BTS Pleural Guideline Committee and the 2018 BTS Mesothelioma Guideline Committee. Dr de Fonseka was a member of the BTS Pleural SAG from 2019 to 2023. She undertook a period of research at the University of Bristol under the supervision of Professor Nick Maskell, completing her PhD in asbestos related pleural disease in 2018. She has an interest in malignant pleural effusions and mesothelioma.

Professor Tony De Soyza trained in Scotland and has worked in Newcastle for over 20 years after completing his PhD in lung infections. He leads BronchUK (www.bronch.ac.uk) and is a member of EMBARC, the European bronchiectasis registry. He also has research interests in COPD and COVID. He was National Specialty Lead for the National Respiratory Group of the NIHR CRN and is a current Chair of the NIHR HTA Prioritisation Panel – the two roles have correlated large uptick in HTA funding into respiratory. He is highly grateful to colleagues and patients supporting recruitment into research both locally and nationally

Dr Lareb Dean is a toxicologist with a background in investigating the effects of air pollution particles on in vitro cell models of the lung. She recently started an independent Fellowship on the theme of climate and health with a view to exploring the impact of rising global temperatures on particle-associated lung and heart disease. She champions a Coastal Communities Special Interest Group, supported by the Southampton Marine and Maritime Institute (SMMI), involved in promoting cross-disciplinary research.

Alex Dipper is a respiratory trainee in the South West of England and has recently been awarded her PhD from the University of Bristol exploring ways in which the management of malignant pleural effusion may be optimised beyond current standard practice. She is trial co-ordinator for the TACTIC RCT which recruited patients from 11 UK sites to determine whether a combined medical thoracoscopy, talc pleurodesis and IPC insertion offers improved

breathlessness control and reduced time in hospital compared to standard care.

Seamas Donnelly is Professor of Medicine at Trinity College Dublin. He is an international leader in translational medicine and his research epitomizes classical bench to bedside on an international stage. In recognition of this he has been awarded an Honorary Professorship by the University of Edinburgh. He is an international leader in pulmonary fibrosis and he leads a department that has the largest interstitial lung disease patient cohort on the island of Ireland. Seamas currently serves as Editor in Chief of the *Quarterly Journal of Medicine (QJM)*. He is a recent past President of the Association of Physicians of Great Britain and Ireland.

Francine M Ducharme, MD MSc, FRCP (c) is Professor in the Departments of Paediatrics and of Social and Preventive Medicine, University of Montréal. She is a paediatrician and clinical epidemiologist, responsible for the Asthma Clinic at the Sainte-Justine University Health Centre. She leads a productive career as a physician caring for asthmatic children, teacher, research mentor, and scientist.
Dr Ducharme's research programme, which received over $35,000,000 of uninterrupted research funding, focuses on improving the diagnosis, management, and long-term outcomes of children with asthma. Her research findings have contributed to modify international guidelines. She has produced over 230 publications, trained numerous physicians and scientists, and given more than 225 invited talks across the world. She has received multiple career awards to highlight her exceptional contribution to improving paediatric asthma care.
After chairing the Canadian Asthma Consensus Statement, Dr Ducharme is currently a member of the Scientific Board of the Global Initiative for Asthma (GINA).

Dr Akshay Dwarakanath is a Consultant in Respiratory Medicine working in Mid Yorkshire Teaching Hospitals NHS Trust (MYTT) and is the Lead for Sleep and Ventilation. He trained in Yorkshire and completed an MD evaluating various aspects about driving fitness and accident risk assessment in OSAS patients with Dr Mark Elliott in Leeds, and was awarded the Postgraduate Research Travel Grant from the University of Leeds. His main research interests are in evaluating driving risk and pre-operative screening in OSAS patients. He is a member of BTS Sleep Apnoea Specialist Advisory Group and BTS High Flow Nasal Therapy Clinical Statement Group. His most recent publications are a review of assessment of sleepiness in drivers with OSAS (Sleep Med Clin 2019) and evaluating the use of coping strategies while driving in OSAS (ERJOR 2024).

Danny J Eckert BAppl Sci, BSc (Hons), PhD, FAASM is a Matthew Flinders Professor at Flinders University in Adelaide, Australia, a National Health and Medical Research Council of Australia Leadership Fellow and a Lead Investigator, Brigham and Women's Hospital, Harvard Medical School, Boston (part-time). He serves as Director of Flinders Health and Medical Research Institute (FHMRI) Sleep Health where he leads a comprehensive basic sciences and translational sleep and respiratory research programme comprised of >70 multidisciplinary researchers. His work focuses on identification of the causes of sleep apnoea, optimisation of existing therapies, and development of new tailored therapies. He is most well-known for his pioneering respiratory endo-phenotyping work which has led to a new precision medicine therapeutic framework to understand and treat OSA and for his research on novel pharmacotherapy.

Stuart Elborn is Professor of Medicine at Queen's University Belfast and until July 2024 was Interim Provost and Deputy Vice-Chancellor. He was responsible for planning, governance and academic performance across the University, with particular responsibility for the delivery of the Queen's University contribution to the Belfast Region City Deal Programme. He also had responsibility for the institutional approach to equality, diversity and inclusion and climate mitigation and sustainability. Stuart is also a Visiting Professor at Imperial College London.
His research interests are in cystic fibrosis and bronchiectasis, focused on identifying new targets and diagnostics for infection and inflammation in lung disease, developing better therapies and the use of digital platforms and artificial intelligence in healthcare delivery. In 2013 Stuart received a CBE for services to healthcare.

Lynn Elsey is a Consultant Respiratory Pharmacist at Manchester University NHS Foundation Trust. She works within the severe asthma multidisciplinary team, leading medicines optimisation. She is undertaking a PhD at the University of Manchester exploring the impact of digital inhaler monitoring on asthma control with an interest in health economics, behaviour change and sustainability. She is a co-lead on the Centre for

SPEAKERS' BIOGRAPHICAL DETAILS

Sustainable Health Respiratory Group, a member of the British Thoracic Society Respiratory Pharmacist Specialist Advisory Group and the Taskforce for Lung Health Access to Treatments Group and the Pharmacist representative on the NICE/BTS/SIGN Asthma Guideline Committee.

Rachael Evans is a Professor of Respiratory Medicine at the University of Leicester and Honorary Consultant Respiratory Physician at Glenfield Hospital. Clinically, Rachael leads a local integrated breathlessness service, one of the largest UK long-COVID services, and delivers an advanced COPD service; all involving multi-professional working and close integration with rehabilitation. Internationally, she is the European Respiratory Society Group 01.02 Pulmonary Rehabilitation Chair and the American Thoracic Society Pulmonary Rehabilitation Assembly Chair. She is the Chief Investigator and co-investigator for several nationally funded grants.

Dr Ahmed Fahim is a Consultant in Respiratory Medicine and Lead for Specialist ILD Services at New Cross Hospital in Wolverhampton. He completed his respiratory training in Yorkshire with a doctorate (MD) from University of Hull evaluating the pathogenesis of idiopathic pulmonary fibrosis (IPF). He is a Senior Clinical Lecturer at the University of Wolverhampton and has been involved in a number of clinical trials in ILD as Principal Investigator and is a joint Chief Investigator for research on "Mechanism of Fibrosis" in collaboration with the University of Wolverhampton. Ahmed is currently a member of the BTS ILD Specialist Advisory Group (SAG) and ILD Interdisciplinary Network (ILD-IN). He has previously served as steering group member for the BTS ILD Registry and National ILD Pathway Development Committee in collaboration with One Voice ILD and Action for Pulmonary Fibrosis.
Ahmed has a number of editorial roles including Pulmonology Review Editor for "*Frontiers in Medicine Journal*", and is a member of the editorial board for "*Therapeutic Advances in Respiratory Disease*". He is also a member of the Guideline Development Group for the first ever UK-specific guidelines for the Diagnosis and Management of Systemic Autoimmune Rheumatic Disease (SARD-ILD) with the British Society of Rheumatology.

Dr Tom Fardon is a Consultant Respiratory Physician in NHS Tayside, and Honorary Professor at the University of Dundee. He graduated from the University of Cambridge in 1999, completing his training in Edinburgh and Dundee. He was the Clinical Lead and author of the Respiratory Care Action Plan for Scotland, and is the current Clinical Lead for the Respiratory Specialist Delivery Group for Scotland. Tom has specialist interest in complex airways disease, including severe asthma, COPD, bronchiectasis, complex pulmonary infection, and cystic fibrosis. He chairs the Scottish Severe Asthma Group, and is Clinical Lead for Severe Asthma in Tayside.

Dr Johanna Feary is an Honorary Respiratory Consultant in Occupational Lung Disease and Asthma at Royal Brompton Hospital and Senior Clinical Research Fellow at the National Heart and Lung Institute, Imperial College, a combination of roles that allows her to carry out clinical work and research as well as teaching. Her research is primarily focused on the respiratory health of working populations including firefighters and individuals exposed to silica. She is the current Chair of the British Thoracic Society Specialist Advisory Group on Occupational and Environmental Lung Disease and a member of the Group of Occupational Respiratory Disease Specialists (GORDS).

Lydia Finney is a Senior Clinical Lecturer in Respiratory Medicine at Imperial College London and an Honorary Respiratory Consultant at Imperial College Healthcare NHS Trust. Her clinical and academic work focuses on exacerbations of chronic obstructive pulmonary disease and airway infection. She is the Early Career Editorial Lead at the *American Journal of Respiratory and Critical Care Medicine* and a member of the COPD Specialist Advisory Group for the British Thoracic Society. Her translational research is funded by NIHR and the Academy of Medical Sciences.

Stephen Fowler is a Professor of Respiratory Medicine at the University of Manchester and Honorary Consultant Physician at Manchester University NHS Foundation Trust. He is Adviser for the NICE "Diagnosis, monitoring and chronic asthma management" guideline, and co-lead for the NIHR-Manchester Respiratory BRC. His clinical and research interests lie in the diagnosis, classification and management of airways disease, principally asthma and associated conditions such as inducible laryngeal obstruction and breathing pattern disorders. He is investigating novel non-invasive biomarkers for phenotyping inflammatory and infectious lung disease, through the detection and analysis of volatile molecules in exhaled breath.

SPEAKERS' BIOGRAPHICAL DETAILS

Jonathan Fuld is Consultant Respiratory Physician based at Cambridge University Hospitals NHS Foundation Trust and the Victor Phillip Dahdaleh Heart and Lung Research Institute, University of Cambridge. Since February 2024 he has been appointed National Clinical Director for Respiratory Disease and Chair of the Adult Specialised Respiratory Clinical Reference Group, NHS England. Jonathan has a clinical and research interest in exercise physiology, chronic obstructive pulmonary disease and access to services for those with chronic lung disease.

Sara Gago is a Lecturer in Fungal Disease Biology at the University of Manchester. She has over 10 years' experience in developing experimental models to define host and pathogen factors leading to fungal disease and the molecular tests to detect them. This translational research is globally appreciated as evidenced by contributions to the WHO list of essential medicines and diagnostic clinical guidelines. More recently, she has developed innovative models to define how fungal factors can regulate viral replication in the lungs, which have been pivotal for her appointment as co-infection theme lead in the Manchester Fungal Infection Group.

Aleksandra Gawlik-Lipinski is Advanced Nurse and Paramedic Practitioner and PhD Student at the University of Leicester. Aleks' research is focused on asthma mortality in children and she currently works in general practice as a respiratory ANP. She is an NRAP (National Respiratory Audit Programme) Clinical Fellow for Children and Young People with Asthma at the Royal College of Physicians (RCP), Vice-Chair of the Association of Respiratory Nurses (ARNS) Research and Education Sub-Committee and a Co-Chair of BTS Nurse Specialist Advisory Group (SAG).

Dr Amanda Goodwin is an Academic Clinical Lecturer at the University of Nottingham. She obtained her medicine degree from the University of Liverpool in 2010, then pursued clinical academic training in the East Midlands. She obtained her PhD in 2021 as part of an MRC Clinical Research Training Fellowship and is continuing this work funded by Asthma + Lung UK and The Academy of Medical Sciences. Her laboratory research focusses on the molecular mechanisms of lung development and repair. She also has an interest in research that will improve the management of interstitial lung disease.

Emma Grainger is Editor-in-Chief of *The Lancet Respiratory Medicine*. She completed a degree and a masters in Biochemistry at the University of Oxford, a masters in Biotechnology from University College, London, and a doctorate on Cancer Viruses from St Mary's Medical School, Imperial College, London. She also held a post-doctoral post at the Institute of Cancer Research linked to the Brompton Hospital in London. Emma's first editorial role at Elsevier in 1999 was as a Scientific Editor for *The European Journal of Cancer*. She joined The Lancet Group in 2005 working for *The Lancet Oncology* as a Senior Editor and then as Deputy Editor from 2008, and she is the founding Editor-in-Chief of *The Lancet Respiratory Medicine*, which launched in March 2013. Emma has also held Acting Executive Editor roles at *The Lancet Haematology* and *eClinicalMedicine*.

Dr Neil Greening is a clinical academic in Respiratory Medicine at Glenfield Hospital, Leicester. He has an interest in COPD. He is part of a specialist complex COPD service covering Leicestershire and leads the Leicester lung volume reduction service and home oxygen service. His research focus in on early phase clinical trials and translational research in hospitalisation due to acute exacerbations. He has a particular interest in muscle wasting and exercise. Dr Greening is Chair of the COPD Specialist Advisory Group for the British Thoracic Society. He has also been on the BTS National Guideline Group for Pulmonary Rehabilitation, the ATS Pulmonary Rehabilitation Programme Committee and is part of the ERS taskforce on the management of cardiac co-morbidities in hospitalised patients with exacerbation of COPD and the ERS taskforce on limb muscle in COPD.

Frances Grudzinska is an Academic Clinical Lecturer in Respiratory Medicine at University of Nottingham. Frances completed her PhD at the University of Birmingham examining neutrophil function and metabolism in pneumonia. Frances's research examines factors influencing recovery from pneumonia. Alongside her clinical training, Frances is a trainee representative on the BTS Science and Research Committee and Midlands representative for INSPIRE, the national trainee collaborative.

Dr Jennifer S Guimbellot serves as Section Chief of Paediatric Pulmonary and Sleep Medicine, Arkansas Children's Hospital and the University of Arkansas for

SPEAKERS' BIOGRAPHICAL DETAILS

Medical Sciences. Dr Guimbellot holds a dual MD and PhD from the University of Alabama at Birmingham, followed by paediatrics residency at Columbia University Medical Centre in New York City, and fellowship in pulmonology at the University of North Carolina. She serves on the Executive Committee for the Section on Clinical Pharmacology and Therapeutics for the American Academy of Paediatrics and focuses on precision medicine in paediatric lung disease, pharmacogenomics, and cystic fibrosis pharmacology.

Jemma Haines is Chief Allied Health Professional and Consultant Speech and Language Therapist at Manchester University NHS Foundation Trust. She has over 20 years' experience working with upper airway disorders and has pioneered the role of speech and language therapy in UK respiratory healthcare. Jemma has co-authored several national professional respiratory guidelines and has numerous peer reviewed publications relating to her clinical research work. In the Queen's birthday honours list in 2021, in recognition of her national leadership within the field, Jemma was made a Member of the Most Excellent Order of the British Empire. She is also a Fellow of the Royal College of Speech and Language Therapists.

Dr Pranabashis Haldar is a Consultant Physician and Senior Clinical Lecturer in Respiratory Medicine at Leicester. He leads the Rapid Access TB Service for the city, which provides a centralised pathway to enable prompt investigation and diagnosis in patients with suspected TB. His primary academic interest is characterising the heterogeneity of human *M.tuberculosis* infection phenotypes and he collaborates closely with academic and industrial partners to develop and evaluate novel biomarkers that can help improve future TB control.

Caroline Harris is a recently appointed Paediatric Respiratory Consultant in the Great North Children's Hospital, Newcastle Upon Tyne. Her sub-specialty interests include severe asthma and cystic fibrosis. She was the Associate PI for the CLASSIC PBB study and is an Academic Mentor for Newcastle University.

Dr Barnaby Hirons is a Senior Respiratory Trainee who has just completed a three-year role as a Chronic Cough Research Fellow at King's College Hospital and King's College London. His MD(Res) thesis is on cough in chronic respiratory disease; impact and predictors. Other key interests include airways disease, lifestyle medicine and medical education. Dr Hirons has recently published on topics such as cough in chronic lung diseases, cough reflex sensitivity in ILD, chronic cough in the neurodegenerative disease CANVAS, and on the development of the cough hypersensitivity questionnaire (CHQ).

Ling-Pei Ho is Professor of Respiratory Immunology at the MRC Translational Immune Discovery Unit, University of Oxford, and Clinical Lead for Oxford Sarcoidosis Service. Her research group works on the immune mechanisms of lung injury, repair and fibrosis, with a focus on the role of myeloid cells in chronic progressive fibrosis (in particular IPF and fibrotic sarcoidosis) and alveolar regeneration. Her most recent work involves development of single cell imaging mass cytometry and mathematical analysis to uncover spatial association between immune cells and pathology in the lungs. Ling-Pei serves on the NIHR Respiratory Translational Research Collaboration (R-TRC) and its ILD Early Clinical Trial work stream, the Sarcoidosis UK Clinical Board, and supports the Research Review Panels for A+LUK and Action for Pulmonary Fibrosis.

Chloe Hughes is a PhD student studying within the Division of Respiratory Medicine and Gastroenterology at the University of Dundee under the supervision of Professor James Chalmers and Professor Faisel Khan. She held the position of PhD representative within the British Association for Lung Research (BALR) from 2022-2024. Her translational research focusses on understanding the pathogenic mechanisms leading to cardiovascular disease associated with COVD-19 and bronchiectasis. She is particularly interested in neutrophilic inflammation and understanding how neutrophils contribute to systemic inflammation and endothelial dysfunction. The aim of her research is to identify targetable pathways that are associated with cardiovascular disease in those with lung conditions to identify novel therapeutics.

Joseph Jacob qualified in medicine from Imperial College London. He then worked for Médecins Sans Frontières for two years in Sudan and India, before training as a chest radiologist in London. Joe is a recipient of successive Wellcome Trust Research Fellowships, with the most Fellowships awarded in October 2023. He Leads the Satsuma Lab at the Centre for Medical Image Computing, University College London which performs computer-analysis of clinical CT imaging in chronic lung diseases and lung cancer. The Satsuma Lab aims to develop imaging biomarkers of globally important lung diseases to

accelerate their early prognostication and in turn, allow an increased focus on managing early-stage modifiable respiratory disease.

Alison John is an Advanced Research Fellow at the National Heart and Lung Institute, Imperial College London where she is a member of the Margaret Turner Warwick Centre for Fibrosing Lung Disease. Her research focuses on understanding the cellular and molecular mechanisms of idiopathic pulmonary fibrosis, with a particular interest in understanding the signalling pathways regulating the activation of the major pro-fibrotic cytokine TGF beta in the lung. Alison's research combines fundamental discovery biology with translational research to both identify novel therapeutic targets and disease biomarkers and to evaluate anti-fibrotic strategies in pre-clinical disease models.

Professor Andrew Jones is Consultant Physician and Centre Director at the Manchester Adult Cystic Fibrosis Centre, Manchester University Hospitals NHS Foundation Trust, which provides care for over 480 adults in North-West England. He has an active interest in CF clinical research and has published over 150 papers. He was previously a Trustee for the CF Trust. He is a committee member of NHS England Clinical Reference Group for Respiratory Medicine, and a member of the US Cystic Fibrosis Foundation Data Safety Monitoring Board. He was a member of the committee that developed the NICE Cystic Fibrosis Clinical Guidelines. Professor Jones Co-Chairs the UK Cystic Fibrosis Trust Standards of Care and Infection Control Groups that are developing national CF guidelines, and is a member of the CF Trust Microbiology Standards Working Group. He has active roles in medical education, including work for the Royal College of Physicians.

Annemijn Jonkman, PhD, is a Technical Physician (combined medicine and engineering discipline, The Netherlands) and Assistant Professor in the ICU of the Erasmus Medical Center (Rotterdam, The Netherlands), where she co-leads the Rotterdam Advanced Respiratory Care Lab of the ICU. She obtained her PhD at the Vrije Universiteit Amsterdam (Professor Heunks' lab, 2017-2021) and completed a post-doctoral fellowship with Dr Brochard's lab at St Michael's Hospital (Toronto, 2020), which stimulated many ongoing international collaborations. With her clinical research she has the ambition to optimise personalised mechanical ventilation in the critically ill, through innovative use of new technology.

Mark Juniper is a Consultant Respiratory Physician in Swindon, Medical Director at Health Innovation West of England and chairs the National Respiratory Working Group for the Health Innovation Network. He is the outgoing Chair of the BTS Quality Improvement Committee. In these roles he has contributed to all of the projects being presented at the Quality Improvement session. These focus on acute non-invasive ventilation, complex ventilation and the national audit of respiratory support.

Sarah Kearney has worked as a Respiratory Nurse Specialist on the Isle of Wight since 1998 and is currently Lead Respiratory Clinical Nurse Specialist and Clinical Lead for Long Covid and Virtual Wards. Her clinical work is a mix of outpatient and community care, for a general respiratory cohort and she leads a small multi- disciplinary, integrated team who manage home oxygen, pulmonary rehabilitation, long COVID, and the virtual ward.
Sarah has been a member of ARNS for many years and joined the Executive Committee in 2016 and is currently Treasurer. She is also a member of the BTS Nurse Specialist Advisory Group.

Catherine Kettleborough PhD, HonFBPhS, leads LifeArc's Chronic Respiratory Infection Translational Challenge. LifeArc is a self-funded, not-for-profit, patient centric organisation supplying expertise, science platforms and financial resources to develop solutions for underserved diseases. The Translational Challenge is a programme focussing on acceleration of diagnostic and therapeutic innovations for people living with bronchiectasis and cystic fibrosis. Previously, she led a drug discovery biology group providing assay development and screening support to de-risk and progress novel targets from academia into the drug discovery pipeline.

Dr Celso Khosa, MD, PhD, is the Director of Centro de Investigação e Treino em Saúde da Polana Caniço (CISPOC) at Instituto Nacional de Saúde (INS) in Maputo, Mozambique. With a distinguished background in medicine and research, he leads infectious disease research programmes and oversees clinical trials for TB and HIV treatments. Dr Khosa holds a PhD in Medical Research/International Health from Ludwig Maximilians University Munich. His research focuses on tuberculosis, HIV, and co-morbidities associated with HIV and COVID-19. He is also involved in teaching and course facilitation on drug-resistant tuberculosis and medical therapeutics, and he serves on various

editorial boards and committees related to global health.

Joanne King has been a Senior Nurse at Frimley Health NHS Trust since 1996. She became a Respiratory Consultant Nurse in 2016 and is the Clinical Lead for Frimley Adult Integrated Respiratory (FAIR) Services, and the Respiratory Elective Recovery and Transformation Lead for Frimley Integrated Care System.
Joanne is Chair of the Association of Respiratory Nurses (ARNS), a member of the National Asthma and COPD Audit Programme Board, the Respiratory Delivery Board, the Early and Accurate Diagnosis Taskforce Group and a national member of ACT on COPD Working Group.
Joanne was awarded Respiratory Nurse Leader at ARNS in 2018 and a Queens Nurse title in 2023.

Claire Laubacher is an MD/PhD candidate at the University of Wisconsin-Madison. She earned her PhD in psychology in May 2024 with Dr Melissa Rosenkranz at the Centre for Healthy Minds. She is currently finishing her fourth year of medical school and applying to psychiatry residency programmes. Dr Laubacher's research uses asthma as a model system to study brain-lung interactions. She is interested in the neurobiology underlying the high rates of co-morbidity between psychiatric symptoms and chronic inflammatory disease and the neurobiological mechanisms by which psychological interventions can improve chronic inflammatory disease management.

Dr Julian Legg, the current President of the British Paediatric Respiratory Society, has been a Consultant Respiratory Paediatrician since 2000, specialising in cystic fibrosis and integrating artificial intelligence into healthcare. He leads several research initiatives, balancing clinical work with a strong commitment to teaching and mentoring the next generation of doctors. Outside of medicine, Dr Legg enjoys the precision of golf and the thrill of touring car racing, hobbies that offer a welcome contrast to his professional life.

Dr Adam Lewis is an Associate Professor in Physiotherapy at the University of Southampton on a balanced portfolio, leading the respiratory education on the BSc and MSc physiotherapy programmes and completing research in the fields of chronic respiratory disease and breathing pattern disorder. He is currently completing an NIHR RfPB feasibility study focused on Singing for Lung Health groups after pulmonary rehabilitation completion, and is setting up a Southern Respiratory Cohort Database across the Wessex region. He is the Research Champion for the Association of Chartered Physiotherapists in Respiratory Care.

Professor Eric Lim is a Consultant Thoracic Surgeon at the Royal Brompton Hospital and Professor of Thoracic Surgery at the National Heart and Lung Institute of Imperial College London. He is the National Chair for Thoracic Academia with an active interest in clinical trials serving as Chief Investigator for UK wide National Institute of Healthcare Research funded multicentre trials of surgery for mesothelioma (MARS 2), VATS lobectomy (VIOLET) and local consolidative treatment for advanced lung cancer (RAMON).

Dr Brian Lipworth is Head of the Scottish Centre of Respiratory Research and Clinical Professor of Allergy and Pulmonology at Ninewells Hospital and Medical School, Dundee. He is currently Honorary Clinical Professor of Medicine at University of Central Lancashire. Brian has over 30 years clinical experience in pulmonology and allergy with an h index of 96 and over 740 publications. Previously, he was Visiting Professor at Harvard University Medical School and University of Florida, as well as Honorary Clinical Professor at University of St Andrews Medical School.

Siobhan Ludlow is the Consultant Speech and Language Therapist and Service Lead for the Manchester Airways Service, which is a tertiary referral centre for patients with complex breathlessness. Siobhan has a specialist interest in exercise induced laryngeal obstruction (EILO), cough hypersensitivity syndrome and patient reported outcome measures (PROMs) and has written several papers in these areas. Siobhan is currently Membership Secretary of the Respiratory SLT Clinical Excellence Network, a committee member of the Global Initiative of Inducible Laryngeal Obstruction (GIILO) Council and a committee member of the North-West Council of Allied Health Professional Research (CAHPR). Siobhan is very committed to clinical research; she has attended numerous national and international conferences presenting her work and is currently a part-time PhD Fellow at the University of Manchester where she is developing a PROM for upper airway conditions.

John Maclay is a Consultant in Respiratory Medicine specialising in lung cancer. After completing his MD at the University of Edinburgh examining the mechanisms

of cardiovascular disease in COPD, he developed a clinical interest in lung cancer and has been a consultant in Glasgow Royal Infirmary since 2014. His primary interest is lung cancer diagnostics and staging and he was the National Lead for developing the Scottish Lung Cancer Management Pathways in 2023. He is the West of Scotland Bronchoscopy and EBUS Training Lead, developing a formalised national training curriculum. He is an NRS Senior Fellow and his research interests include lung cancer staging and prediction of recurrence in radically treated disease.

Professor William Man is Consultant Chest Physician and Professor of Respiratory Medicine at the Royal Brompton and Harefield Hospitals, Guy's and St Thomas' NHS Foundation Trust. He combines full-time NHS clinical practice with health services research in the diagnosis and management of chronic respiratory diseases. Professor Man is the current Honorary President of the Association for Respiratory Technology and Physiology (ARTP), the professional guardians of physiological measurement and interpretation within the field of respiratory medicine for the United Kingdom.

Dr Swapna Mandal is the lead Consultant Physician in Sleep and Ventilation at the Royal Free London NHS Foundation Trust. Focussing on the management of sleep disordered breathing, the service covers a large geographical area treating a range of patients with often complex needs, including those with progressive neurological disorders and ventilatory failure. She also runs a joint respiratory and palliative advanced respiratory care clinic for patients with chronic respiratory conditions requiring input from both specialties. Additionally, she is the Clinical Lead for Lung Function Services across the Trust and has introduced innovative diagnostic pathways. She continues her pursuit of academic interests in sleep and ventilation medicine. She is an active member of the British Thoracic Society Sleep Specialist Adisory Group and British Sleep Society Executive Board.

Adel Mansur graduated from Tripoli Medical College in Libya and had junior medical training in Glasgow, Leeds and West Midlands and was awarded PhD in asthma genetics in 1998 by University of Leeds. He became Consultant in Respiratory / General Medicine in 2002 at Heartlands Hospital in Birmingham and has since been leading the tertiary severe asthma service in Birmingham. He led on the development of the Severe Asthma Network covering a region in central England of West Midlands, Gloucestershire and Derbyshire and is also a member of the UK Severe Asthma Registry Group. Provision of holistic care to patients presenting with severe/difficult to treat asthma was central to the asthma team development in Birmingham now formed of an experienced multidisciplinary team of specialist nurses, physiotherapists, speech therapists, psychologists and pharmacist. The clinical team works closely with the research team led by Professor Mansur. The team research interests are clinically applied in which research questions risen from clinical need were researched and results fed into clinical practice. These research areas ranged from genetics, biomarkers in asthma and phenotyping, adherence optimisation, asthma comorbidities and clinical trials. Professor Mansur is currently conducting an adherence research programme investigating the effect of non-adherence on biologic treatment, use of digital technology to enhance adherence, and development of MDT approach to non-adherence management. Professor Mansur was awarded Honorary Chair by the Institute of Inflammation and Ageing of the University of Birmingham in 2020, and has published 120 peer-reviewed research articles in the field of asthma.

Anthony Martinelli is a Clinical Lecturer in Respiratory Medicine based in Cambridge, where he recently completed a Wellcome Trust Clinical PhD Fellowship. He is now planning to develop a research programme combining his scientific and clinical interests in iron biology, COPD, and infection. He serves as a trainee representative on the BTS Science and Research Committee and would be delighted to hear from any healthcare professional interested in pursuing research, but not sure where to start.

Nick Maskell is Professor of Respiratory Medicine, University of Bristol and Honorary Consultant, North Bristol NHS Trust, Bristol. He undertook his DM thesis on pleural diseases in Oxford prior to taking up a consultant post at North Bristol NHS Trust in 2003. He was awarded a national Walport Senior Lecturer award in 2005 and joined University of Bristol. His research interests include clinical trials in pleural infection, pneumothorax, pleural malignancy and patient safety during pleural procedures. He leads the Academic Respiratory Unit (ARU) at the University of Bristol and is the Deputy Director of the University of Bristol NIHR-BRC. He is an NIHR senior investigator and currently the Chief Investigator for a number of NIHR multi-centre randomised controlled trials. His current H-index is 70 with over 300 peer reviewed

SPEAKERS' BIOGRAPHICAL DETAILS

publications and 16000 citations. He is part of the faculty of the newly developed ERS Thoracic Ultrasound Certified Training Programme. He co-chaired the 2018 BTS mesothelioma guidelines and the 2019 ERS malignant pleural effusion taskforce statement. He also co-chaired the 2023 BTS pleural disease guidelines and 2023 ERS pneumothorax guidelines. Nick is the Chairman of the Board of Trustees for the charity Mesothelioma UK and President Elect for the BTS.

Dr Jane McDowell is a Clinical Lecturer at Queen's University Belfast and Honorary Consultant in Respiratory Medicine at Belfast Health and Social Care Trust with a specialist interest in severe asthma. She graduated from Barts and The London Medical School, and later completed her PhD at Queen's University Belfast. Areas of research interest include understanding mechanisms of ongoing symptoms and exacerbations in biologics-treated patients (leading on the Mepolizumab EXacerbation study), and the burden of toxicity from oral corticosteroid use in severe asthma.

Dr Jamilah Meghji is a Senior Clinical Lecturer and Respiratory Clinician at Imperial College London. Her clinical work is focused on TB and respiratory infection, whilst her research has used mixed methods to describe the burden and impact of post-TB lung disease on TB survivors, with a focus in Malawi. Her ongoing work aims to develop strategies for integrated TB and respiratory care in Kenya, Tanzania and Nigeria.

Ben Messer is a Consultant in Critical Care Medicine and Long-term Ventilation in Newcastle-upon-Tyne and the Clinical Lead of the North East Assisted Ventilation Service. His main critical care interest is acute non-invasive respiratory support. Within home ventilation, his interests are tracheostomy ventilation, upper airway dysfunction and secretion management in MND, and the respiratory and perioperative care of neuromuscular patients.
He is the immediate past Chair of the Critical Care Specialist Advisory Group of the BTS. He was Chair of the multi-professional writing committees for the Joint BTS and Intensive Care Society Guidelines for Respiratory Support Units and Specialist Weaning Units. He is currently Chair of the BTS group writing professional guidance for complex home mechanical ventilation services.

Eleanor Mishra is a Respiratory Consultant and Pleural Lead at NNUH, leading a comprehensive pleural service, offering day case therapeutic thoracoscopy, image guided pleural biopsy, indwelling pleural catheter (IPC) management and ambulatory pneumothorax care. She is Chief Investigator for the NIHR RfPB REPEAT study, which aims to derive and validate a clinical score to predict time to next procedure in patients with malignant pleural effusion, thereby enabling us to offer personalised care to our patients. She is interested in IPC associated infection and biofilm formation and currently holds an MRC IAA grant to develop a biofilm resistant catheter. A further research interest is in bacteriophages and chronic Pseudomonas colonisation in patients with bronchiectasis. She also recruits to other national trials in lung cancer and pleural disease.

Phil Molyneaux is a Professor of Interstitial Lung Disease at Imperial College London and is the Asthma and Lung UK Chair of Respiratory Research. He is a Consultant in Interstitial Lung Disease and the Director of the NIHR Cardiorespiratory Clinical Research Facility at the Royal Brompton Hospital. He runs an active clinical and translational research programme that oversees a team of basic scientists and clinical trial research staff.

Anna Moore is a respiratory doctor who has a long-standing interest in breathlessness management, now paired with medical education with a focus on health equity. She is a proud specialty doctor for the Barts Health Breathlessness Service, and Clinical Lecturer in Communication and Clinical Skills at Queen Mary University (Barts and the London). She was the first Population Health Education Fellow for Barts Health and prior to this completed a national HEE Population Health Fellowship. She founded and continues to support the Barts Health Singing for Breathing group. In her spare time she is an outspoken advocate on the climate crisis and air pollution.

Fiona Mosgrove is a GP with a special interest in respiratory medicine in Aberdeen. She splits her time working between primary care, the community respiratory team and difficult asthma clinic and is studying for her PhD in the microbiology of bronchiectasis. She sits on the Education Committee for the Primary Care Respiratory Society and is a member of the BTS Bronchiectasis Specialist Advisory Group.

Professor Caitlin Notley leads the Lifespan Health Research Centre and the Addiction Research Group at the University of East Anglia. She is a social scientist,

with research expertise in clinical trials and applied mixed methods. Her particular areas of expertise are tobacco smoking cessation, relapse prevention and harm reduction. She currently leads the Babybreathe smoking relapse prevention trial, and co-led the COSTED trial of a vaping based intervention for smoking cessation in hospital emergency departments. She co-chairs the Cancer Research UK E-Cigarette Research Forum, and is also an author of the Cochrane 'E-cigarettes for smoking cessation' living systematic review.

Dr Emma O'Dowd is an Associate Professor at the University of Nottingham and Honorary Consultant Respiratory Physician at Nottingham University Hospitals NHS Trust. Her research interests are lung cancer screening, early diagnosis and epidemiology of lung cancer. She is Chair of the British Thoracic Society Lung Cancer and Mesothelioma Specialist Advisory Group and a member of the UK Lung Cancer Clinical Expert Group.

Cecilia O'Kane is a Professor of Respiratory Medicine at Queen's University Belfast and Honorary Consultant Physician at Belfast Health and Social Care Trust, where she leads the pulmonary TB and non-tuberculous mycobacterial infection service. Cecilia's research interests centre around pulmonary inflammation particularly in the setting of ARDS and mycobacterial infection. She leads a translational group investigating host inflammatory response in NTM infection and testing novel therapies for ARDS in in vitro models, ex vivo human lung, healthy volunteer challenge models and clinical trials. Since August 2022, she has been co-Editor in Chief of *Thorax*, alongside Jennifer Quint and Mark Griffiths.

Dr Deepa Patel is a Paediatric Respiratory Consultant at Leicester Royal Infirmary. Alongside specialising in the care of children with chronic cough and non-CF bronchiectasis, she also leads the national service for paediatric primary ciliary dyskinesia (PCD) management service across Central England. As an early career researcher, Deepa has an interest in airway microbiology, microbiomics and fungal lung disease in cystic fibrosis, non-CF bronchiectasis and PCD. She has successfully completed a higher degree (MD) characterising the bacterial and fungal microbiota in cystic fibrosis.

Dr Paul Pfeffer is a Consultant Respiratory Physician and Honorary Senior Lecturer with Specialist Interest in Asthma at Barts Health NHS Trust, London, UK, and Queen Mary University of London. He is Lead of the North Central and East London Severe Asthma Service. His clinical interest is in how personalisation of treatment to each patient, both in terms of individual disease immunology and healthcare beliefs, can improve patient quality of life, reduce breathlessness and reduce exacerbations.
Paul's research interests include the capacity of environmental factors such as air pollution and airways infections to subvert homeostatic and protective adaptive immune responses in the lung resulting in airway pathology; and severe asthma cohort studies including the UK and International Severe Asthma Registries.

Jacqui Pollington RGN BSc MHSc is a Respiratory Nurse Consultant and Clinical Lead for the Community Respiratory Service at BreathingSpace, in Rotherham, South Yorkshire. Qualified for over 30 years, she has had the privilege of leading service developments in the management of airways diseases including PR, exacerbation management and LTOT. She was Clinical Lead for South Yorkshire's QUIT Programme and has a particular interest in the treatment of tobacco dependence.

Dr Ioana Preston is a pulmonologist and an Associate Professor of Medicine at Tufts University School of Medicine in Boston, MA. She has over 20 years of experience in clinical PH, as well as preclinical, translational and clinical research in pulmonary vascular disease. She is a former Chair of the PH and CTEPH Interdisciplinary Network of the International Society for Heart and Lung Transplantation, former Chair of the Educational Committee of the Pulmonary Hypertension Association, and Chair of the Task Force "Treatment of Pulmonary Hypertension in Special Conditions" of the 7th World Symposium for Pulmonary Hypertension. Dr Preston has published over 100 articles, including original research and comprehensive reviews, on the topic of pulmonary hypertension.

Bradley Price is Director of Policy and Public Affairs at Action for Pulmonary Fibrosis and a Patient and Public Voice Representative on the NHS England Specialised Respiratory Clinical Reference Group. Bradley's work brings together policymakers, healthcare professionals, and those with lived experience to change the healthcare system and ensure better and more equitable access to evidence-based care. He brings experience from the cancer policy space, with a particular interest in medicines access and patient involvement, having led sector engagement with the NHS, NICE, and Government on these issues. He holds a personal

SPEAKERS' BIOGRAPHICAL DETAILS

connection to pulmonary fibrosis, having lost his grandmother to the disease in 2014.

Dr Laura Price is a Consultant Respiratory Physician at Royal Brompton Hospital. She studied medicine at the University of Bristol and trained in respiratory medicine in North-West London and Paris. She completed a PhD in pulmonary hypertension at Imperial College London. She is an integral member of the National Pulmonary Hypertension Service at Royal Brompton Hospital. Dr Price's areas of research include PH related to lung diseases including ILD and sarcoidosis. She co-chairs an ERS Task Force for investigation and management of PH ILD. She has written over 100 peer-reviewed articles, and is associate editor for the *European Respiratory Journal*.

Jennifer Quint is a Professor of Respiratory Epidemiology in the School of Public Health at Imperial College London. She is an Honorary Consultant Physician in Respiratory Medicine at both the Royal Brompton Hospital and Imperial College London NHS Foundation Trust. Professor Quint leads the Respiratory Electronic Health Record Group, a clinical epidemiology research group whose interests centre on using various sources of de-identified, routinely collected electronic healthcare records to study a number of respiratory diseases including chronic obstructive pulmonary disease (COPD), asthma, interstitial lung disease, bronchiectasis and COVID-19. Work centres on maximising the quality, linkage and usage of these data for clinical and research purposes. Research topics include understanding the relationship between cardiovascular and respiratory disease, respiratory disease prevention, diagnosis, natural history and management. Many of the outputs are used for informing policy, and in the planning and allocation of resources.

Peter J Ratcliffe, MD, is a physician scientist who trained as a nephrologist, before founding the Hypoxia Biology Laboratory at Oxford. His laboratory elucidated mechanisms by which human and animal cells sense oxygen levels and transduce these signals to direct adaptive changes in gene expression. For this work he shared the Nobel Prize in Physiology or Medicine in 2019.
He holds appointments as Director of Clinical Research at the Francis Crick Institute, London, Director of the Target Discovery Institute at the University of Oxford and is a Distinguished Scholar of the Ludwig Institute for Cancer Research.

Emer Reeves is an Associate Professor in the Department of Anaesthesia and Critical Care Medicine, Royal College of Surgeons in Ireland. She obtained her PhD from University College London and studied Data Protection Law at The Honourable Society of King's Inns, School of Law, Ireland.
Her current research interests are centred on cell and molecular mechanisms involved in driving lung inflammation, with emphasis on the role of neutrophils and monocytes. This research is based within the clinical setting of cystic fibrosis and chronic obstructive pulmonary disease, with emphasis on alpha-1 antitrypsin deficiency. She has attracted substantial national and international funding and her research reaches a broad audience as demonstrated by successful publications in journals including *Nature, Science Translational Medicine, BLOOD* and *The New England Journal of Medicine*.

Professor Dr Felix Ringshausen is Professor of Respiratory Medicine and a board-certified infectious diseases expert at Hannover Medical School, Germany, where he heads clinics for adults with bronchiectasis, PCD, CF and NTM pulmonary disease. His clinical research interests include clinical trials, complex infections as well as translational and epidemiological aspects of the aforementioned disease areas. Amongst others, he is Principal Investigator of the German Centre for Lung Research, Chair of the German Bronchiectasis Registry PROGNOSIS and member of the steering committee of the European Bronchiectasis Registry EMBARC.

Esther Robinson is Head of UK HSA's TB Unit, a Consultant Microbiologist and Clinical Lead for the National Mycobacterial Reference Service. She was instrumental in implementation of whole-genome sequencing for mycobacteria in England and lead on its application and development for clinical and public health use. She also leads the TB strategy, surveillance and epidemiology function of UKHSA.
Dr Robinson has a DPhil in genomics of transferable antibiotic resistance from the University of Oxford. She has research interests in mycobacterial diagnostics and public health, including whole-genome sequencing, TB transmission and non-tuberculous mycobacteria.

Harry Rossiter is a Professor at the David Geffen School of Medicine at UCLA and Investigator at The Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center. Harry received a PhD in physiology from the University of London and completed postdoctoral training in respiratory

physiology and medicine at the UCSD. His research focuses on improving the lives of patients where exercise intolerance is a major symptom. Harry contributes to international guidelines for cardiopulmonary exercise testing and is co-director of the Harbor-UCLA *Practicum in Exercise Testing and Interpretation*. He has authored 175 peer-reviewed articles and 6 book chapters.

Hitasha Rupani is a Consultant Respiratory Physician at University Hospital Southampton NHS Foundation Trust and leads the Southampton Severe Asthma Centre. She Chairs the British Thoracic Society Specialist Advisory Group for Asthma and is the Lead for Severe Asthma within the Clinical Reference Group for Specialist Commissioning. She has a PhD from the University of Southampton, and her research interests include understanding the mechanisms underlying the development and progression of severe asthma and asthma exacerbations. She is an Associate Editor for *ERJ Open Research* and E-Learning Director for the European Respiratory Society.

Beth Sage is a Consultant Respiratory Physician at NHS Highlands and Honorary Senior Lecturer at the University of Aberdeen. She is Clinical Lead for Lung Cancer in NHS Highland and is PI on a number of lung cancer and mesothelioma clinical trials. Her current research projects are looking at improving diagnosis in mesothelioma using cell free DNA and she has a CSO/NRS Career Researcher Fellowship looking at late lung cancer presentations in rural populations. Previously she undertook an MRC Clinical Research Training Fellowship in Genetically Modified Stem Cell Therapies in Malignant Pleural Mesothelioma.

Dr Sormeh Salehian is a Paediatric Respiratory Consultant in West London Children's Healthcare, where she works at the Royal Brompton Hospital and St Mary's Hospital. She completed sub-specialty training across London and Cambridge and has undertaken post graduate research at Imperial College London. Sormeh's research interests include early life determinants of respiratory health and childhood outcomes of severe pre-school wheeze. As a Clinical Research Fellow at the National Heart and Lung Institute, she conducted a study investigating predictors of progression to school aged asthma.

Professor Liz Sapey is an Academic Acute and Respiratory Medicine Consultant Physician at the University of Birmingham and University Hospitals Birmingham NHS Foundation Trust. Liz is the Head of the School of Medical Sciences at the University and is the founder and Director of the HDR-UK Health Data Research Hub in Acute Care, PIONEER.
Liz graduated from The Royal London Medical School and undertook a PhD at the University of Birmingham while completing specialist clinical training. Liz's research includes neutrophil biology and linking translational and routinely collected health data to better understand disease. She is the President of the British Association for Lung Research. Liz is an enthusiastic champion for increasing research capability and capacity and the adoption of research into clinical practice.

Dr Imran Satia graduated in Medicine from the University of Cambridge in 2006. He gained his Membership of the Royal College of Physicians (London, UK) and completed his specialist training in general internal medicine and respiratory medicine in the North-West Deanery. In 2017 he was awarded a PhD from the University of Manchester in the mechanisms of cough in asthma and was awarded the British Medical Association James Trust Award. Imran was subsequently awarded the European Respiratory Society Respire 3 Marie Curie Post-Doctoral Fellowship. Imran was awarded the EJ Moran Campbell Early Career Award (2021) and European Respiratory Society Mid-Career Gold Medal in Chronic Cough (2023). Imran is on Faculty at McMaster University and the Firestone Institute for Respiratory Health working as an Assistant Professor in Respiratory Medicine. He consults on patients with asthma, refractory chronic cough, complex airways diseases and has a broad research interest in understanding the mechanisms and developing treatments for these troublesome conditions.

Professor Herbert Schiller holds a professorship for 'Systems Biology of the Airways and Lungs' at the Ludwig Maximilians University (LMU) Munich and currently is the director of the independent research unit 'Precision Regenerative Medicine' at Helmholtz Munich.
Herbert holds a master's degree in genetics from the University of Vienna (2004), and a PhD from the Medical University of Vienna (2008) followed by postdoctoral training at the Max Planck Institute of Biochemistry in the laboratories of Professor Reinhard Fässler (Integrin biology) and Professor Matthias Mann (Proteomics). With his lab´s research at Helmholtz Munich, Herbert aims to learn about how to extend the human health-span into very old age by leveraging

SPEAKERS' BIOGRAPHICAL DETAILS

new opportunities in experimental systems biology and AI to study the genetic and environmental inputs that cause premature ageing, regenerative failure, and the development of chronic lung disease.
https://www.helmholtz-munich.de/en/prm
https://x.com/SchillerLab

Aaron Scott is an Associate Professor in Respiratory Science, within the Institute of Inflammation and Ageing at the University of Birmingham. His research in respiratory inflammation focusses on the role of innate immune cell dysfunction as a driver of pathology in the setting of smoking related disease (COPD) and infectious disease (community acquired pneumonia). His most recent work is focused on the impact of E-cigarettes on innate immune cells and the effects of long-term exposure on healthy and at risk patients lung health.

Dr Inderpaul Singh Sehgal is an Associate Professor in the Department of Pulmonary Medicine at the Postgraduate Institute of Medical Education and Research in Chandigarh, India. With a research focus on chronic pulmonary aspergillosis (CPA), Dr Sehgal has spent the past decade delving into the epidemiology, pathogenesis, and treatment of this complex disorder. Notably, Dr Sehgal is the lead author of a large RCT that demonstrated the superior efficacy of a 12-month itraconazole therapy compared to a 6-month regimen. Currently, he is exploring personalised treatment options for CPA based on specific disease phenotypes.

Dr Brintha Selvarajah is a post-doctoral Career Development Fellow at the Francis Crick Institute, London and an Honorary Respiratory Consultant at University College London Hospital. She has a research and clinical interest in interstitial lung disease with a particular focus on idiopathic pulmonary fibrosis (IPF). Her research is focused on dissecting the mechanisms by which alterations in cellular metabolism can promote fibrosis. She also leads the ASPIRE study at UCL, which will utilise an integrated multi-omics approach to characterise interstitial lung abnormalities (ILAs) to potentially identify predictive biomarkers of disease progression to pulmonary fibrosis and enable early diagnosis and intervention.

Dr Wezi Sendama is an NIHR Academic Clinical Lecturer at Newcastle University, undertaking postdoctoral research into pulmonary inflammation in ageing and interstitial lung diseases. He completed clinical training in respiratory medicine in the Northern region. Following a secondment to the Centre for Rare Lung Diseases at Aarhus University Hospital in Denmark, he was appointed as an Honorary Consultant in Respiratory Medicine at the Royal Victoria Infirmary in Newcastle, where he contributes to the tertiary interstitial lung disease service.

Dr Eduard Shantsila is a Senior Clinical Lecturer in the Department of Primary Care and Mental Health at the University of Liverpool and a GP. He has a background as an academic cardiologist. Dr Shantsila has participated in multiple multidisciplinary research collaborations focusing on cardiovascular health (hypertension, atrial fibrillation, heart failure), especially in the context of medical complexity, multimorbidity, polypharmacy and frailty. His current research projects include work to optimise prescribing in polypharmacy, improving cardiovascular risk prediction, and using digital (telehealth) technologies in the NHS. Dr Shantsila is a NICE Heart Failure committee member.

Dr Mahdi Sheikh is a scientist at the International Agency for Research on Cancer (IARC – WHO) and the Deputy Chair of the Tobacco Control and Smoking Cessation Committee at the International Association for the Study of Lung Cancer (IASLC). With an MD and a PhD in cancer epidemiology, Dr Sheikh has dedicated the past decade to pioneering research on the effects of post-diagnosis smoking cessation on various cancer outcomes. Currently, he is leading prospective cohort studies across multiple countries to understand the impact of using addictive substances, such as opioids and various tobacco products, on cancer burden and survival across different populations.

Professor Nick Simmonds is Associate Director of the Adult Cystic Fibrosis Centre at Royal Brompton Hospital, London, and Professor of Practice (Respiratory Medicine) at Imperial College London, UK. His main research interests include difficult CF diagnosis and the investigation of novel CF therapies. He has been a lead investigator on numerous global multicentre trials and is the Co-Director of the

European Cystic Fibrosis Society (ECFS) Clinical Trials Network. He has extensive experience of novel diagnostic techniques and is the Vice Coordinator of the ECFS Diagnostic Network. He is also Chair of the Registry Research Committee of the UK CF Registry, a role which promotes the use of registries to better understand outcomes in CF.

Dr Aran Singanayagam is an MRC Clinician Scientist Group Leader at Imperial College London and Honorary Consultant in Respiratory Medicine at Royal Brompton and Harefield Hospitals. He qualified from the University of Edinburgh Medical School in 2005. Aran's research programme employs a reverse translational approach using in vitro and in vivo disease models to understand how pulmonary host-defence is dysregulated in the context of inflammatory airway diseases. He has published extensively in this area (h-index 49) and sits on the Editorial Boards of the *American Journal of Respiratory and Critical Care Medicine* and *European Respiratory Journal*.

Dr Elaine Soon is an MRC Clinician Scientist at the Cambridge Institute for Medical Research in the University of Cambridge and Honorary Consultant at Cambridge University Hospital NHS Trust. She read Medical Sciences at King's College, University of Cambridge before undertaking her PhD in the role of inflammation in *BMPR2*-associated pulmonary vascular disease. Her current research focuses on how mutations in *GCN2* lead to pulmonary vascular disease; and she has developed two novel mouse models to further characterise this. From the clinical side, she has a particular interest in biomarkers, especially with regard to pulmonary hypertension and SARS-CoV-2.

Professor Kevin Southern joined the University of Liverpool and Alder Hey Children's Hospital on 1st January 2000. He is Director of the Cheshire, Merseyside and North Wales Network of Paediatric Cystic Fibrosis Care with responsibility for the care of over 300 children with CF in the North West of England. He is the Chief Investigator on two national studies funded by the UK government. CF START will evaluate the safest and most effective antibiotic treatment strategy for infants with CF and CF STORM will assess if people with CF, established on triple therapy, can safely stop nebulised muco-active therapies. In 2007, he helped establish the UK Newborn Screening Programme for CF and he now chairs the national board overseeing this programme. He was Leader of the European CF Society Neonatal Screening Working Group for more than ten years, handing over to Professor Jürg Barben in 2019. He is an Editor for the International Cochrane Review Group evaluating evidence for therapies for people with CF. In addition to his editorial role, he has written and contributed to 12 systematic reviews and his research is focused on translating evidence into practice. He has published over 100 peer reviewed articles on cystic fibrosis and is internationally respected for his work on newborn screening. He is the joint editor of a textbook sponsored by the European CF Society, "*Early CF Years*". For seven years, he was an elected member of the ECFS Board and, as such, has a global perspective on the issues facing people with CF. As Director of the ECFS Standards Committee, he has coordinated the production of five papers updating standards for the care of people with CF.

Karl Staples is Professor of Respiratory Immunology and Pharmacology at the University of Southampton Faculty of Medicine and is the NIHR Southampton BRC Academic Career Development Lead. His research focuses on host-pathogen interactions in chronic inflammatory airways diseases, such as asthma and chronic obstructive pulmonary disease (COPD), and the contribution of these interactions to exacerbations of these respiratory conditions. To study these interactions he has developed novel ex vivo models of bacterial and viral infection using human lung cells and tissue. He is the Chair of the British Association for Lung Research and an Associate Editor of *BMJ Open Respiratory Research*.

Anand Sundaralingam is a BRC Research Fellow at the Oxford Pleural Unit completing his MD, studying advanced diagnostics in pleural disease, and a Specialist Registrar in Respiratory and General Internal Medicine (Kent, Surrey, Sussex). Other areas of interest include procedural safety and risk and he is currently co-ordinating an international multi-centre observational study, PROSPECT; collecting data on complications, risk factors and patient reported outcome measures following pleural interventions. He has multiple publications in pleural disease and is lead author on an ERS statement on the management of benign pleural disease. He teaches on the ERS Thoracic Ultrasound Accreditation Programme and serves as Associate Editor for the *BMJ Open Respiratory journal*.

Dr Matt Thomas is a Consultant Respiratory Paediatrician and Honorary Senior Lecturer at the Great North Children's Hospital in Newcastle upon

SPEAKERS' BIOGRAPHICAL DETAILS

Tyne and Newcastle University. His research interests include the epidemiology of respiratory infection, management of paediatric empyema and emerging infection in CF.

Dr Owen Tomlinson is a Lecturer in Medical Science at the University of Exeter Medical School. His research centres on exercise testing in chronic lung disease, focusing on mechanisms of exercise intolerance in these patient groups, as well as establishing quality testing procedures. He is an Honorary Researcher at the Royal Devon University Healthcare NHS Trust, and is a leading member of the European Cystic Fibrosis Society Exercise Working Group.

Alice Turner graduated from the University of Leicester and has done postgraduate training via the Universities of Dundee and Birmingham, and Ashridge-Hult Business School, completing a PhD focussed on COPD and alpha 1 antitrypsin deficiency (AATD) and postgraduate qualifications in medical education, leadership and quality improvement (QI). She is a Professor in Respiratory Medicine at the University of Birmingham and works as a Consultant in Respiratory Medicine at Heartlands and Queen Elizabeth Hospitals. Alice has published widely in COPD and AATD, and has ongoing research projects, mainly clinical trials and observational clinical studies, in AATD and COPD funded by the NIHR and others.

Steve Turner qualified from the medical school at Newcastle upon Tyne and trained in paediatrics in the North East of England, New Zealand and Australia. He has been a Consultant in General and Respiratory at Aberdeen Royal Children's Hospital since 2003 and became Professor in 2017. Steve's research interests include early origins of non-communicable diseases and monitoring asthma. He was elected President of the Royal College of Paediatrics and Child Health in 2024.

Andreas Wack studied in Konstanz, Brighton and Milan and did his PhD at the NIMR in Mill Hill. He then moved to the research institute of Novartis Vaccines in Siena, Italy, to work on how hepatitis C virus modulates human immune cell function, on the action of vaccine adjuvants, and on next generation influenza vaccines. In 2009 he returned to academia, starting his own group at the NIMR and becoming Principal Group Leader at the Francis Crick Institute in 2015. His lab investigates host responses to respiratory viral and bacterial infection, studying the biology of lung epithelia and endothelia; the action of type I and type III interferons in immunopathology, tissue damage and repair; and the long-term effects that acute infections have on lung immunity.

Dr Paul Walker is a Consultant Respiratory Physician in Liverpool University Hospitals Foundation NHS Trust and Sefton Integrated Community Respiratory Team. He is also Diagnostics Lead for Merseyside and Cheshire Respiratory Network. He is current Chair of the British Thoracic Society, having previously been Honorary Treasurer and Chair of the Education and Training Committee.
Paul's clinical interests are integrated care, bronchiectasis, COPD and pulmonary physiology and he is research active in these areas. He has a long-standing interest in health inequality, the impact of social deprivation on health outcomes and developing systems to increase access. This includes work looking at the presence of COPD and asthma in heroin and crack smokers.

Samantha Walker PhD, is Director of Research and Innovation at Asthma + Lung UK. She is responsible for leading the R&I Directorate who work towards (1) advancing knowledge about respiratory diseases through direct grant funding based on unmet patient need; (2) securing more funding at a national and international level for research to bridge the substantial gap between the burden of respiratory disease and current R&I investment and (3) giving a voice to people who live with a lung condition to drive research that is most relevant and most beneficial to them. A+LUK's 2022-27 strategy sees her trying to inspire policy makers, politicians and funders to invest in lung health whilst at the same time directly funding as much research and innovation as possible.

Conall Watson is a Consultant Epidemiologist in the UK Health Security Agency, RSV Lead in the Immunisation and Vaccine-Preventable Diseases Division and joint Head of the Respiratory Viruses Surveillance Section. Conall's team have provided evidence and clinical leadership for the introduction of the national RSV immunisation programmes for infant protection and older adults, and are responsible for impact surveillance in England. Conall was previously a Consultant in Health Protection and Clinical-Epidemiology Lead for Seasonal Influenza in PHE/UKHSA. He was a co-investigator in the Ebola ring vaccination trial and has a PhD in infectious disease dynamics from LSHTM.

Martin R Wilkins is Professor of Clinical Pharmacology at Imperial College London and Director of the National Institute of Health Research Imperial Clinical Research Facility. His research leverages data from multiplex biological platforms – gene sequencing, proteomics, transcriptomics, metabolome – to identify pulmonary arterial hypertension (PAH) risk markers and molecular drug targets. He has two novel agents for PAH in clinical trials. He was elected to the UK Academy of Medical Sciences in 2015 and is Past-President of the Pulmonary Vascular Research Institute http://www.pvrinstitute.org https://www.imperial.ac.uk/people/m.wilkins

Sarah Woolnough is the Chief Executive of The King's Fund, an independent think tank working to improve health across England. Previously, Sarah was the Chief Executive of Asthma + Lung UK, the national respiratory charity, having overseen the merger of the two leading lung health charities, developing a new strategy, brand and successful operating model. Sarah spent over 15 years at Cancer Research UK in a range of senior policy and Executive Board roles and is a previous Non-Executive and Trustee of Bliss, the special care baby charity, Action on Smoking and Health (ASH), the Association of Medical Research Charities (AMRC) and the National Cancer Research Institute (NCRI).
Sarah is a current trustee of MQ: Transforming Mental Health and a member of Telstra Health UK's Advisory Council.

EXHIBITORS' INFORMATION

Abbott Rapid Diagnostics **Stand 29**

Abbott is a global leader in point-of-care (POC) diagnostics with a comprehensive portfolio of rapid tests, services, and handheld devices for use in a wide variety of healthcare settings: labs, clinics, remote healthcare outposts, retail outlets, the patient's bedside and at home. Abbott's offering of near-patient tests and services spans key health and therapeutic areas, including infectious disease, cardiometabolic, informatics, toxicology and consumer diagnostics.

Email: CTOSupport@abbott.com
Website: https://www.globalpointofcare.abbott/gb/en/index.html

Action for Pulmonary Fibrosis **Stand D**

APF is a national UK charity. We bring people together to drive change so more people affected by pulmonary fibrosis (or lung scarring) can live well for longer. People living with lung scarring, their loved ones and the professionals caring for them are at the heart of everything we do.

We provide expert support, information, education, help a growing network of support groups and raise awareness of pulmonary fibrosis. We collaborate to drive change that improves health and care and we provide vital resources to researchers, bringing hope for new and future treatments for this devastating disease.

Together we will stop lives being lost to pulmonary fibrosis.

Email: info@actionpf.org
Website: https://www.actionpf.org

Aerogen **Stand 5**

Headquartered in Galway, Ireland, Aerogen is a world leader in acute care aerosol drug delivery. With over 25 years of experience, 300 international patents and associated with over 200 clinical papers and publications, Aerogen technology has been used to treat 16 million patients in 75 countries worldwide*. Based on pioneering vibrating mesh technology, the Aerogen Solo vibrating mesh nebuliser has become the gold standard for respiratory patient care across the hospital from the emergency department to intensive care. References: *Internal Data on File
1. Aerogen Data on File

Email: info@aerogen.com
Website: https://www.aerogen.com/

Ambu **Stand 23**

At Ambu, we've been at the forefront of medical innovation since 1937, dedicated to saving lives and enhancing patient care globally. From pioneering the world's first self-inflating resuscitator, the Ambu® Bag™, to revolutionizing endoscopy with the Ambu® aScope™, the world's first sterile, single-use flexible endoscope.

With a global team of over 4,500 members, we are driven to push boundaries and propel Ambu Forever Forward. Our journey is marked by innovation, and our dedication to sustainable practices is unwavering. Discover more at www.ambu.co.uk.

Email: uksales@ambu.com
Website: https://www.ambu.co.uk

APR Medtech **Stand 15**

We strive to bring the latest and most effective medical technologies to the NHS. We work closely with healthcare professionals to understand their needs and provide tailored solutions that enhance patient care and drive efficiency in healthcare delivery.

Our team is committed to exceeding our customers' expectations, providing ongoing training, support, and guidance to ensure the seamless integration and optimal use of our products. We are proud to play a role in supporting the healthcare industry and contributing to the betterment of patient outcomes. At our core, we are driven by a mission to improve the quality of healthcare services through the use of innovative medtech. We believe that every patient deserves access to the best possible care, and we are dedicated to empowering healthcare providers with the tools they need to deliver exceptional care.

Email: Passio@aprmedtech.com
Website: https://www.aprmedtech.com

Association of Chartered Physiotherapists in Respiratory Care **Stand F**

The Association of Chartered Physiotherapists in Respiratory Care (ACPRC) promotes health and best practice in respiratory physiotherapy for the benefit of all. With over 1800 members the ACPRC is the largest national body of physiotherapists interested in all aspects of respiratory care. Connecting with our members is at the heart of our organisation, and in

addition to our ACPRC Conference which is taking place in April 2025 we also engage with members via:

- Regular short courses
- Monthly e-Newsletters with latest updates for our members
- Dedicated social media pages via Facebook, Instagram and X with regular updates, opportunities to network, access to a high number of followers and links to key resources
- A website that is packed with resources and also contains subspecialty networks such as the UK ECMO Physiotherapy network www.acprc.org.uk
- Support with publishing your research
- Education grants

Furthermore, we support the development of National Guidelines related to cardio-respiratory care and are key stakeholders in many professional networks and special interest groups. We also aim to publish two peer reviewed journals a year and are a member of crossref.

Email: secretary@acprc.org.uk
Website: https://www.acprc.org.uk

Association of Respiratory Nurses **Stand I**

The Association of Respiratory Nurses (ARNS) was established in 1997 as a nursing forum to champion the specialty respiratory nursing community, promote excellence in practice, and influence respiratory health policy. ARNS also works to influence the direction of respiratory nursing care.

Email: info@arns.co.uk
Website: https://www.arns.co.uk

Association for Respiratory Technology & Physiology **Stand J**

The Association for Respiratory Technology & Physiology (ARTP) are the professional society focused on physiological measurement and interpretation within the field of respiratory medicine for the UK. We work alongside partner organisations and societies to produce position papers, national guidelines and standards for good practice. Our primary focus is the performance of respiratory/sleep physiological measurement, and the delivery of lung function and sleep services.

Email: admin@artp.org.uk
Website: https://www.artp.org.uk

Asthma and Lunk UK **Stand 47**

AstraZeneca **Stands 2 & 30**

AstraZeneca is a global, science-led biopharmaceutical company that focuses on the discovery, development, and commercialisation of prescription medicines in Oncology, Rare Diseases, and BioPharmaceuticals, including Cardiovascular, Renal and Metabolism, and Respiratory and Immunology. AstraZeneca operates in over 100 countries and its medicines are used by millions of patients worldwide.

With a proud 100-year heritage in advancing UK science, today AstraZeneca is the UK's leading biopharmaceutical company. The company is based in five different locations across the UK, with its global headquarters in Cambridge. In the UK, around 8,700 employees work in research and development, manufacturing, supply, sales, and marketing. We supply around 36 different medicines to the NHS.

For more information, please visit www.astrazeneca.co.uk and follow us on Twitter @AstraZenecaUK.

Website: https://www.astrazeneca.co.uk

BD **Stand 35**

BD is one of the largest global medical technology companies in the world and is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. The company supports the heroes on the frontlines of health care by developing innovative technology, services and solutions that help advance both clinical therapy for patients and clinical process for health care providers. BD and its more than 70,000 employees have a passion and commitment to help enhance the safety and efficiency of clinicians' care delivery process, enable laboratory scientists to accurately detect disease and advance researchers' capabilities to develop the next generation of diagnostics and therapeutics. BD has a presence in virtually every country and partners with organizations around the world to address some of the most challenging global health issues. By working in close collaboration with customers, BD can help enhance outcomes, lower costs, increase efficiencies, improve safety and expand access to health care.

Email: Daniel.sime@bd.com
Website: https://www.bd.com/en-uk

EXHIBITORS' INFORMATION

British Association for Lung Research **Stand G**

The British Association for Lung Research (BALR) provides a focus for exchange of ideas between all manner of respiratory researchers, basic scientists and clinicians alike, to ferment collaboration and to further fundamental pulmonary research. Active for over twenty years, the main aim of the society is to promote respiratory research throughout the UK. We also support early career researchers in the field. The BALR is a registered charity (SC010151).

Email: admin@balr.co.uk
Website: https://www.balr.co.uk

British Thoracic Society **Stand A**

British Thoracic Society (BTS) is the largest, most authoritative, and inclusive respiratory professional society in the UK, working to achieve better lung health for all. We have over 4,400 members, including respiratory doctors, nurses, physiotherapists, physiologists, pharmacists, scientists, and other professionals with a respiratory interest. We aim to raise awareness of the impact of lung disease and champion the respiratory workforce.

BTS strongly believes in working collaboratively to influence policy and services to help reduce the health and economic burden of lung disease. We have comprehensive education and clinical workstreams with the goal of developing and promoting evidence based care. We publish guidelines, quality standards, clinical statements, and run national audits. Our members all have a drive to improve patient outcomes, and supporting our members to improve the health of respiratory patients is central to all that we do.

Email: bts@brit-thoracic.org.uk
Website: https://brit-thoracic.org.uk

Broncus Medical Inc / Uptake Medical Inc **Stand 20**

The Archimedes® Navigation System integrates CT and fused fluoroscopy to provide 3D, real-time Guided Transbronchial Needle Aspiration (TBNA) and Bronchoscopic Trans-Parenchymal Nodule Access (BTPNA). The system combines nodule, vessel and airway mapping technology to ensure a safe and efficient Guided TBNA or BTPNA procedure. Archimedes is the only navigation system that provides multiple bronchoscopic techniques to access a nodule regardless of size, location or the presence of a bronchus sign.

The InterVapor® System is designed to deliver targeted Bronchoscopic Thermal Vapor Ablation (BTVA®) to ablate the most diseased lung segments and results in a reduction in emphysematous tissue and volume.

Email: sales@broncus.com
Website: https://www.broncus.com

Chiesi **Stand 3**

Based in Parma, Italy, Chiesi Farmaceutici is an international research-focused biopharmaceuticals group with over 85 years' experience in the pharmaceutical sector operating in 30 countries, employing around 6,000 people. Chiesi develops and markets innovative therapeutic solutions in respiratory health, rare diseases, and specialty care. The company's mission is to improve people's quality of life and act responsibly towards both the community and the environment. As a certified B Corp since 2019, Chiesi is part of a global community of businesses that meet high standards of social and environmental impact. Chiesi Limited is headquartered in Manchester employing over 400 people.

Email: contact.uk@chiesi.com
Website: https://www.chiesi.uk.com

Cipla EU Ltd **Stand 43**

Creo Medical **Stand 14**

Creo Medical is improving patient outcomes by delivering pioneering solutions across the world, empowering healthcare professionals through our range of trusted high quality medical devices. Our advanced energy is addressing unmet needs by providing solutions for indications previously requiring a surgical intervention. By partnering with industry leaders, we are providing intelligent solutions today through the technology of tomorrow.

Email: Neil.Bottomley@creomedical.com
Website: https://www.creomedical.com

DC Action **Stand E**

DC Action was founded by a family who lost a parent to Dyskeratosis congenita, a Telomere Biology Disorder. DC Action aims to improve diagnosis, management and access to treatment for rare, inherited Telomere Biology Disorders through advocacy, education and support. Top of our list is to increase awareness of Telomere Biology Disorders

amongst healthcare professionals, to build multi-disciplinary networks and clinics and to lobby for functional diagnosis and referral pathways.
Email: jane@dcaction.org
Website: http://www.DCAction.org

Erbe Medical UK Ltd **Stands 10 & 11**
As a family-owned and operated business, Erbe develops, manufactures, and markets systems for professional use in various medical disciplines all over the world.
Since the company's foundation, Erbe has continuously reshaped and adapted its business to an ever-changing reality in several key disciplines such as gastroenterology, general surgery, gynaecology, pulmonology and urology. The portfolio comprises devices and instruments for electrosurgery, vessel sealing, plasma surgery, cryosurgery, hydrosurgery and imaging.
Over the last ten years we have seen an 85% increase in employees to over 1,800 colleagues worldwide. Today, the international group of companies is represented in 110 countries around the world with sales and service units, sales and production units and an international distributor network.
A dedicated team of around 260 employees works intensively in research and development. Close cooperation with renowned physicians from medical faculties and hospitals is a key success factor that helps Erbe to successfully drive medical development forward.
Email: sales@erbe-uk.com
Website: https://uk.erbe-med.com/uk-en/

Fannin **Stand 18**
Founded in 1829, Fannin is a leading provider of medical supplies and pharmaceutical distribution across Ireland and the UK, with a commitment to excellence in healthcare.
Supported by DCC, one of Ireland's largest PLCs, Fannin aims to be the UK's top provider of medical devices and services.
Following DCC's acquisition of Medi-Globe in 2022, Fannin's portfolio now includes innovative endoscopic devices, instruments, and implants for minimally invasive gastroenterological procedures.
As a trusted partner to the NHS and private healthcare sectors for over 20 years, Fannin remains focused on innovation, sustainability, and improving patient care while advancing healthcare standards and outcomes.
Email: maria.dicheva@fannin.eu
Website: https://www.fannin.eu

Fisher & Paykel Healthcare **Stand 24**
More than 50 years ago, Fisher & Paykel Healthcare created a device to deliver humidified air and oxygen to hospital patients. That device developed into a full range of innovative products and therapies that are today used in the treatment of around 14 million patients in more than 120 countries. Throughout the years, the company focus has been on therapies that change clinical practice, resulting in world-leading products such as Airvo™ and Optiflow™.
Email: salessupport@fphcare.co.uk
Website: https://www.fphcare.com

GSK **Stands 4 & 38**
GSK are a global biopharma company with a purpose to unite science, technology and talent to get ahead of disease together. We aim to positively impact the health of 2.5 billion people by the end of 2030. Our bold ambitions for patients are reflected in new commitments to growth and a step-change in performance.
NP-GB-RS-COCO-230002 | January 2024
Website: https://www.gsk.com/en-gb/

Guardant Healthcare **Stand 8**

Healthcare21 Group (Aquilant) **Stand 6**

ICU Medical **Stand 19**

Inogen + Physio-Assist **Stand 41**
Inogen, Inc is a leading global medical technology company offering innovative respiratory products for use in the homecare setting. Inogen supports patient respiratory care by developing, manufacturing, and marketing innovative best-in-class portable oxygen concentrators used to deliver supplemental long-term oxygen therapy to patients suffering from chronic respiratory conditions.
Simeox, from Physio-Assist (an Inogen company), is a technology-enabled airway clearance and mucus management device predominantly aimed at treating

bronchiectasis in patients with cystic fibrosis or COPD. Simeox is used in pulmonary rehabilitation centers, as well as at home.
Email: info-eu@inogen.net
Website: https://provider.inogen.com/en

Insmed **Stands 9, 31 & 32**
Insmed is a global biopharmaceutical company on a mission to transform the lives of patients with serious and rare diseases. We are powered by purpose, a purpose to serve patients and their families with unwavering dedication. A purpose to find solutions where there were none before. A purpose to do what's right, even when it isn't easy.
A biotech company that empowers great people to deliver with a profound sense of urgency and compassion, life-altering therapies to small patient populations experiencing big health problems, transforming the lives of patients living with serious and rare diseases.
At Insmed, we are powered by our shared sense of purpose to serve patients. We don't always have a defined play book, but we operate with passion and creativity to find the best path forward. We take pride in our ability to challenge the status quo. Team members are comfortable operating outside their traditional roles and comfort zones, using what we already know to uncover what we don't.
Email: christopher.annis@insmed.com
Website: https://www.insmed.com

Inspire Sleep **Stand 16**
Inspire Medical Systems is a company involved in the treatment of moderate to severe Obstructive Sleep Apnoea with a hypoglossal nerve stimulation device that sits under the skin. The company was founded in 2007 and over 75,000 patients have been treated around the world. Patient satisfaction is 94%. This was the world's first fully implantable device approved by the FDA for the treatment of OSA. Robust clinical data proving safety, efficacy and effectiveness is now out to 10 years and usage has commenced in the NHS. It is specifically for patients suffering from OSA who have become intolerant to CPAP.
Email: markchambers@inspiresleep.com
Website: https://www.inspiresleep.com/en-us/

ILD Interdisciplinary Network **Stand 50**

It's Interventional **Stand 34**
We are It's Interventional, an SME based in Sheffield. Our aim is to be different in an increasingly undifferentiated world. We select proven, clinically effective medical devices and are proud to be exhibiting the Aspira™ Drainage System, a long-term indwelling catheter. Designed for palliative management of recurrent pleural effusion and malignant ascites, Aspira™ is IPC evolved. Featuring new methods of catheter implant, designed for easier adoption and a cleaner procedure, as well as improved drainage option, Aspira™ is designed to maximise patient comfort and convenience during home care.
Please visit us at stand no: 34 or visit www.itsinterventional.com for more information on Aspira™.
Website: https://www.itsinterventional.com

LifeArc **Stand 40**
LifeArc is a self-funded medical research charity. We take science ideas out of the lab and help turn them into medical breakthroughs that can be life-changing for patients. Our work is in translational science – bridging the gap between academic research and clinical development, providing funding, research, and expert knowledge, all with a clear and unwavering commitment to having a positive impact on patient lives. We focus on specific areas where there is under-served health conditions and chronic respiratory infection is one of those areas. Through our Chronic Respiratory Infection Translational Challenge, we are working hard to enable people with bronchiectasis and cystic fibrosis to live longer, with an improved quality of life by breaking the cycle of infection, inflammation and lung damage.
Email: info@lifearc.org
Website: https://www.lifearc.org

The Limbic **Stand 40**

Medtronic **Stand 7**

Mesothelioma UK **Stand K**

MSD **Stands 27 & 28**
At MSD, known as Merck & Co., Inc., Rahway, NJ, USA in the United States and Canada, we are unified around our purpose: We use the power of leading-edge science to save and improve lives around the world. For more than a century, we've been at the forefront of research, bringing forward medicines, vaccines and

innovative health solutions for the world's most challenging diseases.
Email: corporateaffairsuk@msd.com
Website: https://www.msd-uk.com

National Respiratory Audit Programme (NRAP) **Stand B**

The National Respiratory Audit Programme (NRAP) is a suite of continuous clinical audits, the oldest (COPD) of which commenced in February 2017. There are five audits covering the following workstreams – COPD, adult asthma, children and young people's asthma, primary care (Wales only) and pulmonary rehabilitation.
NRAP aims to improve the quality of care, services and clinical outcomes for people with respiratory conditions, and healthcare improvement is central to the programme. NRAP's approach involves providing meaningful real-time data to participating services, engaging with local, regional and national stakeholders, supporting a comprehensive quality improvement programme, and using data insights from the data collected to inform national policy to support population-level change.
Email: NRAPinbox@rcp.ac.uk
Website: https://rcp.ac.uk/improving-care/national-clinical-audits/the-national-respiratory-audit-programme-nrap/

NIOX® **Stand 37**

NIOX® develops and produces state-of-the-art technology for asthma diagnosis and management. We aim to improve the lives of people suffering from asthma by helping physicians assess patients more accurately. Our market-leading device, NIOX VERO®, measures the level of fractional exhaled nitric oxide (FeNO) in the breath, with results proven to help with asthma treatment.[1-3]
NIOX® was the first to commercialise FeNO testing over 25 years ago. Today, we're proud to say NIOX® remains the gold standard device[4], with more than 50 million tests performed worldwide and counting.
References: 1. Carroll 2016. 2. Hanania 2018. 3. Price 2018. 4. Data on File; MKT-DOF-007. 2023.
Email: info@niox.com
Website: https://www.niox.com

NTM Patient Care UK and The NTM Network **Stand M**

NTM Patient Care UK aims to improve the lives of people living with non-tuberculous mycobacterial (NTM) infection in the UK, by providing education and information to increase understanding of NTM for both patient and clinical communities. Leaflets and posters are provided on request or via our website.
The NTM Network for health care professionals, along with input from patients from NTM Patient Care have produced a Standards of Care document this year.
We hold regular Zoom support meetings which include various speakers followed by a questions and answers session.
Email: info@ntmpatientcare.uk
Website: https://ntmpatientcare.uk

Email: admin@ntmnetwork.uk.com
Website: https://www.ntmnetworkuk.com/

Olympus **Stand 13**

At Olympus, we are committed to Our Purpose of making people's lives healthier, safer and more fulfilling. As a global medical technology company, we partner with healthcare professionals to provide best-in-class solutions and services for early detection, diagnosis and minimally invasive treatment, aiming to improve patient outcomes by elevating the standard of care in targeted disease states.
Olympus offers a variety of products and system solutions for Respiratory Endoscopy, constantly seeking to improve lung cancer outcomes, among other diseases. Olympus is committed to developing new technologies, products, services and solutions that comply with the toughest industry standards.
Alexandra Mackie, Senior Territory Manager, Respiratory: alexandra.mackie@olympus.com
Email: customer.service@olympus.co.uk
Website: https://www.olympus.co.uk/medical

Orion Pharma (UK) Ltd **Stand 12**

Orion Pharma (UK) Ltd is a subsidiary of Orion Corporation, pharmaceutical company based in Finland. We are continuously developing new drugs and treatment methods. The core therapy areas of our pharmaceutical R&D are oncology and pain. UK therapy areas include Respiratory, Women's Health and Neurological disorders.
July 2023/CORP-233(3)

EXHIBITORS' INFORMATION

Email: UK-Marketingmailbox@orionpharma.com
Website: https://www.orionpharma.co.uk

PCD Support UK **Stand 49**

We are the UK's dedicated charity supporting those affected by Primary Ciliary Dyskinesia (PCD).
PCD is a rare genetic disease affecting approximately 1 in 7,500 people in the UK and is caused by abnormal motile cilia. Many of our patients develop bronchiectasis before they are diagnosed and require intense daily physiotherapy regimes.
At PCD Support UK, we put our patient community first. We are a team of volunteers whose mission it is to support families and individuals affected by PCD. We also work closely with our clinical professionals, championing research to improve the lives of people with PCD.
Email: chair@pcdsupport.org.uk
Website: https://www.pcdsupport.org.uk

The Pulmonary Rehabilitation Services Accreditation Scheme **Stand C**

The Pulmonary Rehabilitation Services Accreditation Scheme (PRSAS) is an accreditation programme designed to support pulmonary rehabilitation services to improve quality of care. Accreditation of a service provides assurance to patients, referrers, and commissioners of high-quality service delivery. Delivered by the Royal College of Physicians, the programme evaluates the service against a set of standards developed with multi-professional input and in accordance with national guidelines. The accreditation programme is delivered across Scotland, England, Wales, and Northern Ireland. In 2024, NHS England released commissioning standards for pulmonary rehabilitation services. This guidance stated the goal for all patients to receive quality assured pulmonary rehabilitation from an accredited service or a service actively working towards accreditation.
Email: pulmrehab@rcp.ac.uk
Website: https://www.prsas.org/Default.aspx

Richard Wolf UK Ltd **Stand 25**

Roche **Stand 42**

Rocket Medical **Stand 36**

Rocket Medical has partnered the NHS for over 50 years, with our aim to help improve patient's lives. Come and visit us on our stand, where we can demonstrate how we can support your patient's treatment journey for pleural effusion or pneumothorax; including Rocket homecare for supporting patient's care from hospital into the home. For information about any of Rocket Medical's products please contact 0191 419 6949 or homecaresupport@rocketmedical.com or www.rocketmedical.com.
Email: customerservices@rocketmedical.com
Website: https://www.rocketmedical.com

The Royal College of Speech and Language Therapists **Stand H**

The Royal College of Speech and Language Therapists is the professional body for speech and language therapists and assistant practitioners. We promote excellence in practice and influence health, education and social care policies to achieve the best possible outcomes for people with communication and swallowing difficulties.
Email: info@rcslt.org
Website: https://www.rcslt.org/

Sanofi **Stands 1, 21 & 22**

Sanofi are an innovative global healthcare company, driven by one purpose: we chase the miracles of science to improve people's lives. Our team, across the world, is dedicated to transforming the practice of medicine by working to turn the impossible into the possible. We provide potentially life-changing treatment options and life-saving vaccine protection to millions of people globally, while putting sustainability and social responsibility at the center of our ambitions.
Regeneron is a leading biotechnology company that invents, develops and commercializes life-transforming medicines for people with serious diseases. Founded and led by physician-scientists, our unique ability to repeatedly and consistently translate science into medicine has led to numerous approved treatments and product candidates in development, most of which were homegrown in our laboratories.
Email: uk-mr@sanofi.com
Website: https://www.sanofi.co.uk

SarcoidosisUK **Stand L**

SarcoidosisUK is the UK's charity dedicated to sarcoidosis. It is a rare disease, with poor-quality information, low levels of support and awareness and very little funding for a cure.

SarcoidosisUK is working to change this.

The charity has four main goals:

- to provide accurate, detailed information to people with sarcoidosis, their carers, and medical professionals
- to provide emotional support for those affected by sarcoidosis by telephone, email, social media and through regional support groups
- to spread awareness and understanding of sarcoidosis among medical professionals and more widely
- to raise funds for focused medical research to improve outcomes for sarcoidosis patients

Email: info@sarcoidosisuk.org
Website: https://www.sarcoidosisuk.org

Stirling Anglian Pharmaceuticals **Stand 33**

Based in the UK, Stirling Anglian is committed to medicines optimisation. It has sourced and developed a portfolio of medicines to help the NHS curb waste – across a range of conditions that currently place unnecessary and avoidable pressure on NHS resources. At a time when there is such pressure on the NHS to reduce costs we believe we offer a real and practical solution.

We work closely with stakeholders across the NHS to identify real-world problems, and develop value-based solutions that support the delivery of efficient and cost-effective healthcare.

Email: mark.inker@kelsopharma.com
Website: https://www.stirlinganglianpharmaceuticals.com

Thornton & Ross (STADA Group) **Stand 26**

Tidal Sense **Stand 17**

Vitalograph **Stand 44**

Vitalograph is a global leader in respiratory diagnostics, providing solutions that enable Healthcare Professionals to diagnose, monitor and manage their patients' respiratory health in the most efficient and effective way possible. Following the launch of its VitaloPFT series for PFT, it has become the manufacturer with the broadest range of respiratory diagnostic solutions in the world. Since 2001 it has provided comprehensive clinical trial services to those researching therapies in the area of respiratory health, and also provides objective cough monitoring to companies all over the world.

Email: laura.colleran@vitalograph.ie
Website: https://vitalograph.com/

BTS/BALR/A+LUK Early Career Investigator Award Symposium

T1 EXPLORING THE TUMOUR STROMA IN PLEURAL MESOTHELIOMA USING SINGLE-CELL AND SINGLE-NUCLEUS TRANSCRIPTOMICS

[1,2,3]N Veale, [1]JA Valer, [1]J Obacz, [1]A Lewis-Wade, [2]G Aresu, [2]A Peryt, [2]A Coonar, [2]J Hogan, [3]A Patterson, [2,4]RC Rintoul, [1,2,3]SJ Marciniak. *[1]Cambridge Institute for Medical Research, Cambridge, UK; [2]Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK; [3]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [4]Department of Oncology, University of Cambridge, Cambridge, UK*

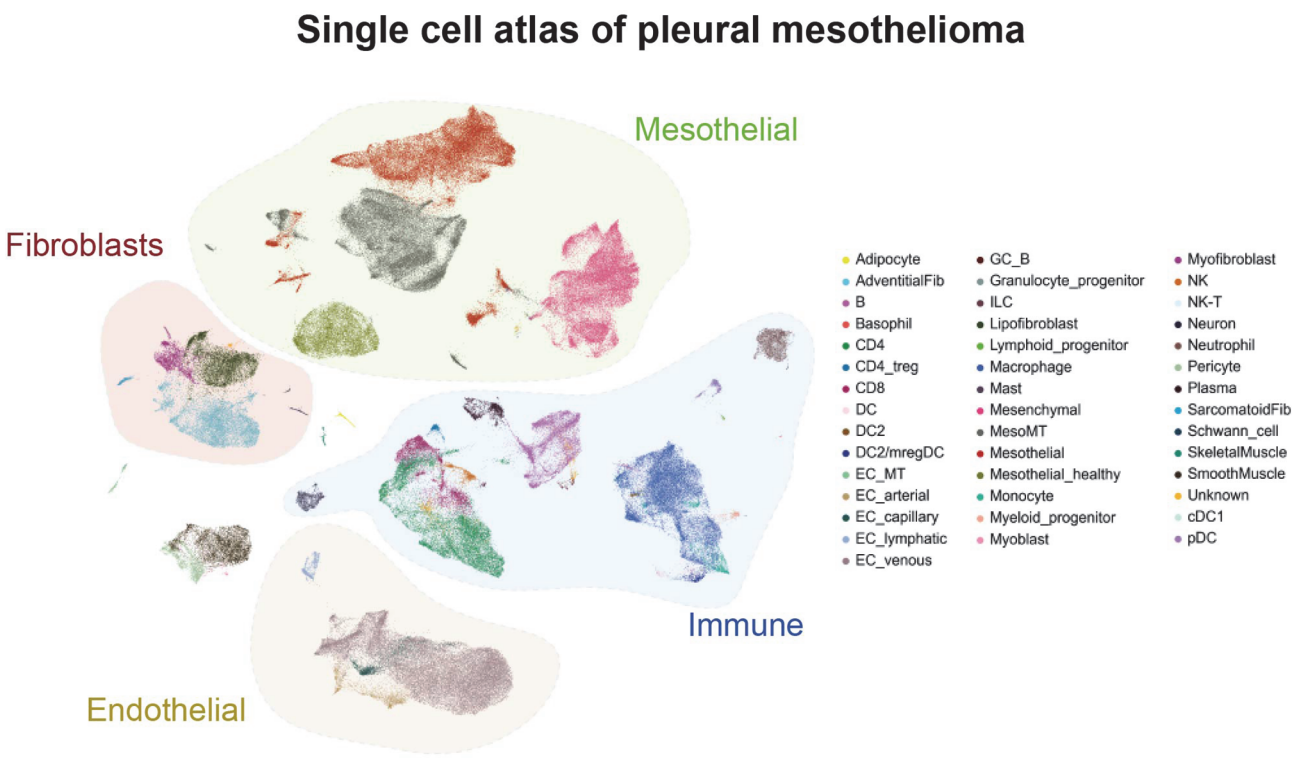
10.1136/thorax-2024-BTSabstracts.1

Introduction Pleural mesothelioma (PM) is a devastating malignancy primarily related to asbestos exposure. It is considered a stromal rich malignancy with cancer-associated fibroblasts (CAFs) the dominant cell type within the tumour stroma, however little is known about CAF biology in PM. Single cell RNA-sequencing (scRNA-seq) allows for detailed characterisation of CAFs but has yet to be applied to PM. We have generated a single cell transcriptomic dataset from both fresh tissue for scRNA-seq, and isolated nuclei from frozen samples for single nuclei RNA-sequencing (snRNA-seq). We then explore CAF heterogeneity in PM to potentially modulate this population for therapeutic benefit.

Methods Ethical approval was gained under Mesobank Research Ethics Committee reference 18/EE/0161. Fresh parietal pleura collected via VATS were dissociated into a single cell suspension and the library constructed using the 10X Genomics 3' v3.1 pipeline for scRNA-seq (n=7). Frozen tumour blocks from Mesobank were processed for single nuclei isolation and submitted using the same pipeline for snRNA-seq (n=15). Libraries were combined and sequenced on Illumina NovaSeq 6000. Healthy pleura scRNA-seq data previously published was included (GSE243446). Raw reads were processed using CellRanger 7.1.0 and aligned to GRCh38 reference. Further quality control and data processing was carried out using scanpy and integrated using scANVI.

Results 282,674 cells/nuclei from 32 samples (healthy pleura n=7, asbestos-exposed fibrinous pleuritis n=5, epithelioid n=9, biphasic n=7 and sarcomatoid n=4) are present in this dataset (figure 1). We identify a cluster of mesenchymal cells found only in sarcomatoid/biphasic PM with *HMGA2* marker gene expression and enrichment in neuronal related gene sets. Fibroblast heterogeneity is observed with populations consistent with lipofibroblast (*APOE*$^{+}$ *PI16*$^{-}$ *COL15A1*$^{-}$), adventitial (*PI16*$^{+}$) and myofibroblasts (*ACTA2*$^{+}$). The lipofibroblast subtype is absent in malignant samples and instead replaced by myofibroblasts.

Conclusions We have generated a single cell atlas of asbestos exposed pleura and demonstrate fibroblast heterogeneity in PM. We have identified a novel cluster of mesenchymal cells that appear only in sarcomatoid/biphasic PM. Future analysis will focus on CAF-mesothelioma cell interactions and whether these can be harnessed for therapeutic benefit.



Abstract T1 Figure 1 Integrated unifold manifold approximation and projection (UMAP) of 282,674 cells from 32 samples clustered into fine cell types and shaded accordingly into broad subgroups

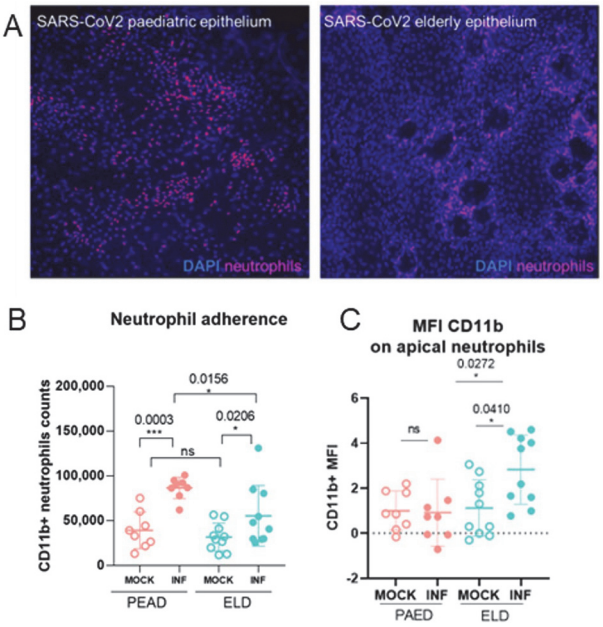
T2 SARS-COV-2 INFECTION OF NASAL EPITHELIAL CELLS FROM CHILDREN RESULTS IN GREATER NEUTROPHIL TRANS-EPITHELIAL MIGRATION, BUT A MORE ACTIVATED NEUTROPHIL PHENOTYPE EMERGES IN OLDER ADULTS

[1]T Masonou, [1]M Woodall, [2]AM Cubja, [1]A Eddaoudi, [1]TD McHugh, [1]C Butler, [1]M Nikolic, [1]RL Smyth, [1]CM Smith. *[1]University College London, London, UK; [2]Wellcome Sanger Institute, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.2

Introduction The COVID-19 pandemic caused a significantly greater impact on older adults than on children. There remains limited understanding of the mechanisms behind the increased disease severity with advancing age. The presence of high numbers of neutrophils in severe COVID-19 cases suggests a potential role for these immune cells. Here we used an experimental infection model of the airway epithelium to study neutrophil function and their interaction with the SARS-CoV-2 infected airway epithelium from children and older adults.

Methods Nasal airway cells obtained from healthy children (<12y) and older adults (>70y) were differentiated at air-liquid interface, infected with SARS-CoV-2 for 24h, and analysed by single-cell RNA sequencing (scRNAseq). Purified human adult venous neutrophils were then added to the basolateral (blood) side of the epithelium so that they migrate to the apical (air) infected side, mimicking the physiological airway. After 1h, neutrophils were collected for flow cytometry to count and analyse cellular marker expression and ELISA for enzyme release. Additionally, a sub-analysis of an *in vivo* scRNAseq dataset of neutrophils from COVID-19+ patients was performed.



Abstract T2 Figure 1 Neutrophil adherence and activation in paediatric and elderly airway epithelium following SARS-CoV-2 infection. A) Representative immunofluorescence image of adherent neutrophils (magenta) on the airway epithelial cells (DAPI; blue) from SARS-CoV-2 infected epithelial cells derived from paediatric (n=8) and elderly (n=10). B) Adherent neutrophil counts (CD11b+) measured by flow cytometry following migration through the paediatric and elderly epithelial cells in mock and SARS-CoV-2 infected conditions. C) Mean Fluorescence Intensity (MFI) of CD11b expression in neutrophils migrating through a mock and SARS-CoV-2 infected paediatric and elderly epithelial cells.

Results Of the genes involved in neutrophil extravasation, only two showed age-dependent differential expression: CD44 was higher in older adults, while ICAM-1 was higher in paediatric infected epithelial cells. Migration resulted in greater neutrophil adherence to infected paediatric, compared to older adult, epithelium. Neutrophils recovered from older adult epithelium exhibited higher CD11b expression and elevated release of myeloperoxidase and LDH, a cell death marker. Airway neutrophils from older COVID-19 patients showed enrichment for pathways involved in neutrophil degranulation and activation, while those from paediatric COVID-19 patients showed enrichment for type I interferon pathways.

Conclusions These findings suggest a more activated neutrophil phenotype emerges following migration across older SARS-CoV-2 infected epithelium. This study highlights the importance of investigating age-related immune interactions with the airway in COVID-19.

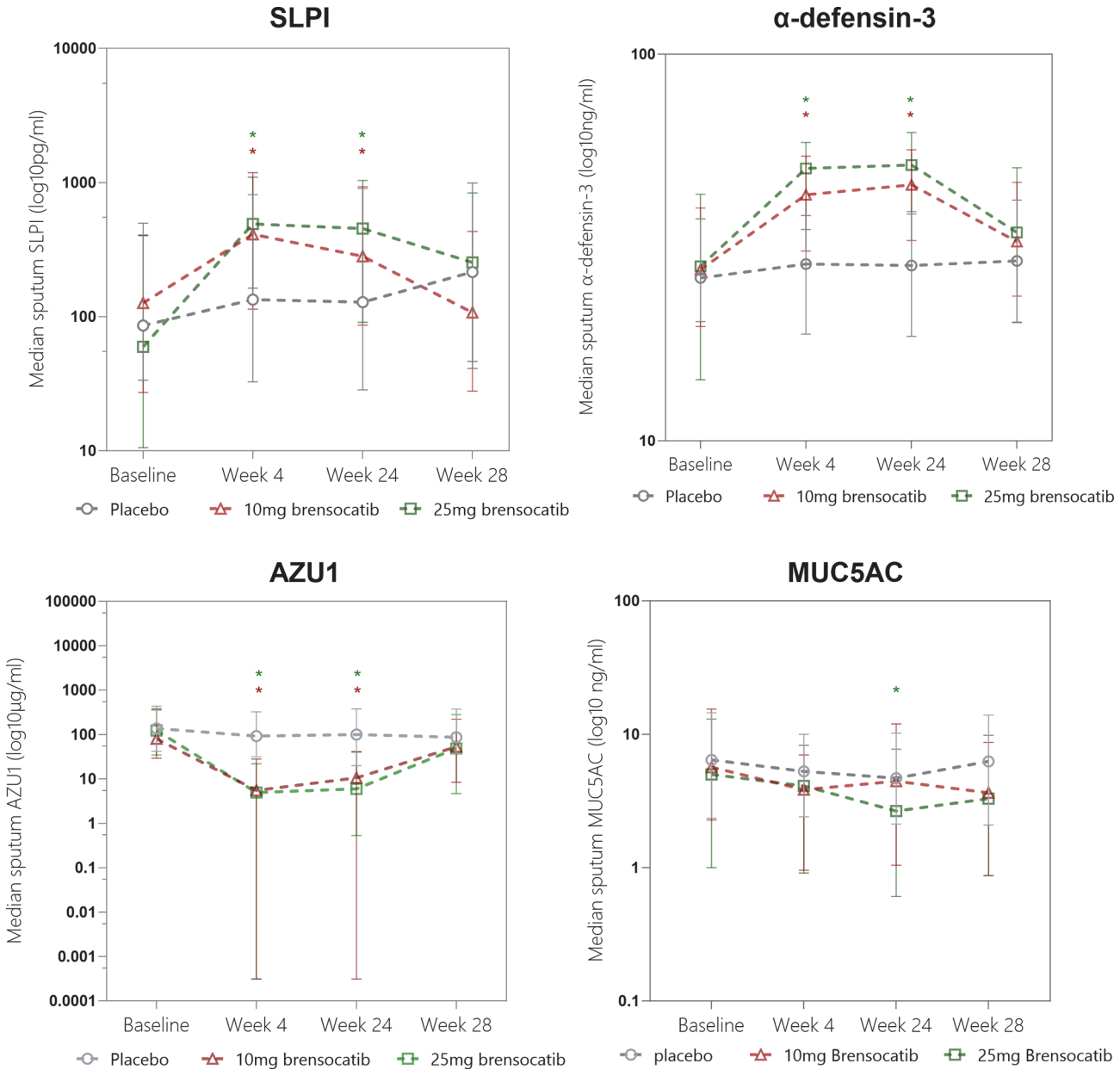
T3 IMMUNOMODULATORY EFFECTS OF THE DIPEPTIDYL PEPTIDASE-1 INHIBITOR BRENSOCATIB IN PATIENTS WITH BRONCHIECTASIS: DATA FROM THE PHASE 2 WILLOW TRIAL

[1]ED Johnson, [1]MB Long, [2]L Perea, [1]A Gilmour, [3]VH Shih, [3]C Fernandez, [3]A Teper, [3]D Cipolla, [1]YH Giam, [1]C Hughes, [1]HR Keir, [1]E McIntosh, [1]R Galloway, [1]Z Eke, [1]M Shuttleworth, [1]RC Hull, [1]T Pembridge, [4]A Spinou, [5]A De Soyza, [6]FC Ringshausen, [7]P Goeminne, [8]N Lorent, [9]C Haworth, [10]MR Loebinger, [11]F Blasi, [12]M Schteinberg, [13]S Aliberti, [14]E Polverino, [2]O Sibila, [1]A Shoemark, [3]K Mange, [1]JTJ Huang, [15]A Condliffe, [1]J Stobo, [1]JD Chalmers. *[1]University of Dundee, Dundee, UK; [2]Servicio de Neumología, Instituto Clínico de Respiratorio. IDIBAPS. Hospital Clínic, University of Barcelona, Barcelona, Spain; [3]Insmed Incorporated, Bridgewater, NJ, USA; [4]Population Health Sciences, Faculty of Life Sciences and Medicine, King's College London, London, UK; [5]Population and Health Science Institute, Newcastle University and NIHR Biomedical Research Centre for Ageing, Freeman Hospital, Newcastle, UK; [6]Department of Respiratory Medicine and Infectious Diseases, Hannover Medical School, Hannover, Germany; [7]Department of Respiratory Disease, AZ Nikolaas, Sint-Niklaas, Belgium; [8]Department of Respiratory Diseases, University Hospital Leuven, Leuven, Belgium; [9]Cambridge Centre for Lung Infection, Royal Papworth Hospital and University of Cambridge, Cambridge, UK; [10]Royal Brompton and Harefield Hospitals and National Heart and Lung Institute, Imperial College London, London, UK; [11]Department of Pathophysiology and Transplantation, University of Milan, Milan, Italy; [12]Pulmonology Institute and CF Center, Carmel Medical Center, Haifa, Israel; [13]Department of Biomedical Sciences, Humanitas University, Milan, Italy; [14]Vall d'Hebron Institut de Recerca (VHIR), Vall d'Hebron Barcelona Hospital Campus, CIBERES, Barcelona, Spain; [15]University of Sheffield, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.3

Background Dipeptidyl peptidase-1 (DPP1) activates neutrophil serine proteases (NSPs), which are implicated in chronic lung diseases. DPP1 inhibitors have shown positive results in bronchiectasis clinical trials, including one in Phase 3. We investigated the mechanism of action of a DPP1 inhibitor by exploring its impact on neutrophil proteins and airway inflammation.

Methods Biomarker analysis was performed on samples from the placebo-controlled phase 2 trial WILLOW trial (NCT03218917) evaluating 10 and 25 mg brensocatib in patients with bronchiectasis. Sputum was collected at baseline, weeks 4 and 24 of treatment and week 28 (4 weeks post-treatment). Biomarker selection was guided by previous untargeted proteomic analyses. Azurocidin-1, α-defensin-3 and secretory leukoproteinase inhibitor (SLPI) were measured by



Abstract T3 Figure 1

ELISA, MUC5AC by LC/MS, myeloperoxidase by immunoassay and 45 inflammatory cytokines by Olink® Target 48 assay. The relationship between these markers and sputum neutrophil elastase (NE) was validated in bronchiectasis patients from the EMBARC-BRIDGE cohort.

Findings Findings from a previous neutrophil proteomic study (STOP-COVID19, NCT04817332) identified 55 significantly altered proteins ($p<0.05$) by day 28 comparing 25mg brensocatib versus placebo. The most altered protein was Azurocidin-1, a novel DPP1 target. α-defensin-3 was upregulated. These observations were validated and extended and their relevance to bronchiectasis explored in this post hoc analysis of the WILLOW trial. Consistent with the neutrophil proteomics, sputum Azurocidin-1 was markedly reduced ($p<0.001$) and sputum SLPI and α-defensin-3 increased ($p<0.001$ for both) by week four of both 10mg and 25mg brensocatib versus placebo, with sustained improvements to week 24. α-defensin-3 was not a known NE target, but in-vitro incubation of α-defensin-3 with NE confirmed degradation. Myeloperoxidase did not change significantly. MUC5AC reduced significantly by week 24 of treatment with brensocatib 25mg ($p=0.007$). 15 cytokines and chemokines increased significantly with both brensocatib doses compared to placebo. CXCL10, CCL8, CCL7, CCL3 and IL-6 increased with both doses at weeks 4 and week 24. In the EMBARC-BRIDGE cohort, NE correlated inversely with SLPI, CCL13, IL7, CCL11, CXCL10, CCL8, CCL7 (all of which were increased by brensocatib).

Interpretation Brensocatib exerts broad anti-inflammatory effects. Its efficacy may relate to downstream improvements in host defence in addition to recognized effects on NSPs.

T4

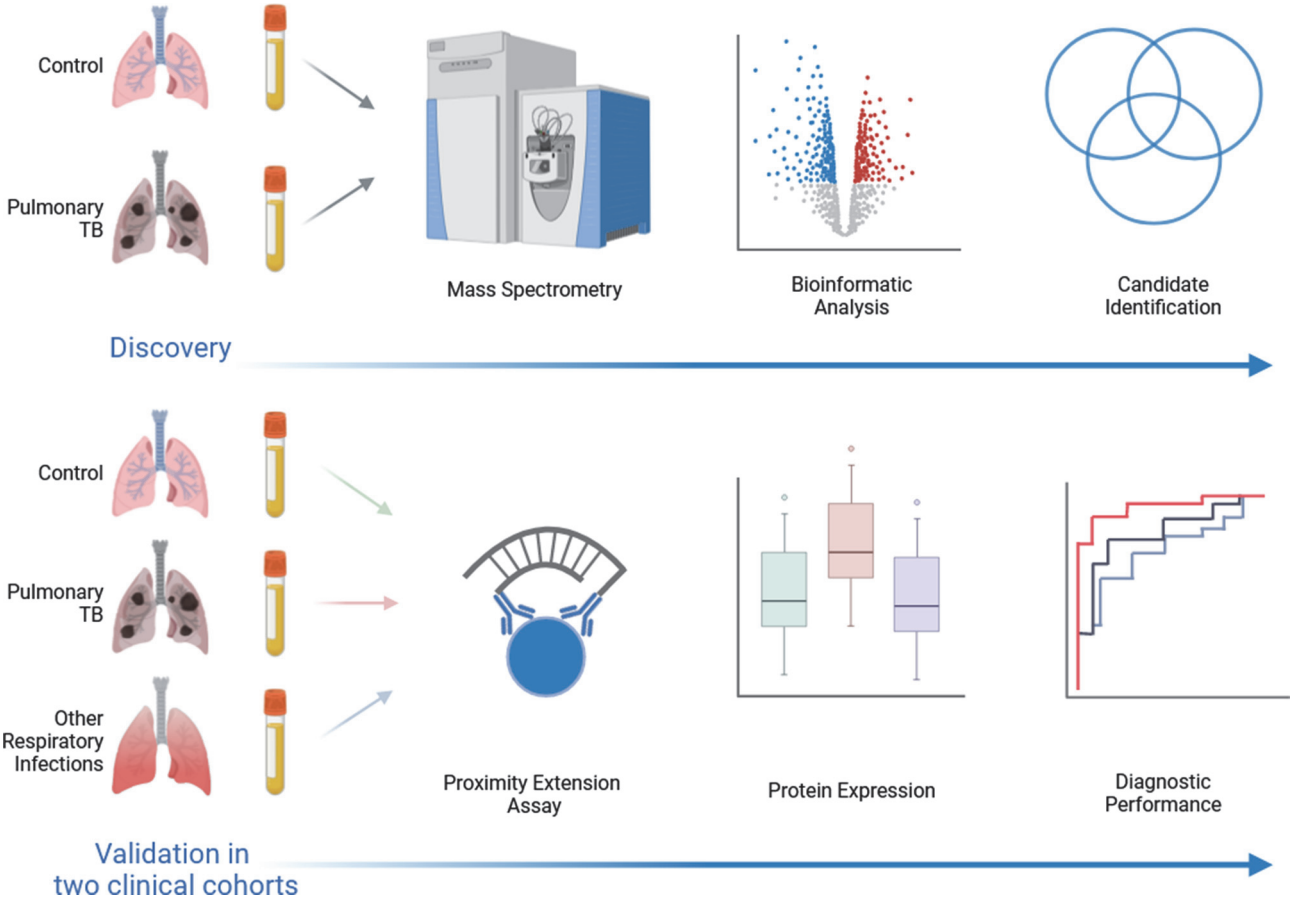
INTEGRATED PLASMA PROTEOMICS IDENTIFIES TUBERCULOSIS-SPECIFIC BIOMARKERS

[1]HF Schiff, [2]NF Walker, [3,4]C Ugarte-Gil, [5]M Tebruegge, [6]A Manousopoulou, [6]SD Garbis, [7]S Mansour, [8]PH Wong, [8]G Rockett, [8]P Piazza, [9]M Niranjan, [1]A Vallejo, [10]CH Woelk, [11,12,13,14]RJ Wilkinson, [1,7]PT Elkington. *[1]NIHR BRC, Clinical and Experimental Sciences, University of Southampton, UK*; *[2]Liverpool School of Tropical Medicine, Liverpool, UK*; *[3]Universidad Peruana Cayetano Heredia, Lima, Peru*; *[4]University of Texas, Galveston, USA*; *[5]Department of Paediatrics, Vienna, Austria*; *[6]Proteas Bioanalytics, Torrance, USA*; *[7]Institute for Life Sciences, Southampton, UK*; *[8]Centre for Human Genetics, University of Oxford, UK*; *[9]Electronics and Computer Sciences, University of Southampton, UK*; *[10]Verge Genomics, San Francisco, USA*; *[11]Centre for Infectious Diseases Research in Africa, Cape Town, South Africa*; *[12]University of Cape Town, Cape Town, South Africa*; *[13]Imperial College, London, UK*; *[14]The Francis Crick Institute, London, UK*

10.1136/thorax-2024-BTSabstracts.4

Novel biomarkers to identify infectious patients transmitting *Mycobacterium tuberculosis* are urgently needed to control the global tuberculosis (TB) pandemic. We hypothesized that proteins released into the plasma in active pulmonary TB are clinically useful biomarkers to distinguish TB cases from healthy individuals and patients with other respiratory infections. We applied a highly sensitive non-depletion tandem mass spectrometry discovery approach to investigate plasma protein expression in pulmonary TB cases compared to healthy controls in South African and Peruvian cohorts. Bioinformatic analysis using linear modelling and network correlation analyses identified 118 differentially expressed proteins, significant through three complementary analytical pipelines. Candidate biomarkers were subsequently analysed in two validation cohorts of differing ethnicity using antibody-based proximity extension assays.

TB-specific host biomarkers were confirmed A six-protein diagnostic panel, comprising FETUB, FCGR3B, LRG1, SELL, CD14 and ADA2, differentiated patients with pulmonary TB from healthy controls and patients with other respiratory infections with high sensitivity and specificity in both cohorts. Performance of this final 6 protein panel was evaluated by biological sex, as the discovery cohort was exclusively male. Notably, the diagnostic performance in females exceeded that of male patients. This biomarker panel exceeds the World Health Organisation Target Product Profile specificity criteria for a triage test for TB. The new biomarkers have potential for further development as near-patient TB screening assays, thereby helping to close the case-detection gap that fuels the global pandemic.



Abstract T4 Figure 1 Graphical overview of proteomic approaches to plasma biomarker discovery and validation

T5 GENOMICS OF DRY COUGH UNRAVELS NEUROLOGICAL PATHWAYS

[1]K Coley, [1,2]C John, [3,4]J Ghouse, [1]DJ Shepherd, [1]N Shrine, [1]AG Izquierdo, [5]S Kanoni, [5]EF Magavern, [1,2]R Packer, [6]L McGarvey, [7]JA Smith, [8,9]H Bundgaard, [9,10]SR Ostrowski, [11,12]C Erikstrup, [9,13]OBV Pedersen, [14]DA van Heel, [15,16]W Hennah, [17]M Marttila, [2,18]RC Free, [19]EJ Hollox, [1,2]LV Wain, [1,2]MD Tobin, [1,2]C Batini. *[1]Department of Population Health Sciences, University of Leicester, Leicester, UK; [2]University Hospitals of Leicester NHS Trust, Leicester, UK; [3]Laboratory for Molecular Cardiology, Department of Cardiology, Copenhagen University Hospital, Copenhagen, Denmark; [4]Laboratory for Molecular Cardiology, Department of Biomedical Sciences, University of Copenhagen, Copenhagen, Denmark; [5]William Harvey Research Institute, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK; [6]Wellcome-Wolfson Institute for Experimental Medicine, School of Medicine, Dentistry and Biomedical Sciences, Queen's University, Belfast, UK; [7]Division of Immunology, Immunity to Infection and Respiratory Medicine, The University of Manchester, Manchester University NHS Foundation Trust, Manchester, UK; [8]Department of Cardiology, Copenhagen University Hospital, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark; [9]Department of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark; [10]Department of Clinical Immunology, Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark; [11]Department of Clinical Immunology, Aarhus University Hospital, Aarhus, Denmark; [12]Department of Clinical Medicine, Aarhus University, Aarhus, Denmark; [13]Department of Clinical Immunology, Zealand University Hospital, Køge, Denmark; [14]Blizard Institute, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK; [15]Orion Pharma, Espoo, Finland; [16]Neuroscience Center, HiLIFE, University of Helsinki, Helsinki, Finland; [17]Orion Pharma, Nottingham, UK; [18]School of Computing and Mathematical Sciences, University of Leicester, Leicester, UK; [19]Department of Genetics and Genome Biology, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.5

Background Chronic cough is common and imposes a substantial burden on patients and health systems. While it can be a symptom of underlying respiratory conditions such as obstructive lung disease and asthma, or a common adverse reaction to ACE inhibitors (ACEis), it can also be unexplained. The biological mechanisms underlying chronic cough are not well understood, but genomic studies offer the opportunity to shed light on its pathology.

Objective We hypothesised shared genetic architecture between two cough phenotypes: chronic dry cough and ACEi-induced cough and aimed to identify causal genes underlying both phenotypes using a multi-trait genome-wide association study (GWAS) approach.

Methods We calculated genetic correlation between chronic dry cough and ACEi-induced cough in UK Biobank, and subsequently performed multi-ancestry GWASs of chronic dry cough and ACEi-induced cough, and a multi-trait GWAS of both phenotypes, utilising data from five cohort studies. Chronic dry cough was defined by questionnaire responses, and ACEi-induced cough by treatment switches or clinical diagnosis in electronic health records. We mapped genome-wide significant (p-value $<5\times10^{-8}$) sentinel variants to putative causal genes, and performed phenome-wide association studies (PheWAS) of sentinel variants and genetic risk scores (GRS) across an extensive range phenotypes to identify pleiotropic effects.

Findings We observed a strong genetic correlation between chronic dry cough and ACEi-induced cough (r_g [SE] = 0.56 [0.15], p-value = 0.0002), and identified seven novel sentinel variants across the multi-trait and single-trait GWASs of both cough phenotypes. These novel variants mapped to 10 novel genes, and we mapped an additional three novel genes to known risk variants, many of which implicate neurological functions (*CTNNA1*, *KCNA10*, *MAPKAP1*, *OR4C12*, *OR4C13*, *SIL1*). The GRS-PheWAS highlighted associations with increased risk of several recognized comorbidities of chronic cough, including migraine, irritable bowel syndrome, fibromyalgia pain, and urinary incontinence, and with quantitative respiratory phenotypes.

Conclusions Our study reveals shared genetic architecture between chronic dry cough and ACEi-induced cough, and provides the first GWAS evidence to reinforce the hypothesis that neurobiological pathways contribute to chronic dry cough pathogenesis. Our findings also highlight the importance of considering potential therapeutic targets for cough in the broader context of comorbid conditions.

T6 EXHALED NITRIC OXIDE (FENO) PREDICTS CLINICAL AND ANTI-INFLAMMATORY RESPONSE TO PREDNISOLONE FOR BREAKTHROUGH ATTACKS IN ANTI-IL5/IL5R TREATED ASTHMA

[1]I Howell, [1]M Mahdi, [1]HR Mahmood, [1]L Bermejo-Sanchez, [1]C Borg, [2]S Ramakrishnan, [1]J Melhorn, [1]G Lavoie, [1]N Petousi, [1]TSC Hinks, [3]M Bafadhel, [1]ID Pavord. *[1]Respiratory Medicine Unit, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Institute for Respiratory Health, University of Western Australia, Perth, Australia; [3]King's Centre for Lung Health, School of Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.6

Introduction Oral corticosteroids are guideline treatment for asthma attacks but have extensive side effects. Anti-IL5 monoclonal antibodies (mAb) reduce asthma attacks by over 50%. Research suggests breakthrough attacks are FeNO-low (infective) and FeNO-high (eosinophilic).

We hypothesised that, in patients on anti-IL5/IL5R treatment presenting with asthma attacks, raised FeNO is associated with better clinical response to prednisolone.

Methods BOOST was a prospective observational study of adults established on anti-IL5 or anti-IL5R therapy presenting with an outpatient asthma attack. All participants received 7 days of oral prednisolone (40mg). We pre-specified a FeNO threshold of 25ppb to compare prednisolone response in FeNO-low versus FeNO-high participants 7 and 28 days after attack (DOI: 10.2196/46741). Participants were also seen at stable state, either prior to attack or over 8 weeks after their last prednisolone dose. Pre-specified outcomes included: treatment failure (repeat prednisolone/antibiotic treatment or unscheduled asthma visit), lung function, symptom questionnaires, nasal viral PCR, sputum culture and NEATstik testing, sputum and nasosorption protein immunoassays (Olink), and sputum bulk transcriptomics (planned).

Results We recruited 60 asthma attacks. 64% were female. 56% were on anti-IL5 and 44% on anti-IL5R therapy.

FeNO-low attacks (n=21) were preceded by more rapid symptom deterioration (5 vs 10 days, p=0.02), and more frequently virus positive (57% vs 29%, p=0.05) than FeNO-high attacks. Geomean blood ($0.01x10^9$/L) and sputum (0.4%) eosinophils were low across all attacks.

After prednisolone treatment, patients with FeNO-low attacks had significantly higher likelihood of treatment failure at day 14 compared to FeNO-high attacks (OR 5.1, p=0.02). At day 7, patients with FeNO-high attacks had significantly greater improvement in FEV_1 (361ml, p=0.02) and ACQ (-1.44, p<0.001), and significant reduction in sputum IL-4, IL-13, IL-5, and MMP1 compared to FeNO-low attacks (figure 1).

FeNO-high participants had over 2-fold higher sputum IL-4, IL-13 and IL-5 concentrations than FeNO-low participants at both baseline and attack. From baseline to attack, FeNO-low participants had significantly larger increases in sputum TSLP, and nasal IFNγ, IL-6, and TNFα.

Conclusions The BOOST study demonstrates that FeNO testing at attack can identify the patients on anti-IL5/IL5R treatment who have the most clinical and anti-inflammatory benefit from prednisolone.

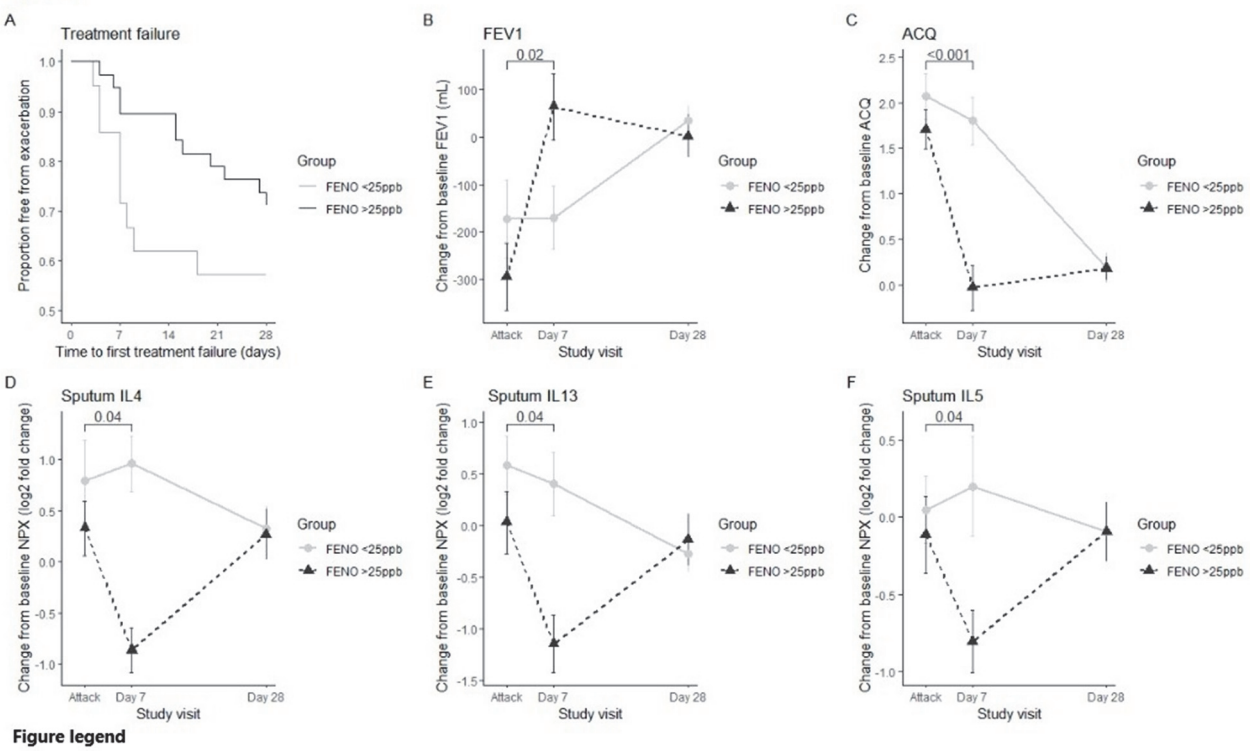


Figure legend

1A. Kaplan-Meier curve of treatment failure from attack to day 28 comparing FeNO-low and FeNO-high groups.

1B – 1F. Change from baseline analysis comparing clinical and inflammatory measures between FeNO-high and FeNO-low groups from attack to day 7 and day 28 visits. Prednisolone treatment was between attack to day 7. The 0 value on the y-axis corresponds to baseline. Paired t-tests were used to compare the change from attack to day 7 between FeNO-high and FeNO-low groups. NPX = normalised protein expression (Olink relative quantification of protein concentration on a log2 scale).

Abstract T6 Figure 1

'The Catcher in the MRI' – Functional imaging in lung disease

S1 **POSTURAL POSITION OF PULMONARY FUNCTION TESTING AND RELATIONSHIP WITH OXYGEN ENHANCED MRI IN CYSTIC FIBROSIS**

[1,2,3]C Efthyvoulou, [1,2,3]C Short, [4]M Tibiletti, [4,5]GJM Parker, [1,2,3]JC Davies. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Royal Brompton and Harefield Hospitals, Department of Paediatrics, London, UK; [3]Lung Clearance Index Core Facility, European Cystic Fibrosis Society, London, UK; [4]Bioxydyn Ltd, Manchester, UK; [5]University of College London, Centre for Medical Image Computing, Department of Medical Physics and Biomedical Engineering, London, UK*

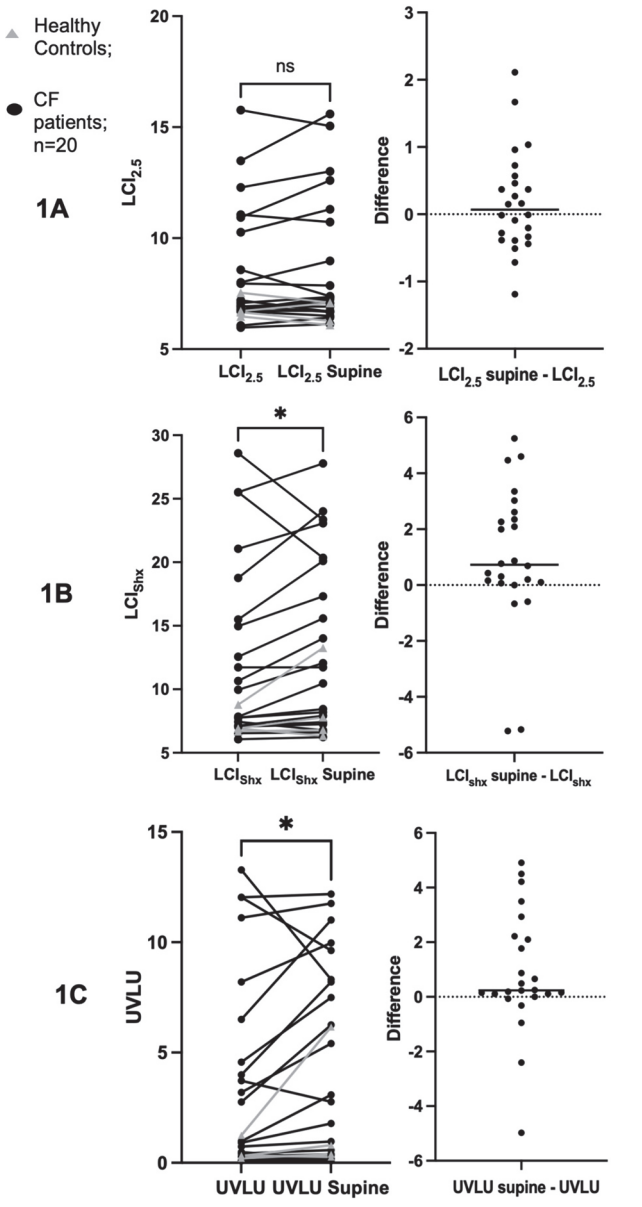
10.1136/thorax-2024-BTSabstracts.7

Background Cystic Fibrosis (CF) is a genetic, multiorgan disease, with respiratory system damage having the largest impact on mortality. Spirometry and medical imaging may show discrepant severity levels, potentially due in part to different postures of testing (seated PFTs and supine imaging). In this study, we utilised the multiple breath washout with Short extension (MBW_{ShX}),[1] which is more sensitive for airways disease in CF than spirometry. Furthermore, MBW_{ShX} offers novel insight into global ventilation efficiency (LCI_{ShX}) by incorporating extent of under-ventilated lung units (UVLU). We hypothesised that there is a significant difference between seated and supine posture on MBW_{ShX} parameters. Moreover, we aimed to compare the relationship between postural position of MBW and oxygen-enhanced MRI (OE-MRI).

Methods We recruited 4 Healthy Controls and 20 CF patients who performed 2 seated and at least 1 supine MBW trials (Exhalyzer D), along with an OE-MRI (1.5 Tesla) on the same day. MBW_{ShX} outcome measures are the lung clearance index ($LCI_{2.5}$), LCI_{Shx} and UVLU (higher = worse). OE-MRI protocol included 360 sets of 5 identical coronal slices at 5° flip angle, alternating between medical-air and 100% oxygen. Oxygen signal is detected via ΔR_2^*, enabling calculation of the primary parameter, the ventilation defect percentage (VDP%) (lung volume where ventilation is extremely limited/absent).

Results We demonstrated significant increase in LCI_{ShX} (0.73 [-5.22;5,25]; P=0.014) and UVLU (0.24 [-4.97;4.91]; P=0.021) from seated to supine posture but, no significant change in $LCI_{2.5}$ (0.07 [-1,19;2.11]; P=0.47). Moreover, we showed a strong correlation between both postures of MBW and OE-MRI parameters (ρ>0.7). However, no differences were detected between seated and supine MBW correlations with OE-MRI ($LCI_{2.5}$, P=0.89; LCI_{shx}, P=0.89; UVLU, P=0.64).

Conclusion We found a significant difference between postures in MBW_{ShX} parameters, with a marked reduction in global ventilation efficiency (increased LCI_{ShX}) and increase of UVLU ('Trapped Air') in supine posture. However, we found no difference in agreement between postural position of MBW and OE-MRI. We conclude that performing MBW in supine posture may offer novel clinical insights but does not improve sensitivity for comparisons to medical imaging.



Abstract S1 Figure 1 Changes in MBW_{ShX} parameters from seated to supine posture (n=24). Graphs on the left-hand side represent individual participant values in the 2 different postures. Difference plots on the right-hand side represent the difference (supine – seated) between the 2 positions. Horizontal lines on the difference plots indicate median change from seated to supine posture. Statistical testing was performed using the Wilcoxon signed ranked test. P<0.05 was considered statistically significant. 1A) Postural effect on $LCI_{2.5}$ (median change [range]; 0.07 [-1,19;2.11]; P=0.47). 1B) Postural effect on LCI_{ShX} (0.73 [-5.22;5,25]; P=0.014). 1C) Postural effect on extent of UVLU (0.24 [-4.97;4.91]; P=0.021). *: P<0.05.

Abbreviations: $LCI_{2.5}$, Lung Clearance Index at 2.5%; LCI_{ShX}, Lung Clearance Index with Short extension; UVLU, Under Ventilated Lung Units; HCs, Healthy Controls; CF, Cystic Fibrosis

REFERENCE

1. Short C, *et al. J Cyst Fibros* 2022 Jan;**21**(1):146–54.

S2 EVALUATION OF LUNG TRANSPLANT FUNCTION AND DETECTION OF CLAD USING 129XE-MRI AND LCI

[1]M Driskel, [2]H Marshall, [2]A Biancardi, [2]L Smith, [2]D Capener, [2]J Bray, [2]A Zalewska, [2]S Fazal, [2]L Saunders, [2]R Munro, [2]O Rodgers, [3]K Santhanakrishnan, [3]R Venkateswaran, [1]J Blaikley, [2]J Wild, [1]A Horsley. *[1]University of Manchester, Manchester, UK; [2]POLARIS, University of Sheffield, Sheffield, UK; [3]Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.8

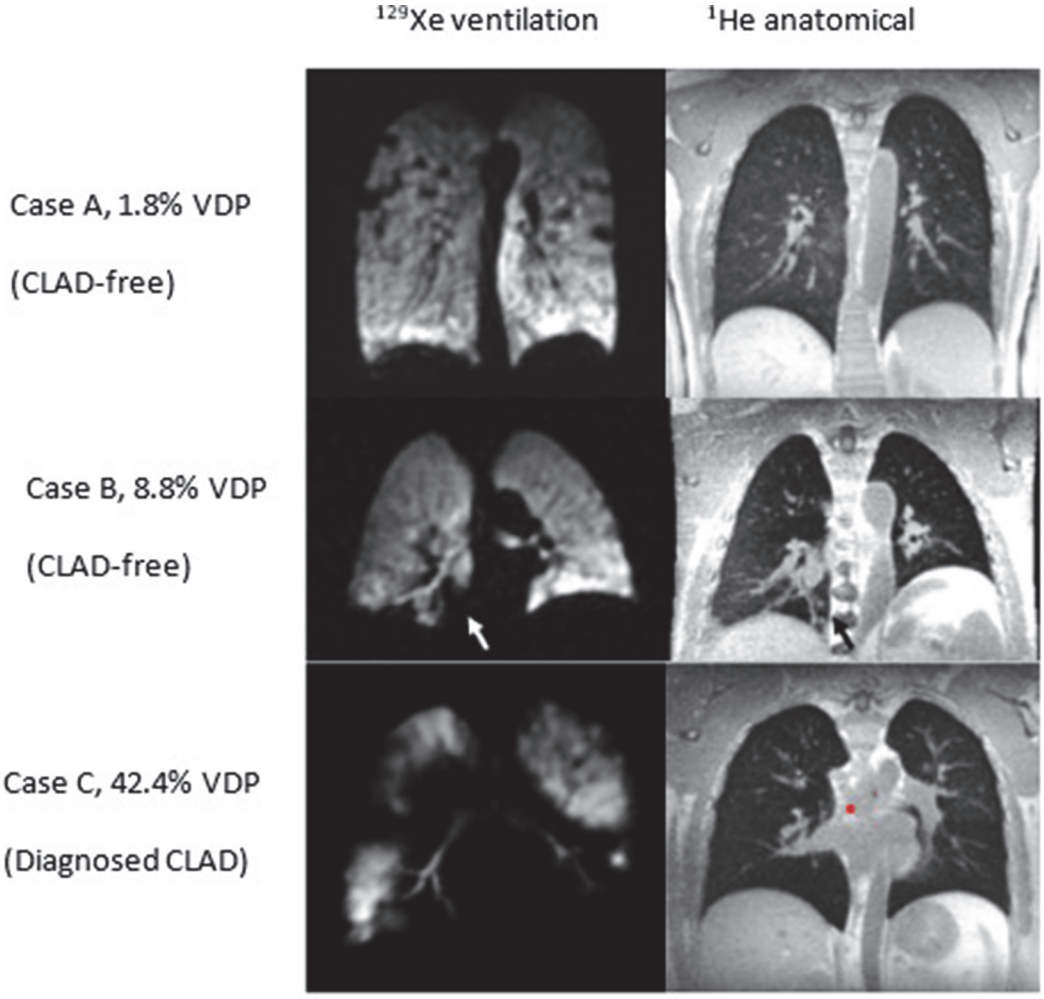
Introduction Outcomes after LTx are limited by development of Chronic Lung Allograft Dysfunction (CLAD), defined spirometrically as an FEV_1 <80% best post-transplant (ISHLT criteria). Lung clearance Index (LCI) is sensitive to early small airway disease. Hyperpolarised-MRI using ^{129}Xe (HPMRI) enables functional imaging of lung disease and is more sensitive than LCI in other conditions, but has limited available literature on detection of CLAD in LTx recipients.

Methods Participants were recruited up to 6 years post-LTx and were CLAD-free at time of study entry. LCI and FEV_1 were measured at routine serial clinic visits in clinically stable double/heart-lung transplant recipients. MRI was measured within 4 weeks of lung function. Ventilation defect percentage (VDP) and ventilation heterogeneity index (VHI) were calculated from HPMRI.

Results 14 patients were assessed with both MRI and LCI: 6F; mean (SD) age 49.8 (12.0); time since transplant 1.9(1.8) years [range 0.46–5.59]. Median (IQR) LCI was 8.2 (7.8–9.1), 13 (93%) were higher than ULN (of 6.8); FEV_1%baseline was 90.7 (83.5–95.9). Median (IQR) time between scan and lung function was -5 days (-15.3–6.0). Median (IQR) VDP was 2.6 (1.4–8.9), above ULN (of 2%) in 8 (57%). Median VHI was 8.9.Ventilation defects were widely distributed with no lobar patterns. There were significant correlations between both lung function (LCI and FEV_1) and imaging parameters (VHI and VDP), $p<0.05$.

Two patients had CLAD at time of MRI, with FEV_1 of 71% and 40% baseline. Both had elevated LCI (12.5, 11.9 respectively) as well as elevated VDP (42.3, 20.7) and VHI (18.8, 16.6)

Conclusions HP-MRI can be used to identify ventilation defects in LTx patients. Measures of VDP and VHI correlate well with both FEV_1 (%baseline) and LCI. Majority of LTx patients have abnormalities in ventilation imaging (VDP, VHI) or physiology (LCI) even when post-transplant FEV_1 is preserved. Longitudinal data are needed to establish if indices derived from HPMRI and LCI precede sustained drops in FEV_1, to aid earlier detection of CLAD.



Abstract S2 Figure 1

S3

PREDICTING LONGITUDINAL DECLINE IN GAS EXCHANGE IN ASTHMA AND/OR COPD USING XENON-129 MRI AND EXPLAINABLE MACHINE LEARNING TECHNIQUES

[1]JR Astley, [1]H Marshall, [1]LJ Smith, [2]R Hughes, [1,3]BA Tahir, [1,3]JM Wild. *[1]POLARIS, University of Sheffield, Sheffield, UK; [2]Early Development Respiratory Medicine, AstraZeneca, Cambridge, UK; [3]Insigneo Institute, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.9

Introduction and Objectives Prediction of worsening lung function is challenging yet important for patient management. Non-linear regression models of disease progression may improve predictions when compared to conventional linear regression, but lack explanatory power. Here, regression algorithms are used to predict future TL_{CO} with SHapley Additive exPlanations (SHAP) employed to improve explainability.

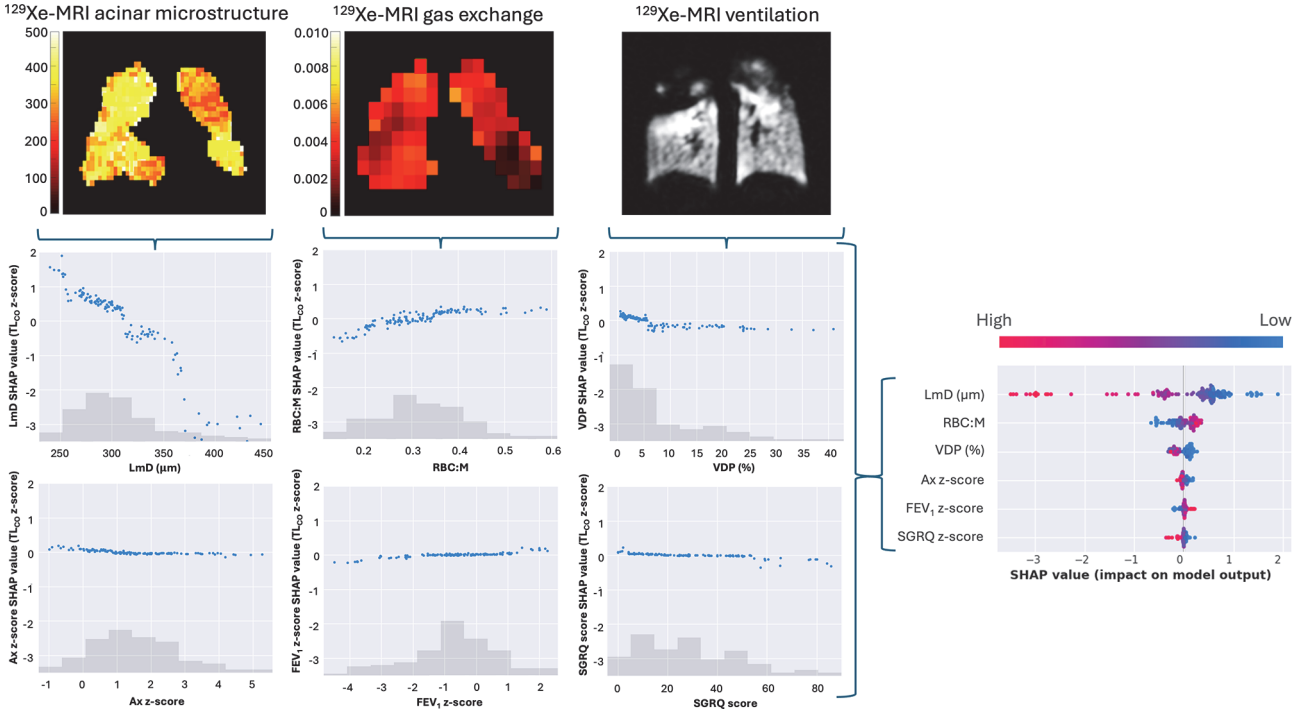
Methods A retrospective analysis from 121 participants with asthma and/or COPD from NOVELTY [NCT02760329] was performed. Using this dataset, we have previously reported a significant decline in TL_{CO} over a 1-year interval. Patients were assessed post-bronchodilator with ^{129}Xe-MRI (ventilation, acinar dimensions and gas transfer), spirometry, body plethysmography, multiple breath washout and airwave oscillometry at 2 visits (range=47–79 weeks apart). Clinical, demographic, pulmonary function and imaging data from the aforementioned tests formed 22 covariables, originating from visit 1, that were used to predict TL_{CO} z-score at visit 2. TL_{CO} z-score at visit 1 was not included as a covariable.

Linear, random forest (RF) and XGBoost regression algorithms were compared. 5-fold cross-validation was employed. TL_{CO} z-score predictions were evaluated using mean absolute error (MAE). SHAP analysis was performed for each method.

Results The RF method yielded the lowest MAE (0.315 ±0.260), significantly outperforming linear regression (0.585 ±0.457) and outperforming XGBoost (0.353±0.239). 39 patients were considered to have a clinically significant reduction in TL_{CO} of -0.5 z-scores over 1-year; RF regression accurately predicted 28 of these declining individuals.

SHAP analysis of RF regression indicated that ^{129}Xe-MRI acinar dimensions (L_{mD}), gas transfer (red blood cell to membrane ratio, RBC:M), ventilation defect percentage (VDP), Ax z-score, FEV_1 z-score and SGRQ score at visit 1 were the most important covariables for accurately predicting TL_{CO} z-score at visit 2 (figure 1).

Conclusions Non-linear regression algorithms more accurately predict longitudinal decline in asthma and/or COPD patients. ^{129}Xe-MRI reduced gas transfer and ventilation were important to producing accurate predictions; however, alveolar dimensions were vastly more predictive of reduced TL_{CO}compared to other clinical and lung function covariables,



Abstract S3 Figure 1 (right) Beeswarm plot of SHAP values for the top six most important features when longitudinally predicting TL_{co} z-score, namely, Lm_D, RBC:M, VDP, Ax z-score, FEV_1 z-score and SGRQ score. Full list of covariables: sex, age, body mass index, lung clearance index, FEV_1 z-score, RV/TLC plethysmography, R5-R20 z-score, Ax z-score, smoking status, exacerbations in previous year, asthma and/or COPD grouping and severity, SGRQ and CAAT score, ventilation defect percentage (VDP) at TLC and FRC+bag, ventilation coefficient of variation, mean acinar dimensions (Lm_D), red blood cell to membrane ratio (RBC:M), membrane to gas ratio (M:Gas), red blood cell to gas ratio (RBC:Gas) and amplitude of RBC oscillations (ARBCOsc). Each point represents an individual patient, with the colour indicating the feature value and the horizontal location indicating the impact of the feature on the model's prediction for that patient.(left) Scatter plots for the top six most important features when longitudinally predicting TL_{CO} z-score, indicating the relationship between the feature value and its impact for each patient in the dataset. The x-axis shows the raw feature value, and the y-axis indicates the SHAP value measure as TL_{CO} Z-score. For example, the graph for Lm_D (top left) demonstrates that as the Lm_D increases above 325μm, the predicted TL_{CO} z-score will be reduced, compared to the average TL_{CO} z-score of the dataset, up to a -3 z-score decrease from the average for Lm_D values over 400μm. The feature value distribution is also provided in grey.(top) Example ^{129}Xe-MRI acinar microstructure, gas exchange and ventilation images used to derive Lm_D, RBC:M and VDP metrics, respectively.

indicating that enlarged alveolar dimensions, consistent with emphysema, can predict worsening gas exchange. ^{129}Xe-MRI may detect deterioration in asthma and/or COPD, by providing high sensitivity to changes, earlier than traditional physiological measures.

S4 TREATMENT RESPONSE MAPPING USING 19F-MRI IN PATIENTS WITH ASTHMA AND COPD

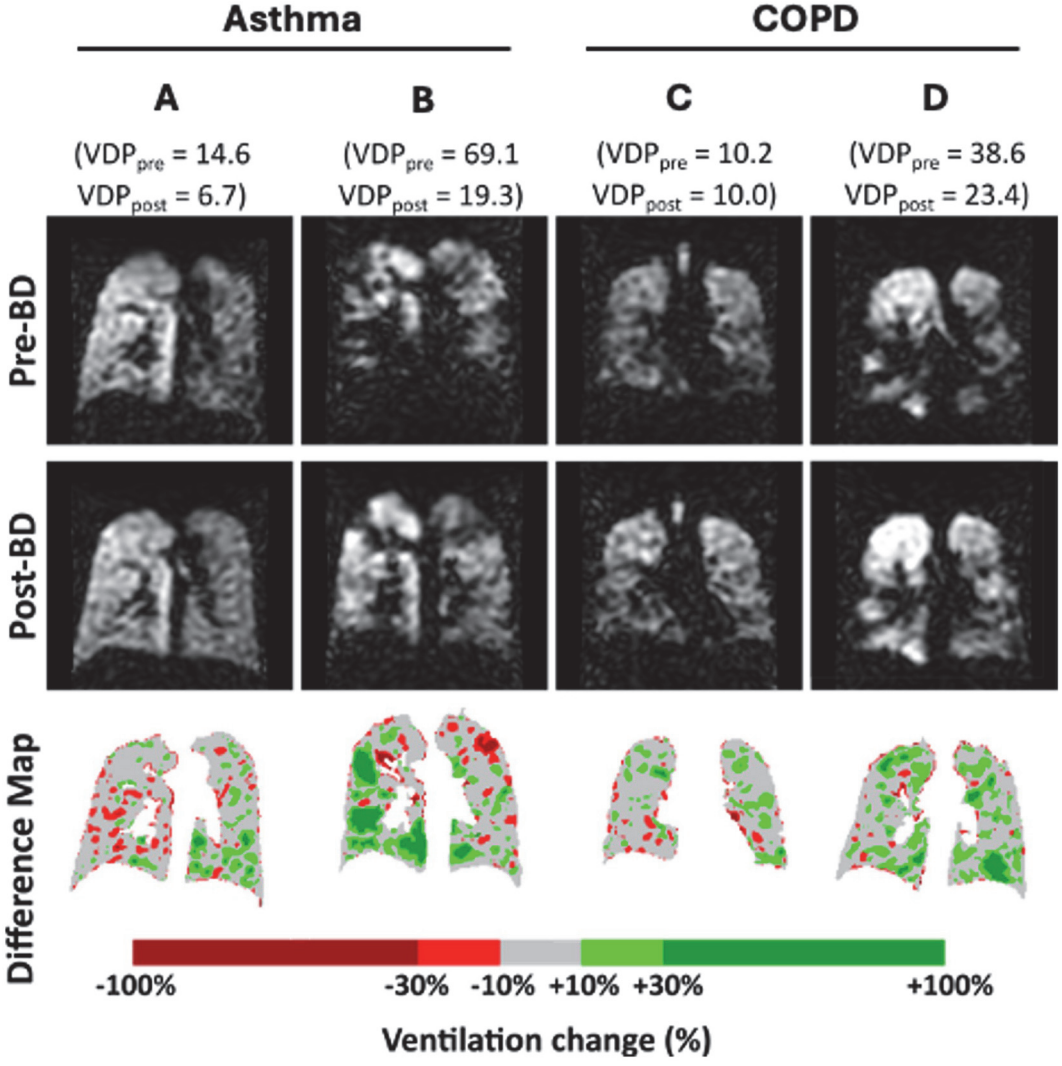
[1]BJ Pippard, [1]M Neal, [1]C Holland, [2]R Lawson, [2]J Wild, [1]AJ Simpson, [1]P Thelwall. [1]*Newcastle University, Newcastle upon Tyne, UK*; [2]*University of Sheffield, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.10

Introduction ^{19}F-MRI of inhaled perfluoropropane (PFP) represents an emerging approach to ventilation imaging, enabling quantitative assessment of lung function without the requirement for hyperpolarisation. Compared to conventional spirometry, pulmonary MRI offers potential for regional evaluation and monitoring oftherapeutic intervention. Treatment response mapping has previously been demonstrated using hyperpolarised-gas MRI[1] yet remains poorly established with regards to ^{19}F-MRI.

Aim We assessed the utility of treatment response maps, acquired by ^{19}F-MRI, to characterise regional changes in ventilation following bronchodilator (BD) therapy in patients with asthma and COPD.

Methods 35 patients with asthma and 21 patients with COPD were recruited as part of a dual-centre study. Participants withheld regular BD medication for 12–24 hours prior to undergoing MRI scanning, involving periodic inhalation of a 79% PFP/21% oxygen gas mixture. Each inhalation session comprised three deep breaths of gas followed by a breathhold, during which ^{19}F-MRI was acquired. ^{19}F-MRI and conventional spirometry were performed before and after administration of 2.5mg nebulised salbutamol. 3D treatment response maps were generated by co-registering segmented pre- and post-BD ^{19}F-MR images and calculating the percentage change



Abstract S4 Figure 1 Representative treatment response maps, generated for two patients with asthma (A and B) and two patients with COPD (C and D). Difference maps illustrate the percentage change in PFP signal intensity following BD administration, showing regions of increased (green) and decreased (red) lung recruitment, underpinning global VDP measurements. **A**: 57M, pre-BD $FEV_1$3.8 (95% pred.), FVC 6.1(116% pred.), ratio 62.9; post-BD FEV_1 3.9 (98% pred.), FVC 5.9 (113% pred.), ratio 66.9. **B**: 46M, pre-BD FEV_1 1.6 (35% pred.), FVC 3.5 (63% pred.), ratio 44.1; post-BD $FEV_1$2.7 (60% pred.), FVC 5.1(92% pred.), ratio 51.6. **C**: 71M, pre-BD FEV_1 1.5 (48% pred.), FVC 3.5 (87% pred.), ratio 41.3; post-BD FEV_1 1.6 (52% pred.), FVC 3.6 (90% pred.), ratio 43.9. **D**: 67M, pre-BD FEV_1 1.4 (42% pred.),FVC 4.3 (82% pred.), ratio 39.3; post-BD FEV_1 1.5 (46% pred.), FVC 3.9 (90% pred.), ratio 38.9

in PFP signal amplitude on a voxelwise basis. The ventilation defect percentage (VDP) was also calculated for all ^{19}F-MR images.

Results Treatment response maps, acquired in four representative patients (2 asthma, 2 COPD), are shown in figure 1. Regions of increased (green) and decreased (red) lung recruitment following BD administration can be visualised, underpinning the change in associated global pre- and post-VDP values. In one of these patients (figure 1C, COPD), there was little demonstrable change in VDP following BD administration, despite evident alteration to local PFP gas distribution.

Discussion Our findings highlight the complexity of regional changes underpinning ventilatory response to BD therapy in patients with established airways disease. Importantly, substantial variation in local lung recruitment exists that is not always reflected by global measures like VDP, or FEV_1. Future work will examine the capability of ^{19}F-MRI to monitor therapeutic response to novel or targeted intervention in early-stage disease, with potential for improved sensitivity and personalisation compared to conventional spirometric or imaging metrics.

REFERENCE

1. Horn F, *et al. Radiology* 2017;**284**:854–861.

'Topic of Cancer' – Lung cancer diagnosis and treatment

S5 REAL-WORLD EVIDENCE ON THE JOURNEY OF LUNG CANCER PATIENTS IN ENGLAND: DELAYS IN DIAGNOSIS AND TREATMENT

[1,2]ML Mullin, [3]XL Marston, [4]J Lavin, [1]R Thakrar. *[1]University College London, London, UK; [2]University of British Columbia, Vancouver, Canada; [3]OPEN Health Evidence and Access, London, UK; [4]Intuitive Surgical Sàrl, Aubonne, Switzerland*

10.1136/thorax-2024-BTSabstracts.11

Introduction Lung Cancer (LC) is the most frequently diagnosed cancer worldwide. Timeliness in diagnosis is crucial, as delays contribute to worsened survival. Diagnostic delays can lead to unplanned healthcare utilisation, including A&E visits. In the UK, the National Lung Cancer Audit evaluates quality metrics. To improve LC care, this study was conducted to understand patterns in patients not meeting national goals in real-world settings.

Methods Adult patients (≥ 18 years) diagnosed with LC (ICD-10: C34) between 1 April 2018 and 31 March 2019 were included. Linked data from Hospital Episode Statistics (HES) and the Diagnostic Imaging Database (DID) were used. Patients were excluded if they had another primary cancer or no records in DID prior to diagnosis. Records of chest imaging in the six months before diagnosis were extracted using OPCS-4 codes in HES and SNOMED, modality, or NICIP codes in DID. Presence of a code for imaging and a code for body part (i.e., chest) were both required. Treatments received within 12 months after diagnosis were analysed. Intervals were reported as median days and upper quartiles (75th percentile). Proportions of patients visiting A&E were reported.

Results A total of 21,052 patients diagnosed with LC during the study period were included. Median time from first chest imaging to diagnosis was 56 days, with the upper quartile of 113 days. Almost half (46%) of patients had more than one chest X-ray and 17% had more than one CT scan before diagnosis. Median time from first chest imaging to treatment was 84 days, with the upper quartile of 136 days. A third (31%) were diagnosed via emergency presentation and more than half (53%) visited A&E between first imaging to treatment. Patients whose diagnosis took longer (> 56 days) had on average two A&E visits before treatment, compared to one visit in those diagnosed sooner (≤ 56 days).

Conclusion Timeliness of LC care remains an ongoing concern and this research provides real-world evidence to understand disparities in diagnostic pathways. Prolonged time to diagnosis and treatment can lead to increased healthcare utilisation with repeated diagnostic imaging and unplanned A&E visits.

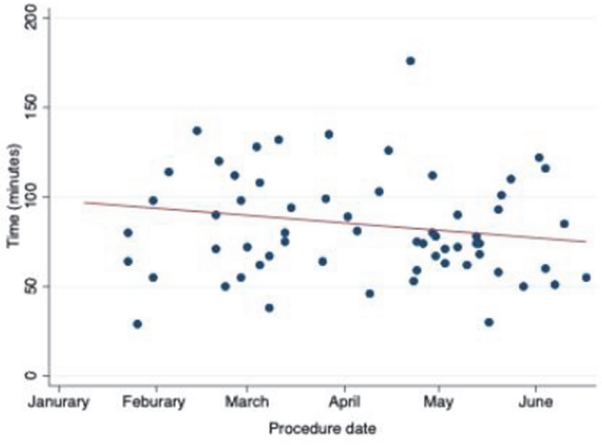
S6 ROBOTIC ASSISTED BRONCHOSCOPY IMPLEMENTATION WITHIN A UK TERTIARY REFERRAL CENTRE

[1]R Dunwoody, [1,2]M Mullin, [1]R Shea, [1]D Estenor, [1]A Ahmed, [1]R Khiroya, [1]P Gorur, [1]N Navani, [1]R Thakrar. *[1]University College London Hospital, London, UK; [2]University of British Columbia, Vancouver, Canada*

10.1136/thorax-2024-BTSabstracts.12

Introduction Robotic-assisted bronchoscopy (RAB) is a new technology that allows respiratory physicians to sample peripheral nodules with increased accuracy compared to conventional bronchoscopy. RAB is an option for patients who are unable to have CT-guided biopsy or those individuals that require mediastinal staging and nodule biopsy in the same procedure. With the implementation of lung cancer screening, the demand for work up of pulmonary nodules is expected to increase.

Methods This is a single centre retrospective analysis of a prospectively maintained database, consisting of consecutive cases following implementation of RAB within a tertiary peripheral bronchoscopy service. Patients underwent shape-sensing robotic-assisted bronchoscopy with the ION® endoluminal system (Intuitive Surgical) under general anaesthesia. Tissue acquisition was performed under fluoroscopy guidance. Patient characteristics (age, gender, smoking status, and previous history of cancer), nodule characteristics (density, size, location, Brock/Herder score, and SUV avidity) and procedure characteristics (duration, sampling and imaging techniques, adverse



Abstract S6 Figure 1 Impact of experience on procedure time in robotic-assisted bronchoscopy. Figure demonstrates individual operators procedure number and duration. As experience increase, time to complete each procedure decreases.

events, and diagnostic yield) were collected. Data are presented as frequency N(%), mean±standard deviation and median (interquartile range). Yield was defined according to a recent consensus statement and was considered positive if it allowed definitive patient management.

Results 63 robotic-assisted bronchoscopies were carried out between 23.1.24 and 20.6.24. 41(65%) patients referred for RAB were deemed unsuitable for CT guided biopsy, and 12 (19%) had indeterminate mediastinal nodes that needed EBUS-staging as well as sampling of the lung nodule. 46% of patients were male with median age of 70 years (61–78). 76% of patients were current or former smokers. Solid lesions (N=53) were 29±15mm and subsolid lesions (N=11) were 32±12mm with 17±7mm solid component. 31% of lesions did not have an air bronchus sign on CT and 43% of lesions had only eccentric radial EBUS view initially. Diagnostic yield was 88%. Adverse events included pneumothorax requiring chest drain (3%) and bleeding requiring admission (1.6%). Procedural time decreased with increase in experience, figure 1.

Conclusion Robotic-assisted bronchoscopy can be successfully implemented into a tertiary peripheral bronchoscopy programme with excellent diagnostic results. It is safe and well tolerated. Crucially, the technology provides a diagnostic option for individuals who cannot undergo a CT-guided biopsy.

S7 IMPACT OF FRAILTY AND COMORBIDITIES ON TREATMENT DECISIONS AND OUTCOMES IN PATIENTS WITH LUNG CANCER: A RETROSPECTIVE COHORT STUDY

[1,2]KP Yip, [2]HK Dhillon, [2]P Chandrasekaran, [2]A Ode, [2]IS Chin, [2]B Adizie. *[1]Institute of Inflammation and Ageing, University of Birmingham, Birmingham, UK; [2]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.13

Introduction Eastern Cooperative Oncology Group Performance Status (PS) is the most widely used score to triage lung cancer patients. However, its use in assessing patient multimorbidity, frailty or cognition is limited. Incorporating other scores, such as the Charlson Comorbidity Index (CCI) or the Clinical Frailty Scale (CFS), provides further prognostic information to inform decision-making. Yet, they are not consistently used in clinical practice. In this retrospective study, we assess the burden of frailty and comorbidities in our local population and describe the impact on treatment and survival.

Methods Electronic records for all patients with lung cancer diagnoses discussed at a University Hospitals Birmingham MDMs between January and June 2023 were interrogated for clinical and oncological information. CCI ≥3 was used to define high comorbidity burden, and CFS ≥5 to define high frailty level. The proportion of patients alive during data analysis (11–17 months from diagnosis) was calculated according to comorbidity/frailty and treatment intent. Spearman's correlation coefficient was used to calculate the correlation of CCI/CFS with PS.

Results A total of 400 patients were identified. Most were in the 70–79 age bracket (n=162, 40.5%), and 189 (47%) were male. Levels of frailty were high (median CFS 4 (IQR 3–5) with 40.7% having a score of ≥5). There exists a significant burden of comorbidity among the cohort with distribution as follows - CCI 0: 7 (1.8%), CCI 1–2: 40 (10.0%) and CCI ≥3: 353 (88.3%). PS score was significantly correlated with CCI (r_s = 0.3, p<0.001) and CFS (r_s = 0.69, p<0.001).

Abstract S7 Table 1 Lung cancer patients stratified by their performance status (PS), Charlson Comorbidity Index (CCI) or Clinical Frailty Scale (CFS) scores with proportions in each treatment intent group

	Curative intent treatment n,%	Palliative intent treatment n,%	Best supportive care (n,%)	Survival (n,%)
PS				
0–1 (n=207)	106 (51.2%)	64 (30.9%)	37 (17.9%)	124 (59.9%)
2 (n=75)	25 (33.3%)	13 (17.3%)	37 (49.3%)	29 (38.7%)
3–4 (n=118)	0 (0%)	4 (3.4%)	114 (96.6%)	25 (21.2%)
CCI				
0–2 (n=47)	14 (29.8%)	22 (46.8%)	11 (23.4%)	25 (53.2%)
≥3 (n=353)	117 (33.1%)	59 (16.7%)	177 (50.1%)	153 (43.3%)
CFS				
1–4 (n=237)	108 (45.6%)	65 (27.4%)	64 (27.0%)	132 (55.7%)
≥5 (n=163)	23 (14.1%)	16 (9.8%)	124 (76.1%)	46 (28.2%)

Table 1 shows patients stratified by PS/CCI/CFS with proportion in each treatment modality and corresponding survival rates. CFS ≥5 was associated with poorer prognosis (HR 2.21 95% CI 1.70–2.88), p<0.001) compared to CFS 1–4. However, CCI ≥3 was not associated with poorer prognosis (HR 1.29 95% CI 0.83–2.00), p=0.26) compared to CCI 0–2.

Conclusion The use of CFS provides additional prognostic information. Consistent incorporation of this information in the assessment of lung cancer patients has the potential to enhance decision-making and redefine boundaries for enrolling patients with lung cancer patients into clinical trials.

S8 COMPARATIVE EVALUATION OF CLINICAL FRAILTY SCALE AND WHO PERFORMANCE STATUS FOR PREDICTING 90-DAY MORTALITY IN PEOPLE WITH LUNG CANCER

V Kumar, S Sultan, T Ward, R Sudhir, M Majid, S Mohammad, S Agrawal, J Bennett. *University Hospitals of Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.14

Background The WHO performance score (WHO PS) has been a widely used assessment tool to guide treatment pathways and prognosis in lung cancer patients. The Rockwood Clinical Frailty Scale (CFS), though less commonly used in this population, is a descriptive assessment that reliably predicts mortality, and treatment-related complications and guide management decisions.[1]

Study Aim The aim of our study was to compare the two most commonly used measures of fitness in the clinical practice, WHO PS and CFS for predicting 90-day mortality in patients with lung cancer.

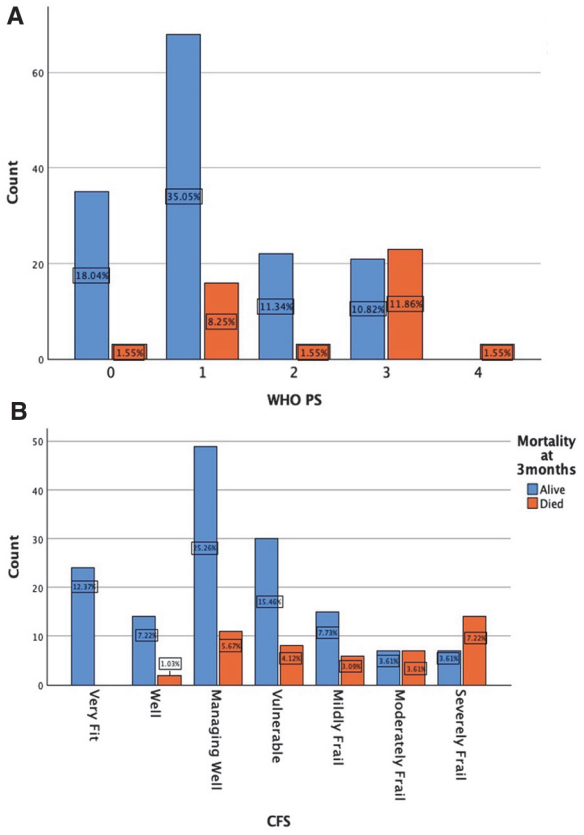
Methods We conducted a retrospective observational study on 194 patients with lung cancer based on confirmed histological diagnosis and clinico-radiological diagnosis from the lung cancer multidisciplinary team.

Result Out of the 194 (median age:74.5 years, IQR 67–79) patients, 51.5% (100) had CFS ≤3 (very fit–managing well), 19.6% (38) had CFS 4(vulnerable) and 28.8% (56) were CFS ≥5 (mildly frail–terminally ill). Using the WHO performance

status, 62.9% (122) had WHO PS 0–1, 12.9% (25) had WHO PS 2 and 24.2% (47) had WHO PS ≥3.

The overall 90-day mortality in the study was 24.7% (48/194). Mortality in patients with CFS ≤3, CFS 4 and CFS ≥5 was 13% (13/100), 21% (8/38) and 48.2% (27/56) respectively. Comparably, mortality in patients with WHO PS 0–1, WHO PS 2 and WHO PS ≥3 was 15.6% (19/122), 12% (3/25) and 55.3% (26/47) respectively.

The Spearman's rank-order correlation showed a significant strong positive correlation between WHO PS and CFS, r_s = .894, n= 194, p <0.001.The binary logistic regression revealed that CFS was superior to WHO PS in predicting 90-day mortality (Nagelkerke $R^2$23.5% vs 19.6%). The odds ratio of 90-day mortality for one unit change in WHO PS was 2.29 [95% CI 1.64–3.2], p=<.001, and CFS was 1.80 [95% CI 1.45–2.25], p=<.001.



Abstract S8 Figure 1 A & B shows mortality at 3 months based on WHO Performance Status (WHO PS) (A) and Clinical Frailty Score (CFS) (B)

Conclusion We conclude CFS to be a better predictor of 90-day mortality and recommend including it in the assessment of lung cancer patients especially ≥65years age-group to guide management pathways and prognosis.

REFERENCE

1. Fletcher JA, *et al*. The impact of frailty on health outcomes in older adults with lung cancer: a systematic review. *Cancer Treat Res Commun* 2022;**33**:100652.

S9 UTILITY OF PET CT IN CT STAGE IA NON-SMALL CELL LUNG CANCER: THE NEW ZEALAND TE WHATU ORA NORTHERN REGION EXPERIENCE

RJ Kelly, GD Anderson, BJ Joshi, JJ Donald. *Department of Radiology, Counties Manukau Health, Auckland, New Zealand*

10.1136/thorax-2024-BTSabstracts.15

Introduction Our objective was to investigate the utility of fluorodeoxyglucose positron emission tomography-computed tomography (FDG PET-CT) in assessing CT stage 1A non-small cell lung cancer (NSCLC) with potential for curative treatment in the Te Whatu Ora Northern region of New Zealand. We hypothesised that FDG PET-CT may have limited value in Tis, T1mi, and T1a category lesions, as previous studies suggest low metastatic risk for lesions with small or no solid components.

Method We retrospectively reviewed 735 lesions in 653 patients from the New Zealand Te Whatu Ora Northern region lung cancer database with stage 1A NSCLC on CT scan who underwent FDG PET-CT imaging. We determined how often FDG PET-CT upstaged patients and then compared to pathological staging where available. We recorded the percent of upstaged lesions that retained Stage 1A status, either by increasing in size but remaining ≤ 3 cm or by being downstaged on pathological assessment, thereby remaining potentially suitable for curative treatment.

Results FDG PET-CT provided an overall upstaging rate of 9.7%. Category-specific rates were 0% in Tis, 0.9% in T1mi, 7.4% in T1a, 10% in T1b, and 12% in T1c groups. The percentage of lesions upstaged on FDG PET-CT that remained Stage 1A was 100% in T1mi, 100% in T1a, 47.1% in T1b, and 40.7% in T1c groups. The p value was statistically significant at 0.004, indicating upstaging beyond Stage 1A was dependent on T category.

Conclusion Our data suggests that FDG PET-CT is indicated for T1b and T1c lesions but is of limited utility in Tis, T1mi and T1a lesions. Omitting FDG PET-CT in these early stage lung cancers could significantly shorten the diagnostic pathway, reduce unnecessary investigations, improve accessibility for patients in whom FDG PET-CT is essential for their diagnostic pathway and potentially yield financial savings.

'The Taming of the T2' – T2 inflammation in asthma

S10 THE EFFECT OF THE ORAL CONTRACEPTIVE PILL ON THE RISK OF ASTHMA EXACERBATIONS IN WOMEN: A POPULATION COHORT STUDY

AR Rafati Fard, B Lee, C Bloom. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.16

Background Asthma incidence and severity is greater in women, indicating interaction between the ovarian hormones and asthma. Yet, experimental and limited epidemiological studies investigating this relationship have reported heterogenous findings. The oral contraceptive pill (OCP) acutely

modifies ovarian hormone levels, therefore we sought to investigate its association with asthma exacerbations. We additionally investigated the influence of body mass index (BMI), smoking, asthma severity and blood eosinophil count on this relationship.

Methods Using nationwide primary healthcare records (Clinical Practice Research Datalink), we followed-up a cohort of women with asthma (aged 18–50-years) for two years, comparing OCP new-users and never-users. OCP was categorised into the combined oral contraceptive (COC) and the progesterone-only pill (POP). Asthma exacerbations were defined as a short course of oral corticosteroids or unscheduled asthma-related hospital attendance. To minimise confounding we applied propensity scoring with inverse probability weighting and weighted cox proportional hazards models. Variables included were age, BMI, smoking, socioeconomic status, asthma severity and comorbidities. Analyses were further stratified by potential effect modifiers.

Results There were 6,863 OCP new-users (3,747 COC; 1,390 POP; 1,726 switchers) and 104,408 never-users. OCP had no effect on asthma exacerbations (HR=1.05, 95%CI 0.95–1.16). When stratified by OCP type, COC and POP similarly had no effect. There was no effect modification of the association by BMI, smoking status or asthma severity. However, when stratifying by OCP type, in the COC users only, blood eosinophilia ($>4x10^9$ cells/L) was associated with reduced exacerbations (HR=0.73, 95%CI 0.54–0.98, p<0.05).

Conclusions OCP was not associated with exacerbations, except when phenotyping asthma patients by type-2 inflammation. We found that in women with blood eosinophilia, COC (but not POP) was associated with a reduced risk of exacerbations. This observation, in real-world data, substantiates the finding of oestrogen-mediated attenuation of eosinophilic asthma in experimental studies. Further *in-vivo* and population-based studies are required to support these findings.

S11 THE DIFFERENT MECHANISMS OF INHALED AND ORAL CORTICOSTEROIDS IN T2-HIGH ASTHMA. FOR THOSE ESTABLISHED ON INHALED STEROIDS ADDITIONAL EFFECTS FROM ORAL STEROIDS MAY LIE IN ACCESS TO THE SMALL AIRWAYS

[1]J Melhorn, [2]C Pelaia, [1]G Hynes, [3]R Shrimanker, [1]L Bermejo-Sanchez, [1]C Borg, [1]M Mahdi, [4]S Couillard, [1]G Lavoie, [1]I Howell, [1]H Xu, [1]ID Pavord, [1]TSC Hinks. *[1]Oxford Respiratory NIHR BRC, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Department of Medical and Surgical Sciences, University Magna Graecia of Catanzaro, Catanzaro, Italy; [3]Department of Respiratory Medicine, North Bristol NHS Trust, Bristol, UK; [4]Faculté de Médecine et des Sciences de la Santé, Université de Sherbrooke, Sherbrooke, Canada*

10.1136/thorax-2024-BTSabstracts.17

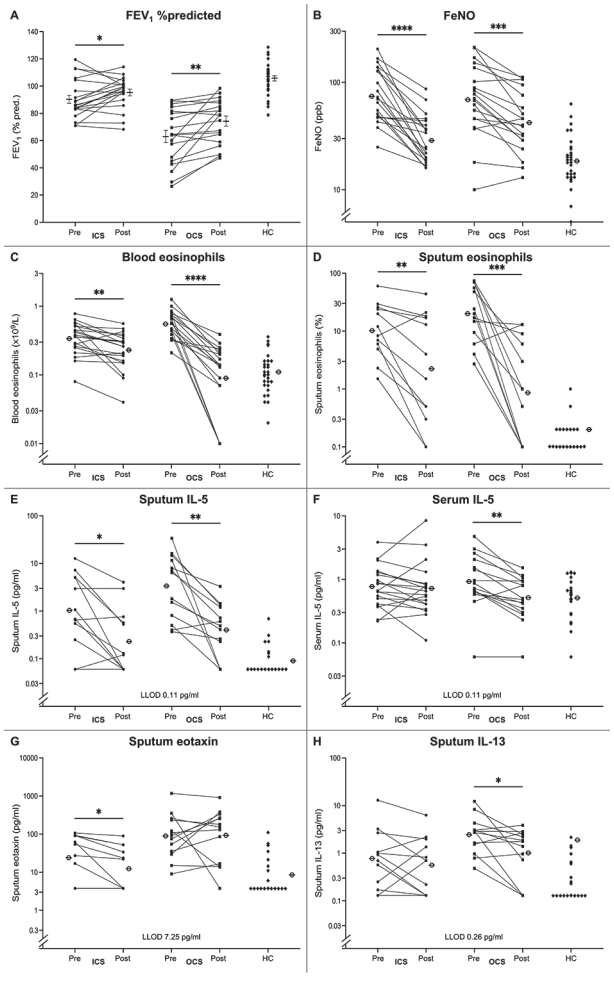
Introduction Inhaled and oral corticosteroids are cornerstone treatments of eosinophilic asthma but their differential mechanisms of action are incompletely understood.

Methods We conducted a prospective observational study to examine the effects of inhaled and oral corticosteroids [REC18/SC/0361]. Participants with FeNO >45 ppb and/or blood eosinophils $>0.30x10^9$/L were selected. Cohorts comprised: (i) inhaled corticosteroid-naïve patients before/after 8 weeks beclomethasone 200 mcg twice daily (ICS group, n=21); (ii) participants with confirmed adherence to ICS treatment (geomean daily BDP equivalent dose ±SEM 949 ±130mcg) *and* abstinent of oral corticosteroids for >3 months before/after 10 days of prednisolone 30 mg daily (OCS group, n=21); (iii) healthy controls (n=31). Outcomes included lung function, symptoms, blood and sputum cell counts and levels of 12 canonical markers of type-2 inflammation assayed via ELISA. Between and within group comparisons were made using mixed effects ANOVA.

Results ICS and OCS groups were matched at baseline for age, gender, atopy, bronchodilator reversibility and FeNO.

Both ICS and OCS treatments resulted in significant improvements in FEV_1 (figure 1A) and reduction of symptom scores (mean ACQ5 difference 1.1 with OCS and 1.5 with ICS, both p<0.001). FeNO was reduced by both ICS (mean reduction 62%, p<0.0001) and OCS (mean reduction 42%, p<0.001) with no significant between-group treatment effect (figure 1B). Introducing OCS treatment resulted in a greater reduction of blood eosinophils (76%) than initiating ICS treatment (31%) (p<0.001) and OCS reduced sputum eosinophil% by a greater margin than ICS (28.5% points vs 6.8% points, p=0.02, figure 1D).

ICS treatment had no significant effect on serum mediators while OCS treatment reduced serum IL-5 only (figure 1F). Both ICS and OCS treatment reduced sputum levels of IL-5, eotaxin-3 and TSLP (all p<0.01). Sputum eotaxin was



Abstract S11 Figure 1 Effect of inhaled and oral corticosteroid treatment on: A. FEV_1% predicted, B. fraction exhaled nitric oxide, C. Blood eosinophil counts, D. sputum eosinophil cell count %, E. serum IL-5 levels, F. sputum IL-5 levels, G. sputum eotaxin levels, H. sputum IL-13 levels. Statistical analyses on blood/sputum eosinophils and cytokine levels performed after log10 transformation of data. Θ geomean, * p<0.05, ** p<0.01, *** p<0.001

reduced uniquely by ICS (p=0.02, figure 1G) while the addition of OCS uniquely reduced sputum levels of IL-4, IL-13 and LTE4 (all p<0.04).

Conclusion Our findings are consistent with an important role for the small airways in FeNO non-suppression and a site of OCS treatment response in T2-high patients. This effect might result through greater tissue bioavailability of OCS and/or in providing enhanced access for inhaled therapies.

S12 ASSOCIATION BETWEEN DISEASE DURATION AND FEV1 IN SEVERE ASTHMA PHENOTYPES AND ENDOTYPES

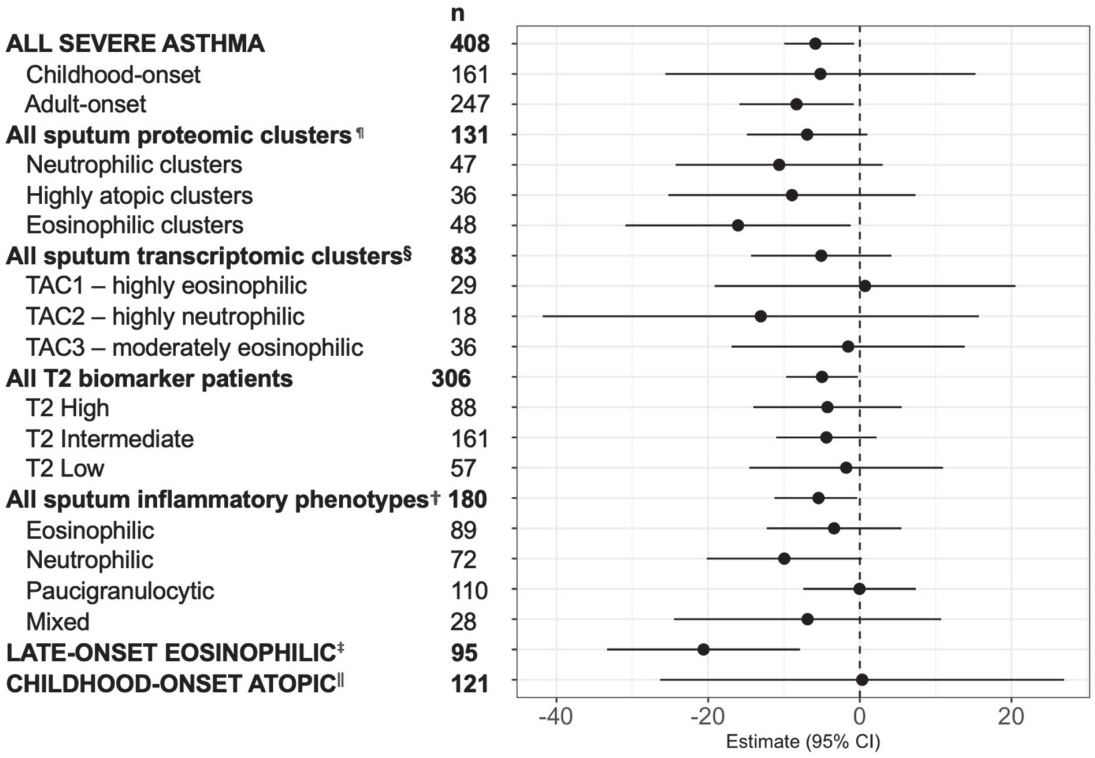
[1]F Yang, [2]N Zounemat-Kermani, [1]P Dixey, [2]IM Adcock, [1]CI Bloom, [2]KF Chung. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]National Heart and Lung Institute and Department of Computing and Data Science Institute, London, UK*

10.1136/thorax-2024-BTSabstracts.18

Background Severe asthma (SA) is a heterogenous inflammatory condition. The influence of asthma duration in SA, and its phenotypes and endotypes, is unknown.

Aims We investigated the relationship between asthma duration and lung function and whether this relationship was influenced by SA phenotypes and endotypes.

Methods We included SA patients aged ≥18 from Unbiased Biomarkers for the Prediction of Respiratory disease Outcomes (U-BIOPRED). Childhood-onset, adult-onset and late-onset asthma were defined as onset of symptoms <18, ≥18 and ≥30 years of age. Association between asthma duration and FEV1 was determined using multivariable linear regression adjusted for age, sex, BMI, ethnicity and smoking history. Patients were then stratified by phenotypes: (1) T2 biomarkers FeNO and blood eosinophils, (2) sputum inflammatory phenotypes; and endotypes: (3) sputum transcriptomic clusters TAC1, TAC2, TAC3,[1] (4) sputum proteomic clusters.[2]



Each row represents a single multiple linear regression model adjusted for age, sex, body mass index, ethnicity and smoking history – FEV1 in ml and asthma duration in years.

¶ Neutrophilic clusters: 8, 9, 10; Highly atopic clusters: 5, 6; Eosinophilic clusters: 1, 2, 3 (Schofield et al. JACI 2019 Jul; 144(1):70-82)

§ TAC1 had highest sputum eosinophils and FeNO; TAC2 had highest sputum neutrophils and serum C-reactive protein; TAC3 had moderately high sputum eosinophils.

† Eosinophilic: sputum eosinophil ≥3%, Neutrophilic: sputum neutrophils ≥60%, Paucigranulocytic: sputum neutrophils <60% and eosinophils <3%, Mixed: sputum eosinophil ≥3% and neutrophils ≥60%.

‡ Late-onset eosinophilic: Asthma onset age ≥30 years and blood eosinophil count ≥0.3 x10^9/L

‖ Childhood-onset atopic: Asthma onset age <18 years and positive serology for common aeroallergen.

Abstract S12 Figure 1 The association between asthma duration (years) and FEV1 (ml) in all severe asthma patients and according to various endotypes and phenotypes.

Results In 408 patients, median asthma duration was 23 (IQR 12,38) years. Each year of asthma duration was associated with, on average, 6ml lower FEV1 (95%CI -10,-2). Longer disease duration was associated with lower FEV1 in those with adult-onset (-8ml, 95%CI -16,-1) but not childhood-onset asthma (-5ml, 95%CI -26,15). When stratified by (1) T2 biomarkers, (2) sputum inflammatory phenotypes and (3) sputum transcriptomic clusters, these did not modify the association between asthma duration and FEV1. When stratified by (4) sputum proteomic clusters, asthma duration was associated with lower FEV1 (16ml per year) in eosinophilic endotypes (95%CI -31,-1), but not highly atopic or neutrophilic endotypes. In patients with late-onset severe eosinophilic asthma, a well-recognised SA phenotype, asthma duration was associated with a much lower FEV1 (22ml per year, 95%CI -36,-8), but this association was not evident in patients with childhood-onset atopic asthma (0.3ml, 95%CI -26,27).

Conclusion Longer disease duration may be more important for lung function decline in patients with late-onset severe eosinophilic asthma, likely to be due to differences in pathobiological mechanisms.

REFERENCES

1. Kuo CS, *et al*. T-helper cell type 2 (Th2) and non-Th2 molecular phenotypes of asthma using sputum transcriptomics in U-BIOPRED. *ERJ* 2017 Feb 8;**49**(2):1602135.
2. Schofield JPR, *et al*. Stratification of asthma phenotypes by airway proteomic signatures. *JACI* 2019 Jul;**144**(1):70–82.

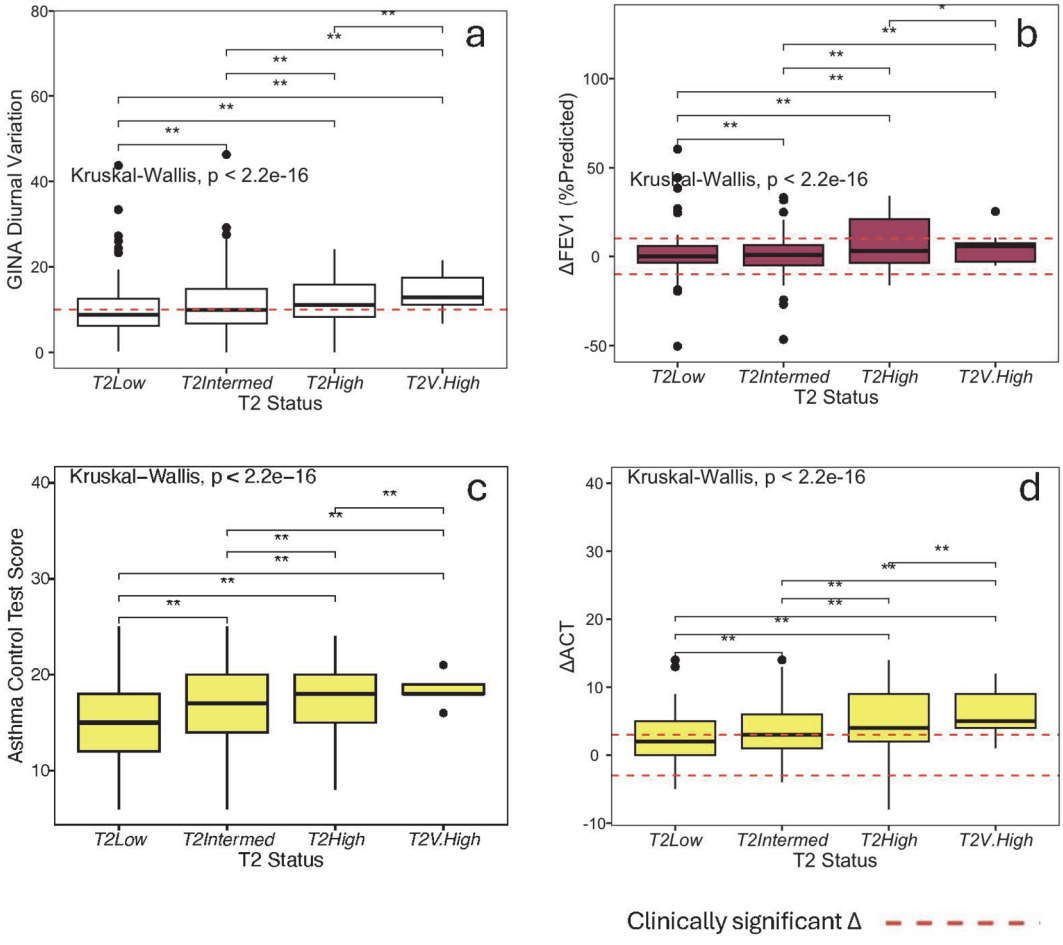
S13 INCREASED VARIABILITY OF PEAK FLOW REFLECT T2 INFLAMMATION MORE THAN ACT OR CHANGE IN FEV1

[1,2]C Ottewill, [3]V Brennan, [1]P Kerr, [1]E MacHale, [4]G Greene, [1,3]RW Costello. [1]*Royal College of Surgeons in Ireland, Dublin, Ireland*; [2]*Bon Secours Hospital, Glasnevin, Dublin, Ireland*; [3]*Department of Respiratory Medicine, Beaumont Hospital, Dublin, Ireland*; [4]*University College Dublin School of Mathematics and Statistics, Dublin, Ireland*

10.1136/thorax-2024-BTSabstracts.19

Introduction Asthma control is assessed with in-person lab spirometry (LS) and by patient-reported outcomes(PROs). However, spirometry provides a point-in-time measure and self-reported questionnaires are biased by non-specific symptoms. As variability in airflow is a characteristic feature of asthma, we tested the hypothesis that airflow variation would reflect changes in T2 inflammation better than LS or PROs.

Methods Post-hoc analysis of data from a clinical trial of 200 patients with severe asthma was performed.[1] A model of diurnal variation (DV) of PEF data that accounted for concomitant short and long-acting beta agonist use, using an exponential decay equation, was developed. T2 status was determined by blood eosinophil (PBE) count and FeNO, with those with PBE <0.3 and FeNO <25 categorized as T2-Low, T2-intermediate as one of PBE >0.3 or FeNO >25, T2-high having eosinophilia and raised FeNO, and T2-Very-high having FeNO >50 and PBE >=0.4., Asthma Control Test (ACT) was



Abstract S13 Figure 1 Figure 1a illustrates peak flow variability's interplay with T2 status. Figure 1b represents the change in FEV1 over the first month of the study, how this relates to T2 status, with a clinically meaningful 10% change is demarcated in red. Absolute ACT and change in ACT over a month period and how these interplay with T2 status are denoted in Figure 1c & d respectively

used to assess PROs. Changes in spirometry from day 0 to day 30 were compared with the adjusted PEF variance.

Results Ordinal logistic regressions, adjusting for age, BMI, gender & prior month's steroid exposure demonstrated an association of T2 status with PEF variability (OR 1.04, p<0.01, 95%CI 1.03–1.05), figure 1.While ΔFEV1 was associated with higher T2 status, median values across categories did not reach a clinically meaningful 10% change in predicted FEV1. Those with lower ACT were more likely to be T2-low. Those whose ACT improved were more frequently T2-high (OR 1.12, p <0.01, 95% CI 1.119–1.127).

Conclusion T2 status correlates with PEF variability. Those with highest FeNO and PBE demonstrated greatest PEF variability. While change in FEV1 correlated with T2status, this did not improve to a clinically meaningful degree. Changes in ACT did not reflect T2 biomarkers. PEF provides a useful assessment of active asthma.

REFERENCE

1. Hale EM, Greene G, Mulvey C, Mokoka MC, Van Boven JFM, Cushen B, *et al*. Use of digital measurement of medication adherence and lung function to guide the management of uncontrolled asthma (INCA Sun): a multicentre, single-blinded, randomised clinical trial. *The Lancet Respiratory Medicine* 2023 Jul;**11** (7):591–601.

S14 LOSS OF MEMBRANE IL-5 RECEPTOR IS A MARKER FOR EOSINOPHIL ACTIVATION

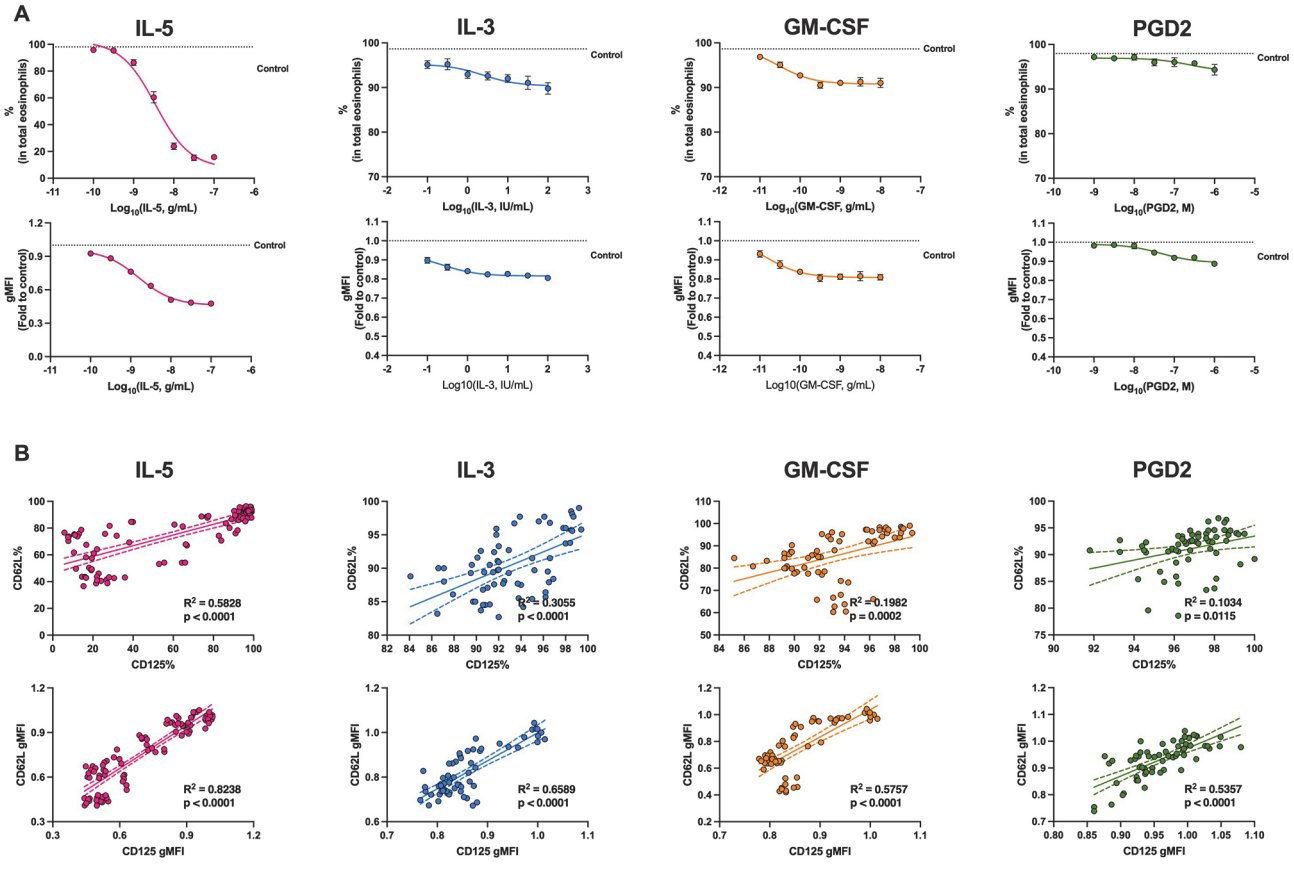
J Luo, J Van Heerden, S Barden, J Melhorn, T Hinks, I Pavord. *Respiratory Medicine Unit and NIHR Oxford Biomedical Research Centre, University of Oxford, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.20

Background It has been reported that the binding of IL-5RA with its ligand or antagonist can lead to cleavage of mIL-5RA and formation of soluble IL-5RA (sIL-5RA), which binds to IL-5 and limits its activity.[1] Our previous data have shown that sIL-5RA is derived from the cleavage of mIL-5RA but not the upregulation of transcriptome, and sIL-5R inhibits IL-5-induced eosinophil activation, migration and survival. However, the relationship between the loss of mIL-5RA (manifestation of cleavage of mIL-5RA) and eosinophil activation is not fully understood.

Methods The expression levels of mIL-5RA (CD125) and activation marker (CD62L) on blood eosinophils were measured by flow cytometer with different stimulation conditions including serial concentrations of IL-5, interleukin-3 (IL-3), granulocyte-macrophage colony-stimulating factor (GM-CSF), and prostaglandin D2 (PGD2). The expression levels were presented as both percentage of marker positive eosinophils in total eosinophils and the ratio of geometric mean of fluorescence intensity (gMFI) of stimulation to that of control. The correlation of CD125 and CD62L was analysed using spearman correlation test under each stimulation condition. Eosinophils were defined as $SSC^{high}CD16^{-}$.

Results A universal downregulation of CD125 was observed following IL-5, IL-3, GM-CSF, and PGD2 stimulation in a dose-dependent manner. Such reduction of CD125 was most obvious in IL-5 stimulation (~80% reduction of $CD125^{+}$ eosinophils) compared to other stimulations (~10% reduction of $CD125^{+}$ eosinophils). Significant correlation of CD125 and CD62L was shown in all stimulation conditions (IL-5: R^2 = 0.8238, p < 0.001; IL-3: R^2 = 0.6589, p < 0.001; GM-



Abstract S14 Figure 1

CSF: R^2 = 0.5757, p < 0.001; PGD2: R^2 = 0.5357, p < 0.001).

Conclusions Loss of mIL-5RA can be induced by different eosinophil activation cytokines or lipid mediators. Loss of mIL-5RA is correlated with the loss of CD62L, suggesting it is a marker for eosinophil activation.

REFERENCE

1. Wilson TM, Maric I, Shukla J, Brown M, Santos C, Simakova O, Khoury P, Fay MP, Kozhich A, Kolbeck R, Metcalfe DD, Klion AD. IL-5 receptor α levels in patients with marked eosinophilia or mastocytosis. *J Allergy Clin Immunol* 2011 Nov;**128**(5):1086–92.e1–3. doi: 10.1016/j.jaci.2011.05.032. Epub 2011 Jul 16. PMID: 21762978; PMCID: PMC3205313.

S15 IL-5RÎ± IS LOST FROM THE SPUTUM EOSINOPHILS OF EOSINOPHILIC ASTHMATICS AT STEADY STATE: POTENTIAL IMPLICATIONS FOR ASTHMA CONTROL

[1]J Melhorn, [2]C Pelaia, [1]M Mahdi, [1]J Luo, [1]D Oliver, [1]G Lavoie, [1]H Ferry, [1]ID Pavord, [1]TSC Hinks. *[1]Oxford Respiratory NIHR BRC, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Department of Medical and Surgical Sciences, University Magna Graecia of Catanzaro, Catanzaro, Italy*

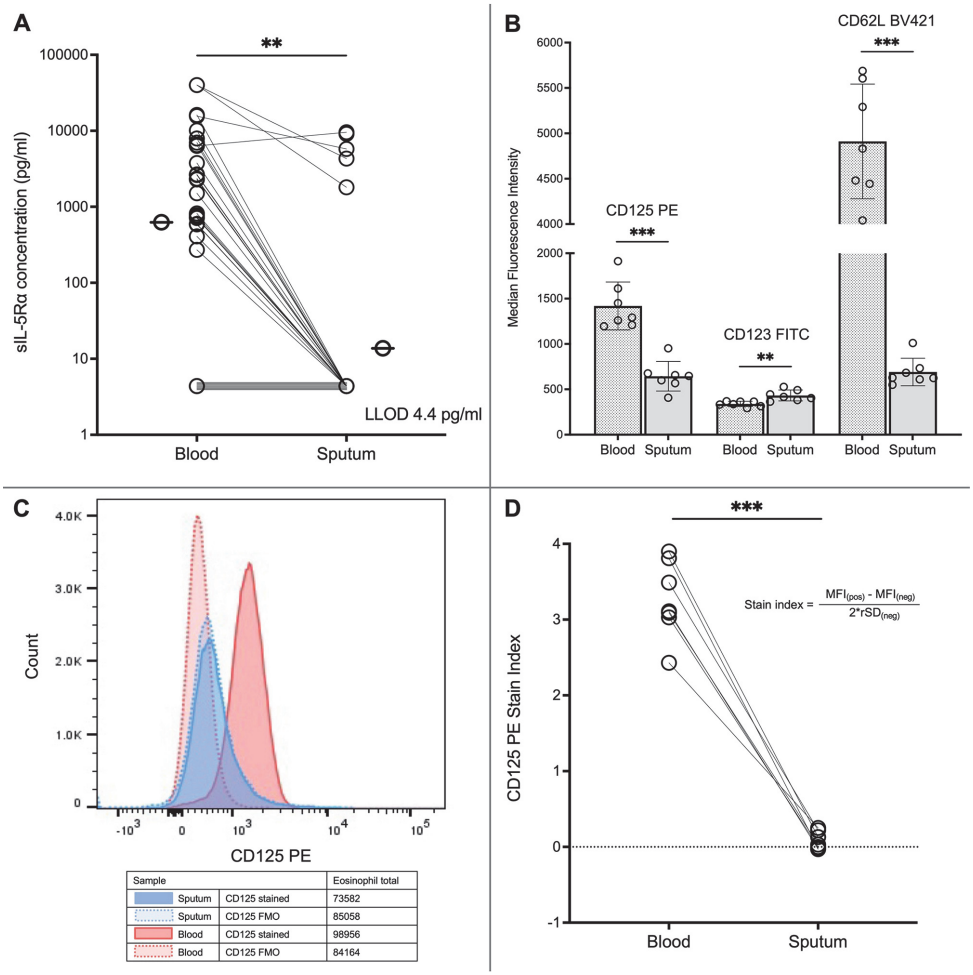
10.1136/thorax-2024-BTSabstracts.21

Introduction IL-5 exerts effects on eosinophils from prolonging their survival to activation via IL-5Rα. It has been reported that binding of IL-5 by the solubilized form of the receptor, sIL-5Rα, can limit these effects on eosinophils.[1] This has implications for eosinophil counts and activation in eosinophilic asthma.

Methods Patients with confirmed eosinophilic asthma (n=31) free of oral corticosteroids for ≥3 months provided simultaneous blood and induced sputum. sIL-5Rα and IL-5 levels in plasma and sputum supernatants were assayed via ELISA. Blood and sputum eosinophils (n=7) were flow-sorted (SSC^{high}>Singlets>Live>$CD45^{pos}$>$CD16^{neg}$>Siglec-8^{pos}) with cytospins to assess purity. Expression of IL-5Rα (CD125), IL-3R (CD123) and CD62L on sorted eosinophils was enumerated.

Results No relationship was found between plasma levels of sIL-5Rα and IL-5 or blood eosinophil counts but there was a weak correlation between plasma sIL5Rα and fractional exhaled nitric oxide R^2=0.33, p=0.07.

Levels of sIL-5Rα in sputum supernatant were consistently reduced compared to plasma levels (figure 1A). IL-5Rα expression on sputum eosinophils is reduced compared to blood eosinophils (p<0.001, figure 1C&D). Increased expression of IL3R on sputum eosinophils demonstrates this is not a



Abstract S15 Figure 1 A. Difference in concentration between soluble IL-5Rα in plasma and sputum supernatant(n=31). B. Median Fluorescence Intensity of CD125 (IL-5Rα), CD123 (IL-3R) and CD62L on blood and sputum eosinophils (n=7). C. Histogram showing fluorescence intensity of CD125 (IL-5Rα) on blood and sputum eosinophils with CD125 negative (FMO) conditions (n=7, pooled). D.Stain index for CD125 (IL-5Rα) on paired blood and sputum eosinophils by individual controlling for eosinophil auto-fluorescence (n=7). = geomean, ** p<0.01, *** p<0.001

ubiquitous effect on eosinophil receptors ($p<0.003$, figure 1B). Further experiments confirmed loss of IL-5Rα was not due to sputum handling. There was an anticipated reduction in sputum eosinophil CD62L expression and increased sputum eosinophil auto-fluorescence (both $p<0.001$, figure 1B&C). Sorted blood and sputum eosinophils were of high purity: mean eosinophil count for blood 100% (95%CI 100–100%), and sputum 98.5% (95%CI 97.9–99.1%).

Conclusion There is a sharp reduction in IL-5Rα expression on sputum eosinophils compared to blood eosinophils in eosinophilic asthma. This reduction corresponds with markers of eosinophil migration and activation. The lack of relationship between blood eosinophil counts and plasma sIL-5Rα concentrations may reflect the contribution of non-IL-5 mediators to loss of membrane bound IL-5Rα. Further work is planned to examine this.

These findings would be consistent with loss of IL-5Rα expression on sputum eosinophils acting to prevent over-stimulation within the airway from higher levels of IL-5.

REFERENCE

1. Liu, *et al.* Decreased expression of membrane IL-5 receptor on human eosinophils:IL-5 down-modulates its receptor via a proteinase-mediated process. *J.Immunol* 2002;**269**(11):6459–646.

'Lungs Labours Lost' – Occupational lung disease

S16 HANDS-ON ASTHMA (HEALTH AND SOCIAL FACTORS AND THEIR INFLUENCE ON ASTHMA SYMPTOMS AT WORK). A CROSS-SECTIONAL STUDY TO EVALUATE THE INFLUENCE OF BIO-PSYCHO-SOCIAL AND CULTURAL FACTORS ON THE PRESENCE OF WORK-EXACERBATED ASTHMA

N Kongsupon, GI Walters, RL Adams, RE Jordan, P Adab. *University of Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.22

Introduction Work-exacerbated asthma (WEA) affects ≤25% of working-age asthmatics[1] and is associated with absenteeism, loss of productivity and poor asthma control. Patients with work-related asthma symptoms (WRS) may be exposed to airway irritants and other physical and psychological factors at work. The aim of the HANDS-ON study is to examine the burden and relationship of a variety of bio-psycho-social and workplace cultural factors and the relationship with WRS and WEA.

Methods We recruited n=659 working-age patients with asthma from 21 West Midlands primary care practices (n=160) and from NIHR Be-Part-of-Research scheme (n=499); overall response rate=11%. Participants completed cross-sectional questionnaires using REDCap software, with items on demographics, asthma diagnosis and control, treatments, employment characteristics, job exposures and WRS, and the following outcome variables (with associated tools): absenteeism, Stanford presenteeism scale (SPS-6), quality of life (EQ-5D), hospital anxiety and depression scale (HADS), and job satisfaction (Minnesota satisfaction questionnaire). WRS were defined as those better on days away from work, and/or on longer periods, on any day ≤preceding 12 months. Job roles were mapped to ISCO-88 and the OAs-JEM (job-exposure matrix).[2] This initial analysis compared a variety of variables between those with and without WRS, using hypothesis testing.

Results 394/659 (60%) of patients described WRS; using the JEM 17–20% had high/moderate exposure to sensitising agents, and 28% to airway irritants, not significantly different to those without WRS. Compared to those without WRS, patients with WRS had significantly higher reliever inhaler (57%vs.37%;$p<0.001$) and oral corticosteroid use (37% vs.18%;$p<0.001$), more asthma control rated poor (28% vs.15%;$p<0.001$), lower EQ-5D score (0.86vs.0.92;$p<0.001$) more clinical anxiety (31%vs.22%; $p=0.005$) and depression (13%vs.7%;$p=0.02$). more likely to perceive workplace triggers (emotional stress=43% vs 20%;$p<0.001$, temperature extremes=69%vs.42%;$p<0.001$, physical exertion=55% vs.36%;$p<0.001$), more asthma-related sickness absence (43% vs.22%;$p<0.001$), greater presenteeism (19vs.18;$p<0.001$), and lower job satisfaction (3.6vs.3.9;$p<0.001$).

Conclusions WRS in individuals in the general population with asthma are not associated with inhaled exposures to asthmagens or irritants; differences in treatment, control, mental status, physical and emotional stressors exist.

REFERENCES

1. Henneberger, *et al. Am J Respir Crit Care Med* 2011;**184**:368–78.
2. Le Moual, *et al. Occup Environ Med* 2018;**75**:507–14.

S17 THE DIAGNOSTIC ACCURACY OF CHEST X-RAY FOR THE DIAGNOSIS OF SILICOSIS AND HOW THIS RELATES TO SILICA EXPOSURE

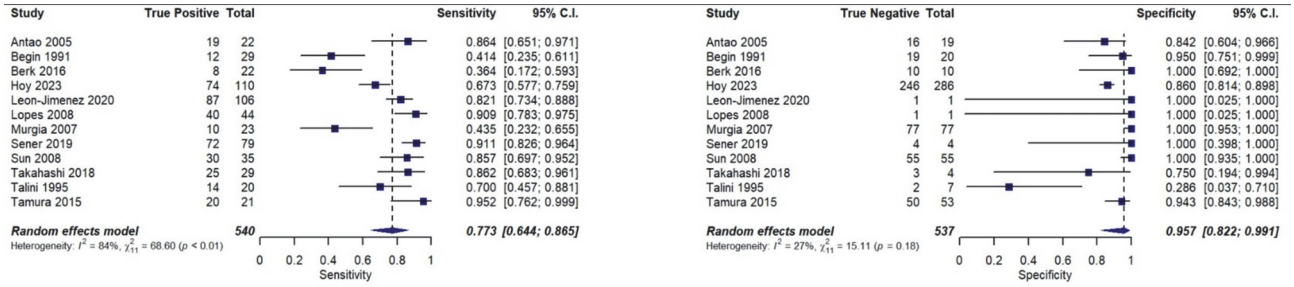
A Durairaj, P Howlett, J Feary. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.23

Background Silicosis remains a global health problem. Chest radiography (CXR) is widely used for diagnosis and screening, despite concerns regarding its sensitivity. This systematic review and meta-analysis aimed to determine the pooled diagnostic accuracy of CXR compared to computed tomography (CT), high-resolution CT (HRCT) and autopsy, investigate heterogeneity according to severity of disease, and model the exposure-response relationship between silica exposure and CXR sensitivity.

Methods Medline, Embase, Scopus, and Web of Science databases were searched for relevant studies. Methodological quality was assessed using QUADAS-2. Meta-analyses were performed separately for different reference standards. We combined a linear meta-regression model to investigate differential heterogeneity according to severity of disease (determined by the ILO classification) and the exposure-response relationship with a previously unpublished logistic regression model from the Institute of Occupational Medicine. We estimated the number of cases missed using CXR.

Results Twenty studies met the inclusion criteria. CXR had moderate sensitivity (0.77; 95% CI: 0.64–0.87, I^2 = 84%, n=12) and high specificity (0.96, 95% CI: 0.82–0.99, I^2 = 27%, n=12) compared to HRCT (figure 1), and lower sensitivity (0.50, 95% CI: 0.45–0.55, I^2 = 0%, n=2) and high specificity (0.91, 95% CI: 0.87–0.93, I^2 = 20%, n=2) compared to autopsy. Compared to CT, CXR had high sensitivity (0.99, 95% CI: 0.86–1.00, I^2 = 0%, n=2) and moderate specificity (0.78, 95% CI: 0.15–0.99, I^2 = 0%, n=2). The linear meta-regression model (n=7 studies) showed that the



Abstract S17 Figure 1 Forest plots describing the sensitivity (left) and specificity (right) of CXR compared to HRCT

proportion of severe cases (ILO category ≥2) explained a substantial proportion of the heterogeneity in sensitivity (R^2= 88.56%). Modelling the exposure-response relationship revealed that CXR sensitivity increased with increasing silica exposure, reaching 1.0 at 7.3 mg/m^3-years (95% CI: 3.1–18.6). However, the absolute missed cases increased with higher exposures due to the concomitant increase in prevalence; for example, at 4 mg/m^3-years, 673/2058 (33%) cases were missed by CXR.

Discussion We report the sensitivity of CXRs in detection of silicosis and demonstrate that reliance on CXR alone in screening and health surveillance programmes will miss a significant burden of silicosis, especially in high-exposure settings, which may be mitigated through the wider use of HRCT.

S18 FIFTY YEARS OF THE GREAT BRITAIN ASBESTOS WORKERS' SURVEY (AWS): PAST, PRESENT AND FUTURE

G Nicholls, L Darnton, C Young, D Fishwick, A Curran. *Health and Safety Executive, Buxton, UK*

10.1136/thorax-2024-BTSabstracts.24

Introduction The Great Britain (GB) Asbestos Workers' Survey is one of the longest running occupational health cohorts in the world. It aims to monitor the long-term health of people who work in the asbestos industry. The study has been consistently recruiting and collecting data for over 50 years. Some of the results to date will be summarised along with how the survey has and will continue to adapt.

Methods Licensed asbestos workers are recruited at routine medical examinations required every two years under asbestos regulations. With their consent, they complete a short questionnaire and are flagged with National Health Service central registers for mortality and cancer incidence. The initially brief questionnaire collected date of first occupational exposure and smoking status. In 1987, it included more detailed questions about asbestos removal work. In 2020, it was extended to collect current health status.

Results Since 1971, the study has recruited 121,325 licensed asbestos workers who have worked in the GB asbestos industry. Analyses carried out in the 2000's confirmed known associations between asbestos and mortality from, e.g., lung cancer, mesothelioma and asbestosis, and that past work with asbestos insulation posed the greatest risk to health. An analysis of asbestos removal workers found higher than expected mortality from asbestos-related diseases [e.g., mesothelioma standardised mortality ratio 808, 95% confidence interval (CI) 629–1023]. The study has highlighted high smoking rates among asbestos workers and reported a greater than additive interaction between smoking and asbestos on lung cancer mortality (synergy index 1.4, 95% CI 1.2–1.6). A cross-section of recent surveys found that of the 3,584 asbestos workers examined between April 2022 and March 2023, 1824 (51%) consented and completed a questionnaire. Smoking rates remain high (40%), nearly 10% of workers reported dry stripping asbestos, and fewer than 10 (<0.5%) reported having been diagnosed with an asbestos-related disease.

Conclusions The focus of the study has been and will continue to be monitoring the long-term health of asbestos workers in GB. However, the repeated cross-sectional nature of the data collections and additional health questions means that useful insights can now be gained more immediately.

S19 RESPIRATORY HEALTH HAZARDS IN THE WIND INDUSTRY: A SCOPING REVIEW

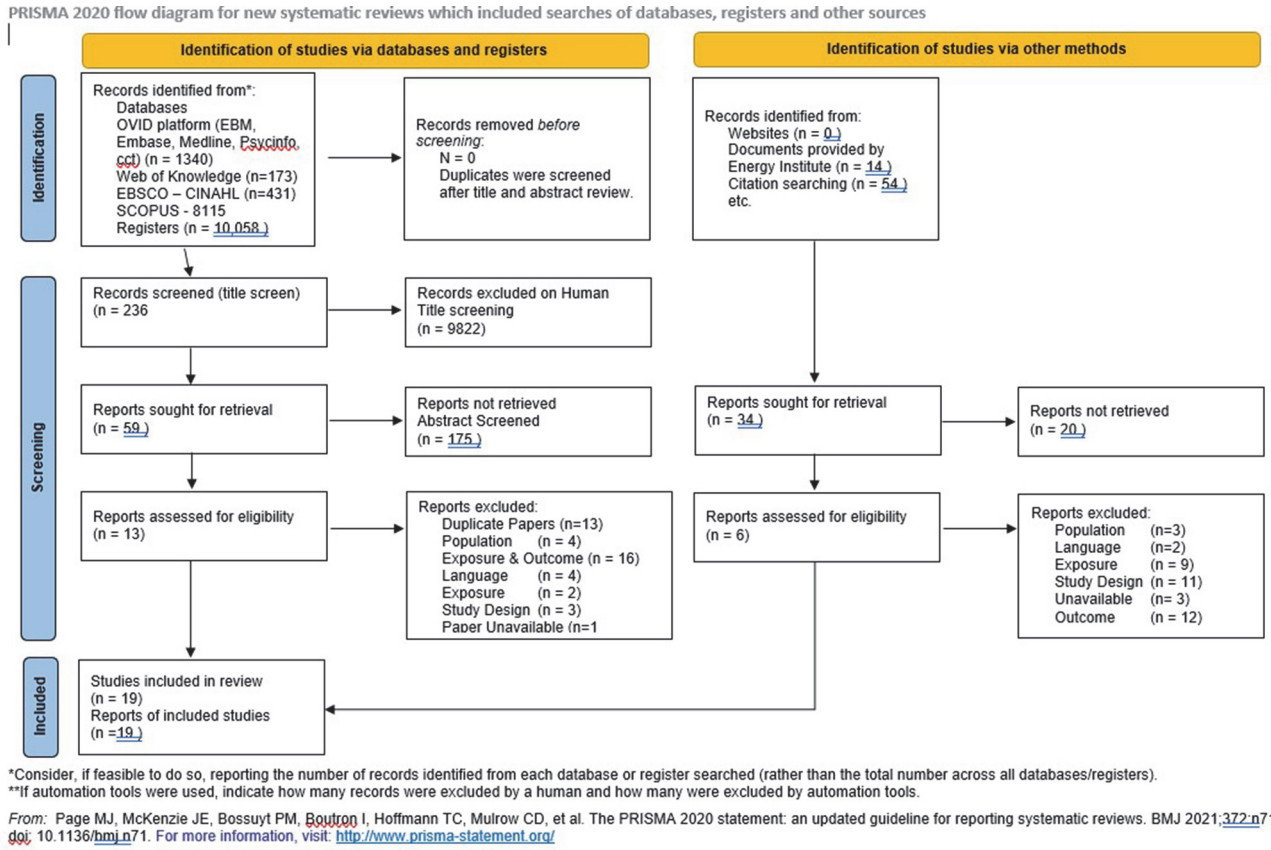
[1]T McLay, [1]V Turner, [2]J Hoyle, [1]D Fishwick, [2]H Badri, [2]R Wiggans, [1]M Van-Tongeren. *[1]University of Manchester, Manchester, UK; [2]North Manchester General Hospital, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.25

Introduction The wind industry is experiencing significant growth in the UK. Production of on and offshore wind has not commonly been associated with respiratory health hazards. This scoping review aimed to understand existing evidence for respiratory health hazards associated with working in the wind industry.

Methodology A scoping review was performed using predefined search terms in OVID, Web of Knowledge, EBSCO, and SCOPUS, and reported according to PRISMA methodology (figure 1). Systematic reviews were screened for additional references. Information on relevant exposures was sought from industry sources and was also included in the review. Studies were included if published in English and regarding respiratory health hazards in the wind industry. Studies were excluded if they only addressed hazards associated with manufacture of components for the wind industry.

Results Nineteen articles were included. Papers published were heterogenous in terms of quality and methodology, and few directly addressed potentially harmful respiratory exposures in the wind industry. Respiratory hazards were identified during turbine maintenance and repair, including epoxy resins, isocyanates, phthalic anhydrides, silica dust, styrene, fiberglass, and



Abstract S19 Figure 1 PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources.

particulate. One study identified a risk of offshore exposure to contaminated water associated with Legionella and another offshore study identified an associated with brevotoxin-releasing phyloplankton and exacerbations of asthma.

Conclusion We identified several potential respiratory hazards associated with working in the wind industry, particularly in maintenance and repair. Biological hazards were associated with work in offshore environments. Workers, employers, and policy makers should be aware of potential hazards associated with working in wind and measures taken to mitigate any identified risks.

S20 LESSONS LEARNT FROM A COMBINED SCREENING AND RESEARCH PROGRAMME FOR SILICOSIS AND TUBERCULOSIS AMONGST A SMALL-SCALE MINING POPULATION

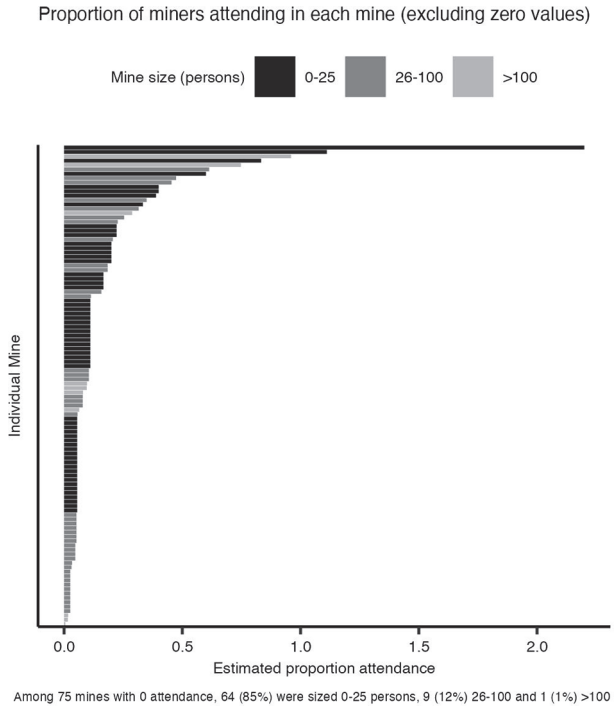
[1]PJ Howlett, [2]BN Said, [2]E Mwanga, [1]A Amaral, [1]J Feary, [2]SG Mpagama. *[1]Imperial College London, London, UK; [2]KIDH, Kilimanjaro, Tanzania*

10.1136/thorax-2024-BTSabstracts.26

Background There are 44 million small-scale miners globally who face a significant burden of occupational lung disease. There is a need for expanded access to care and research, however clinical and logistical challenges make the population difficult-to-access. There is a need to better understand how research and care can be improved in this context. We aimed to describe and evaluate a combined research and screening programme in Mererani, an underground gemstone mining area in Northern Tanzania.

Methods Following a mapping exercise to identify the number, size and location of mines, a tuberculosis-silicosis screening programme was conducted from 11–24th March 2024. Xpert Ultra was used for tuberculosis (TB) diagnosis. Early treatment outcomes were evaluated at 2-months. Programme costs were estimated from the study budget. Following a post-programme reflective meeting and internal report, we used the RE-AIM (Reach, Adoption, Effectiveness, Implementation, Maintenance) framework to evaluate the programme.

Results Following mapping, 185 mines were identified. The most common category of size was 11–25 miners (51%); the estimated total miner population was 6375 persons. 1063 miners and 221 community members (including ex-miners) were screened; 4 miners and 2 community members declined consent for research. No miners attended from 75 mines. Among the remaining mines (figure 1) the median attendance was 17.3% (IQR 9.7% - 18.4%). Among miners and community members, 45/1063 (3.3%) had microbiologically confirmed TB of whom 4 had died at 2 months; among community members 14/221 (6.3%) had microbiological TB and 1 (an ex-miner) had died. Silicosis prevalence is yet to be formally evaluated. Screening cost £18.68 per individual. Challenges identified using the RE-AIM framework were: (1) Selection bias through under-representation of some mines; (2) Clinical differentiation of silicosis, post-TB lung disease and TB. Successes were: (1) Engagement of stakeholders allowing effective implementation and maintenance; (2) Maintaining



Abstract S20 Figure 1

high volume screening while also collecting valuable research information.

Discussion Data collection for research purposes is feasible and should be adopted as part of screening in SSM populations, with special attention paid to ensuring adequate reach of the activity. The high early mortality among microbiologically positive TB cases is highly concerning and requires urgent investigation.

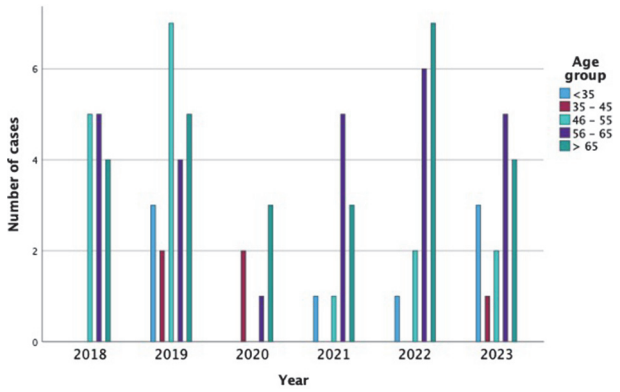
S21 EPIDEMIOLOGY OF SILICOSIS IN THE UK: AN UPDATE FROM THE SWORD SCHEME 2018–2023

[1]R Wiggans, [1]L Byrne, [1]D Fishwick, [1]M Van-Tongeren, [2]CM Barber. *[1]University of Manchester, Manchester, UK; [2]Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.27

Introduction Silicosis is a preventable pneumoconiosis, and cases continue to be reported in the UK. Artificial stone silicosis is an emerging disease in high-income countries but until recently no UK cases had been identified. We analysed cases of silicosis reported to the UK surveillance of work-related occupational respiratory disease (SWORD) scheme from 2018–2023.

Methodology A previously published study of silicosis cases reported to SWORD was updated.[1] To account for temporal reporting changes, silicosis cases were defined as either: 1) 'pneumoconiosis', causative agent 'respirable crystalline silica (RCS)' or 'stone, quarry (etc) dust'; 2) 'silicosis'; or 3) 'other pneumoconiosis' or 'other' where silicosis was included in the diagnosis. Mean age at reporting was calculated yearly and compared using ANOVA. Cases were split into occupational and industry groups using standard occupational classification (SOC) and standard industrial classification (SIC) codes respectively.



Abstract S21 Figure 1 Diagnoses of silicosis reported to the SWORD scheme, 2018 – 23, split by age group

Results Eighty-two cases of silicosis were reported across the period (figure 1). Most cases (n=77, 94%) were men. Mean age was 59 (SD 14) years: youngest age at reporting was 27 and the oldest was 99. Mean age by year ranged from 56 to 64, with no significant difference across the period.

Thirty-five cases were reported in SOC code 5 'skilled trades and occupations', 37 in code 8 'process plant and machine operatives', six in group 9 'elementary occupations', with the remainder in groups 3 and 2.

Most cases were reported in stonemasons (n=19, 23%), ceramic/brick/pottery workers (n=18, 22%), then construction, tunnelling, and other occupations (all n=11, 13%). Other occupations included dental technicians, chemical processing, and an application engineer. Four cases were reported in benchtop fabricators using artificial stone.

Conclusion Silicosis remains a problem in the UK, with approximately 14 cases per year reported between 2018–23. Cases persist in younger age groups suggesting exposures for some remain unacceptably high. Though cases of silicosis continue to occur in traditionally high-risk jobs artificial stone silicosis is an emerging risk in the UK. Individuals, employers, policymakers and healthcare professionals should remain alert to the risk of silicosis.

REFERENCE

1. Barber CM, Fishwick D, Carder M, *et al. Occup Environ Med* 2019;**76**:17–21.

'This is Going to Hurt' – Pleural interventions

S22 THE ROLE OF ERECTOR SPINAE PLANE BLOCKS IN MEDICAL THORACOSCOPY: A SAFE AND EFFECTIVE WAY OF PROVIDING ANALGESIA

[1]T Wijayaratne, [1]A Yousuf, [1]R Samarasinghe, [1]A Mavilakandy, [2]H Yusuff, [2]S Hanna-Jumma, [1]S Ajmal, [1]R Sudhir, [1]R Panchal. *[1]Department of Respiratory Medicine, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK; [2]Department of Anaesthetics, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.28

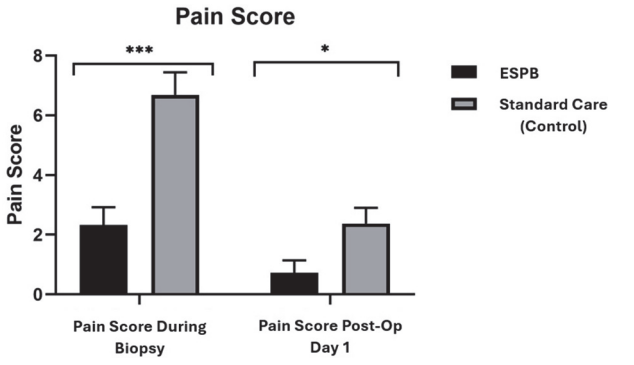
Introduction Erector spinae plane block (ESPB) is an interfascial plane block used as a regional anaesthetic in thoracic surgery. Medical thoracoscopy (MT) is performed under conscious sedation with injection of a local anaesthetic at the

port of insertion. However, this does not provide anaesthesia to the parietal pleura where biopsies are obtained. This study aims to evaluate the feasibility and efficacy of ESPB under ultrasound guidance in facilitating MT.

Methods A total of 31 patients (15 patients with ESPB with standard care and 16 with standard care alone (control) who underwent MT from March 2023-April 2024 were included. Primary and secondary outcomes included, patient reported pain severity using a 10 point numerical rating scale during biopsy and the following day, dosages of midazolam and fentanyl and dosages of postoperative analgesia.

Results Intravenous midazolam requirement was lower in the ESPB group compared to the control group (2.47 ± 0.198 mg vs. 3.06 ± 0.214 mg, P<0.05), while fentanyl requirements were similar (75.0 ± 6.46 µg vs. 67.2 ± 6.34 µg, P=0.468). Pain scores were significantly lower for the ESPB group during biopsy (2.33 ± 0.590 vs. 6.69 ± 0.757, P=0.0003) and day after (0.733 ± 0.408 vs. 2.38 ± 0.531, P<0.05) when compared with the control group. ESPB group also demonstrated a non-significant reduction in postoperative paracetamol (2.93 ± 0.518 mg vs. 3.13 ± 0.593 mg, P=0.916) and oral morphine (18.1 ± 4.37 mg vs. 29.9 ± 10.1 mg, P=0.475). No adverse outcomes were noted.

Discussion This study demonstrated encouraging outcomes as demonstrated by reduced pain severity, reduced analgesic and sedation requirements during the procedure in patients who received ESPB. In addition, this approach appears safe with no reported adverse events. ESPB is a paraspinal fascial plane block where local anaesthesia is placed between the erector spinae muscle and the spinal transverse process. This would block the dorsal and ventral rami of the thoracic nerves which will adequately provide analgesia and anaesthesia to the parietal pleura. The ease of identification of the erector spinae plane using ultrasound makes ESPB an accessible and feasible technique for non-anaesthetists to perform after appropriate training.



Abstract S22 Figure 1

S23 ADJUSTING TO LIFE WITH AN INDWELLING PLEURAL CATHETER – ASSESSING AND IMPROVING WRITTEN INFORMATION FOR PATIENTS

F Vivian, J Liang, O Kadwani, J Zhang. *Guy's and St Thomas' NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.29

Introduction Malignant pleural effusions are common, with indwelling pleural catheters (IPCs) being a first line treatment option. The MY-IPC study highlighted the significant psychosocial impact of living with an IPC.[1] Prominent themes affecting patient experience included anxiety surrounding physical activities, IPC-related physical symptoms and care adjustments.

Aims

1. To evaluate existing written resources for patients undergoing IPC insertion for the management of symptomatic pleural effusions.
2. To identify how these might be improved to equip patients for living with an IPC.

Methods Existing resources for patients undergoing IPC insertion were identified from a web search. A 'gold-standard' written resource was created by combining issues covered in existing resources and those highlighted in the MY-IPC study. The new resource was qualitatively assessed by 5 current IPC patients. Pre-existing resources were qualitatively assessed against our new resource.

Results Existing resources were identified from 10 hospitals, 4 manufacturers and the British Thoracic Society. Many concerns identified by patients in the MY-IPC study were not addressed in these resources, for example none discussed physical activities (table 1). In areas that were addressed,

Abstract S23 Table 1 Qualitative assessment of existing written resources against topics included in our 'gold-standard' resource

	Stitches / dressings	Bathing	Pain	Itching	Physical activities	Sleep	Travel	Damage / displacement	Drainage schedule	Drainage supplies	Fluid colour	Waste disposal
North East District General Hospital	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
North West Teaching Hospital	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Midlands District General Hospital (1)	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗	✗	✗
Midlands District General Hospital (2)	✓	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
South West Teaching Hospital	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	✓	✗
South West District General Hospital (1)	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗
South West District General Hospital (2)	✓	✓	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗
South East Teaching Hospital	✓	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
London Teaching Hospital (1)	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✓
London Teaching Hospital (2)	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Manufacturer (1)	✗	✓	✗	✗	✗	✗	✗	✓	✓	✗	✓	✗
Manufacturer (2)	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗
Manufacturer (3)	✗	✓	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗
Manufacturer (4)	✗	✓	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗
British Thoracic Society sample leaflet	✓	✓	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗

detail was often lacking, for example few discussed flexibility around drainages. All 5 patients who reviewed our new resource provided positive feedback. For instance, one wrote that 'The leaflet has covered all eventualities, and I have nothing further to add.' and another that it was 'clear, concise, and easy to read'.

Discussion Living with an IPC is a significant life adjustment. Existing resources fail to address many of the anxieties and practical issues experienced by patients. Providing quality written information at time of insertion can help ease the psychosocial impact of living with an IPC. We are currently working to share the new resource more widely with the pleural community online.

REFERENCE

1. Zhang J, *et al*. Malignant Pleural Effusions: Evaluating the Psychosocial Impact of Indwelling Pleural Catheters on Patients (MY-IPC) – An Interim Analysis [abstract]. In: Griffiths M, O'Kane C, Quint J. (eds.) British Thoracic Society Winter Meeting 2023; 2023 Nov 22–24; London, UK. London (UK): BMJ; 2023; A100.

S24 THE CASE FOR A NCEPOD REVIEW INTO HARM FROM PLEURAL INTERVENTIONS

A Aujayeb. *Northumbria Healthcare NHS Foundation Trust, Newcastle, UK*

10.1136/thorax-2024-BTSabstracts.30

Introduction Complications due to pleural interventions are common and under-reported. The patient safety incidents occur frequently enough to have been the subject of two national patient safety alerts in 2008 and 2020.

Methods A survey of members of the British Thoracic Society pleural specialist advisory group again revealed instances of harm from six trusts in England over the last two years.

Results Six trusts provided information, from the last two years. There were 11 serious harm incidents described, related to 1. Poor decision, 2. Poor interpretation of chest imaging 3. Poor choice of pleural intervention, 4. Timing of intervention. They were- a bleed from a chest drain inserted out of hours without the recommended safety checks and requiring cardiothoracic surgery, inappropriate drain insertion out of hours by trainees only trained on mannequins with no experience on real patients, large bore drain inserted unnecessarily and damaging the underlying lung, requiring surgery, two examples of misinterpretation of a chest x-ray resulting in unnecessary drain insertion and a complication requiring surgery, four examples of accidental insertion into the abdominal cavity (three directly into the liver and one into the spleen), two deaths re-expansion pulmonary oedema, two retained guidewire within the chest, a drain into the heart with fatal bleeding, multiple examples of drains nor properly secured and falling out, often requiring further invasive procedures to re-site or replace.

Conclusions Based on this data, it is estimated that in just over 200 hospitals there may have been as many as 370 incidences of serious harm over the same two year period. An NCEPOD review, based on the above, has now reached the final stages of approval with the Healthcare Quality Improvement Partnership.

S25 LOCAL ANAESTHETIC USE IN PLEURAL PROCEDURES: TIME TO RECONSIDER THE GUIDELINES?

[1]I Mechie, [1]C Mounsey, [1]D Addala, [2]E Smith, [2]Z Small, [2]B Gould, [2]R Suribhatla, [2]G Annetts, [2]D Krouzkova, [1]N Rahman. *[1]Oxford University Hospitals NHS Trust, Oxford, UK; [2]Oxford University, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.31

Introduction Over 30,000 pleural procedures are performed in the United Kingdom every year. In line with most procedures using local anaesthetic, British Thoracic Society guidelines recommend lidocaine at doses up to 3mg/kg, or 7mg/kg if co-administered with adrenaline.[1] However, there is no consensus on safe maximum dosing, and it has been suggested that blanket maximum doses across individuals and procedures are not valid.[2]

Methods Data on local anaesthetic usage in pleural procedures at Oxford University Hospitals were collected from the procedure reports from pleural lists over a two-year period (January 2022 to December 2023). Patient weights were obtained from the electronic medical record.

Results 930 procedure reports were reviewed. Of these procedures, 362 involved the use of lidocaine without adrenaline at doses >3mg/kg, 63 at doses >4.5mg/kg and 13 at doses >6mg/kg. A further 21 procedures used lidocaine with adrenaline at doses >7mg/kg. There were no incidences of local anaesthetic toxicity.

Discussion The dose of lidocaine used in pleural procedures at Oxford University Hospitals exceeded the recommended dose advocated by the British Thoracic Society guidelines in 49% of cases over the measured period. Despite this, there were no incidences of local anaesthetic toxicity. Given that pleural diseases are becoming more common; and pain during pleural procedures can interfere with procedure success and patient satisfaction; safely optimising pain control in patients undergoing pleural procedures is paramount. Our results suggests that guidance on lidocaine use in pleural procedures should be reconsidered to support a transition towards procedure- and patient-centred dosing.

REFERENCES

1. Asciak R, *et al*. British Thoracic Society Clinical Statement on pleural procedures. doi:10.1136/thorax-2022-219371.
2. Heavner JE. Let's abandon blanket maximum recommended doses of local anesthetics. *Reg Anesth Pain Med* 2004;**29**:524.

S26 FEASIBILITY AND EFFECTIVENESS OF THE PASSIO™ DIGITAL DRAINAGE SYSTEM IN REDUCING CHEST PAIN DURING IPC PLEURAL DRAINAGE

T Wijayaratne, F Hinchcliffe, S Rizvi, A Mavilakandy, S Johnstone, R Sudhir, R Panchal. *Department of Respiratory Medicine, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK*

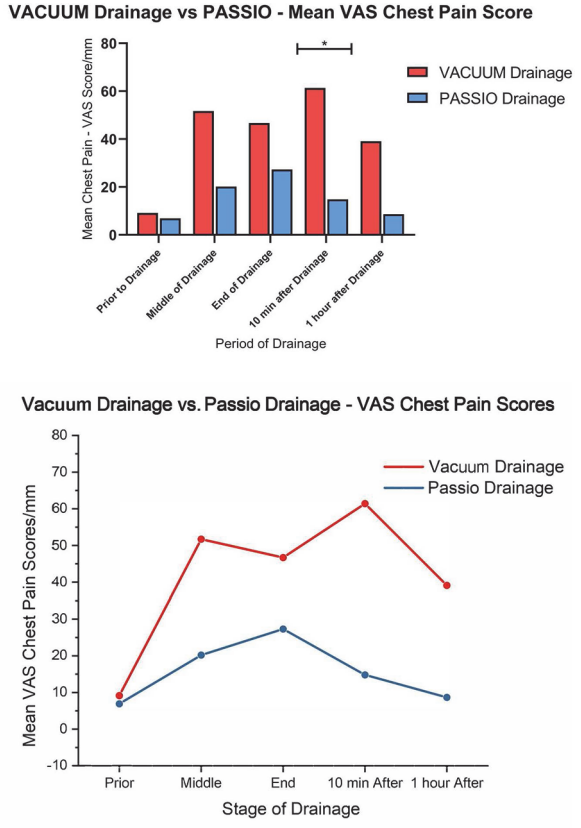
10.1136/thorax-2024-BTSabstracts.32

Introduction Indwelling pleural catheters (IPC) employ a vacuum based drainage system with pressures as high as -995cmH_20[1] and may cause pain during pleural drainage especially in patients who have a non-expandable lung (NEL). We

evaluated pain levels experienced during IPC drainage and assessed whether a digitally controlled pleural drainage system (Passio™- Bearpac Medical) could offer a viable alternative to patients who experience pain during drainage.

Methods All IPC patients between November2023 - April 2024 were given questionnaires to complete during the first two weeks after insertion. Pain severity was assessed using a 10 point numerical visual analogue scale (VAS) at 4 points during drainage. Questionnaires were reviewed at the routine 2-week post-IPC insertion appointment to assess drainage related pain and if present, the existing IPC valve was replaced with a Passio™ valve (n=5).

Results 27 patients (59% male, mean age 70 years) were included in this analysis. 37% had evidence of NEL and 70% had >25% pleural apposition. Mean VAS scores for pain with standard vacuum bottle were not statistically different at mid-drainage (19.86mm ± 5.15, P=0.29) and end of drainage (20.86mm ± 5.87, P=0.29) when compared to pre-drainage (10.53mm ± 2.73). Patients who experienced pain with the vacuum bottle (n=5, NEL in all cases) had higher mean VAS scores at mid-drainage (51.68mm ± 16.29, P=0.13), end of drainage (46.68mm ± 19.45, P=0.19), and 10 minutes post-drainage (61.38mm ± 9.81, P=0.06) compared to pre-drainage (9.16mm ± 4.01). Post-Passio™ valve replacement (n=5), patients had a lower VAS pain score mid-drainage (20.15mm ± 9.34, P=0.25), end of drainage (27.28mm ± 12.69, P=0.84) and 10-minutes post drainage (14.81mm ± 3.33, P=0.0079) when compared with vacuum bottle drainage (figure 1). There were no complications with the Passio™ drainage system and it achieved 100% patient satisfaction.



Abstract S26 Figure 1 Mean VAS Chest Pain Score -Vacuum Drainage vs Passio™ Drainage.

Conclusion Controlled pleural drainage using a digital drainage device such as Passio™ may have a role in IPC patients who experience pain with vacuum bottle drainage especially in those who have NEL.

REFERENCE

1. Thakkar D, *et al. Am J Respir Crit* 2019;**199**:A4338.

S27 UK LOCAL ANAESTHETIC THORACOSCOPY SERVICES IN 2024

[1]D de Fonseka, [2]A Aujayeb, [3,4]R Bhatnagar. *[1]Academic Directorate of Respiratory Medicine, Sheffield Teaching Hospitals NHS Trust, Sheffield, UK; [2]Respiratory Department, Northumbria Health Care NHS Foundation Trust, Newcastle, UK; [3]Academic Respiratory Unit, University of Bristol, Bristol, UK; [4]Respiratory Department, North Bristol NHS Trust, Bristol, UK*

10.1136/thorax-2024-BTSabstracts.33

Introduction Local anaesthetic thoracoscopy (LAT) is widely available in the UK. It is the preferred choice of investigation for an exudative pleural effusion where malignancy is suspected. There are no agreed national standards regarding LAT, with many sites following locally developed guidelines only. The last survey of UK thoracoscopy practice was in 2017.[1]

Methods An electronic survey (Google Forms) was circulated via the UK Pleural Society (UKPS) newsletter and through direct communication with centres known to be undertaking LAT. Invited centres were requested to distribute the survey further. The survey was open from 20th of May to 20th of June 2024. Only one response per centre was accepted.

Results After excluding duplicates and non-UK responses, 38 sites were included. Amongst respondents, LAT remains the preferred method of investigation for an undiagnosed unilateral exudative pleural effusion in 33/38 (87%). The number of trained thoracoscopists ranged from 1–6, with all practitioners being medically trained. 81% of the sites had a dedicated thoracoscopy list with frequency varying from weekly (47%), ad-hoc (32%), twice a week (13%) to alternate weeks (8%). 53% of the responding sites routinely admitted patients post thoracoscopy (compared to 76% in 2017).

79% of the respondents don't routinely give antibiotics. 95% of sites routinely use sedation, with the commonest agent being Midazolam, typically in combination with an opiate. Where minimal effusion is present 71% would induce a pneumothorax. 92% of sites follow a safety checklist pre-procedure. 11/38 (29%) sites would perform LAT in cases of pleural infection (including TB). 69% would not routinely apply suction post LAT. Only 31% of the sites has on-site thoracic surgical support.

Discussion Despite inherent limitations due to potential reporting bias, there appears to remain wide variation in LAT practice amongst UK centres. These results support the urgent need for identifying best practice and, ideally, standardisation of LAT practices (and outcome reporting). These survey results will form the basis of an application to the relevant British Thoracic Society committee.

REFERENCE

1. deFonseka D, Bhatnagar R, Maskell N. Local anaesthetic thoracoscopy services in the UK. *Respiration* 2018;**96**(6):560–3.

'Crime and Punishment' in pulmonary vascular disease

S28 SEMAGLUTIDE ADDED TO ANTICOAGULATION IN ACUTE INTERMEDIATE-RISK PULMONARY EMBOLISM IS SAFE AND DOWNREGULATES IMMUNOMETABOLIC GLYCOPROTEINS

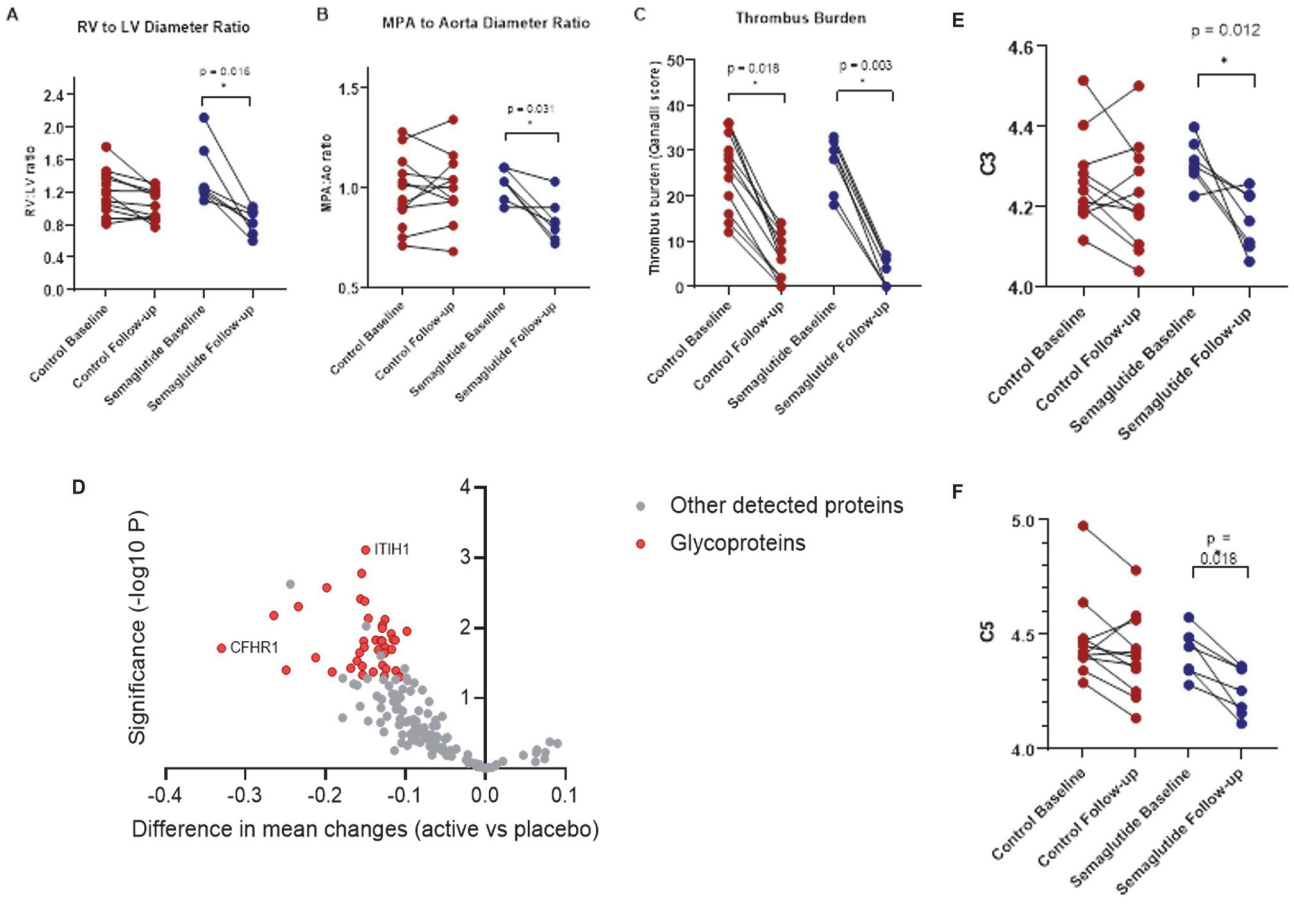
[1]C Samaranayake, [2]M Fang, [3]Y Chen, [3]S Song, [3]F Sabrin, [3]A Ashek, [3]C Rhodes, [1]J Pinguel, [3]L Howard, [4]K Breen, [1]L Price, [4]B Mukherjee, [3]K Bonnici, [2]T Rudd, [1]S Wort, [3]L Zhao, [1]C McCabe. *[1]Royal Brompton Hospital, London, UK; [2]Medicines and Healthcare Products Regulatory Agency, Potters Bar, UK; [3]Imperial College, London, UK; [4]St Thomas Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.34

Background Up to 50% of patients suffering acute pulmonary embolism (PE) demonstrate impaired pulmonary vascular recovery at follow up despite optimal anticoagulation, impacting negatively on long-term outcomes. Multiple inflammatory and immune factors may contribute to aberrant thrombus remodelling during PE recovery and in rare cases, chronic thromboembolic pulmonary hypertension may develop. Glucagon-like peptide-1 agonists have prominent anti-inflammatory and vasorelaxant properties supporting their use in higher risk patients with PE at risk of worse outcome.

Methods We undertook a proof-of-concept open-label controlled study evaluating the safety and tolerability of the GLP-1 agonist Semaglutide administered as an add-on therapy to standard of care anticoagulation for four weeks in adult patients with acute PE of at least intermediate risk severity. In addition to clinical assessments, we evaluated the effect of Semaglutide on plasma proteomics including markers of vascular inflammation and endothelial dysfunction. CT-based metrics of RV dysfunction were measured at baseline and follow-up to determine exploratory clinical effects on RV recovery.

Results After four weeks, open-label treatment with GLP-1 agonist, Semaglutide, added to anticoagulation in patients with intermediate high-risk PE was well tolerated with no relevant safety signals. Examining all well detected proteins in response to Semaglutide, a total of 44 proteins were nominally significantly altered during the study period ($p<0.05$) although none individually met significance for multiple testing. Enrichment testing of these 44 proteins ($p<0.05$) identified significant



A-C) CTPA parameters at baseline and follow-up in the study groups: change in right ventricle to left ventricle (RV:LV) diameter ratio, main pulmonary artery to aorta (MPA:Ao) and Qanadli obstruction score in Control and Semaglutide groups. D) Volcano plot showing differential protein expression in response to Semaglutide. E,F) Complement Luminex assay showing complement intermediate downregulation in response to Semaglutide

Abstract S28 Figure 1

enrichment of glycoproteins (40/44 proteins, FDR q<0.05), and the expression of these glycoproteins showed a clear down-regulation pattern post-treatment. Downregulated proteins included regulators of metabolic stress and key complement intermediates (C3 - C5) with reduction in complement glycoproteins and plasma MMP-9 validated by ELISA. Glycopeptide analysis demonstrated deglycosylation of highly abundant candidate glycoproteins in response to Semaglutide as the plausible mechanism for glycoprotein downregulation. Exploratory CT markers of right ventricular dysfunction improved between baseline and follow up only in those patients who received Semaglutide.

Conclusion This study contributes to the growing evidence base for GLP-1 agonist-mediated metabolic modulation in cardiovascular disease and suggests GLP-1 agonists warrant further clinical evaluation as a potential therapeutic add-on in selected acute PE populations.

S29 LOW-PROBABILITY TRANSTHORACIC ECHOCARDIOGRAPHY IN CTEPH – A MISSED DIAGNOSTIC OPPORTUNITY?

[1]J Page, [1]H Wong, [1]P Charters, [1]C Wild, [1]R Mackenzie-Ross, [2]JG Coghlan, [1]D Augustine, [1]J Rodrigues, [1]J Suntharalingam. *[1]Royal United Hospital Bath NHS Trust, Bath, UK; [2]Royal Free London NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.35

Background Undiagnosed chronic thromboembolic pulmonary hypertension (CTEPH) is a fatal complication in survivors of acute pulmonary embolism (PE). Significant efforts have been made to improve earlier CTEPH diagnosis in this cohort. Current ESC/ERS guidelines recommend transthoracic echocardiogram (TTE) as the initial investigation for persistent symptoms. However, TTE lacks sensitivity in detecting milder forms of PH.[1]

Although CT Pulmonary Angiogram (CTPA) is not recommended in the follow-up for acute PE, it is frequently performed to investigate breathlessness. CTPA allows identification of both persistent thrombus and right heart strain. A main pulmonary artery (mPA) CTPA diameter >29mm is considered predictive of PH.[2] This study evaluates the added benefit of CTPA alongside TTE in the assessment of CTEPH.

Methods Retrospective analysis of all patients referred to the regional PH service for CTEPH assessment between 2018–2023. Patients were included if right heart catheterisation (RHC) was performed within 1-year of TTE. Patients with insufficient quality TTE were excluded. Diagnosis was classified using latest ESC/ERS haemodynamic PH criteria.

Results 187 patients were included. 32% (n=60) had low-probability TTE. Of these, 60% (n=36/60) had RHC-confirmed PH. TTE alone had an overall sensitivity and specificity of 77.2% (95% CI,70.7–83.8%) and 82.8% (95% CI,69.0–96.5%) respectively. All low-probability TTE patients had residual thrombus on follow-up CTPA at expert review. Using theoretical analysis, inclusion of mPA diameter alongside low-probability TTE patient's initial assessment for PH would have identified an additional 13 cases of CTEPH.

Conclusion Our data suggests that relying on TTE alone may lead to missed diagnostic opportunity in patients with suspected CTEPH. Combining TTE with CTPA not only helps identify residual thrombus, which may have implications for long-term anticoagulation strategy, but may also identify the presence of PH by incorporating mPA diameter measurements. This is particularly important in patients with a falsely negative low probability TTE.

REFERENCES

1. Slegg OG, Willis JA, Wilkinson F, *et al.* IMproving PULmonary hypertension Screening by Echocardiography: IMPULSE. *Echo Res Pract* 2022;**9**:9.
2. Aluja JF, Gutierrez FR, Díaz Telli FG, *et al*. Approach to pulmonary hypertension: from CT to clinical diagnosis. *Radiographics* 2018;**38**:2.

S30 QUANTITATIVE ASSESSMENT OF PULMONARY ARTERY BLOOD VOLUME IN CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION- USING CTPA AND MACHINE LEARNING

[1,2]H Ghani, [1]A Ruggiero, [3]E Bussell, [1,2]J Weir-McCall, [2]M Graves, [3,4]S Walsh, [1,3]M Thillai, [1,2]J Pepke-Zaba. *[1]Royal Papworth Hospital, Cambridge, UK; [2]University of Cambridge, Cambridge, UK; [3]Qureight Ltd, Cambridge, UK; [4]Imperial College London, London, UK*

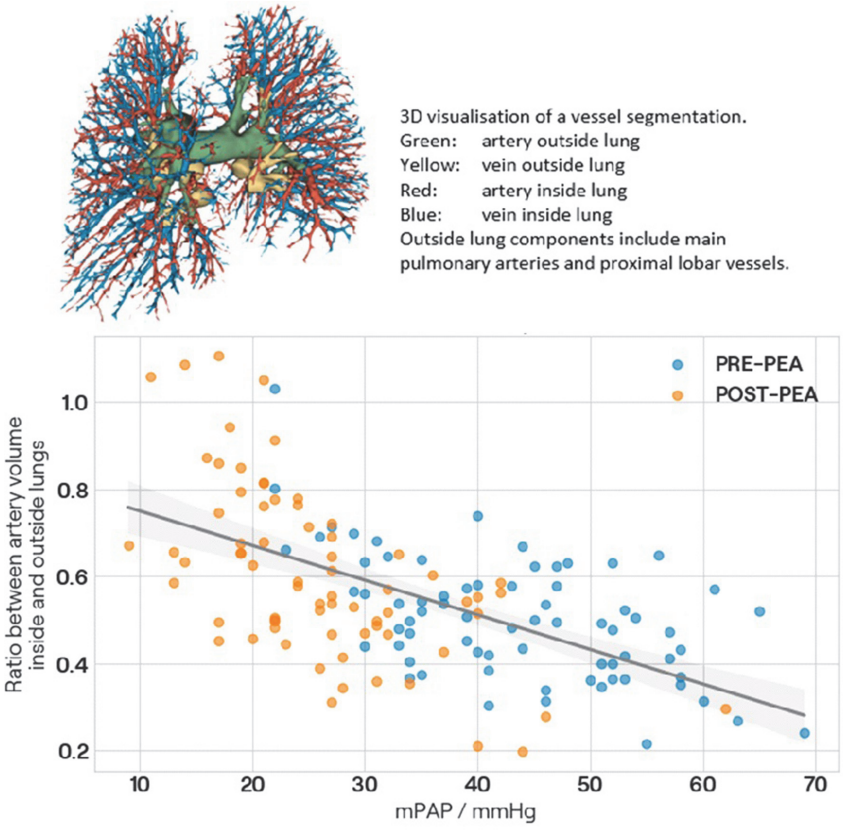
10.1136/thorax-2024-BTSabstracts.36

Introduction and Objectives CT pulmonary angiography (CTPA) is primarily employed in chronic thromboembolic pulmonary hypertension (CTEPH) to qualitatively assess blood clots. We quantitatively assessed altered pulmonary artery blood volume (PaBV) due to chronic thromboembolism in CTEPH by leveraging automated pulmonary vasculature segmentation on CTPA.

Methods Utilizing Vascul8^{TM} for automated segmentation of pulmonary arteries and veins on CTPA, we retrospectively assessed PaBV in patients pre- and post-pulmonary endarterectomy (PEA) at the UK National CTEPH Centre. Pulmonary arteries were separated by boundaries of mediastinal pleura into central (main pulmonary artery and predominantly lobar arteries) and intrapulmonary (predominantly segmental and subsegmental arteries) and evaluated separately. The primary outcome measure was PaBV correlation with right heart catheter hemodynamic measurements. Secondary outcome measures were PaBV correlation with right ventricular (RV) diameter and volume on echocardiography and MRI. Associations between the presence of residual pulmonary hypertension (PH) (defined as mean pulmonary artery pressure (mPAP) >30mmHg) and PaBV on post-PEA CTPA were assessed and validated in a separate cohort.

Results Paired pre- and post-PEA CTPA from 71 CTEPH patients (median age=63 [55,71], male=46/71) showed the ratio of PaBV inside to outside the mediastinal pleura negatively correlated with mPAP (n=142, ρ=-0.6, p<0.001) (figure 1) after controlling for age, sex, and BMI. PaBV outside the mediastinal pleura correlated with RV basal diameter on echocardiography (ρ=0.63, p<0.001), and RV end-systolic volume (ρ=0.64, p<0.001) and end-diastolic volume (ρ=0.6, p<0.001) from MRI (n=85/142). PaBV post-PEA outside the mediastinal pleura showed large effect size (d=-1.23, p<0.001) to identify residual PH (n=19/71) with an optimal threshold of 120ml (sensitivity 89%, specificity 67%). Ratio of PaBV post-PEA inside to outside the mediastinal pleura showed large effect size (d=1.13, p<0.001) to determine residual PH with an optimal threshold of 0.60 (sensitivity 95%, specificity 58%). In the validation cohort (n=30, median age=70 [46,74], male=14/30), ratio of PaBV post-PEA inside to outside the mediastinal pleura of ≤0.6 identified 100% (n=8/30) of residual PH with a false positive rate of 0.5.

Conclusions Quantitative PaBV assessment on CTPA with the aid of automated pulmonary vasculature segmentation



Abstract S30 Figure 1 Shows the 3D reconstruction of pulmonary vessels inside and outside the mediastinal pleura from CTPA. Ratio of pulmonary artery blood volume (PaBV) inside to outside of the mediastinal pleura improves with reduction of mean pulmonary arterial pressure (mPAP) post-pulmonary endarterectomy (PEA).

correlates with pulmonary haemodynamics and can provide additional non-invasive insights in CTEPH.

S31 PULMONARY AVM ISCHAEMIC STROKE RISK: 5HT PATHWAY GENES AND VARIANTS RELEVANT TO VARIABILITY MEDIATED BY IRON DEFICIENCY

[1]M Iyer, [2]CL Shovlin. *[1]Imperial College School of Medicine, London, UK; [2]National Heart and Lung Institute, London, UK*

10.1136/thorax-2024-BTSabstracts.37

Introduction Pulmonary arteriovenous malformations (PAVMs) result in an intra-pulmonary right-to-left shunt and paradoxical emboli. Ischaemic stroke-in-young and silent cerebral infarction affect >50% of patients with PAVMs. Across 4,271,910 US Nationwide Inpatient Sample acute ischaemic stroke admissions 2005–2014, PAVMs accounted for 0.02% of stroke admissions, and patients with PAVMs had ischaemic stroke a decade earlier than routine stroke, losing 9 extra healthy life-years per patient. Iron deficiency/exuberant platelet aggregation to serotonin (5 hydroxytryptophan, 5-HT) were identified as ischaemic stroke risk factors in 497 consecutive UK patients with PAVMs, with substantial inter-patient variability. We hypothesised that 5-HT genetic variants may predict 5-HT levels and stroke susceptibility.

Methods 30 genes related to 5-HT were selected and categorised into three groups according to function: 5-HT biosynthesis and metabolism; the kynurenine pathway; and 5-HT receptors. Population-wide data were extracted from the Genome Aggregation Database (gnomAD 2.1.1, spanning 141,456 genomes), including missense and predicted loss of function (pLOF) variant counts for each gene. As proof of concept, variants were examined in PAVM patients recruited to the 100,000 Genomes Project with MRI confirmation of ischaemic stroke status (none, n=11; ischaemic stroke, n=13) before export of aggregate variant data through the Genomics England Airlock.

Results Across 30 genes, 8,854 5-HT gene variants were identified in gnomAD 2.1.1, including 5,728 missense variants, and 300 pLOF variants. All variants were rare (allele frequencies $4x10^{-6}$-0.034, mean $8.9x10^{-5}$) implying ~3% people would be predicted to have a pLOF variant. In keeping with selective pressures for essential genes, all gene groups had significantly fewer pLOF variants than expected ($p<0.05$). pLOF variants were depleted more markedly in receptor genes compared to kynurenine genes ($p=0.031$), while two genes had no pLOF variants (*MAOA* and *MAOB*). The average PAVM participant in the 100,000 Genomes Project had 3,797 variants in the 5-HT genes, including 2.71 pLOF variants. There was no difference in this pilot study between stroke and control groups.

Conclusion DNA variants provide plausible explanations to explain variability in platelet aggregation and ischemic stroke phenotypes mediated by right-to-left shunts such as PAVMs in the setting of iron deficiency. Further evaluation is warranted.

S32 ELECTIVE CARDIOTHORACIC SURGICAL RESECTIONS FOR PULMONARY ARTERIOVENOUS MALFORMATIONS- A 16 YEAR SINGLE-CENTRE EXPERIENCE

[1]M Al-Sahaf, [1]J Anderson, [1]J Nandi, [1]A Alsafi, [2]CL Shovlin. *[1]Imperial College Healthcare NHS Trust, London, UK; [2]Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.38

Background Pulmonary arteriovenous malformations (PAVMs) are a preventable cause of stroke-in-young due to paradoxical emboli through the continuous right-to-left shunt. Published international guidelines recommend elective embolisation therapy which is a successful and safe treatment, but can leave residual shunting after maximal embolisation, necessitating difficult decisions regarding antiplatelet therapy in patients with concurrent hereditary haemorrhagic telangiectasia (HHT). Surgical resection has always been performed in emergency situations, but there was caution in utilising electively.

Methods Multi-disciplinary team (Respiratory Medicine, Interventional Radiology, Cardiothoracic Surgery) management at a single high-referral institution was retrospectively evaluated, and surgical outcomes reviewed.

Results Between 2006–2022, 714 patients were reviewed with PAVMs. 159 (22.3%) were managed conservatively (usually due to small size of PAVMs), 531 (74.4%) were treated by embolization, and 24 (3.3%) by elective surgery providing an embolization: surgery ratio 22:1. Initially, the bar for elective surgery had been set very high, for patients with persistent symptoms of cerebral ischaemia after maximal embolization and medical therapy, or patient preference. Greater experience, appreciation of PAVM natural history and recognition of follow-up radiation burdens, resulted in a change in the surgical threshold. The 24 surgically-treated patients comprised 11 males and 13 females aged 17–80 (mean 39)ys. 17 had confirmed HHT (*ACVRL1*, *ENG* or *SMAD4* genotypes). Ten had previous maximal embolization but ongoing severe hypoxaemia, haemoptysis or neurological symptoms. Fourteen had localised, very complex PAVMs with innumerable small feeding arteries where embolization would not have obliterated shunting. 11/24 (46%) had a limited lung sparing procedure removing all abnormal tissue, as remnant thin-walled AV fistulous tissue would risk local recurrence. Median hospital stay was 4 days (range 2–12); 30-day readmission was zero, and at follow-up (mean 10.3 months, range 1.0–150 months), SaO_2 improved significantly, 8 had markedly improved exercise tolerance, none had further hemoptysis, and all except one reported no further neurological symptoms.

Conclusions Where resection can be achieved with limited loss of lung parenchyma, surgical resection of PAVMs is associated with low mortality, low postoperative complications, and can be curative in a selected group of patients including those with localised very complex PAVMs, where embolization may leave residual shunting.

'Harry Potter and the Sorcerer's Biologic' – Asthma biologics (1)

S33 REAL-WORLD EFFECTIVENESS OF BIOLOGIC THERAPIES IN SEVERE ASTHMA PATIENTS INELIGIBLE FOR PHASE 3 RANDOMISED CONTROLLED TRIALS (RCTS)

[1]PE Pfeffer, [1]J Karaj, [2]T Brown, [3]H Burhan, [4]R Chaudhuri, [5]S Siddiqui, [6]LG Heaney, [7]DJ Jackson, [8]M Patel, [9]P Patel, [6]J Busby. *[1]Barts Health NHS Trust, London, UK; [2]Portsmouth Hospitals University NHS Trust, Portsmouth, UK; [3]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [4]Gartnavel General Hospital, Glasgow, UK; [5]National Lung and Heart Institute, London, UK; [6]Queens University Belfast, Belfast, UK; [7]Guy's Severe Asthma Centre, King's College London, London, UK; [8]University Hospitals Plymouth NHS Trust, Plymouth, UK; [9]Royal Brompton Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.39

Background Previous research has shown most patients in real-world severe asthma populations would not be eligible for relevant biologics RCTs. Although observational evidence has confirmed the effectiveness of biologics in unselected real-world populations, whether specific RCT inclusion and exclusion criteria affect response remains unclear.

Methods Inclusion and exclusion criteria from 11 landmark phase 3 asthma biologics RCTs were reviewed to identify themes in inclusion/exclusion criteria, and the median stringency criteria within each theme characterised. Patients within the UK Severe Asthma Registry (UKSAR) with at least one year of follow-up on biologics were assessed as to whether they would satisfy inclusion/exclusion for each identified theme.

Regression models were undertaken to assess whether composite biologic response, defined as meeting the NICE criteria of a 50% reduction in exacerbations or a 50% reduction in maintenance oral corticosteroids (mOCS), was non-inferior in patients ineligible by each theme. Superiority analyses and domain specific (ACQ improvement, exacerbation reduction, lung function improvement, mOCS elimination) responses were also analysed.

Results 1421 adult patients with severe asthma in UKSAR from 13 specialist centres were included in this analysis.

Non-inferiority of composite biologic response was demonstrated for all eligibility criteria except medication adherence. In superiority analyses, patients ineligible by adherence theme had a significant lower Odds Ratio (OR) for composite biologics response of 0.37 (95% CI 0.20, 0.68) whilst patients ineligible by (low) baseline asthma symptom score (ACQ<1.5) had a significantly higher OR for response of 2.09 (1.31, 3.32). Additionally, being ineligible by some criteria was associated with significant differences in several domain specific responses (table 1), e.g. non-obstructive lung function at baseline was associated with an inferior lung function domain response.

Discussion In this multi-centre analysis, ineligibility by typical RCT inclusion/exclusion themes was generally not associated with inferior biologic responses. While strict inclusion/exclusion criteria are needed for RCTs leading to drug licensing, our

Abstract S33 Table 1 Odds Ratio (OR) for composite/ domain specific responses in ineligible patients relative to eligible patients for different eligibility criteria. Assuming biologic response rates of 80% in eligible patients and with a non-inferiority margin of 15%, the non-inferiority bound for the odds ratio is 0.46. Fully-adjusted models included hospital site, age (5-year categories), sex and pre-biologic blood eosinophil counts.

Criteria	Response Domain	Ineligible Responders (%)	Eligible Responders (%)	Fully Adjusted OR (95% CI)
Confirmatory Diagnostic Lung Function	**Composite Response**	**74.4%**	**69.1%**	**1.36 (0.90, 2.04)**
	ACQ Improvement ≥0.5 or Controlled	74.5%	72.5%	1.04 (0.66, 1.64)
	Exacerbation Reduction >50% or No Exacerbations	74.0%	68.8%	1.44 (0.95, 2.16)
	FEV_1 increase >100ml	42.5%	67.3%	0.39 (0.26, 0.59)
	mOCS Dose Decrease ≥50% or No mOCS	50.8%	46.5%	1.17 (0.62, 2.22)
Baseline Obstructive Spirometry	**Composite Response**	**78.2%**	**74.2%**	**1.25 (0.90, 1.73)**
	ACQ Improvement ≥0.5 or Controlled	71.0%	69.0%	1.05 (0.75, 1.46)
	Exacerbation Reduction >50% or No Exacerbations	76.7%	71.6%	1.36 (0.98, 1.87)
	FEV_1 increase >100ml	25.4%	55.6%	0.25 (0.18, 0.35)
	mOCS Dose Decrease ≥50% or No mOCS	59.6%	55.1%	1.20 (0.81, 1.79)
Uncontrolled Asthma Symptoms	**Composite Response**	**84.8%**	**74.4%**	**2.09 (1.31, 3.32)**
	ACQ Improvement ≥0.5 or Controlled	67.9%	69.3%	0.96 (0.65, 1.40)
	Exacerbation Reduction >50% or No Exacerbations	83.2%	72.4%	1.92 (1.23, 2.97)
	FEV_1 increase >100ml	40.3%	47.2%	0.65 (0.44, 0.94)
	mOCS Dose Decrease ≥50% or No mOCS	62.8%	54.2%	1.74 (1.09, 2.80)
Medication Adherence	**Composite Response**	**65.3%**	**75.7%**	**0.37 (0.20, 0.68)**
	ACQ Improvement ≥0.5 or Controlled	79.3%	69.0%	1.97 (0.97, 3.97)
	Exacerbation Reduction >50% or No Exacerbations	65.8%	74.6%	0.49 (0.27, 0.88)
	FEV_1 increase >100ml	56.9%	44.8%	1.82 (1.01, 3.28)
	mOCS Dose Decrease ≥50% or No mOCS	53.8%	53.8%	0.44 (0.20, 0.94)
No Significant Smoking History	**Composite Response**	**76.1%**	**75.8%**	**0.93 (0.67, 1.27)**
	ACQ Improvement ≥0.5 or Controlled	65.7%	70.2%	0.74 (0.54, 1.02)
	Exacerbation Reduction >50% or No Exacerbations	74.3%	73.8%	0.96 (0.70, 1.30)
	FEV_1 increase >100ml	45.7%	47.4%	0.92 (0.69, 1.23)
	mOCS Dose Decrease ≥50% or No mOCS	53.6%	56.3%	0.80 (0.54, 1.18)
No Comorbid Pulmonary/Other Eosinophilic Disease	**Composite Response**	**76.9%**	**75.2%**	**0.92 (0.68, 1.25)**
	ACQ Improvement ≥0.5 or Controlled	67.2%	69.7%	0.88 (0.64, 1.19)
	Exacerbation Reduction >50% or No Exacerbations	74.5%	73.6%	0.97 (0.72, 1.31)
	FEV_1 increase >100ml	47.1%	46.9%	1.07 (0.81, 1.42)
	mOCS Dose Decrease ≥50% or No mOCS	53.9%	56.2%	0.73 (0.52, 1.04)

results show that asthma biologics are effective in a broad range of patients, many who would not have met clinical trial criteria.

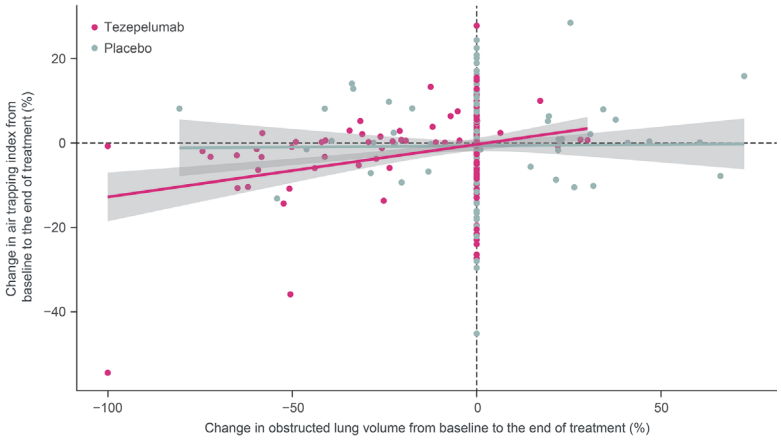
S34 REDUCED MUCUS PLUGGING WITH TEZEPELUMAB IS SPATIALLY ASSOCIATED WITH REDUCED AIR TRAPPING IN A BROAD POPULATION OF PATIENTS WITH MODERATE TO SEVERE ASTHMA

[1]CE Brightling, [2]Å Hellqvist, [1]S Diver, [3]C Porsbjerg, [4]E Israel, [5,6]JD Newell, [6]S Peterson, [7]JM Sepena, [8]AW Lindsley, [9]A Megally, [10]LH Nordenmark. *[1]Institute for Lung Health, National Institute for Health and Care Research, Leicester Biomedical Research Centre, University of Leicester, Leicester, UK; [2]Biometrics, Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden; [3]Department of Respiratory Medicine and Infectious Diseases, Bispebjerg Hospital, Copenhagen University, Copenhagen, Denmark; [4]Pulmonary and Critical Care Medicine, Allergy and Immunology, Brigham and Womens Hospital, Harvard Medical School, Boston, MA, USA; [5]Department of Radiology and Biomedical Engineering, University of Iowa, Iowa City, IA, USA; [6]VIDA Diagnostics, Coralville, IA, USA; [7]Biometrics, Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Barcelona, Spain; [8]US Medical Affairs, Amgen, Thousand Oaks, CA, USA; [9]Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gaithersburg, MD, USA; [10]Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Oslo, Norway*

10.1136/thorax-2024-BTSabstracts.40

Introduction and Objectives In the phase 2 CASCADE (NCT03688074) randomized controlled trial, tezepelumab treatment reduced the number of occlusive mucus plugs compared with placebo in a broad population of patients with moderate to severe, uncontrolled asthma. In tezepelumab recipients, reductions in mucus plug scores correlated with improvements in lung function, reductions in blood eosinophil counts and reductions in levels of eosinophil-derived neurotoxin. This *post hoc* analysis of CASCADE investigated whether the reduction in mucus plugging observed with tezepelumab treatment was also associated with regional improvements in air trapping.

Methods CASCADE was an exploratory, double-blind, placebo-controlled study in patients with moderate to severe asthma. Patients (18–75 years old) were randomized 1:1 to receive tezepelumab 210 mg or placebo subcutaneously every 4 weeks until the end of treatment (≥ 28 weeks). Mucus plugging scores were recorded at baseline and at the end of treatment in five lobes based on computed tomography (CT) images acquired with a standardized protocol. Within each lobe, the sum of expiratory volumes of sub-lobar lung regions with mucus-occluded airways was divided by the total expiratory volume of the lobe to estimate the percentage of obstructed lung volume. The air trapping index was assessed for each



End of treatment was planned for week 28. For patients who could not visit a study site at week 28 owing to the COVID-19 pandemic, treatment was extended until they were able to visit a study site, for up to a total of 52 weeks.
COVID-19, coronavirus disease 2019.

Abstract S34 Figure 1 Correlation between the percentage change from baseline in obstructed lung volume and air trapping index at the end of treatment.

lobe as the percentage of the volume with a density lower than –856 Hounsfield units in the expiratory CT scan. Spearman's rank correlation coefficients (ρ) were used to assess the relationship between obstructed lung volume and air trapping index.

Results Data from all five lobes in patients treated with tezepelumab (n=34, 170 sub-lobar regions) or placebo (n=43, 215 sub-lobar regions) were included in this analysis. In tezepelumab recipients, improvement in the percentage change in obstructed lung volume from baseline to the end of treatment correlated with an improvement in air trapping index in the same region (ρ=0.17, p=0.029); no correlation was observed for placebo recipients (ρ=0.0096, p=0.89) (**figure 1**).

Conclusions Over the study duration, a reduction in mucus plugging with tezepelumab treatment was correlated with a spatially-associated improvement in air trapping index, providing further insights into the therapeutic effect of tezepelumab on mucus plugs in patients with moderate to severe asthma.

S35 DUPILUMAB EFFECT ON EXACERBATIONS AND LUNG FUNCTION DESPITE WITHDRAWAL OF INHALED CORTICOSTEROIDS/LONG-ACTING BETA AGONISTS

[1]ME Wechsler, [2,3]P Pfeffer, [4]DJ Jackson, [5]KF Rabe, [6]ID Pavord, [7]JC Virchow, [8]R Katial, [9]E Israel, [10]C Xia, [11]N Pandit-Abid, [10]M Soliman, [11]PJ Rowe, [10]Y Deniz, [10]H Sacks, [11]JA Jacob-Nara. *[1]National Jewish Health, Denver, Colorado, USA; [2]Department of Respiratory Medicine, St Bartholomew's Hospital, London, UK; [3]Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK; [4]Guy's and St Thomas' NHS Foundation Trust, London, UK; [5]Airway Research Center North (ARCN), LungenClinic Grosshansdorf (member of the German Center for Lung Research [DZL]), Grosshansdorf, Germany; Airway Research Center North (ARCN), Christian-Albrechts University (member of the German Center for Lung Research [DZL]), Kiel, Germany; [6]National Institute for Health Research Oxford Biomedical Research Centre, and Nuffield Department of Medicine, University of Oxford, Oxford , UK; [7]Department of Pneumology, University of Rostock, Rostock, Germany; [8]National Jewish Health, Division of Allergy and Clinical Immunology, Department of Medicine, Denver, Colorado, USA; [9]Division of Pulmonary and Critical Care Medicine and Allergy and Immunology, Brigham and Women's Hospital, MA, USA; [10]Regeneron Pharmaceuticals, Inc, Tarrytown, New York, USA; [11]Sanofi, Bridgewater, New Jersey, USA*

10.1136/thorax-2024-BTSabstracts.41

Background Dupilumab reduces severe exacerbations, improves lung function in patients with moderate-to-severe asthma, and demonstrates an acceptable safety profile. Reduction of inhaled corticosteroid (ICS) and long-acting beta-agonist (LABA) dose is recommended in patients who respond to biologics, but little evidence is available regarding the safety of such reduction.

Abstract S35 Table 1 Exacerbation rates, pre-bronchodilator FEV_1, and asthma control maintenance in patients with moderate-to-severe asthma and baseline blood eosinophil count ≥300 cells/μL without ICS or LABA background therapy.

	Phase 2a		Phase 2	
Characteristics	**Placebo qw (N=47)**	**Dupilumab 300 mg qw (N=50)**	**Placebo qw (N=41)**	**Dupilumab 300 mg q2w (N=31)**
Adjusted annualized severe exacerbation rates				
Estimate (95% CI)	1.206 (0.732, 1.987)	0.480 (0.234, 0.986)	2.468 (1.487, 4.094)	0.624 (0.221, 1.756)
Relative risk vs placebo		0.398 (0.180, 0.884)		0.253 (0.084, 0.763)
% reduction		−60.2%		−74.7%
P value vs placebo		0.0240		0.0155
Pre-bronchodilator FEV_1, L				
Baseline	2.54 (0.62)	2.49 (0.65)	2.07 (0.60)	2.07 (0.57)
Change from baseline to Week 12	−0.11 (0.36)	0.07 (0.32)	0.00 (0.35)	0.31 (0.40)
P value vs placebo		0.0009		0.0010
Change from Week 4 to Week 12	−0.16 (0.38)	−0.17 (0.26)	−0.10 (0.24)	−0.07 (0.27)
P value vs placebo		0.4329		0.2649
Proportion of patients withdrawing ICS and maintaining ACQ-5 <1.5 at Week 12, n/N (%)	18/47 (38.3)	31/50 (62.0)	15/41 (36.6)	19/31 (61.3)
P value vs placebo		0.0196		0.0376

Data are shown in mean (SD), unless stated otherwise.
ACQ-5, 5-item Asthma Control Questionnaire; CI, confidence interval; FEV_1, forced expiratory volume in 1 second; ICS, inhaled corticosteroids; qw, once a week; q2w, every 2 weeks.

This analysis evaluated the impact of ICS/LABA withdrawal on exacerbations and lung function in patients with asthma and baseline eosinophils ≥300 cells/μL in 2 clinical studies (Phase 2a [NCT01312961] and Phase 2 [NCT03387852]).

Method Patients (≥18 years) received dupilumab 300 mg weekly (Phase 2a) or dupilumab 300 mg every 2 weeks (Phase 2) for 12 weeks or placebo. LABA was discontinued at Week 4, and ICS tapered over Weeks 6 to 9. Adjusted annualized exacerbation rates, changes from baseline to Week 12 and from Week 4 to 12 in pre-bronchodilator (BD) forced expiratory volume in 1 second (FEV_1), and proportions of patients who maintained 5-item Asthma Control Questionnaire (ACQ-5) scores <1.5 at Week 12 were assessed.

Results Dupilumab vs placebo reduced severe exacerbation rates by 60.2% (P=0.0240; Phase 2a) and 74.7% (P=0.0155; Phase 2). Pre-BD FEV_1 significantly improved from baseline to Week 12 in both studies. No further improvements in pre-BD FEV_1 were observed from Week 4 (after LABA discontinuation) to Week 12 (**table 1**). By Week 12, 62.0/61.3% (dupilumab) and 38.3/36.6% (placebo) of patients in Phase2a/Phase 2 studies were able to withdraw ICS while maintaining asthma control (ACQ-5 <1.5).

Conclusion Dupilumab reduced exacerbations and significantly improved lung function despite ICS/LABA withdrawal in patients with moderate-to-severe asthma.

S36 USING NASAL GENE EXPRESSION PROFILING AND DNA METHYLATION TO IDENTIFY MECHANISMS UNDERLYING CLINICAL RESPONSE TO MEPOLIZUMAB IN SEVERE ASTHMA

[1,2]Y AlZahrani, [1]YL Pang, [1]K Rakkar, [1]R Hall, [1]P Rajasekar, [1]RL Clifford, [1]MA Portelli, [3]D Shaw, [1]I Sayers. *[1]University of Nottingham, Nottingham, UK; [2]Prince Sultan Military College of Health Sciences, Dhahran, Saudi Arabia; [3]University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.42

Mepolizumab, a biological medication targeting interleukin-5 (IL5), is used to reduce exacerbations in severe asthma and other conditions characterized by high levels of eosinophils. However, the changes driven by Mepolizumab in the airway epithelium remains unknown. We have previously shown that 3-months of Mepolizumab treatment alters nasal epithelial gene expression and DNA methylation (DNAm) in severe asthma patients. Here, we investigated the more prolonged effect of Mepolizumab at 6-months, to provide a new insight into the mechanism of action.

42 patients with severe asthma were enrolled to the Poor Response tO monoClonaL therApy In asthMa (PROCLAIM) study. Nasal brushes were taken at baseline and 6-months post-initiation of Mepolizumab administration (n=23 patients). Changes in mRNA expression were investigated using polyA, paired-end RNA sequencing (25M reads/sample). Raw reads were aligned to GRCh37 using STAR. Data was deconvoluted using CIBERSORT. Sample quality control and differential gene expression was determined using Limma and EdgeR. Ingenuity Pathway Analysis was applied. DNAm was analysed using the EPIC array. Benjamini-Hochberg p<0.05 was taken as significant for all analyses.

Mepolizumab induced significant nasal epithelial gene expression changes from baseline at 6-months (6069 genes: 2020 upregulated and 4049 downregulated). TNFR2 signalling was the only activated pathway, and potentially as anticipated Th2 signalling was inhibited, with 61 additional pathways also inhibited related to broad epithelial functions e.g. ion channel transport, cAMP signalling. Mepolizumab induced significant nasal epithelial DNAm changes at 6-months (208752 DNAm sites (CpGs): 77430 increased, 131322 decreased). Upstream regulator analyses demonstrated increased de-novo methylation-associated DNTM3b enzyme activity, which may contribute to the increase in DNAm observed.

These data show that Mepolizumab drives transcriptomic and DNA methylation changes in the nasal epithelium at 6-months. Pathway analyses identified the inhibition of Th2 signalling related pathways potentially as anticipated but also revealed significant novel effects on the airway epithelium in severe asthma.

S37 ATTENUATION OF MANNITOL AIRWAY HYPER-RESPONSIVENESS BY DUPILUMAB IN UNCONTROLLED SEVERE TYPE 2 HIGH ASTHMA

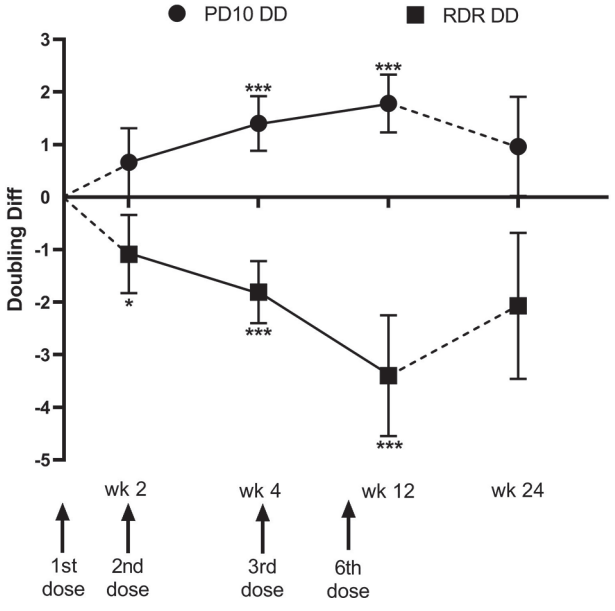
BJ Lipworth, KE Stewart, CR Kuo, R Chan. *University of Dundee, Dundee, UK*

10.1136/thorax-2024-BTSabstracts.43

Rationale Airway hyper-responsiveness (AHR) is tenet of persistent asthma. However, effects of IL4/13 blockade on AHR are unknown.

Methods Following a 4 week run-in on beclomethasone/formoterol 100/6ug (BDP/FM) MART (baseline), patients with severe asthma received dupilumab 300mg 2 weekly for 12 weeks. Serial mannitol challenges were performed at baseline 2, 4 and 12 weeks of dupilumab and after a further 12 week washout. The study was powered to detect a 1 doubling difference (dd) in the primary end point of mannitol PD_{10} as change from baseline vs week 12.

Results 23 out of 24 enrolled patients completed per protocol for mannitol PD10 at week 12. Mean baseline values were: Age 52, $FEV_1$82%, mannitol PD_{10}125mg, ACQ 2.53,



Abstract S37 Figure 1 Mean (95% CI) dd for mannitol PD_{10} and RDR after dupilumab and washout. Bonferroni-corrected p values vs baseline *p<0.05 **p<0.01 ***p<0.01

FeNO 50ppb, Eosinophils 552/ul, ICS dose 1300 µg . Serial changes in mannitol sensitivity as PD_{10} were significant (Bonferroni corrected) by week 4, and in mannitol reactivity as response dose ratio (RDR) by week 2 . After 12 weeks of dupilumab the mean (95%CI) dd change from baseline for PD_{10} was 1.78 (1.23,2.33) $p<0.001$ and for RDR was 3.40 (2.25,4.55) $p<0.001$, with 61% becoming mannitol non-responsive indicating AHR remission. After washout the dd for PD10 was 0.96 (0.02,1.91) $p<0.05$ and for RDR was 2.07 (0.68,3.46) $p<0.01$, with 53% non responders. ACQ-6 and mini-AQLQ were significant by week 2 and by week 12 :ACQ improved by 1.73 (1.11, 2.36) $p<0.001$ and mini-AQLQ by 2.31 (1.57, 3.05) $p<0.001$. FEV_1 change at week 12 was 0.39 L (0.11, 0.67)$p<0.01$, and PEF was 61 L/min (24, 98) $p<0.001$. Dupilumab suppressed FeNO by 23 ppb (6, 40) $p<0.01$, while eosinophils were not significantly altered :87/ul (-357,183). Furthermore, BDP/FM MART use was reduced at 12 weeks vs baseline by a mean of 1.70 puffs/day (0.32, 3.08), $p=0.01$.

Conclusion Despite exhibiting ICS sparing activity dupilumab attenuated mannitol AHR to a clinically relevant degree along with improved lung function, asthma control and quality of life.

S38 NEW ONSET EGPA IN PATIENTS ON BIOLOGICS FOR SEVERE ASTHMA- A MULTI-CENTRE CASE SERIES

[1]H Rupani, [2]AT Bansal, [3]S Sergejeva, [4]A Nanzer, [5]M Caminati, [6]P Kopac, [7]Z Csoma, [8]S Skrgat, [9]B Milenkovic, [10]K Bieksiene, [11]E Zervas, [12]E Weersink, [13]P Kuna, [14]V Yasinka, [15]V Sedlak, [1]P Dennison, [8]S Rink, [16]G Anderson, [17]C Porsbjerg. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]Acclorogen Ltd, Cambridge, UK; [3]University of Tartu, Tartu, Estonia; [4]Guy's and St Thomas' NHS Foundation Trust, London, UK; [5]University of Verona, Verona, Italy; [6]University Clinic of Respiratory Diseases, Golnik, Slovenia; [7]National Koreani Institute for Pulmonology, Budapest, Hungary; [8]University of Ljubljana, Lubljana, Slovenia; [9]Clinic for Pulmonary Diseases, Belgrade, Serbia; [10]Lithuanian University of Health Sciences, Kaunas, Lithuania; [11]Athens Chest Hospital, Athans, Greece; [12]University of Amsterdam, Amsterdam, Netherlands; [13]Medical University of Lodz, Lodz, Poland; [14]Karolinksa Severe Asthma Centre, Stockholm, Sweden; [15]Czech Pneumology and Phthiseology Society, Prague, Czech Republic; [16]University of Melbourne, Parkville, Australia; [17]Bispesbjerg Hospital, Copenhagen, Denmark*

10.1136/thorax-2024-BTSabstracts.44

Background There have been reports of emergent EGPA in patients established on biologics for severe asthma. It is unclear if this phenomenon is related to maintenance oral corticosteroid (mOCS) wean and if inflammatory biomarkers can predict the onset of EGPA.

Methods All members of the 28 countries in the ERS Severe Heterogeneous Asthma Research Patient-centred Collaboration (SHARP-CRC) were invited to submit cases via an online form. Results are median (IQR) unless otherwise specified. EGPA was diagnosed based on clinical trial definition.[1]

Results 27 cases (52% female) from 11 countries were submitted. All had adult-onset asthma. 2 patients (7%) were on dupilumab, 3 (11%) omalizumab, 4 (15%) mepolizumab and 18 (67%) benralizumab. EGPA was diagnosed 22 (10,52) weeks after biologic initiation. 13 (48%) were ANCA positive at EGPA diagnosis.

22 (81%) were on mOCS at biologic initiation at a median dose of 10mg (7.5,10)/day. Patients on mOCS had received a higher median OCS load than patients not on mOCS in the year pre-biologic: 2700mg (1575,3725) vs 1400 (950,3130). In mOCS patients, wean started 5 (4,12) weeks after biologic initiation and EGPA was diagnosed 21 (5,47) weeks after wean started. By this time, 9/22 (41%) were off mOCS and 7/22 (32%) had reduced to 5mg (4,5) daily (dose unavailable for remaining 6 patients). The timing and rate of OCS wean was not associated with EGPA development.

Peak historic eosinophil count was 1500 (870,2020) cells/uL and not correlated with eosinophil count at EGPA diagnosis, 1400 (400–3150) cells/uL. There was no correlation between baseline FeNO and FeNO at EGPA diagnosis.

Conclusion In our case-series, type of biologic, baseline biomarkers or rate of OCS wean were not related to and did not predict EGPA onset. All patients had a high steroid burden pre-biologic with reduction in the use and dose of mOCS when EGPA was diagnosed supporting the proposal that OCS use may have masked an underlying vasculitis in some patients.

REFERENCE

1. Wechsler, *et al. NEJM* 2017.

'Where the Wild Things Are' – Infection and inflammation in bronchiectasis and NTM

S39 PATIENT REPORTED OUTCOME MEASURES USING AWESCORE IN PATIENTS WITH BRONCHIECTASIS

C Wood, L Speight, C Lane, L Torres, J Duckers. *Cardiff and Vale University Health Board, Cardiff, UK*

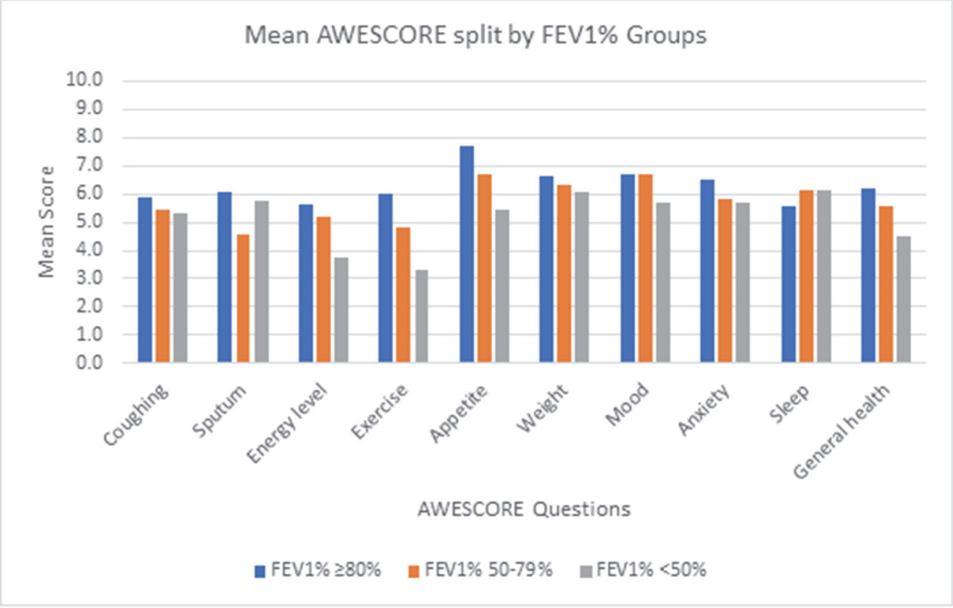
10.1136/thorax-2024-BTSabstracts.45

Introduction Bronchiectasis is a chronic, progressive lung condition which has significant effects on quality of life (QOL). Quick patient reported outcome measures (PROMs) measuring QOL are limited for this patient cohort. The AWESCORE is a quick, validated, reliable 10-item scoring tool which assesses QOL (cough, sputum, energy, exercise, appetite, weight, mood, anxiety, sleep and general health) in people with cystic fibrosis (CF)[1]. In this study we evaluated the use of AWESCORE in people with non-CF related bronchiectasis.

Methods A prospective observational study was conducted at a regional bronchiectasis clinic. Consecutive patients attending clinic between January and May 2024 were asked to complete the paper AWESCORE questionnaire. Patient age, sex and FEV_1% were also recorded. Three sub-groups of FEV_1% were created: $\geq$80% (n=47), 50–79% (n=51) and <50% (n=21); ANOVA was used to compare mean AWESCORE between these groups.

Results A total of 121 questionnaires were completed. The median age was 74 (range 26–94) and 69% were female. The mean AWESCORE was 58 (out of 100 where 100 represents highest QOL), with lowest scores reported in exercise participation (mean 5.0/10) and energy level (mean 5.1/10). Appetite and mood were least affected (means 6.8/10 and 6.5/10 respectively). FEV_1% was available in 119/121 patients. Mean AWESCOREs were 62, 57 and 52 for FEV_1%$\geq$80%, 50–79% and <50% sub-groups respectively ($F(2)=3.63$, $p=0.029$). Figure 1 displays the mean score for each question from the AWESCORE questionnaire, split by FEV_1%.

Conclusion The AWESCORE is a quick, user-friendly tool which provides insight into PROMs for people with bronchiectasis. Reduced lung function correlates with worsening PROMs. AWESCORE appears to be lower in people with bronchiectasis in comparison to people with CF (mean 58 vs



Abstract S39 Figure 1 Mean score for individual AWESCORE questions split by FEV_1% groups. 10/10 shows highest quality of life, 0/0 shows lowest quality of life. Three sub-groups of FEV_1% were used: ≥80% (n=47), 50–79% (n=51) and <50% (n=21)

73)[1] suggesting worse QOL. The AWESCORE warrants further exploration as a quick screen for QOL in bronchiectasis.

REFERENCE

1. Button BM, Wilson LM, Burge AT, Kimmel L, Finlayson F, Williams E, *et al*. The AWESCORE, a patient-reported outcome measure: development, feasibility, reliability, validity and responsiveness for adults with cystic fibrosis. *ERJ Open Research [Internet]* 2021 Jul 1;**7**(3):00120–2021. Available from:â€ ¯https://doi.org/10.1183/23120541.00120-2021.

S40 RADIOLOGICAL BRONCHIECTASIS VS OUTCOMES IN ALPHA-1 ANTITRYPSIN DEFICIENCY

[1]J De Soyza, [1]P Ellis, [2]L Rickard, [1]M Newnham, [1]AM Turner. [1]*University of Birmingham, Birmingham, UK*; [2]*University Hospitals Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.46

Introduction Bronchiectasis (Bx) in alpha-1 antitrypsin deficiency (AATD) is heterogenous and often co-occurs with COPD. We aimed to establish whether particular radiological subtypes of Bx correlated with disease outcomes in AATD.

Methods In a retrospective observational study from the Birmingham AATD cohort, CT Thorax scans from AATD patients with and without a clinical diagnosis of Bx were analysed by a physician for morphology, bronchial dilatation and wall thickness, and lobar involvement. FEV1, TLCO, and KCO% predicted (pp) yearly decline rates were calculated. Radiological subtypes were compared with lung function decline, exacerbation rate and mMRC score with adjustment for phenotype, age, sex, COPD, and smoking. Rare phenotypes and those with other bronchiectasis causes were excluded. 10% of scans were independently read by a radiologist.

Results 290 scans were analysed. 219 had evidence of Bx, including 22 without a previous clinical diagnosis. Of these 219, Bx was mild overall, with 68.4% having 2 or fewer lobes involved, 69.9% having mild dilatation, and only 7% having cystic morphology. 82.8% had lower lobe involvement (vs 26.5% upper lobe). Good inter-rater reliability was demonstrated (mean Cohen's κ 0.67). Multivariate analysis revealed cystic morphology was associated with a further -2.46% KCOpp/year decline (95% CI -41.5 to -0.76, p = 0.0048) and an increase in exacerbation rate of 1.52 per year (95% CI 0.7 to 2.3, p = 0.0002).

Conclusions In our cohort, most cases of Bx are mild, and have a lower lobe predominance. Cystic Bx morphology is associated with increased KCO decline and exacerbations. Bx has clinical relevance in AATD and should be proactively investigated and managed in these patients.

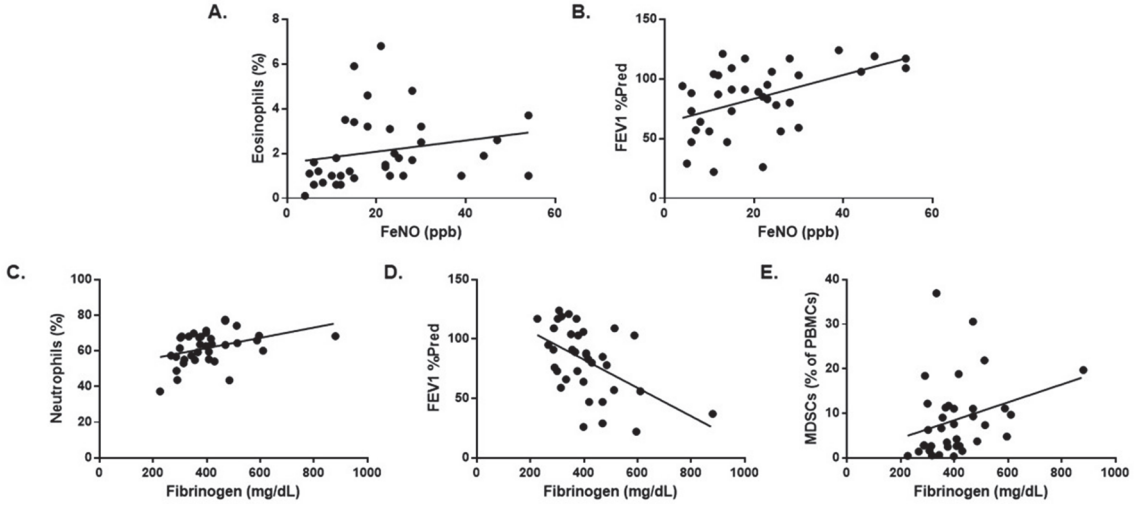
S41 INVESTIGATION OF NOVEL BIOMARKERS OF IMMUNE DYSREGULATION FOR THE IMPROVEMENT OF ENDOTYPING IN BRONCHIECTASIS

[1]AM Matthaiou, [1]N Bizymi, [1]G Pitsidianakis, [1]E Vasarmidi, [2]C Skiadas, [1]N Tzanakis, [1]KM Antoniou. [1]*Laboratory of Molecular and Cellular Pneumonology, School of Medicine, University of Crete and Department of Respiratory Medicine, University Hospital of Heraklion, Heraklion, Greece*; [2]*Department of Medical Imaging, University Hospital of Heraklion, Heraklion, Greece*

10.1136/thorax-2024-BTSabstracts.47

Introduction and Objectives Immune dysregulation is of great importance in the pathogenesis of bronchiectasis. The disease is mainly characterised by neutrophilic inflammation, but eosinophilia is known to predominate in 20% of the cases. Myeloid-derived suppressor cells (MDSCs) are immunomodulatory cells previously proven by our group to be altered and correlated with impaired pulmonary function in bronchiectasis. This study aimed to investigate whether the alterations of novel biomarkers of immune dysregulation in bronchiectasis are correlated with clinical, laboratory, and imaging features and predict disease outcomes.

Methods In 40 bronchiectasis patients, clinical and laboratory data, including white blood cells (WBC), neutrophils, eosinophils, C-reactive protein (CRP), fibrinogen, fractional exhaled



Abstract S41 Figure 1 Graphs A-E show the correlations of FeNO and fibrinogen with eosinophils, neutrophils, FEV_1, and MDSCs. (A) FeNO was correlated with eosinophils (Spearman, r=0.4170, p=0.0114). (B) FeNO was correlated with %Pred FEV_1 (Spearman, r=0.4674, p=0.0041). (C) Fibrinogen was correlated with neutrophils (Spearman, r=0.4261, p=0.0096). (D) Fibrinogen was inversely correlated with %Pred FEV_1 (Spearman, r=-0.5135, p=0.0014). (E) Fibrinogen was correlated with MDSCs (Spearman, r=0.3667, p=0.0278)

nitric oxide (FeNO), spirometric indices, and the scores Quality of Life Questionnaire-Bronchiectasis (QOL-B), Bronchiectasis Radiologically Indexed Computed Tomography Score (BRICS), Bronchiectasis Severity Index (BSI), and FEV_1-Age-Colonisation-Extent-Dyspnoea (FACED) were collected. MDSCs were measured in peripheral blood via flow-cytometry. Correlations were performed with Spearman analysis.

Results In this cohort, FeNO was correlated with eosinophils (r=0.4170, p=0.0114), percentage of predicted (%Pred) forced expiratory volume in one second (FEV_1, r=0.4674, p=0.0041),%Pred forced vital capacity (FVC, r=0.3574, p=0.0324), and%Pred FEV_1/FVC (r=0.3718, p=0.0256), while it was inversely correlated with WBC (r=-0.4109, p=0.0128). On the other hand, fibrinogen was correlated with CRP (r=0.7238, p<0.0001), WBC (r=0.3613, p=0.0304), neutrophils (r=0.4261, p=0.0096), MDSCs (r=0.3667, p=0.0278), and BSI (r=0.3687, p=0.0269), and inversely correlated with%Pred FEV_1 (r=-0.5135, p=0.0014), %Pred FVC (r=-0.4115, p=0.0127), and%Pred FEV_1/FVC (r=-0.4173, p=0.0113).

Conclusions Novel biomarkers of immune dysregulation could contribute to the better endotyping of bronchiectasis into neutrophilic and eosinophilic types. High FeNO, as an indicator of eosinophilic inflammation, was associated with better lung function, while high fibrinogen, as an indicator of neutrophilic inflammation, was associated with worse lung function, more severe disease, and alterations of immunomodulatory cell populations.

S42 PSEUDOMONAS AERUGINOSA GENETIC VARIANTS ASSOCIATED WITH INCREASED EXACERBATIONS IN BRONCHIECTASIS

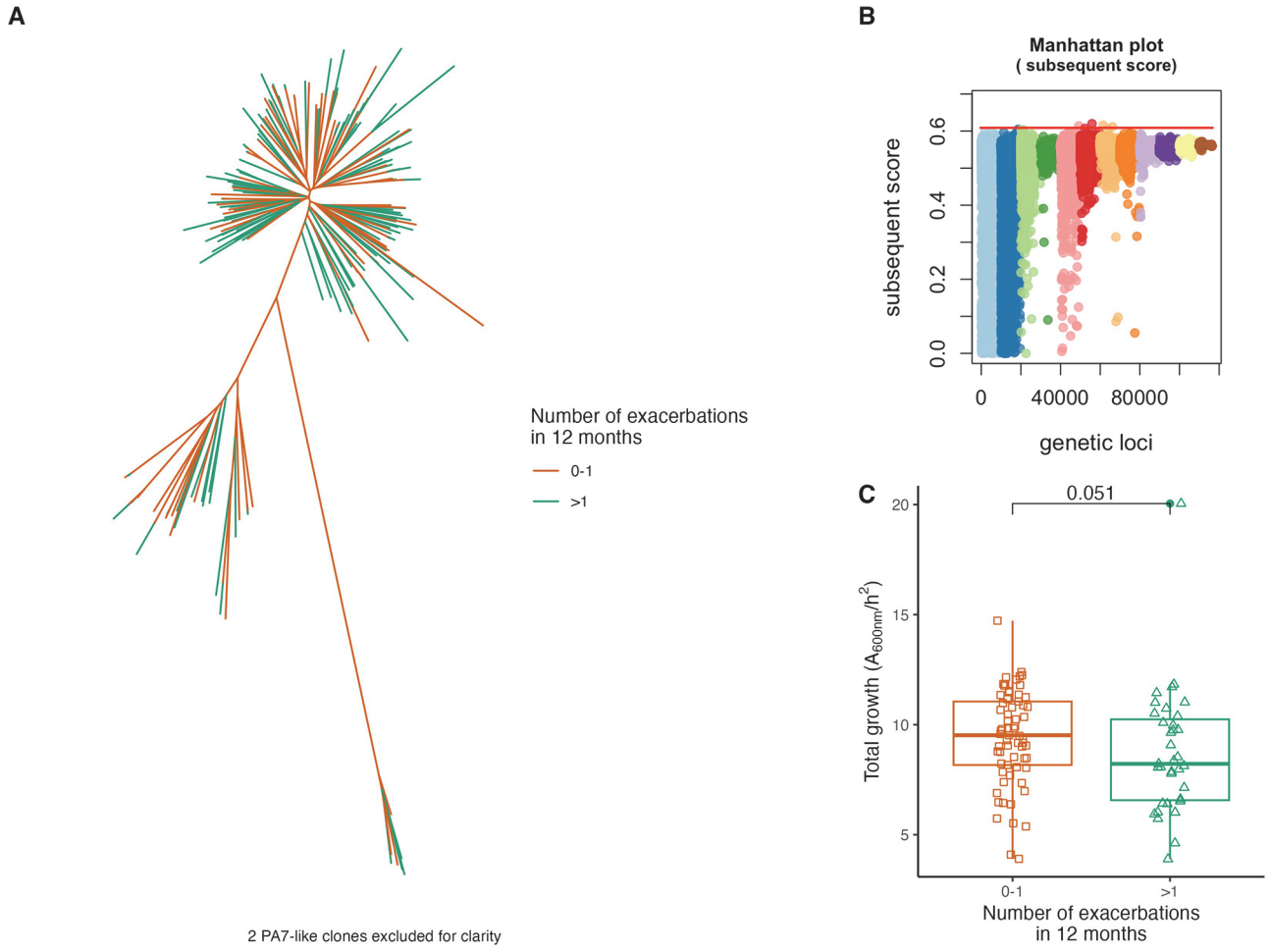
[1]RC Hull, [2]N Harrington, [1]A Gilmour, [1]MB Long, [1]J Stobo, [3]A Kottara, [2]K Cagney, [4]PC Goeminne, [5]C Haworth, [2]JL Fothergill, [3]M Brockhurst, [2]S Paterson, [1]JD Chalmers. *[1]University of Dundee, Dundee, UK; [2]University of Liverpool, Liverpool, UK; [3]University of Manchester, Manchester, UK; [4]AZ Nikolaas, Sint-Niklaas, Belgium; [5]Cambridge Centre for Lung Infection, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.48

Pseudomonas aeruginosa infections in bronchiectasis (BE) are common and associated with increased exacerbation frequency, risk of hospitalisation and death. These infections are poorly characterised, including the contribution of bacterial characteristics to disease severity. We hypothesise that genetic variants in *P. aeruginosa* will be associated with exacerbation frequency.

P. aeruginosa was isolated from sputum from 276 patients with chronic *P. aeruginosa* infection in the ORBIT-3 (n=176) and ORBIT-4 (n=100) trials of inhaled liposomal ciprofloxacin (ARD-3150 n=182, placebo n=94) at baseline prior to treatment. Illumina whole genome sequencing was performed on one clone per patient. *P. aeruginosa* variants were compared to the PAO1 reference strain (NCBI, GCF_000006765.1) (Snippy v4.6.0). Nonsynonymous variants were used to construct a tree-structured phenotypic model (treeWAS, R 4.2.2) and variants were compared between clones from patients with 0–1 vs. >1 exacerbations in the next 12 months (PE) (99.99999% threshold). In all ORBIT-4 clones, bacterial growth was measured at A_{600nm} for 24h and biofilm formation was measured by crystal violet staining after 24h.

During the 12-months following baseline *P. aeruginosa* isolation, 65.9% of patients had 0–1 exacerbations and 34.1% of patients had >1 exacerbations. Exacerbation rates were not associated with treatment groups (p=0.595). Patients *P. aeruginosa* clones were genetically diverse (figure 1A) with between 291 and 15407 nonsynonymous variants per strain (3189 ±2616 [median±IQR]). 5 variants had significant associations with PE, within 4 genes (figure 1B). These genes are: PA2594 (hypothetical protein, association score (score)=-0.61, 2 patients 0–1 PE, 2 patients >1 PE); *tle1* in 2 loci (secreted phospholipase, score= -0.62, -0.61, 5 patients 0–1 PE, 5 patients >1 PE); *bfiS* (regulates biofilm formation, score=-0.62, 1 patient 0–1 PE, 4 patients >1 PE); and PA4735 (outer membrane vesicles derived, score=-0.41, 0 patients 0–1 PE, 7 patients >1 PE). Biofilm formation was not significantly changed between exacerbation groups (p=0.885, 0–1 PE=0.381±0.545 A_{600}, >1 PE=0.427±0.462 A_{600}). In contrast, there was a trend to decreased growth in clones from



Abstract S42 Figure 1

patients with increased PE (figure 1C, p=0.051, 0–1 PE=9.52 ±2.93 A_{600}/h^2, >1 PE=8.22±3.63 A_{600}/h^2).

P. aeruginosa is highly genetically diverse within bronchiectasis infections suggesting adaptations to the infection environment with potential influences on patient outcomes.

S43 THE LUNG MYCOBIOME IN NONTUBERCULOUS MYCOBACTERIAL PULMONARY DISEASE

[1,2]K Kumar, [1]A Nastase, [1]L Cuthbertson, [1,2]HC Ellis, [1]C Churchward, [1]J Ish-Horowicz, [3]N Lambie, [3]B Phillimore, [3]N Matthews, [1,2]MR Loebinger, [1]MF Moffatt, [1]WOC Cookson. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Host Defence Unit, Department of Respiratory Medicine, Royal Brompton Hospital, Guy's and St Thomas' NHS Foundation Trust, London, UK; [3]NIHR Imperial BRC Genomics Facility, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.49

Introduction The clinical course of nontuberculous mycobacterial pulmonary disease (NTM-PD) may be complicated by fungal lung infection. There are limited data on the lung mycobiome in NTM-PD. We hypothesised that there are differences in pulmonary fungal communities in NTM-PD depending on the NTM species, use of NTM treatment and the underlying lung disease. We sought to examine this longitudinally in individuals with *Mycobacterium avium* complex pulmonary disease (MAC-PD) and *M. abscessus* pulmonary disease (MAB-PD).

Methods Sputum samples were acquired at baseline, weekly for 4 weeks and monthly up to 3 months from 37 participants who either had NTM-PD requiring treatment; or had NTM-PD not requiring treatment; or did not have NTM-PD. Additional samples were collected periodically from those on NTM treatment up to 18 months. DNA extracted from samples underwent 18S rRNA gene quantitative polymerase chain reaction to quantify total fungal burden; and internal transcribed space 2 sequencing on an Illumina MiSeq™ Next Generation Sequencer to characterise the fungal communities.

Results No significant differences in pulmonary fungal biomass were identified between MAC-PD or MAB-PD. At baseline, alpha diversity analysis showed that fungal richness was higher in MAC-PD compared to MAB-PD ($P<0.05$) and non-NTM controls ($P<0.05$); and there was no difference in Shannon index, Simpson index or Pielou's evenness index between groups. At 3 months, no differences in alpha diversity measures were identified. Among those on NTM treatment followed up until 18 months, there was a tendency towards higher Shannon index, Simpson index and Pielou's evenness index in MAC-PD compared to MAB-PD at 12 months ($P=0.06$ for all three measures); but not at 18 months. Beta diversity measured using the Bray-Curtis dissimilarity index was not different between groups according to underlying lung disease, NTM species or NTM treatment at baseline, 3 months or when assessed longitudinally across all timepoints.

Sputum samples were dominated by *Candida*. The most prevalent genera thereafter were *Aspergillus* and *Exophiala*.
Conclusions Differences in lung mycobiome composition between individuals with NTM-PD are limited. Pulmonary fungal communities do not appear to be perturbed by NTM treatment. Studies evaluating the impact on clinical outcomes appear warranted.

S44 OUTCOMES AND CHARACTERISTICS OF PATIENTS TREATED WITH NEBULISED AMIKACIN LIPOSOME INHALATION SUSPENSION (ARIKAYCE®): REPORT FROM A TERTIARY CENTRE

[1]GM Housley, [1,2]MR Loebinger. [1]*Royal Brompton Hospital, Heart, Lung and Critical Care Division, Guy's and St Thomas' Hospitals, London, UK*; [2]*NHLI Imperial College, London, UK*

10.1136/thorax-2024-BTSabstracts.50

Background Arikayce is used as add-on therapy to Guideline-Based-Treatment (GBT) for patients with refractory mycobacterium avium complex (MAC).[1] Initial treatment success is judged on sputum culture conversion at 6 months' treatment. This review examined the progress of our cohort, in particular the characteristics of patients successfully treated with Arikayce vs. those who failed.
Method Patient progress was tracked from start of treatment. Characteristics, including sputum culture, of patients treated with Arikayce for 6 months were examined including gender; FEV_1; FEV_1% pred; BMI; and possible indicators of more severe disease including previous treatment with IV amikacin, presence of cavities on HRCT, length of GBT and smear positivity, pre-Arikayce.
Results Our cohort comprises 20 patients of varying pathologies. 11/20 have been on Arikayce for at least 6 months. Of the remaining 9, 3 failed a Drug Response Assessment/didn't start; 3 stopped due to tolerability (often related to upper airway irritation); 3 have been on treatment < 6 months. Of those that have been on Arikayce for at least 6 months, table 1 shows the characteristics of patients that culture converted at 6 months (n=5) vs those who did not (n=6). Of the parameters examined, younger age was associated with treatment success (p=0.05).
Discussion Numbers are small but initial results could suggest a higher sputum culture conversion rate (45%) than previously reported[1]. A younger patient age may also be a predictor of treatment success.

Abstract S44 Table 1 Comparison of responders vs. non-responders

	Responders (n=5)	Non-responders (n=6)	p
F/M**	4/1	3/3	0.55
Age (yrs)	58.40 +/- 14.36	72.17 +/- 3.54	0.05
FEV_1 (l)	2.03 +/- 0.64	1.80 +/- 0.66	0.57
FEV_1% predicted	75.20 +/- 32.54	71.33 +/- 21.75	0.82
BMI	23.10 +/- 3.41	22.08 +/- 3.57	0.64
Previous IV amikacin(Y/N) **	2/3	2/4	1.0
Cavities on HRCT (Y/N) **	4/1	5/1	1.0
GBT length pre-Arikayce (months)*	25.80 +/- 26.00	39.00 +/- 17.60	0.23
Smear +ve pre-Arikayce (Y/N) **	2/3	5/1	0.24

KEY Data expressed as Mean +/- SD; comparison by t-test, unless otherwise specified. *Mann-Whitney U test ** Fisher-Exact test.

REFERENCE
1. Griffith D, *et al. Am J Crit Care Med* 2018;**198**(12):1559–1569.

'The Wind in the Willows' – Home mechanical ventilation

S45 THE CHANGING DEMOGRAPHICS OF HOME MECHANICAL VENTILATION (HMV) SET-UPS FOLLOWING ACUTE HYPERCAPNIC RESPIRATORY FAILURE (AHRF)

[1]JW Goh, [1]PL Lee, [2]D Mukherjee, [1]S Wallbanks, [2]A Krishnan, [1]S Abid, [1]A Oakes, [1]R Mukherjee. [1]*Heartlands Hospital, Birmingham, UK*; [2]*HEE – West Midlands, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.51

Introduction Obesity as the primary cause of AHRF receiving acute Non-invasive Ventilation (NIV) had doubled within a decade[1] and is known to prolong length of hospital stay. We analysed the primary diagnoses for receiving HMV upon discharge following an acute NIV episode.
Methods Data was collected from the NIV quality database of our acute teaching hospital between Jan2014-Feb2020 (Period1) and Aug2020-Dec2021 (Period2) to exclude the first peak of the COVID-19 pandemic when the HMV service was not functional. Adults receiving HMV upon discharge following an acute NIV episode were included. One-year and two-year survival was recorded using the NHS Spine Portal: NHS England Digital. Population characteristics recorded were age, sex, primary diagnosis requiring HMV (Obesity, COPD, Neuromuscular and Chest Wall Deformity) and concomitant home oxygen use alongside HMV. Chi-square test was performed to assess significance of variations between Period1 and Period2.
Results A total of 354 patients (298 in Period1 and 56 in Period2) received HMV upon discharge following an acute NIV episode (118 or 33% with home oxygen): one-year survival was 79% and two-year survival was 64%. There was no significant difference between age, sex and home oxygen use. There was a significant increase in the number of patients receiving HMV for Obesity (27.8% in Period1 vs. 53.6% in Period2; p=0.037). There was no difference in one-year and two-year survival within each of the diagnostic categories across the two periods; COPD had lowest (44%) and neuromuscular had the highest (77%) two-year survival.
Discussion There has been a significant rise in HMV utilization due to Obesity following an episode of AHRF. This is in keeping with the rise in obesity in the population. Further work is needed to confirm this because the immediate post-COVID-pandemic period was characterised by a reduction in COPD exacerbation rates due to improved infection control measures at a population level. Also, the coexistence of COPD with Obesity as a combined cause of respiratory failure needs to be studied further.

REFERENCE
1. Thippanna CM, *et al*. Effect of obesity in patients admitted to NIV unit with Acute Hypercapnic Respiratory Failure (AHRF). *Thorax* 2010;**65**(4):A 142–143. (doi:10.1136/thx.2010.151043.3).

S46 A COMPARATIVE STUDY EVALUATING THE CLINICAL CHARACTERISTICS AND PATIENT RELATED OUTCOMES BETWEEN INPATIENT VERSUS OUTPATIENT DOMICILIARY NON INVASIVE VENTILATION (D-NIV) TRIALS

AB Huda, A Khan, A Dwarakanath. *Department of Respiratory Medicine, Sleep and Ventilation, Mid Yorkshire Teaching NHS Trust, Wakefield, UK*

10.1136/thorax-2024-BTSabstracts.52

Introduction The BTS Respiratory support audit report in 2023 showed that our trust as compared to nationally was initiating a higher number of inpatient D-NIV trials (33% versus 12%). Obesity prevalence is higher than the national average in our area and we hypothesised that the inpatient NIV trial initiation was obesity driven. We have evaluated this further and compared the clinical characteristics and patient related outcomes with outpatient set ups.

Method All patients who were initiated on D-NIV trial over a 12 month period were included. Data on demographics, indications, arterial blood gas parameters, spirometry, D- NIV settings, duration of D-NIV trial and outcome, mortality, input from the ventilation team and number of annual hospital admissions were evaluated. Clinical information was obtained from a database and electronic patient records.

Abstract S46 Table 1 Showing the baseline demographics, clinical characteristics and patient related outcomes between inpatient v/s outpatient NIV trials

Parameters	Inpatient NIV set up (n=64)	Outpatient NIV set up (n=36)	P value
Females (58%)	36	22	P=0.67
Males (42%)	28	14	
Age (mean+/-SD)	66+/-12	68+/-12	P= 0.41
ESS (mean+/-SD)	10+/-6	12+/-6	P= 0.12
BMI (kg/m^2)	36+/12	32+/11	P=0.13
LTOT	**22% (n=14)**	**53% (n=19)**	**P= 0.002**
Opioid use	14% (n=9)	31% (n=11)	P=0.06
Indications for D-NIV Trials			
Acute exacerbation of COPD with failure to wean from acute NIV or recurrent admissions needing acute NIV	20(31%)	8 (22%)	P=0.36
Overlap Syndrome (COPD +OSA)	5(8%)	3 (8%)	P=NS
COPD with chronic hypercapnic respiratory failure (CHRF)	**5(8%)**	**9(25%)**	**P= 0.03**
Decompensated OHS	**30(47%)**	**0(0%)**	**P= < 0.0001**
Stable OHS	**0(0%)**	**14(39%)**	**P= < 0.0002**
Neuromuscular disorders	4(6%)	2(6%)	P=NS
Chest wall disorders	0(0%)	0(0%)	P=NS
Clinical Characteristics			
Mean PCo2 (Kpa) pretrial	**10+/-2.2**	**8+/-1.2**	**P= <0.0001**
Mean FEV1 (% predicted)	**45+/-17**	**38+/-17**	**P=0.04**
Mean FVC (% predicted)	63+/-23	62+/-16	P=0.84
Pulmonary Hypertension	13% (n=8)	19% (n=7)	P=0.39
Mean IPAP in cm H2O	**26+/-4**	**22+/-5**	**P= < 0.0001**
Mean EPAP in cm H2O	**7 +/-2**	**5 +/-2**	**P= 0.0013**
Mean Back up rate	14 +/- 1	13+/-1	P= 0.06
Mean PCo2 (Kpa)post-trial	6.7 +/-1.1	7 +/- 1	P=0.18
Clinical outcomes			
Trial Period in days (mean +/- SD)	33+/-25	28+/-30	P=0.30
Number of visits made by the ventilation team during NIV trial (mean +/-SD)	5+/-1	6+/-4	P=0.17
Domiciliary NIV trial outcome	Negative= 16% (n=10) Positive= 84% (n= 54)	Negative= 19% (n=7) Positive= 81% (29)	P=0.78
Trial to follow up clinic time	4.4 +/- 2.9 months	4 +/- 2.2 months	P=0.60
Compliance during the trial in hours (mean +/- SD)	5.8 +/- 2.1	5.6 +/- 2.6	P=0.22
Compliance in clinic review in hours (mean +/- SD)	7.3 +/- 2.4	5.6 +/- 2.6 hrs	P=0.07
1 year Mortality	28.1% (n=18)	27.8% (n=10)	P=NS
Hospitals admissions in 1 year	2 +/- 3	2 +/- 3	P=0.70

Results 100 Patients were initiated on D-NIV trials (inpatient-64%). No difference in demographics (table 1). LTOT Patients were significantly higher in the outpatient set up group (53% v/s 22%, P= 0.002). Decompensated OHS (47% v/s 0%, P= < 0.0001) was the most common aetiology for inpatient D-NIV trial as compared to outpatient. Stable OHS (39% v/s 0%, P= 0.0002) and COPD with CHRF (25% vs 8%, P= 0.03) were the aetiologies for outpatient set ups as compared to inpatient. Mean baseline PCo2 (10+/-2.2 kpa v/s 8+/-1.2 kpa, P= < 0.0001), mean FEV1% (45+/- 17 v/s 38+/-17, P= 0.04) and NIV parameters (IPAP- 26+/-4 v/s 22+/-5, P= < 0.0001; EPAP 7+/-2 v/s 5+/-2, P= 0.0013) at the time of D-NIV initiation was significantly different in the inpatient group as compared to outpatient group. No difference in hospital admissions post D-NIV trials and one year mortality between the two groups.

Conclusion Domiciliary NIV trials can be considered both as an inpatient and outpatient basis. Careful patient selection and clinical monitoring remains the key. Hypercapnia is significantly worse in inpatient set ups likely due to decompensation and disease burden. NIV parameters should be patient focussed to achieve good outcomes. Early identification of obesity related respiratory failure will be advantageous to reduce the burden on unplanned hospital admissions.

S47 PNEUMOCOCCUS AND INFLUENZA VACCINATIONS IN PATIENTS WITH COPD ESTABLISHED ON LONG-TERM NON-INVASIVE VENTILATION

[1]E Croft, [2]B Csoma, [1]A Chai, [2]T Felton, [2]A Bentley, [2]A Bikov. *[1]University of Manchester, Manchester, UK; [2]Long-Term Ventilation Service, Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.53

Background Pneumococcus and annual Influenza vaccinations are advised for patients with COPD. However, the real-world prevalence of vaccinations is poorly understood in these patients, especially in those with the most severe disease. Long-term non-invasive ventilation (LT-NIV) may reduce the number of exacerbations. However, the impact of vaccinations on the reduction of exacerbations has not previously been

studied. The aim of this service evaluation project was to describe the vaccination status of patients with COPD on LT-NIV and to analyse their association with exacerbations before and after LT-NIV setup.

Methods We assessed vaccination data of 340 patients with COPD who were set up on LT-NIV between September 2011 and July 2023. The number and the date of vaccinations were obtained from the Greater Manchester Care Records.

Results 270 patients (79%) have ever received a pneumococcus vaccination (n=96 within 5 years of LT-NIV setup), and 314 patients (92%) have ever received a flu jab, but only 297 (87%) within a year of LT-NIV setup. Neither pneumococcus nor influenza vaccination was associated with the number of exacerbations in the year before LT-NIV setup. Following LT-NIV setup the number of exacerbations significantly decreased in the first 12 months (from 3/2–5/to 1/0–4/, median/inter-quartile range/, $p<0.01$). The change was not affected by either pneumococcus or influenza vaccination; however, the number of exacerbations in the first year were surprisingly higher in those patients who have ever received pneumococcus vaccination (2/0–4/vs. 0.5/0–2/, $p<0.01$).

Discussion Long-term NIV significantly reduces the number of exacerbations in the first 12 months following set up, irrespective of the vaccination status.

S48 FRAILTY & MULTIMORBIDITY IN PATIENTS TREATED WITH DOMICILIARY NIV FOR OBESITY-RELATED SLEEP DISORDERED BREATHING: A SINGLE CENTRE EXPERIENCE AT A DISTRICT GENERAL HOSPITAL

R Chapman, J Bourne, G Tinson, N Hussain, J Coffey, J Loft, K Spurling, I Moonsie. *North Middlesex University Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.54

Introduction The prevalence of obesity and associated sleep-disorders is rising in the UK, as is the use of domiciliary non-invasive ventilation (NIV) in treating these conditions. Patients with obstructive sleep apnoea (OSA) and/or obesity hypoventilation syndrome (OHS) have reported excess comorbidity, more frequent hospitalisations, and reduced quality of life in observational studies. We aimed to assess the incidence of frailty and multimorbidity, and their impact on respiratory-related hospital admission rates, in a cohort of patients with OSA/OHS who had been initiated on domiciliary NIV from within a district general hospital (DGH) setting.

Methods A single centre retrospective cohort study was carried out by reviewing the electronic healthrecords of all patients initiated on domiciliary NIV for OSA and/or OHS at a DGH between 2015 and 2022. Data collected included: Rockwood clinical frailty score (CFS), comorbid diagnoses at time of NIV initiation, and number of hospital admissions for respiratory infection and/or failure following initiation of domiciliary NIV.

Results 23 patients were included (mean age 62 years, 56.5% female); 43.4% of patients had a co-existing diagnosis of airways disease. Common comorbidities were hypertension (65.2%), diabetes mellitus (47.8%), heart disease (43.4%) and chronic kidney disease (17.3%). 73.9% of patients had ³3 significant comorbidities (multimorbid). In multimorbid patients, there were a total of 32 hospital admissions (1.9 per patient) over the data collection period compared to a total of 1 hospital admission in those patients with <3 comorbidities (0.2 per patient).

The mean CFS across all patients was 4.8 (range 3–7), with 56.5% of patients having a CFS of ³5 (at least mildly frail). In patients with a CFS of 5 or above, there were 26 hospital admissions during the data collection period (2 per patient), compared to 8 hospital admissions for those patients with a CFS of £4 (0.8 per patient).

Conclusion Our single-centre study highlights the burden of frailty and multimorbidity in patients with obesity-related sleep disorders using domiciliary NIV. The presence of frailty and/or multimorbidity may be useful in predicting which patients are at an increased risk of future hospital admission for respiratory illness, and thus the need for enhanced community support.

S49 TREATMENT CONSIDERATIONS FOR LONG TERM TRACHEAL VENTILATION IN PROGRESSIVE OR POST-ACUTE NEUROLOGICAL DISEASE

[1]A Evans-Tomlinson, [1]P Byrne, [2]M Ramsay, [1]L Bradley. *[1]The Royal Hospital for Neurodisability, London, UK; [2]Lane Fox Unit, St Thomas' Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.55

Introduction and Objectives Patients with progressive or post-acute neurological disease often require long-term life-sustaining treatments (LTS). These may include continuous artificial nutrition and hydration (CANH) and long-term tracheal ventilation (LTTV). The decision to initiate these treatments is often made acutely in the context of an emergency hospital admission. There has been considerable focus on the moral, legal and ethical dimensions of the longer-term continuation of CANH in people who lack the capacity to make treatment decisions and what may or may not be in their 'best interest'. However, there is a lack of research or guidance around these considerations in the context of LTTV for people with similar presentations.

In order to establish the need for a framework or guidelines, we set out to establish how decision making around all LST was approached in a cohort of patients on LTTV with irreversible (post-acute or progressive) neurological disease in a community-based specialist care-setting.

Methods A retrospective descriptive cohort study of patients receiving LTTV in long-term care with progressive or post-acute neurological disease.

The previous five years' notes were reviewed to determine diagnosis, duration of ventilation, provision of other LTS (cardioprotective agents, anti-coagulation, seizure prophylaxis, pacemakers/defibrillators, insulin), capacity assessments, best interest decisions, advanced care planning (ACP) and appointment of a lasting power of attorney (LPA).

Results The cohort of 30 patients on LTTV (5 with MND, 18 with acquired brain injury, 5 with high spinal cord injury, 2 with neuropathy). Appropriate best interests discussions were not undertaken for LTTV or other life sustaining treatments for the patients who lack capacity. For most patients with retained capacity, ACP or appointment of an LPA has not occurred (see table 1).

Conclusions The decision to initiate ventilation has long term consequences. There is a lack of best interest discussions regarding ongoing administration of LST for this patient group. Further work is needed to understand the barriers to these conversations but adopting a structured approached in consideration of continuation LST (including LTTV) as

Abstract S49 Table 1 Capacity decisions, treatment plans and life sustaining treatments in long-term ventilated patients (ABI = acquired brain injury, SCI = spinal cord injury, MND = motor neuron disease, LPA = lasting power of attorney appointed, CANH= clinically assisted nutrition and hydration, CPR = cardiopulmonary resuscitation, LST = life sustaining treatments (cardioprotective agents, anti-coagulation, seizure prophylaxis, pacemakers/defibrillators, insulin)) *capacity to consent to treatment

Diagnosis	Capacity*	LPA (health)	CANH	For CPR?	Additional Life sustaining treatments	Total LST
ABI	No	No	Yes	No	1	3
ABI	Yes	No	Yes	Yes	3	6
ABI	No	No	Yes	No	3	5
ABI	No	Yes	Yes	Yes	1	4
ABI	Yes	No	Yes	Yes	1	4
ABI	Yes	No- declined	Yes	No	5	7
ABI	Yes	No	Yes	Yes	1	4
ABI	No	No	Yes	Yes	2	5
ABI	No	No	Yes	Yes	0	3
ABI	Yes	No	Yes	Yes	0	3
ABI	No	No	No	No	2	3
ABI	Yes	No	Yes	No	1	3
ABI	Yes	No	Yes	Yes	1	4
ABI	No	No	Yes	Yes	3	6
ABI	No	No	Yes	No	1	3
ABI	No	No-declined	Yes	Yes	2	5
ABI	No	No	Yes	Yes	0	2
ABI	Yes	No	Yes	No	1	3
MEAN VENTILATION IN MONTHS FOR ABI 78.1						
MND	Yes	Yes	Yes	Yes	0	3
MND	Yes	Yes	Yes	No	1	3
MND	Yes	No	Yes	No	0	2
MND	No	No	Yes	No	2	4
MND	Yes	No- declined	Yes	Yes	0	3
MEAN VENTILATION IN MONTHS FOR MND 19.2						
Neuropathy	Yes	No- declined	Yes	Yes	0	3
Neuropathy	Yes	No	Yes	Yes	2	5
MEAN VENTILATION IN MONTHS FOR NEUROPATHIES 13						
SCI	Yes	Yes	Yes	No	2	4
SCI	Yes	No	No	Yes	2	4
SCI	Yes	No- declined	No	Yes	2	4
SCI	Yes	No	No	Yes	2	4
SCI	Yes	No	No	Yes	1	3
MEAN VENTILATION IN MONTHS FOR SCI 82.2						

currently occurs for CANH may lead to improved utilisation of ACP and discussions around best interests in this cohort of patients.

S50 EFFECT OF PULSE OXIMETRY ACCURACY ON TIMING OF LONG-TERM OXYGEN ASSESSMENTS IN PEOPLE WITH DARKER SKIN TONES

WAKT Chua, JMR Ruanto, S Williams, N Gardiner, A Fogarty, D Shaw, T Ward. *University Hospitals of Leicester NHS Trust, Leicester, UK*

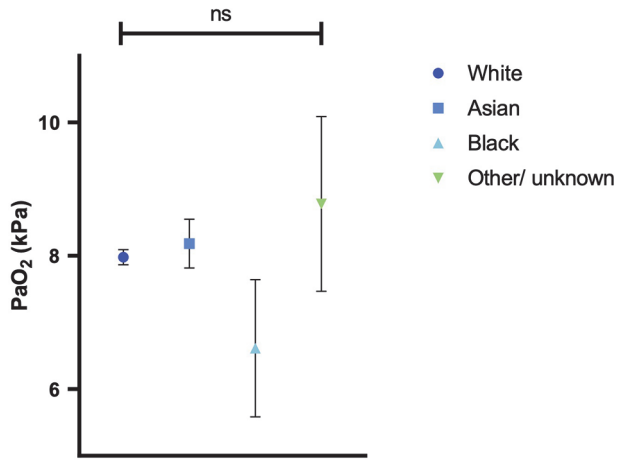
10.1136/thorax-2024-BTSabstracts.56

Introduction Studies have raised concerns about the accuracy of pulse oximeter readings among different ethnic groups, especially those with darker skin tones, leading to delays in providing acute respiratory support. Pulse oximetry is used as a screening tool to identify the need for formal oxygen assessment in people with chronic respiratory disease. Whether inaccuracies in pulse oximetry in people with darker skin tones lead to later referral for long-term oxygen therapy (LTOT) assessment than those with white skin is unknown.

Aim To investigate whether PaO_2 is lower in people with darker skin tones at initial LTOT assessment.

Methods A retrospective analysis of LTOT assessments conducted at Glenfield Hospital, Leicester. Capillary blood gas readings from the first LTOT assessment were recorded and ethnicity was documented from electronic medical records. Individuals receiving oxygen for cluster headaches or as part of end of life care were excluded. Differences in variables between groups were compared with one-way ANOVA and chi-squared tests.

Results Of 786 people assessed for LTOT, 676 (86%) were White, 92 (12%) Asian and 6 (1%) Black. pO_2 in Black individuals was lower (6.61±0.98 kPa) compared to White (7.98 ±1.50 kPa) and Asian (8.18±1.76 kPa) individuals, although this was not statistically significant ($p=0.21$). SaO_2 was also numerically lower ($p=0.24$) in Black individuals (82.3±6.9%)



Abstract S50 Figure 1

compared to White (90.2±5.7%) and Asian (89.9±6.2) individuals. PaO_2 was less than 7.3 kPa in 83% of Black people, 34% of White people and 35% of Asian people (p=0.08). There was a significant difference in pH (p < 0.001) and a non-significant difference in $PaCO_2$ (p=0.27) between ethnic groups: 7.41±0.04 and 6.10±1.37 kPa in Black individuals, 7.44±0.04 and 5.54±1.01 kPa in White individuals and 7.42 ±0.04 and 5.64±1.16 kPa in Asian individuals.

Conclusion These findings suggest that Black individuals being evaluated for LTOT, may have lower PaO_2 and more severe blood gas abnormalities at the time of assessment. Despite the limited sample size, this data signals an urgent need for further investigation into the provision of LTOT across different ethnic groups.

'The Thursday Meso Club' – Pleural malignancy

S51 STAGING BY THORACOSCOPY IN POTENTIALLY RADICALLY TREATABLE LUNG CANCER ASSOCIATED WITH MINIMAL PLEURAL EFFUSION (STRATIFY): RESULTS OF A PROSPECTIVE, MULTICENTRE, OBSERVATIONAL STUDY

[1]J Ferguson, [2]S Tsim, [3]C Kelly, [3]L Alexander, [3]S Shad, [1]M Neilly, [1]M Tate, [4]B Zahra, [4]M Saleh, [4]G Cowell, [3]E Banks, [5]S Grundy, [6]J Corcoran, [7]N Downer, [8]N Rahman, [9]N Maskell, [10]M Evison, [1]KG Blyth. *[1]University of Glasgow, Glasgow, UK; [2]Glasgow Pleural Disease Unit, Glasgow, UK; [3]Cancer Research UK Glasgow CTU, Glasgow, UK; [4]Queen Elizabeth University Hospital, Glasgow, UK; [5]Salford Royal Hospital, Salford, UK; [6]Derriford Hospital, Plymouth, UK; [7]King's Mill Hospital, Sutton-in-Ashfield, UK; [8]Churchill Hospital, Oxford, UK; [9]University of Bristol, Bristol, UK; [10]University Hospital of South Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.57

Introduction Recurrence following radical therapy for lung cancer remains common, potentially reflecting occult metastatic disease. In multiple retrospective studies, minimal pleural effusion (mini-PE) is associated with particularly high recurrence risk. Mini-PE is defined as an ipsilateral effusion (<1/3 hemithorax on chest radiograph), which is cytology negative or too small for safely aspirate. Thoracoscopy (Local Anaesthetic Thoracoscopy (LAT) or Video Assisted Thoracoscopic Surgery (VATS)) is the gold-standard sampling method for larger effusions but is not routinely used in mini-PE. STRATIFY prospectively evaluated thoracoscopic staging in mini-PE for the first time.

Methods STRATIFY was a prospective multi-centre observational study that recruited from 7 UK pleural centres between January 2020 and May 2024. Target sample size was 50. The primary objective was to determine the prevalence of detectable Occult Pleural Metastases (OPM) in patients with otherwise radically-treatable lung cancer. Secondary objectives included technical feasibility, safety and the impact of thoracoscopy results on treatment plans. Inclusion criteria were (1) suspected/confirmed stage I-III lung cancer (2) Mini-PE (3) Performance Status 0–2 (4) Radical treatment feasible if OPM excluded (5) ≥16 years old (6) informed consent. Exclusion criteria included any metastatic disease or contraindication to the chosen thoracoscopy method (LAT/VATS). Ultrasound screening was mandatory if LAT was the preferred approach. All patients had LAT/VATS within 7 (+/- 5) days of registration, with results returned to lung cancer teams for treatment planning.

Results Recruitment was interrupted due to COVID19 and accrual was slower than expected. Pre-screening data suggested that many patients with mini-PE were unfit for radical therapy or had metastatic disease elsewhere. 27/37 screened patients were recruited (24 LAT; 3 VATS), constituting 54% of the target sample size. Mean age was 69 (1.7) years. 19/27 participants were male. Analyses regarding the primary endpoint and secondary outcomes describing technical feasibly and safety will be available for conference. These will be supplemented by pre-screening information highlighting the true incidence of mini-PE.

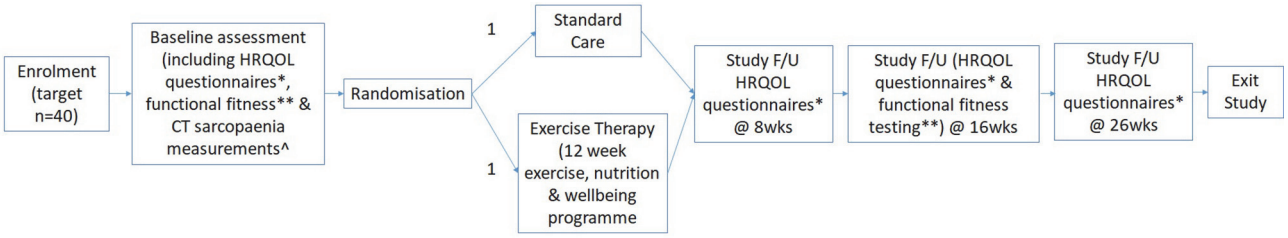
Conclusion Recruitment to STRATIFY was below target, reducing the precision with which the primary endpoint can be reported. However, important new knowledge has been generated regarding mini-PE incidence and the technical feasibility and safety of staging thoracoscopy.

S52 EXTRA-MESO FEASIBILITY – A RANDOMISED FEASIBILITY STUDY OF EXERCISE THERAPY IN MESOTHELIOMA

[1,2]S Tsim, [1,2]KG Blyth, [3]J Moore, [4]A Marcu, [5]Z Merchant, [1]C MacRae, [5,6]M Evison. *[1]Pleural Disease Unit, Queen Elizabeth University Hospital, NHS Greater Glasgow and Clyde, Glasgow, UK; [2]School of Cancer Sciences, University of Glasgow, Glasgow, UK; [3]Department of Critical Care and Anaesthesia, Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK; [4]School of Health Sciences, Faculty of Health and Medical Sciences, University of Surrey, Surrey, UK; [5]Department of Respiratory Medicine, Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK; [6]Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.58

Introduction Malignant Pleural Mesothelioma (MPM) is associated with high symptom burden, cancer cachexia and poor health-related quality of life (HRQOL), even in those with good performance status (PS). Improving and maintaining HRQOL is a key goal in MPM management, and maximising systemic anti-cancer treatment (SACT) opportunity has never been more important. However, SACT uptake is typically low, often due to reduced physical fitness associated with MPM and advanced age at diagnosis. Exercise therapy is a rational approach to improving HRQOL and could maintain and/or improve fitness. There is evidence to support exercise therapy



*Euroqol quality of life survery (EQ-5D-5L), 36-item short form survey (SF-36), EORTC QLQ-C30, Hospital and Anxiety Depression Scale (HADS), Short Warwick Edinburgh Metal Wellbeing Scale (sWEMWBS)
**Six minute walk test (6MWT), hand grip strength and 30 second sit-to-stand test
^Skeletal muscle area and visceral fat index measurements on routinely-acquired clinical CT scan within the preceding 3 months (if available)

Abstract S52 Figure 1 Study flowchart

in other cancers, but there is limited evidence for the role of exercise therapy in MPM. EXTRA-Meso feasibility study is a prospective, randomised feasibility trial of exercise therapy versus standard care in patients with a diagnosis of MPM.

Methods EXTRA-Meso Feasibility is currently recruiting from two UK centres (Glasgow and Manchester). Patients with a diagnosis of mesothelioma, ratified by a mesothelioma MDT; PS 0 - 2; clinical frailty score ≤5 and able/willing to provide informed written consent are eligible. Patients will be randomised 1:1 to intervention, where they receive a 12 week personalised exercise programme, after being assessed by a physiotherapist or qualified exercise professional with specific cancer training, or standard care (routine clinical follow-up). Baseline and follow-up assessments include functional fitness assessments and HRQOL questionnaires. Study flowchart is detailed in figure 1. The primary objective is to determine whether it is feasible to recruit and randomise 40 patients within 12 months. Secondary objectives include assessment of barriers to study recruitment and retention, and to determine the safety and tolerability of the exercise intervention and study assessments.

Results The study opened to recruitment on 18th January 2024, at the time of submission 19/40 patients had been enrolled and randomised. Preliminary results relating to study secondary objectives will be available for presentation at BTS Winter Meeting 2024.

Conclusion Results of EXTRA-Meso feasibility will directly influence the study design of a future phase 3 randomised trial. Recruitment to date has met target recruitment rate, and if the current rate continues, a phase 3 study is likely to be feasible.

S53 UPFRONT SURGERY IMPROVES OUTCOMES OVER NEOADJUVANT CHEMOTHERAPY IN RESECTABLE MESOTHELIOMA

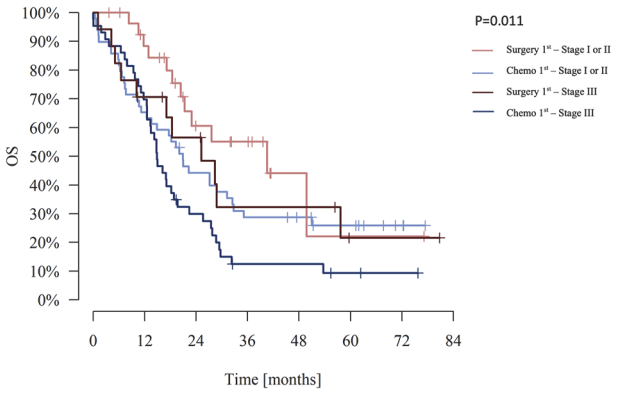
[1]M Lee, [1]A Dhanji, [1]A Paul, [2]R Baranowski, [1]J Hargrave, [1]D Waller. *[1]St Bartholomew's Hospital, London, UK; [2]Royal Victoria Hospital, Belfast, UK*

10.1136/thorax-2024-BTSabstracts.59

Objective Recent release of MARS2 study compared outcomes after (extended) pleurectomy decortication plus chemotherapy versus chemotherapy alone. The results showed (extended) pleurectomy decortication group with worse survival, a higher rate of serious adverse events and poorer quality of life.[1] This study however included all cell types and the surgical group included about 2.6 times as many sarcomatoid patients as the chemotherapy group. We aimed to evaluate the effects of upfront chemotherapy or surgery whilst maintaining macroscopic complete resection (MCR) as the treatment of choice for MPM in epithelioid 'resectable' mesothelioma.

Methods Consecutive of series of 137 patients [109M: 24F, median age 67(41–79) years] with epithelioid resectable mesothelioma underwent radical surgery for MPM. We identified 92 patients [77M:15F, median age 67(41–79) years], in whom received upfront chemotherapy and compared their perioperative outcomes this with 45 patients [32M:13F, median age 68 (45–79) years] who received upfront surgery.

Results There was no significant intergroup difference in demographics or pathological stage (TNM 8th) (p=0.32). However, there were significantly more non-epithelioid cases after surgery in those who received neoadjuvant chemotherapy (p=0.01). In overall survival (OS) between the two groups, upfront surgery group (40.57 months in stage I/II, 25.26 months in stage III) had better outcomes than upfront chemotherapy group (20.93 months in stage I/II, 14.88 months in stage III) (p=0.011). **(Figure 1)**



Abstract S53 Figure 1 Overall survival after pleurectomy/decortication in resectable epithelioid mesothelioma

Conclusion Upfront surgery in epithelioid resectable MPM is associated with improved perioperative outcomes and improved overall survival.

REFERENCES

1. Lim E, Waller D, Lau K, Steele J, Pope A, Ali C, *et al*. Extended pleurectomy decortication and chemotherapy versus chemotherapy alone for pleural

mesothelioma (MARS 2): a phase 3 randomised controlled trial. *The Lancet Respiratory Medicine* 2024.
2. Lababede O, Meziane MA. The eighth edition of TNM staging of lung cancer: reference chart and diagrams. *Oncologist* 2018 Jul;**23**(7):844–848. doi: 10.1634/theoncologist.2017–0659. Epub 2018 Apr 12. PMID: 29650687; PMCID: PMC6058324.

S54 THE IMPACT OF UNDERLYING CANCER TYPE ON SURVIVAL IN MALIGNANT PLEURAL EFFUSION

[1]C Mounsey, [2]N Kanellakis, [1]D Addala, [1]WM Chew, [1]B Iqbal, [1]E Alguili, [1]A Saad, [1]N Kaushal, [1]N Russell, [1]J Cabildo, [1]R Hallifax, [1]N Rahman. *[1]Oxford Pleural Unit, Oxford, UK; [2]Chinese Academy of Medical Sciences Oxford Institute, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.60

Introduction Almost any advanced malignancy can spread to the pleura and cause malignant pleural effusion (MPE). The causative primary malignancy in MPE is known to impact survival, and the LENT[1] and PROMISE[2] prognostic scores include tumour type as a variable. However, the scores categorise causative malignancies differently, and their stratification of tumour types into three risk groups has been argued to insufficiently account for the biological variability between and within malignancies, especially with the increased use of molecular targeted therapy.

Methods Patients (n = 773) with a diagnosis of MPE between 2015–2023 were identified from the Oxford Pleural Database. Electronic medical records were reviewed to calculate length of survival and to identify the causative malignancy. Patients were divided into groups of tumour type as per LENT score and median (IQR) lengths of survival were calculated and log-rank tests performed. Survival between patients with different mesothelioma sub-types was compared.

Results Survival in patients with haematological malignancy appeared markedly better than all other categories (table 1), and this was confirmed through log-rank tests. Survival of 'other' malignancies was significantly worse than that of those with lung cancer (p = 0.001). In patients with mesothelioma, survival time in those with an epithelioid sub-type (n = 115, median 473 days) was significantly greater than those with a non-epithelioid sub-type (n = 43, median 182 days) (p < 0.001).

Discussion Our results highlight marked variation in survival between different underlying malignancies in MPE, and support suggestions that the categorisation of tumour types in the LENT and PROMISE scores inadequately account for the heterogeneity between malignancies. Furthermore, given the significant survival differences between epithelioid and non-epithelioid mesotheliomas, this suggests that tumour sub-types should be considered to improve prognostic score performance.

S55 THE RELATIONSHIP BETWEEN PLEURAL FLUID EXPOSURE AND SURVIVAL IN MALIGNANT PLEURAL EFFUSION: INSIGHTS FROM RANDOMISED TRIALS

[1]DN Addala, [1]C Mounsey, [1]B Iqbal, [1]A Elshiekh, [1]WM Chew, [1]A Sundaralingam, [1]R Hallifax, [1]JM Wrightson, [1]EOM Bedawi, [2]A Dipper, [3,4]E Mishra, [2]R Bhatnagar, [2]N Maskell, [1]NM Rahman. *[1]Oxford Pleural Unit/Oxford Respiratory Trials Unit, Oxford, UK; [2]Academic Respiratory Unit, University of Bristol, Bristol, UK; [3]University of East Anglia, Norwich, UK; [4]Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK*

10.1136/thorax-2024-BTSabstracts.61

The relationship between duration of pleural fluid exposure and survival in malignant pleural effusion (MPE) is unclear. Recent laboratory studies have demonstrated that pleural fluid promotes tumour growth in-vitro, and pleurodesis success may be associated with improved survival in MPE.

Aims To determine whether duration of malignant pleural fluid exposure independently impacts survival in a large, prospective cohort.

Methods Prospectively collected data from the four largest UK randomised trials in MPE (TIME-1, TIME-2, IPC+, TAPPS) were analysed. Demographics, proportion of remaining lifespan exposed to pleural fluid from randomisation and time to death/censoring were calculated.

Initial data analysis was conducted using Kaplain Meier survival curves, and univariate cox proportional hazards. Parameters that displayed p<0.2 in univariate modelling were included in a multivariate cox model to delineate independent predictors of survival with hazard ratios for death. A time varying co-efficient was included to control for extremes of survival time.

Results A total of 841 patients were included, 430 (51%) male, 411 (49%) female. Median age was 69.9 years (IQR 62.0–77.0) and median survival was 239 days (IQR 99–460). The most common primary malignancies were lung (n=236), breast (n=190) and mesothelioma (n=175).

In univariate modelling, CRP, Hb, performance status, LENT tumour type, proportion of exposure to pleural fluid (all p<0.001), sex (p=0.012), and treatment with chemotherapy (p=0.02) were significantly associated with survival.

Multivariate cox regression analysis using the above parameters, corrected with a time dependent covariate (days exposed to pleural fluid), illustrated that LENT tumour type, CRP and exposure to pleural fluid were significantly associated with

Abstract S54 Table 1 Average length of survival by malignancy type. Abbreviations: LOS, length of survival; IQR, inter-quartile range

Malignancy	Median LOS (days)	IQR	LENT risk group	PROMISE risk group
Mesothelioma	293	108.5–659.8	Lowest	Lowest
Haematological	1326	350-	Lowest	Middle
Breast	295	70–1041	Middle	Middle
Gynaecological	241	80–549	Middle	Middle
Renal cell carcinoma	55	35–214	Middle	Middle
Lung	112	44–271	Highest	Highest
Other	64	36–140	Highest	Middle

Abstract S55 Table 1 Multivariate cox proportional hazards model showing hazard ratio for death with selected variables. All variables displayed p<0.02 in prior univariate modelling. LENT tumour type indicates tumour categorisation as used in the LENT prognostic score in malignant pleural effusion. *Indicates statistically significance, set at p<0.05

Variable	Hazard Ratio	95% confidence interval	P Value
Proportion of life remaining exposed to pleural fluid	3.11	1.81 to 5.35	<0.0001*
Age	1.01	0.97 to 1.02	0.15
LENT tumour type	1.38	1.09 to 1.75	0.007*
CRP	1.01	1.00 to 1.01	<0.001*
Haemoglobin	1.00	0.99 to 1.01	0.64
Performance status	1.21	0.89 to 1.64	0.21
Treatment with chemotherapy	1.87	1.32 to 2.64	<0.001*

survival (table-1). The hazard ratio for proportion of remaining life exposed to pleural fluid and death was 3.11 (95% CI 1.81–5.35), p<0.0001.

Conclusions To date this is the only study using prospective data to assess the relationship between pleural fluid exposure and survival in MPE. The data suggests that longer exposure to pleural fluid significantly increases the risk of mortality, even when corrected for known prognostic factors. This results in significant implications for clinical practice, as it suggests that more aggressive fluid management to minimise time of exposure to pleural fluid should be considered.

'The Nurse of Monte Cristo' – Nurse led respiratory care

S56 USING ABC (ADHERENCE, BIOMARKERS AND CO-MORBIDITY) IN THE NURSE-LED ASTHMA CLINIC TO REDUCE INAPPROPRIATE USE OF STEROIDS AND ANTIBIOTIC IN PATIENTS WITH BREATHLESSNESS

[1]C Eames, [1]S Kerley, [1]M Pantaleon, [1]C Whitfield, [2]A Freeman, [2]HM Haitchi, [2]RJ Kurukulaaratchy, [1]H Rupani. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]University of Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.62

Background Patients with asthma with increased breathlessness symptoms are often prescribed oral corticosteroids (OCS) and antibiotics. Exacerbations are frequently due to viral infections and antibiotics are not always needed. Breathlessness symptoms may be due to treatment non-adherence or co-morbidities. Previous work has shown the value of biomarker-directed treatment of exacerbations. We developed an assessment tool to support clinical nurse specialist (CNS) review and reduce inappropriate use of OCS and antibiotics.

Methods Patients (biologic naïve and biologic-treated) with clinician diagnosed severe asthma presenting with increased breathlessness were reviewed by the CNS using:

Abstract S56 Table 1 ABC assessment of asthma patients presenting with acute breathlessness

	Patients on biologics	Patients not on biologics
Number of patients	68	35
Adherence	10 non-adherent (14%)	9 non-adherent (26%)
Biomarkers		
Baseline FeNO (ppb)	28 (13, 52)	25 (13, 41)
FeNO at exacerbation (ppb)	24 (12, 55)	27 (13, 42)
ACQ at exacerbation	4.0 (3.1, 4.2)	3.2 (2.5, 3.9)
Blood eosinophil at exacerbation (x 10^9/L)	0.0 (0.0, 0.10)	0.3 (0.15, 0.40)
Comorbidities		
Breathing pattern disorder	42 patients (62%)	21 patients (60%)
Other assessments		
Percentage of patients with positive respiratory virus throat swab	18 (6/34)	37 (10/27)
Percentage of patients with positive sputum culture	18 (3/17)	20 (2/10)

ACQ: asthma control questionnaire, FeNO: fraction of exhaled nitric oxide

- A. Adherence: reviewed using medicine possession ratio (MPR) with MPR ≥75 considered adherent
- B. Biomarkers: Fractional exhaled Nitric Oxide (FeNO) and blood eosinophil
- C. Co-morbidities: any upper airway or breathing pattern disorder (BPD) symptoms.

Patients also had clinical examination, viral throat swab, sputum culture and CRP. If the throat swab confirmed a viral infection, antibiotics were usually avoided. If biomarkers were not raised compared to baseline, OCS was usually avoided.

Results Between 01/10/23 and 30/04/24, 103 patients were reviewed. Table 1 shows the ABC assessment. Non-adherent patients were reminded of the importance of regular inhaled-steroid treatment. Patients who had worsening BPD symptoms were reminded of their breathing retraining exercises.

Based on ABC assessment, 22 patients (21%) were treated with OCS. This was similar in the biologics-treated (16 patients, 24%) and biologic-naïve group (6 patients,17%). Of the remaining 81 patients, 2 started a course of OCS within 2 weeks of review; there were no hospital admissions.

16 patients (16%) were treated with antibiotics (similar in the biologic-treated and biologic-naïve group). Fewer had a positive sputum culture (5/16, 31%).

OCS treated patients had an increase in FeNO compared to baseline, this was not statistically significant: biologics-treated: 34ppb (14,48) to 44ppb (15,63), biologics-naïve: 36ppb (15,60) to 50ppb (43,167). In patients where OCS was avoided, there was no change in FeNO from baseline- biologics-treated: 25ppb (13,57) to 21ppb (12,50), biologics-naïve 25ppb (13, 39) to 25ppb (11, 32).

Conclusion Structured clinical assessment, using the ABC method, by an asthma CNS successfully reduces inappropriate use of OCS and antibiotics in patients with severe asthma.

S57 A NATIONAL SURVEY OF SPECIALIST PLEURAL NURSES: – SUCCESSES, CHALLENGES + PRIORITIES FOR WORKFORCE DEVELOPMENT

[1]J Rees, [2]H Collins. [1]*Manchester University NHS Foundation Trust, Manchester, UK*; [2]*Cambridge University NHS Foundation Trust, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.63

Introduction The role of specialist pleural nurses is evolving rapidly, driven by advances in medical practice and increasing patient needs, and is an integral part of pleural services nationally.

Methods An online questionnaire was distributed to 60 pleural nurses throughout the United Kingdom via email. This aimed to capture comprehensive data on their roles, priorities, training, and support needs.

Results A total of 28/60 (46.7%) responses were recorded. 23/28 (82%) of respondents were Band 7 and above. The reported scope of practice is presented in figure 1. 14/28 (54%) felt their scope of practice and banding aligned the BTS pleural nurse banding framework. 21/28 (75%) felt sufficiently trained and supported though 11/28 (42%) stated they do not have a pleural procedure competency framework to follow. 21/28 (75%) welcomed the idea of a Pleural Nurse Network and the top recommendations for such a network were: a clinical and networking forum 18/28 (64%), learning resources 24/28 (85%), developing a standardised digital logbook for procedures 21/28 (75%) and developing a standardised curriculum 20/28 (79%). (75%) 21/28 responders felt this would be best via a nurse society, (46.4%) 13/28 felt a wats app group would be useful, (60.7%) 17/28 voted for a Teams forum and (64.3%) 18/28 would be happy with an online community of practice (email group)

When asked to provide future priorities for workforce development, 22/28 (79%) responded. The common themes were standardisation of training, education and practice, developing a pleural nursing community and ensuring appropriate recognition of this role.

Conclusion The survey has highlighted areas for celebration within pleural nursing, a highly skilled workforce with a broad yet advanced scope of practice that feel well supported within their teams. However, challenges exist such as the need for standardised frameworks for education & training and ensuring appropriate recognition of this specialist role. The key priorities for future workforce development centre on bringing together the pleural nursing community within a dedicated network to connect, learn, collaborate and innovate.

S58 A RETROSPECTIVE ANALYSIS OF LUNG CANCER NURSE SPECIALIST-INITIATED MEET-AND-GREET SERVICE DURING CT SCANS FOR OPTIMAL LUNG CANCER PATHWAY

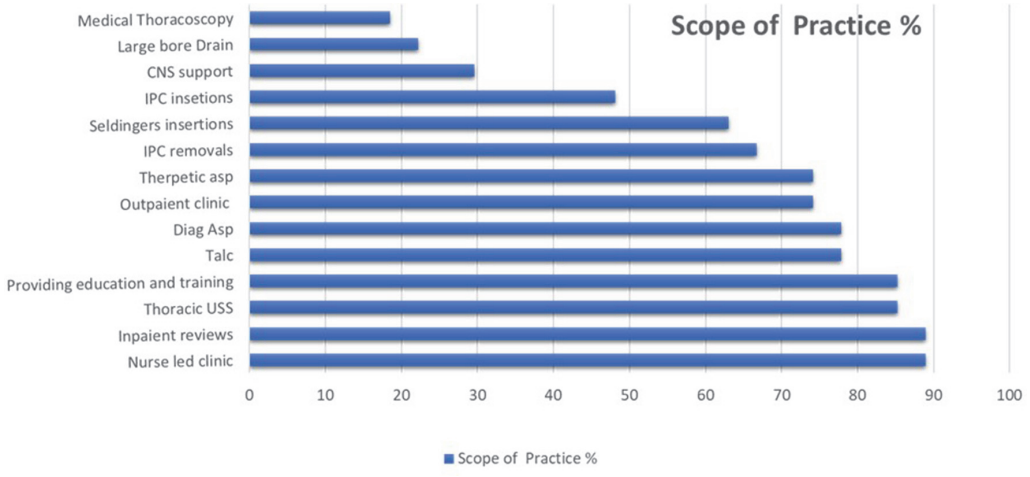
ZA Aung, LCNS Team, S Agrawal, M Majid, I Das, J Bennett, R Sudhir. *Glenfield Hospital, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.64

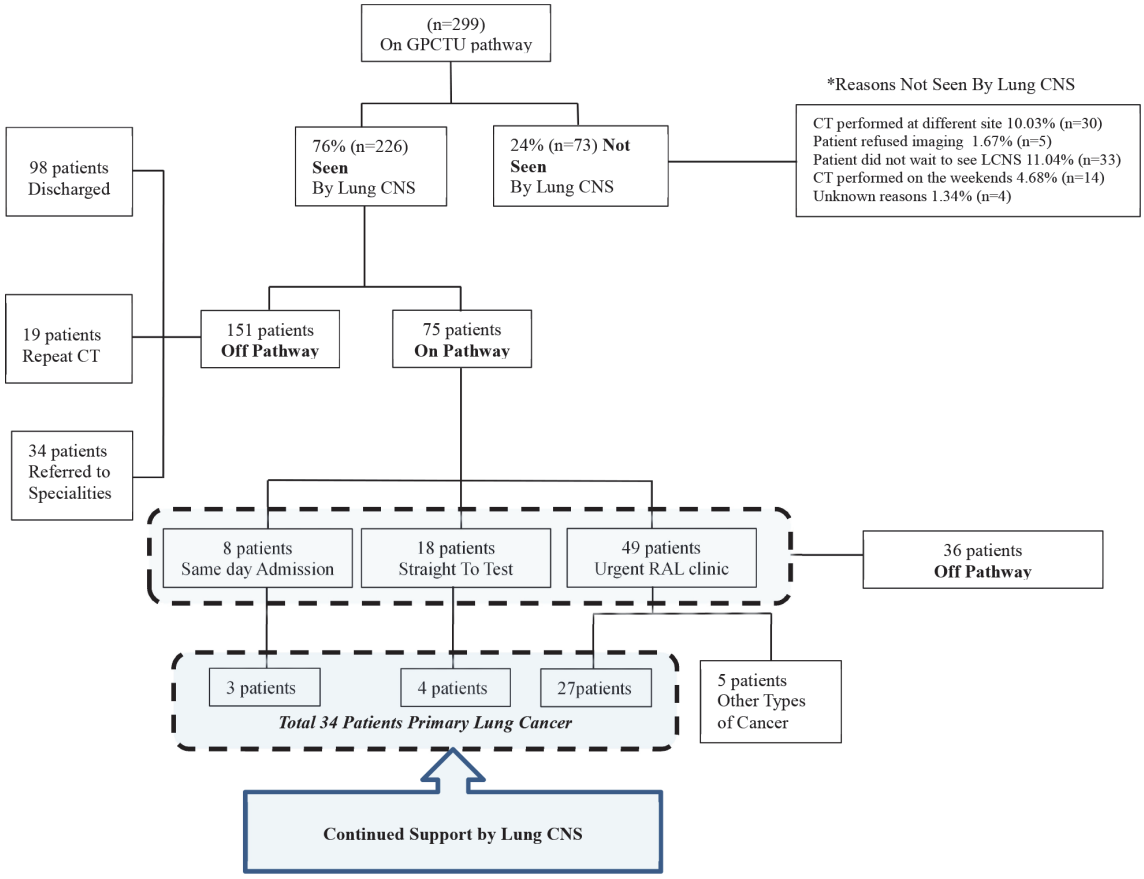
Introductions and Objectives As part of the National Optimal Lung Cancer Pathway, we introduced straight-to- CT imaging pathway (GPCTFU) for patients with chest xrays concerning for lung cancer. CT scans were preferentially booked for weekdays 8–9 am, when our Lung cancer nurse specialists (LCNS) met them obtaining relevant clinical information using a standardized proforma. The clinical details and patient expectations obtained by LCNS were discussed together with reported CT imaging at a daily (weekdays) respiratory Consultant-Led Triage Virtual Clinic. This study aims to assess the impact of LCNS contact for patients on this pathway.

Methods A retrospective review of GPCTFU pathway patients between January to March 2024, utilising cancer registry data and clinic letters, was analyzed with Microsoft Excel.

Results Between January and March 2024, 299 patients presented on the GPCTFU pathway. Of these, 226 patients (76%) were reviewed by LCNS , during their CT scans. 75% of patients were triaged within 24 hours, 95%within 3 days, and 100% within 7 days. The outcomes for 226 patients seen by LCNS upfront was communicated on the same day as triage, through a telephone call from LCNS. Of the 226 patients, 151 (66.8%) were discharged at triage from the Lung Cancer pathway. Among the remaining 75 patients (33.2%), 18 (8.0%) proceeded straight to diagnostic tests, 49 (21.7%) were scheduled for urgent face-to-face appointments at the Rapid Access Lung (RAL) clinic and 8 (3.5%) were directly admitted to the ward due to medical emergencies,. Of those remaining on the pathway, 34 (15%) were diagnosed



Abstract S57 Figure 1



Abstract S58 Figure 1 Flow chart of patients evaluated by lung CNS during CT scan and subsequent outcomes

with primary lung cancer, and 5 (2.21%) with other types of cancer, receiving prompt review for further management.

Discussion LCNS clinical review and use of a standardized nursing assessment proforma informed triage decision making and facilitated rapid, same day communication of results and plans back to patients. Our study shows that Meet& Greet service benefits both patients and healthcare systems by communicating outcomes promptly to patients, expediting diagnostic investigations and outpatient appointments, facilitating appropriate admissions and minimizing physician-led face-to-face consultations. Informal feedback has been overwhelmingly positive, though formal evaluation is in process.

REFERENCE

1. https://www.england.nhs.uk/long-read/implementing-a-timed-lung-cancer-diagnostic-pathway(2023).

S59 THE ROLE AND IMPACT OF AN INTERSTITIAL LUNG DISEASE SPECIALIST NURSE IN THE SECONDARY CARE SETTING

[1]N Hosking, [2]C Fiddler, [3]R Moore, [4]D Jones, [5]J Hartley, [4]M Najafi, [3]S Rees, [6]T Lush, [2]H Parfrey, [1]R Badiger. *[1]Chest and Lungs Service, East Suffolk and North Essex NHS Foundation Trust, Colchester Hospital, Colchester, UK; [2]Cambridge Interstitial Lung Disease Unit, Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK; [3]Medical Affairs, Boehringer Ingelheim Ltd, Bracknell, UK; [4]Healthcare Systems Engagement and Partnerships, Boehringer Ingelheim Ltd, Bracknell, UK; [5]Commissioning and Contracts, East Suffolk and North Essex NHS Foundation Trust, Colchester, UK; [6]Engagement and Communications, Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.65

Introduction NICE recommend an ILD clinical nurse specialist (ILD CNS) for all patients with idiopathic pulmonary fibrosis (IPF). The Respiratory GIRFT report advocates a minimum one Band 6 nurse per 300 ILD patients and that their role should be disease-specific. ILD CNS are a requisite for ILD specialist centres but are lacking in most secondary care respiratory services.

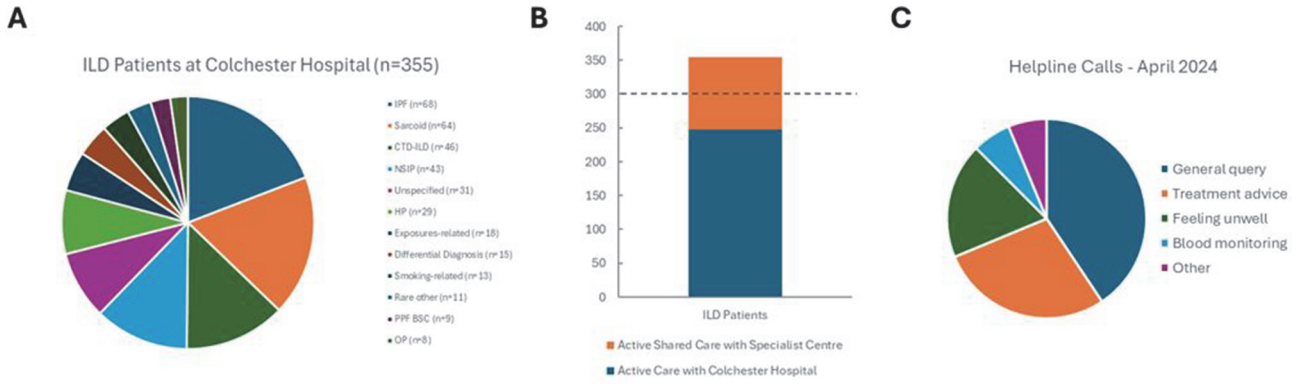
A collaborative project between Colchester Hospital (CH), Royal Papworth Hospital (RPH) and Boehringer Ingelheim is evaluating the role and impact of an ILD CNS in secondary care.

Methods 0.6 FTE Band 6 ILD CNS was recruited and trained for this pilot project. Between October 2023 and April 2024, a retrospective review of ILD patients at CH was conducted and anonymised demographic and clinical data were collected. An ILD telephone helpline was established and a subgroup of patients completed a patient experience questionnaire.

Results 408 ILD patients were identified (figure 1A). 55 of these patients are prescribed antifibrotic therapy (IPF n=37). 107 patients are under shared care with an ILD Specialist Centre and have access to ILD CNS support. 248 ILD patients did not have access to an ILD CNS (figure 1B).

An ILD patient telephone helpline started in October 2023 and the number of calls/month has increased from three to 46 by April 2024. Over 50% of calls were directly related to their ILD (figure 1C). Of the calls in April 2024, three resulted in hospital admission avoidance which was estimated to save up to 26 bed days.

Per week, the ILD CNS spends 24 hours conducting clinical activities (clinics, blood monitoring, telephone helpline)



Abstract S59 Figure 1 (A) A retrospective review of anonymised clinical data at CH identified 408 ILD patients. 53 of these patients were referrals of suspected ILD and awaiting diagnosis. The remaining 355 were categorised based on their working diagnosis, most common being IPF (n=68), sarcoid (n=64) and connective tissue disease-associated ILD (CTD-ILD; n=46). (B) 107 of the 355 patients are under shared care CH with an ILD specialist centre. The dashed horizontal line denotes the advocation by the Respiratory GIRFT Report for a minimum of one disease-specific Band 6 nurse per 300 ILD patients. (C) Breakdown of calls received to the ILD patient helpline at CH during April 2024.

and 15 hours of non-clinical tasks, of which 70% could be undertaken by an administrator. Patients highly rated feeling supported (6.8/7; n=16) and informed (6.65/7; n=17) as a direct result of their interactions with the ILD CNS.

Conclusion These results highlight the unmet need for ILD patients in secondary care. The data suggests local ILD CNS expertise may help to address inequities and inequalities of care for ILD patients. This will support the transition of the delivery of specialist ILD care to secondary respiratory services.

S60 OUTCOMES OF THE COMMUNITY BASED; NURSE DELIVERED INTERVENTIONS TO IMPROVE PAEDIATRIC ASTHMA CARE IN AN INNER-CITY AREA IN THE UK

[1]T Evans, [1]S Frost, [1]L Morris, [2]T Ninan, [1]P Nagakumar, [1]S Rao. *[1]Birmingham Women's and Children Hospital, Birmingham, UK; [2]Birmingham Heartlands Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.66

Background Asthma remains the most common chronic disease in children and the UK has some of the poorest asthma outcomes in Europe. The socio demographic inequalities contribute to severe asthma attacks in children (Simms- Williams: BMJ Open Resp:2024). To address this, a Paediatric nurse-led service was established in Birmingham, an area with high deprivation rates and a significant ethnic minority population. We report the outcomes of the service established in March 2022.

Methods Data from children seen at the locality-based clinics between March 2022 to May 2024 and the interventions were analysed. The children were referred to the service by the primary care teams. The service was led by 2 specialist paediatric asthma nurses and supported by the primary and secondary care professionals. Feedback from parents were obtained using a 5-point Likert scale.

Results A total of 1,204 children were seen in the clinics. Three hundred and fifty-three have had a second review, ACT scores are recorded, two hundred and eighty-five (80%) made an improvement, thirteen no change (4%) Fifty-six showed a decline (16%). Seven hundred and seventy (64%) of children used incorrect spacer devices. During the clinical assessment it was found that 505 (42%) were non-adherent to their treatment. Three hundred and seventy (30%) had changes to their treatment. The clinic has engaged with 57 schools to address issues such as failure to notify parents about inhaler use and has completed 27 family connect forms, often due to poor housing conditions exacerbating asthma symptoms. Only 78 (6.5%) were discussed with a secondary care asthma specialist for additional advice. Three hundred and twenty-one (26%) parents/carers have filled out evaluation forms following the clinic appointment and the comments are very positive.

Conclusion We report the improvement in asthma outcomes as measured by the asthma control test by providing asthma education and essential asthma care in children from geographical areas with high deprivation and diverse ethnic groups. Addressing social and environmental determinants along with appropriate medical management, results in improved asthma outcome in children.

'Firestarter' – Inflammation, mechanisms and biomarkers in COPD

S61 FREQUENT PRODUCTIVE COUGH ASSOCIATES WITH AN INCREASED RISK OF CARDIOPULMONARY OUTCOMES IN A REAL-LIFE COHORT OF PATIENTS WITH COPD (NOVELTY STUDY)

[1]E Rapsomaniki, [2]H Müllerová, [3]R Hughes, [4]J Marshall, [5]A Papi, [6,7]H Reddel, [8]M Patel. *[1]Real World Data Science, Medical Evidence, BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [2]Respiratory Evidence Strategy, BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [3]Research and Early Development, Respiratory and Immunology, Clinical, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [4]BioPharmaceuticals Medical, Medical Affairs, Respiratory and Immunology, AstraZeneca, Cambridge, UK; [5]Respiratory Medicine Unit, Department of Translational Medicine, Università di Ferrara, Ferrara, Italy; [6]The Woolcock Institute of Medical Research and Macquarie University, The University of Sydney, Sydney, Australia; [7]Sydney Local Health District, Sydney, Australia; [8]BioPharmaceuticals Medical, Clinical Development, Respiratory and Immunology, AstraZeneca, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.67

Rationale Frequent Productive Cough (FPC) is associated with an increased risk of exacerbations in patients with asthma and/or Chronic Obstructive Pulmonary Disease (COPD) and may reflect complex underlying pathobiology. Exacerbations

are related to an increased risk of major cardiovascular (CV) outcomes in patients with COPD [Shafuddin E, et al. ERJ Open Res 2021;7(1):00531–2020] but the relationship of FPC and CV outcomes is unknown. We evaluated the relationship of FPC with major CV and respiratory outcomes in patients with a COPD diagnosis.

Methods NOVELTY (NCT02760329) was an observational multi-country study of patients with a diagnosis of asthma and/or COPD. FPC was defined at baseline using St George's Respiratory Questionnaire (SGRQ) scores of $\geq$3 for both cough and sputum. During a 3-year follow-up, major CV outcomes (MACE) were: new diagnosis of nonfatal acute myocardial infarction, heart failure, coronary artery disease and CV death; MACRE also included the respiratory outcome (R) of hospitalised COPD exacerbations. Kaplan-Meier curves and Cox proportional models (adjusted for age, sex, smoking status, history of exacerbations and CV disease) were applied.

Results 2,295 patients with COPD were evaluated; 898 (39%) had FPC at baseline. FPC at baseline increased the risk of MACRE by 39% (adj. HR 1.39; 95% CI 1.11–1.74) and MACE (adj. HR 1.49; 95% CI 0.96–2.30).

Conclusions In patients with COPD, FPC was associated with an increased risk of cardiopulmonary outcomes. The mechanisms have not been fully explored but may reflect underlying inflammation. This underlines the importance of managing the drivers of respiratory symptoms in COPD.

S62 EXTRACELLULAR MATRIX (ECM) REMODELLING IN COPD

[1,2]AKCW Kong, [3]JMB Sand, [3]DJ Leeming, [3]SR Rønnow, [2]CM Spalluto, [2]K Staples, [1,4]K Ostridge, [5]A Platt, [1,2]T Wilkinson. *[1]Southampton NIHR Respiratory Biomedical Research Unit, University Hospital Southampton, Southampton, UK; [2]Clinical and Experimental Sciences, Faculty of Medicine, University Hospital Southampton, Southampton, UK; [3]Hepatic and Pulmonary Research, Nordic Bioscience, Herlev, Denmark; [4]Translational Science and Experimental Medicine, Research and Early development, Respiratory and Immunology RandD BioPharmaceuticals, Astrazeneca, Gothenburg, Sweden; [5]Translational Science and Experimental Medicine, Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.68

Introduction COPD is often diagnosed late when significant lung function is already lost, limiting treatment efficacy. Early detection is imperative to prevent irreversible damage. Small airways disease (SAD) involves extracellular matrix (ECM) remodelling and precedes the detection of airflow obstruction and emphysema. Despite its importance, there are no established guidelines or standardised measurements for diagnosing SAD. Serum biomarkers derived from elastin and collagen turnover (neoepitopes) may offer valuable insights into tissue remodelling in COPD. The aim of this study is to characterise ECM remodelling in COPD by the serological assessment of neoepitopes.

Methods A total of 58 participants were recruited, forming three distinct groups: 24 previous or current smokers with normal lung function (mean [+/- SD] age, 46 +/- 7), and 24 previous or current smokers showing evidence of physiological SAD but without airflow obstruction (FEV1/FVC > 0.70) (mean [+/- SD] age, 48 +/- 12) and 10 patients with mild to moderate COPD (mean [+/- SD] age, 63 +/- 8). We assessed serum levels of ECM remodelling neoepitopes for elastin (ELP-3, EL-NE) and collagen type I (C1M), type III (PRO-C3 and C3M), type IV (PRO-C4 and C4M) and type VI (PRO-C6 and C6M) using specific immunoassays (Nordic Bioscience). We investigated the relationship between these biomarkers and conventional markers of airflow obstruction and SAD using spirometry and impulse oscillometry (IOS).

Results The elastin degradation marker ELP-3 was positively correlated with the oscillometry small airways resistance index (R5-R20) (r=0.314, p<0.05) and area of reactance (AX) (r=0.364, p<0.01), and inversely related to reactance (X5) (r=-0.433, p<0.01). Collagen formation biomarkers PRO-C3 and PRO-C6 showed similar correlations (table 1). Collagen degradation markers C4M and C6M were also associated with AX and X5. There were no statistically significant differences in neoepitope levels between the subgroups.

Conclusion Dysregulated elastin and collagen turnover contribute to the structural and functional abnormalities in COPD. Advancing beyond spirometry-defined airflow obstruction to include additional biomarkers could improve early diagnostic accuracy. These findings highlight the potential of ECM neoepitopes in detecting disease activity. Longitudinal assessments of these biomarkers using a multimodal approach may help identify individuals at risk of developing COPD.

Abstract S62 Table 1 Elastin and collagen neoepitopes are associated with IOS parameters of SAD.

	FEV1%	FEV1/FVC	MMEF%	AX	X5	R5-R20
ELP-3	-0.126	-0.058	-0.106	0.364**	-0.433**	0.314*
EL-NE	-0.119	-0.246	-0.074	0.083	-0.098	0.033
PRO-C3	-0.188	-0.046	-0.132	0.452**	-0.482**	0.398**
PRO-C4	-0.174	-0.080	0.064	0.184	-0.250	0.123
PRO-C6	-0.085	-0.026	-0.046	0.466**	-0.518**	0.465**
C1M	0.054	0.068	0.034	0.226	-0.270*	0.168
C3M	-0.112	0.012	0.017	0.242	-0.306*	0.189
C4M	-0.059	0.048	0.018	0.279*	-0.348*	0.230
C6M	-0.044	-0.027	0.032	0.284*	-0.324*	0.214

Pearson's correlation coefficient values given for elastin and collagen biomarkers and physiological markers of airflow obstruction and SAD. Numbers in the boxes are the r value of statistically significant correlations *= p<0.05, **= p<0.01

S63 EOSINOPHILIC INFLAMMATION AT EXACERBATIONS OF COPD IS ASSOCIATED WITH LESS DYNAMIC TROPONIN RISES IN THE 30 DAYS POST EXACERBATION

P Dobson, W Ee, J Baker, S Cass, S Ramakrishnan, M Bafadhel, R Russell. *King's Centre for Lung Health, School of Immunology and Microbial Sciences, Faculty of Life Sciences and Medicine, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.69

Introduction and Objectives Patients with COPD have an increased risk of cardiovascular disease (CVD) and major adverse cardiovascular events (MACE) within 30-days of an exacerbation. Eosinophilic COPD is a common endotype with evidence that inhaled corticosteroids (ICS) reduces mortality in patients with COPD. The aim of this study was to investigate the effect of eosinophilic inflammation on dynamic troponin rise amongst patients who have a moderate exacerbation of COPD.

Methods Patients with COPD were prospectively recruited from 14 GP practices, during steady state, exacerbations and post-exacerbation (day 30). Blood sampling was obtained at these time-points. Troponin ELISA (R&D systems, LLD 125pg/mL) were performed in available samples, with matched steady state, exacerbation and post-exacerbation visits. The peak troponin rise between steady state and post exacerbation was calculated. Significant troponin rise was defined as $\geq$20 pg/ml.

Results There were 75 patients included in the study, 53 patients (71%) were male. The mean (range) age was 71 (46–84) years. 57 (76%) were ex-smokers and 51 (68%) were on ICS therapy. A dynamic and significant peak troponin rise was seen in 22 patients (29%) at exacerbation. There was a negative correlation between percentage eosinophil levels and the extent of peak dynamic troponin rise (r = -0.49, p=0.02). There was no difference in the clinical characteristics between those with and without a dynamic troponin rise.

Conclusion Eosinophilic inflammation during exacerbations may confer a protective effect from myocardial injury. Whether this is related to treatment effect or underlying mechanism needs further investigation.

S64 EOSINOPHIL PEROXIDASE AND IL-5 AS BIOMARKERS OF EOSINOPHILIC AIRWAY INFLAMMATION IN COPD

[1,2]F Baraldi, [1]JSY Mah, [1]MA MacLeod, [1]SWJ Bartlett-Pestell, [1]A Braddy-Green, [1]R Lopez, [1]ANJM Marion, [1]LA Moreira, [1]H Shahbakhti, [1]JP Allinson, [2]A Papi, [1]JA Wedzicha, [1]LJ Finney. *[1]Imperial College London, London, UK; [2]University of Ferrara, Ferrara, Italy*

10.1136/thorax-2024-BTSabstracts.70

Introduction Blood eosinophil count (BEC) is a recognized biomarker predicting response to inhaled corticosteroids, and possibly biologics, in chronic obstructive pulmonary disease (COPD). However, the relationship between BEC and airway eosinophil activation remains less clear. This study aimed to investigate the relationship between BECs, exacerbation phenotypes and sputum biomarkers of Th2 inflammation (including IL-5 and Eosinophil Peroxidase (EPX), a marker of eosinophilic degranulation) in disease stability.

Methods Patients with COPD were recruited from the London COPD Exacerbation (EXCEL) cohort and stratified according to stable state BEC levels as High ($\geq$ 300 cells/μL) or Low ($<$ 300 cells/μL). Further grouping by BEC at exacerbation visits was performed (Eosinophilic Exacerbator (BEC ($\geq$ 300 cells/μL before oral corticosteroid treatment) or Non-Eosinophilic Exacerbator). Stable state sputum EPX by ELISA, IL-4, IL-5 and IL-13 (Meso Scale Discovery) was measured in samples collected concurrently with stable state BEC.

Results Forty-three patients (mean age 74.8 years, 65% female). Sputum EPX was significantly higher in the High BEC group compared to the Low BEC group (4596.34 vs 3982.13 ng/ml, p=0.01) and there was a positive correlation between EPX and BEC (R=0.02, p=0.02). Sputum IL-5 levels were significantly higher in Eosinophilic Exacerbators compared to Non-Eosinophilic Exacerbators (8.26 vs 1.28 ng/ml, p=0.02). Patients with low BEC in stable state but defined as Eosinophilic Exacerbators at exacerbation's visits had significantly higher levels of sputum IL-5 compared to Non-Eosinophilic Exacerbators (11.00 vs 1.09 ng/ml, p=0.002). Sputum IL-4 and IL-13 were undetectable in 44% and 75% of samples respectively, with no differences between groups.

Conclusions Sputum EPX is a potential biomarker of eosinophilic airway inflammation in COPD. Sputum IL-5 was higher in Eosinophilic Exacerbators compared to Non-Eosinophilic Exacerbators suggesting this group may be prone to Th2 airway inflammation. Further work is needed to investigate whether Eosinophilic Exacerbators may respond to biologic treatment.

S65 A MULTI-OMICS-BASED EVALUATION OF THE EFFECTS OF VALACICLOVIR ON THE SPUTUM PROTEOME, MICROBIOME AND METABOLOME OF COPD PATIENTS

[1]RJ Delaney, [2]GG Einarsson, [3]SJS Cameron, [4]JC Kidney, [2]MM Tunney, [1]CC Taggart, [1,4]DA Linden. *[1]Centre for Experimental Medicine, Queen's Hospital, Belfast, UK; [2]School of Pharmacy, Queen's Hospital, Belfast, UK; [3]School of Biological Sciences, Queen's Hospital, Belfast, UK; [4]Mater Hospital, Belfast Health and Social Care Trust, Belfast, UK*

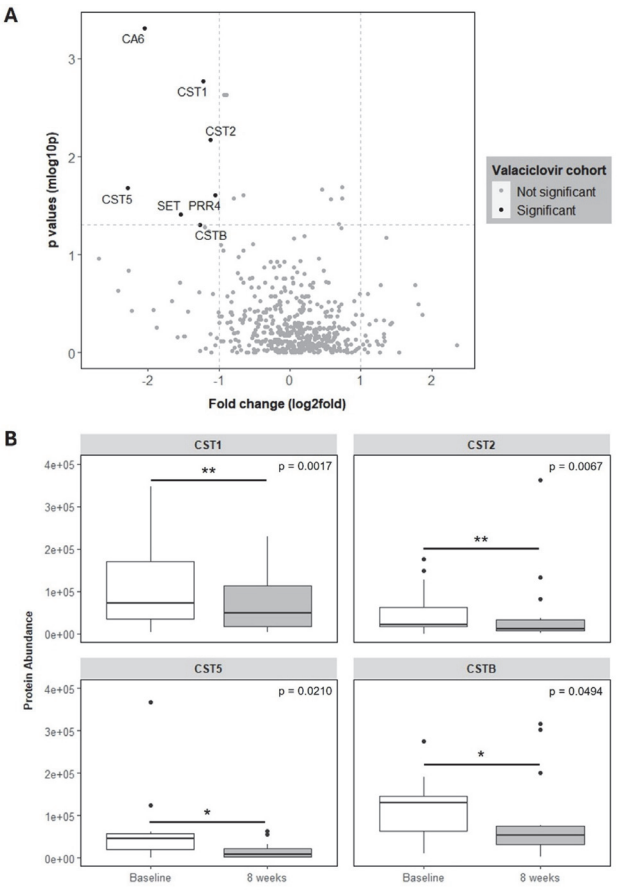
10.1136/thorax-2024-BTSabstracts.71

Introduction Airway immunohistochemistry in COPD indicates that latent herpes-virus detection is strongly associated with airway remodelling, CD8+ T lymphocyte accumulation and depletion of host defence proteins. We recently reported that Epstein-Barr virus (EBV) suppression in COPD was associated with attenuation of the sputum inflammatory cell infiltrate; however, the mechanisms underpinning this finding remain poorly understood. We hypothesised that virus suppression may be associated with immunomodulatory effects with resultant modification of the sputum proteome, metabolome and airway microbiota.

Aim To investigate whether the use of the thymidine kinase inhibitor therapy, valaciclovir results in modification of the sputum proteome, microbiome and metabolome in patients with COPD.

Methods Sputum multi-omics evaluation was a pre-specified exploratory mechanistic outcome from EViSCO (NCT03699904); a randomised, double-blind, placebo-controlled trial of valaciclovir (1 gram TID for 8 weeks) for EBV suppression in COPD. Sputum from an unbiased selection of patients from both treatment groups was sent for proteomics analysis using LC-MS, with results analysed using RStudio. Sputum microbiome, bacterial 16S and H. influenzae load were quantified at baseline and week 8 using 16S rRNA-seq and qPCR; while rapid evaporative ionisation MS (REIMS) was used for metabolomics analysis.

Results To date, analysis has revealed various members of the cystatin family to be significantly decreased in patients



Abstract S65 Figure 1 Proteomics analysis reveals that treatment of COPD patients with valaciclovir results in decreased levels of sputum cystatins. (A) Volcano plot of sputum proteomics data in the valaciclovir-treated cohort at 8 weeks relative to their baseline visit. (B) Boxplots of cystatin abundances in the valaciclovir-treated cohort. Wilcoxon matched-pairs t-tests; n=14. CSTB, cystatin-B; CST1, cystatin-SN; CST2, cystatin-SA; CST5, cystatin-D

following valaciclovir treatment (figure 1). Cystatins have previously been linked to inflammatory processes in a number of respiratory diseases. Valaciclovir treatment was also associated with significant reductions in sputum total 16S bacterial load (p=0.0004) and H. influenzae (p=0.03), however no between-group differences in α-diversity were identified at week 8.

Conclusion Suppression of EBV in patients with moderate to severe COPD results in significant changes to the sputum proteome and H. influenzae which may underpin the reduced inflammatory cell infiltrate observed following treatment.

S66 MULTI-ANCESTRY GENOME-WIDE GENE–AGE INTERACTION STUDY FOR LUNG FUNCTION AND COPD

AG Izquierdo, N Shrine, J Chen, MD Tobin, AL Guyatt. *Department of Health Sciences, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.72

Introduction Chronic obstructive pulmonary disease (COPD) is a major global health issue characterized by significant morbidity and mortality. It can result from impaired lung function development early in life or from rapid lung function decline during adulthood. While key genetic markers and biological pathways related to COPD and lung function have been identified, the specific mechanisms by which these genetic factors interact with age, particularly in diverse populations, remain unclear. This study aims to elucidate the gene-age interaction in the context of COPD and lung function through a multi-ancestry genome-wide analysis.

Aim Identify genetic variants whose association with lung function varies by age.

Materials and Methods An age-stratification approach was used, categorizing individuals into age groups (<10, 10–19, 20–29, 30–39, 40–49, 50–59, and >60 years). A large-scale genome-wide meta-regression analysis of SNP x mean age interaction was conducted, adjusting for relevant covariates and genetic variation axes. The analysis included data on forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), and their ratio (FEV1/FVC) from 798,811 individuals across 44 cohorts of European, African, East Asian, South Asian, and Hispanic ancestries.

Results The analysis identified nine loci exhibiting age-dependent effects on lung function (P <= 5x10^-8). These loci had not been previously reported by genome-wide association studies (GWAS) on lung function and were enriched in pathways related to oxidative stress, inflammation, and extracellular matrix remodeling, suggesting their role in the age-related pathogenesis of COPD. Additionally, 77 previously reported loci showed less stringent significance (P < 0.05), with a general pattern of increasing age-varying genetic effects in older individuals.

Conclusion This study highlights the complex relationship between genetics, age, and COPD. It suggests that genetic influences on COPD risk and lung function are more pronounced in older individuals, providing new insights into the age-related genetic architecture of COPD.

REFERENCE

1. Shrine N, Izquierdo AG, Chen J, Packer R, Hall RJ, Guyatt AL, Batini C, Thompson RJ, Pavuluri C, Malik V, Hobbs BD. Multi-ancestry genome-wide association analyses improve resolution of genes and pathways influencing lung function and chronic obstructive pulmonary disease risk. *Nature Genetics* 2023;**55**(3):410–422.

'Foundations Edge' (1) – Next generation discovery science

S67 INCREASED SENESCENT AND EXHAUSTED IMMUNE CELLS IN OLDER SEVERE ASTHMA PATIENTS IMPAIRS ANTIGEN-SPECIFIC IMMUNITY

[1]Y Huang, [1]J Sikora, [1]W Cai, [2]PE Pfeffer, [1]ES Chambers. *[1]Queen Mary University of London, London, UK; [2]Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.73

Background Life-expectancy is increasing in the western-world. Unfortunately, increasing lifespan does not coincide with increasing health-span. Older people (≥60 years) are living longer with chronic illnesses such as asthma. Increasing age is associated with profound changes in the immune system including immunosenescence and inflammageing resulting in increased incidence and severity of infections, as well as other diseases. Yet despite these dramatic changes in immunity, the impact of increasing age on severe asthma phenotype and immune function is not well understood. The majority of clinical and research studies to-date have focussed on younger

patients, often actively excluding older participants, despite the 2014 National Review of Asthma Deaths that showed mortality from asthma in older adults has not improved over 30 years, in contrast to younger patients.

Aim The aim of this project is to dissect how the combination of old age and asthmatic disease changes the immune system and to dissect the implications for antigen-specific immunity.

Methods Peripheral blood was collected after full informed written consent. Whole blood high dimensional spectral flow analysis was performed using a 27 colour panel and the Cytek Aurora. PBMCs were isolated and cryopreserved and subsequently stimulated with peptides from common respiratory pathogens including RSV, Influenza, SARs-CoV-2 and *Aspergillus*. Antigen-specific immunity was assessed by flow cytometric assessment of activation markers and proliferation using Celltrace Violet.

Results In this study, we observed that there was an increase in senescent CD4+ and CD8+ T cells (termed EMRA) in older asthma patients as compared to age-matched controls. The T cells present in older asthma patients are more exhausted with increased expression of exhaustion markers PD-1 and CD57. This increase in immunosenescence and immune exhaustion correlated with reduced antigen-specific immunity *in vitro* to common respiratory pathogens.

Discussion We conclude that older severe asthma patients have increased immunosenescence and immune exhaustion which leads to a reduced antigen-specific immunity. This could explain in part why older asthma patients are more susceptible to respiratory infections, themselves a trigger of asthma exacerbations.

S68 THE EFFECT OF HYDROGEN SULFIDE SUPPLEMENTATION ON THE PRO-FIBROTIC PROFILE OF MONOCYTES IN IDIOPATHIC PULMONARY FIBROSIS

[1]E Leonova, [1]X Dun, [2]SL Barratt, [3]MA Lindsay, [4]MA Gibbons, [1]M Whiteman, [1]CJ Scotton. *[1]University of Exeter, Exeter, UK; [2]North Bristol NHS Trust, Bristol, UK; [3]University of Bath, Bath, UK; [4]Royal Devon and University Hospital NHS Trust, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.74

Introduction and Objectives Idiopathic pulmonary fibrosis (IPF) is a chronic progressive disease with limited therapeutic treatments. Aberrant wound healing is a key pathophysiological mechanism. Peripheral blood monocyte count is a prognostic marker in IPF; monocyte/macrophages also play a vital role in orchestrating wound healing, making them a potential therapeutic target. Monocyte/macrophage function depends on their metabolism, and hydrogen sulfide (H_2S) is a physiological gasotransmitter which regulates metabolic function - however its role in IPF has not been fully explored. We hypothesised that IPF patient monocytes would have different metabolic/phenotypic characteristics, and that supplementation with mitochondrial-targeted H_2S donor compound (mtH_2SD) would modulate monocyte metabolism in an anti-fibrotic direction.

Methods Peripheral blood was collected from 20 IPF patients (Age, Median [IQR]: 75[73–78] years) and 16 healthy donors (60 [59–62] years). Serum H_2S level was measured by high-performance liquid chromatography. Monocytes were isolated and analysed by multispectral flow cytometry (n = 4) or Seahorse metabolic assay (n = 6) immediately after extraction and after 24-hour incubation *in vitro* with and without pro-fibrotic IL-4 or pro-inflammatory TNFα (both 20ng/ml) +/- mtH_2SD (100nM). Bulk RNA sequencing was performed on freshly isolated cells.

Results H_2S level was significantly lower in IPF (Median [IQR]: 1.13 [1.09–1.71] μM) vs healthy control (HC; 2.76 [2.67- 3.92] μM; $p<0.01$) and correlated with forced vital capacity (FVC; $r=0.689$, $p<0.05$) and haematocrit ($r=-0.720$, $p<0.05$) in IPF. Immediately after extraction, there was a difference in IPF and HC metabolic parameters, with higher maximal respiration in HC monocytes ($p<0.05$). There were clear differences in cell surface markers between IPF and HC. By RNAseq 184 genes were differentially expressed in IPF monocytes ($p_{adj}<0.05$); pathway analysis revealed significant over-representation of genes involved in mitochondrial function. MtH_2SD supplementation modified profibrotic features of IPF monocytes, decreasing profibrotic oxidative phosphorylation ($p<0.05$) in unstimulated and IL4-stimulated cells, plus chemokine receptor CCR2 expression and IL-6 production in TNFα-stimulated cells ($p<0.001$).

Conclusions Patients with IPF have a deficit in circulating H_2S levels, correlated with worsened FVC and haematocrit. IPF patient monocytes are transcriptionally, phenotypically, and metabolically-distinct compared with HC. Targeting IPF monocytes with mtH_2SD modified pro-fibrotic metabolism, phenotype and pro-inflammatory cytokine release.

S69 2.7 Å CRYO-EM STRUCTURE OF THE ERAD CHECKPOINT COMPLEX AND SUBSTRATE INTERACTION STUDIES SHOW HOW MISFOLDING VARIANTS ARE PREPARED FOR DEGRADATION IN ALPHA1-ANTITRYPSIN DEFICIENCY

[1,2,3]CJ Hitchman, [1]A Lia, [1]G Tax, [1]C Savva, [1]E Hesketh, [1]R Jukes-Jones, [1,4]P Roversi, [1,2]B Gooptu. *[1]Department of Respiratory Sciences, Centre for Fibrosis Research and Institute for Structural and Chemical Biology, University of Leicester, Leicester, UK; [2]Institute for Lung Health and NIHR Leicester BRC-Respiratory, Glenfield Hospital, Leicester, UK; [3]Membrane Protein Laboratory, Diamond Light Source and Research Complex at Harwell, Didcot, UK; [4]Institute of Agricultural Biology and Biotechnology, IBBA-CNR Unit of Milano, Milan, Italy*

10.1136/thorax-2024-BTSabstracts.75

Background The common Z (Glu342Lys) variant of $alpha_1$-antitrypsin (A1AT) misfolds within the endoplasmic reticulum (ER) of hepatocytes, the major site of A1AT synthesis, with concomitant circulating/pulmonary A1AT deficiency (A1ATD). These events predispose to both liver disease and emphysema. Whilst 15% of synthesised Z A1AT is retained within the ER in an alternatively-folded, polymeric form, 70% is recognised as terminally-misfolded and targeted for ER-associated degradation (ERAD). 100% of the rarer NullHongKong (NHK) variant terminally misfolds and is processed by ERAD. The ERAD pathway proceeds via interactions between misfolded substrates and a checkpoint complex formed by two ER enzymes: PDI and EDEM. The structure of this ERAD checkpoint and the details of its interaction with misfolded states of Z and NHK variants of A1AT, or other misfolded glycoprotein substrates, is unknown.

Methods PDI, EDEM +/- Z or NHK A1AT variants were overexpressed in human (HEK293) cells and co-purified for cryo-electron microscopy studies. The datasets allowed 3D reconstructions of their molecular structures. Mechanistic conclusions were tested by mutagenesis with western blot, mass spectrometry and functional readouts.

Results The cryo-EM structure of PDI:EDEM was defined to 2.7 Å resolution, allowing confident fitting of the protein

backbone and amino-acid side-chains. Our findings indicate functional importance of inter- and intra-domain flexibility in the enzyme structures. This interpretation was validated by a 'trapping' mutation of a key cysteine residue which stabilised PDI:EDEM in ternary complex with misfolded A1AT. We have undertaken preliminary cryoEM structural analyses of such ternary complexes and can report specifically upon substrate binding events from this and our mass spectrometry results.

Conclusions Structural data demonstrate molecular flexibility in the ER enzymes studied. Functional studies confirm mechanistic importance of the role of dynamic switching of disulphide bonds between PDI:EDEM and PDI:misfolded protein interactions. These findings improve our molecular understanding of ER proteostasis. Specifically they point to the importance of dynamic behaviour of the ERAD checkpoint complex both in processing the misfolded substrate upon binding, and in accommodating a very diverse range of misfolded subtrate species. They identify novel strategies to modulate the molecular mechanisms underlying A1ATD and other conditions mediated by protein misfolding within the ER.

S70 ADVANCED FLUORESCENCE AND CRYO-ELECTRON MICROSCOPY STUDIES DEFINE A MEMBRANE PROTEIN SUPERCOMPLEX LINKING PRO-INFLAMMATORY AND PRO-FIBROTIC PATHWAYS IN ACUTE EXACERBATIONS OF INTERSTITIAL LUNG DISEASE (AE-ILD)

[1,2,3]CJ Hitchman, [3]J Birch, [3]H Cheruvara, [3]SR Needham, [3]BM Davis, [3]DJ Rolfe, [3]P Harrison, [3]A Quigley, [1,2]B Gooptu. [1]*Centre for Fibrosis Research, Leicester Institute for Structural and Chemical Biology, and Department of Respiratory Sciences, University of Leicester, Leicester, UK*; [2]*Institute for Lung Health/NIHR Leicester BRC-Respiratory, Glenfield Hospital, Leicester, UK*; [3]*Membrane Protein Laboratory, UKRI-STFC Central Laser Facility, Diamond Light Source and Research Complex at Harwell, Rutherford Appleton Laboratory, Didcot, UK*

10.1136/thorax-2024-BTSabstracts.76

Background In progressive fibrotic interstitial lung diseases (ILD), chronic decline is accelerated by inflammatory flares (acute exacerbations, AE-ILD). Our recent work characterises a molecular pathway that mediates experimental models of AE-ILD and appears to prime fibrotic lung tissue for these events. We hypothesise this involves an extended macromolecular supercomplex at the cell surface, nucleated by the protein galectin-3. This 'gal-3-fibrosome' may directly co-stabilise proteins mediating inflammatory (CD98, integrins) and fibrogenic (TGF-beta Receptor (TGF-bR)II) responses, allowing cross-talk that drives poor prognosis in AE-ILD.

Aims To assess and characterise key molecular interactions predicted by the gal-3-fibrosome hypothesis.

Methods

- Fluorescence localisation imaging with photobleaching (FLImP, a novel super-resolution microscopy method) to characterise galectin-3 interactions on lung epithelial cells.
- Extraction of gal-3-fibrosome sub-complexes and proteins from cell membranes.
- Affinity and size exclusion chromatography protein purification.
- Negative-stain and cryo-electron microscopy (cryo-EM).

Results Overexpression of each membrane protein partner stimulated galectin-3 oligomerisation via N-terminal domain self-association at the cell surface. Sub-complexes consistent with the gal-3-fibrosome model co-immunopurified from both endogenous and overexpression systems. For cryo-EM studies, purification was optimised individually for the membrane proteins CD98, beta1-integrin and TGF-bRII, and sub-complexes reconstituted with the addition of galectin-3. We have acquired and assessed negative stain EM data for TGF-bRII, and cryo-EM data for the CD98:galectin-3 complex.

Conclusion Combining the findings from advanced fluorescence, negative stain and cryo-electron microscopy studies *in situ* and in membrane-mimicking environments, powerfully validates the core gal-3-fibrosome model. Cryo-EM and 3D reconstruction of galectin-3:CD98/integrin/TGF-bRII complexes can define key interactions within the super-complex to high resolution, to better understand and target the coupling of inflammation and progressive fibrosis in AE-ILD.

S71 ACUTE ENDOTHELIAL STRESSES IDENTIFY MICRORNA LET-7B AND NON-CODING SLC11A2 (NRAMP2/DMT1) EXON AS BIOMARKERS THAT OVERLAP WITH THOSE DETECTED IN CHRONIC RESPIRATORY DISEASES

[1]AM Bielowka, [1]D Patel, [1]D Li, [1]ME Bernabeu-Herrero, [2]L Game, [3]MA Aldred, [4]IG Mollet, [1]CL Shovlin. [1]*Imperial College London, London, UK*; [2]*UKRI MRC Laboratory of Medical Sciences, London, UK*; [3]*Indiana University School of Medicine, Indianapolis, USA*; [4]*Universidade NOVA de Lisboa, Lisbon, Portugal*

10.1136/thorax-2024-BTSabstracts.77

Background Where disease onset occurs long after initiation, pathology can be challenging to dissect and reverse. We hypothesised that rapid physiological responses could highlight perturbing stimuli that all cells need to withstand, with biomarkers of immediate responses relevant to longer-term disease processes. Based on precipitation of evident bleeding in hereditary haemorrhagic telangiectasia (HHT), we focussed on the acute redox challenge resulting from rapid increases in circulating iron concentrations after dietary or drug absorption (noting iron treatments are prescribed 8 million times/year in England), and the integrated stress response (ISR), where cells not only activate specific survival programmes, but also transiently inhibit global protein synthesis thereby abrogating nonsense mediated decay of RNA transcripts containing premature termination codons.

Methods Normal primary human microvascular endothelial cells (ECs) were treated for 1–6h with 10μM ferric citrate, or cycloheximide 100μM to inhibit protein translation/model the ISR. Directional whole transcriptome RNA-sequencing (RNA-seq) was performed; differentially expressed genes clustered in pathway analyses, and 1h micro(mi)RNA changes validated by 6h reciprocal changes in target mRNA targets. Customized novel scripts examined expression of 517,225 exons before and after 1hr treatment. Validations were by qRT-PCR in cel-miR-39-spiked extracts; RNA-seq in other endothelial cell types; and RNA-seq/qRT-PCR in peripheral blood mononuclear cells (PBMCs) and plasma.

Results Pathway analyses of differentially expressed mRNAs indicated appropriate endothelial responses to the stresses. There was a global, transient fall in miRNAs 1h after 10μM ferric citrate ($p<0.01$), most notably in let-7 (*lethal-7*) family member pre-miRNAs ($p<0.05$), where there was an accompanying differential 6h increased expression of 570 let-7 target mRNAs identified through TargetScan ($p<0.0001$). qRT-PCR and RNA-seq validations in other normal endothelial cells, plasma and PBMCs confirmed pre-let-7b/let-7b-5p as biomarkers for 1h iron responses. Exon 3B of the *SLC11A2*

(*NRAMP2/DMT1*)-encoded divalent metal transporter 1 responsible for cadmium, copper, zinc, iron and manganese absorption/transport was identified as a novel exon most consistently stabilized following 1h treatment with cycloheximide which generated a robust immediate gene signature. Overlaps with asthma, pulmonary hypertension, neurological and oncological biomarkers were noted.

Conclusions Endothelial RNA is rapidly modified in response to acute stresses. Further study on disease relevance is warranted.

S72 PROTEOMIC EVALUATION OF A HUMAN LUNG MODEL OF FIBROSIS FOR NOVEL THERAPEUTIC TARGET SELECTION

[1]C Maxwell, [2]P Stylianou, [2]P Bradding, [1,3]DJL Jones, [2]KM Roach. *[1]Department of Cardiovascular Sciences and NIHR Leicester Cardiovascular Biomedical Research Unit, Glenfield Hospital, Leicester, UK; [2]Department of Respiratory Sciences, Glenfield Hospital, University of Leicester, Leicester, UK; [3]Department of Cancer Studies, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.78

Introduction and Aim Novel treatments for idiopathic pulmonary fibrosis (IPF) are required urgently. TGFβ1 is a central pro-fibrotic mediator in IPF. A better understanding of the molecular pathways activated by TGFβ1 in human lung tissue may facilitate the development of novel more effective anti-fibrotic medications. Our aim was to examine the protein changes in human lung tissue exposed to TGFβ1. In the current study we have used proteomic analysis to test the hypothesis that *TGFβ1 exerts pro-fibrotic effects on human lung parenchyma and this is a viable model for testing novel therapeutic targets.*

Methods 2mm^3 pieces of non-fibrotic human lung parenchymal tissue were cultured for 7 days in serum free (SF)and TGFβ1-stimulated (10 ng/ml) media from n=11 patient donors. The tissue was homogenised and liquid chromatography - tandem mass spectrometry (LC-MS/MS) analysis was performed. The tissue response to TGFβ1 was determined by evaluating PCA, differential expression of the proteins, pathway analysis, drug target set enrichment analysis and NeDRex platform for drug repurposing.

Results In tissue stimulated with TGFβ1 for 7 days there was a strong fibrotic protein response. PCA analysis showed samples clustered together dependent on their treatment (SF vs TGFβ1-stimulated). In total, 2391 proteins were quantified and differential expression analysis found 306 proteins upregulated and 285 downregulated following 7 days of TGFβ1 stimulation (0.5 $\log_2$ and $p<0.05$ FDR statistical cut-off). Biological process analysis revealed TGFβ1 induced changes in actin cytoskeleton organisation, extracellular matrix organisation and wound healing pathways, all processes relevant to IPF pathology. Drug repurposing analysis was performed to identify approved drugs which could be repurposed based on the differentially expressed proteins in the model between control vs TGFβ1, identifying 265 drug repurposing candidates. Of note, IPF drug Nintedanib was found to be a suitable therapeutic target in this model of human lung fibrosis.

Conclusion Our previous work showed this human model of fibrosis to be a useful therapeutic discovery tool as TGFβ1 activates a core pro-fibrotic protein expression program in human lung parenchyma. Proteomic analysis has further concluded the value of this model for recapitulating human lung tissue fibrotic responses highlighted its potential for therapeutic drug screening.

'Midsummer Night's Dream' – Ventilation in motor neurone disease

S73 FACTORS CONTRIBUTING TO FAILURE OF DOMICILIARY NON-INVASIVE VENTILATION IN PATIENTS WITH MOTOR NEURONE DISEASE

G Cox, E Johnstone, J Davidson, D Shrikrishna. *Somerset NHS Foundation Trust, Taunton, UK*

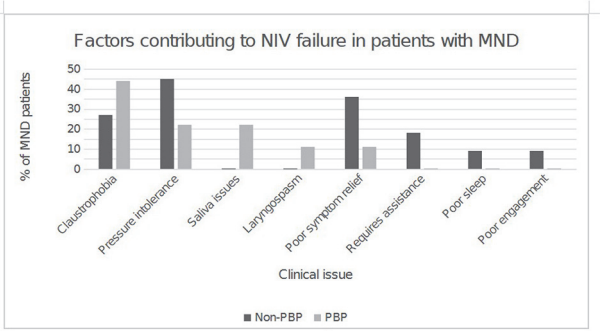
10.1136/thorax-2024-BTSabstracts.79

Introduction This study investigated factors contributing to failure of domiciliary non-invasive ventilation (NIV) in patients with Motor Neurone Disease (MND), including a cohort of patients with Progressive Bulbar Palsy (PBP). NICE NG42 recommend NIV be considered in those with bulbar dysfunction if they present with sleep related symptoms or for correction of hypoventilation.[1]

Methods We retrospectively studied clinical notes made within the domiciliary MND service from April 2016 to June 2024. From the total number of patients set-up on NIV, we identified those patients whose NIV trial 'failed' (definition: utilisation <4 hours/24-hour period after 1 month trial) and the predominant factors contributing to this. The data for MND patients diagnosed with PBP was compared to those with non-PBP.

Results 202 patients with MND were referred into the respiratory service during this period, 33% male, mean age 70 (SD 10.3). 63 patients were initiated onto domiciliary NIV, of which, 16% had a diagnosis of PBP. The number of failed NIV trials was 35%, and of those with PBP, 90% failed their NIV trial. The factors contributing to NIV failure are shown in figure 1. In the non-PBP group these factors included pressure intolerance (45%), poor symptom relief (36%) and claustrophobia (27%). In comparison, the factors for NIV failure in the PBP group were claustrophobia (44%), pressure intolerance (22%) and saliva issues (22%), alongside laryngospasm (11%) and poor symptom relief (11%).

Conclusion National guidance advises clinicians to trial MND patients with bulbar symptoms on NIV for symptom relief[1]. This study has identified key factors contributing to a high failure rate for those patients started on NIV, particularly



Abstract S73 Figure 1 Factors contributing to NIV failure in non-PBP and PBP patients with MND

those with PBP, and highlights clinical issues that should be mitigated, where possible, for this patient cohort.

REFERENCE

1. National Institute of Clinical Excellence (NICE) (2016) *Clinical Guidelines 42: Motor neurone disease: assessment and management* [online]. Available from: https://www.nice.org.uk/guidance/ng42 [Accessed 26 June 2024].

S74 IMPROVED NIV ADHERENCE WITH INTELLIGENT VOLUME ASSURED PRESSURE SUPPORT WITH AUTOMATIC EXPIRATORY POSITIVE AIRWAY PRESSURE (IVAPS-AE) IN AMYOTROPHIC LATERAL SCLEROSIS (ALS)

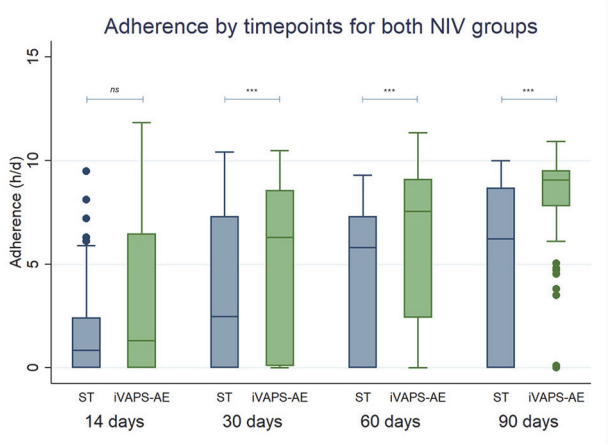
ED Parkes, J Shakespeare, A Ali. *UHCW, Coventry, UK*

10.1136/thorax-2024-BTSabstracts.80

Introduction Few studies have compared adherence rates between volume mode non-invasive ventilation (NIV) and pressure mode (ST) NIV in amyotrophic lateral sclerosis (ALS). The use of intelligent volume assured pressure support with automatic expiratory positive airway pressure (iVAPS-AE) to treat sleep disordered breathing (SDB) in ALS is limited, reflecting clinical uncertainty about its role as an effective mode of NIV in ALS patients with diaphragmatic muscle weakness.

Methods This was a prospective pilot study with randomisation to explore adherence differences between iVAPS-AE and ST and act as a prerequisite for a large-scale study. Fifteen ALS patients were randomised to receive iVAPS-AE or ST mode. Adherence data was recorded at 14, 30, 60 and 90 days. All patients followed a standard ventilatory care pathway for ALS patients.

Results Median adherence from 0 – 90 days for iVAPS-AE was 7.1 hours per day (h/d) (0.28–9.0) and 3.93 h/d for ST (0–7.3). Between group comparisons of adherence by time point showed median adherence for iVAPS-AE to be statistically significantly higher than ST at 30, 60 and 90 days (6.29h/d (0.1–8.55), 2.48h/d (0–7.3); 7.54h/d (2.43–9.08), 5.8h/d (0–7.3) and 9.05h/d (7.8–9.5), 6.22h/d (0–8.66), respectively); figure 1. Seventy nine patients would be required for each NIV mode to provide appropriate statistical power for a large-scale study.



Abstract S74 Figure 1 Box-plot of adherence by timepoints for both NIV groups. Data points denoted as circles are outliers. ns=p value >0.05. P value ≤0.05 is designated with one (*) asterisk, ≤0.01 two (**) asterisk, ≤0.001 three (***) asterisk. ST=spontaneous/timed. iVAPS-AE=intelligent volume assured pressure support with automatic expiratory positive airway pressure. h/d=hours per a day

Discussion To our knowledge this is the only pilot study with randomisation comparing adherence between two NIV modes in ALS. Improved NIV adherence was achieved using iVAPS-AE compared to ST. Our study provides novel evidence to shape future clinical practice and recommends a large-scale study to fully explore the impact of iVAPS-AE on adherence rates in ALS.

S75 FEASIBILITY AND OUTCOMES OF AMBULATORY INITIATION OF NON-INVASIVE VENTILATION IN PATIENTS WITH MOTOR NEURONE DISEASE

[1]F Fyles, [1]N Shafiqa, [2]K Elhadd, [1]H Ashcroft-Kelso, [1]L Campbell, [1]C Unsworth, [1]J Walsh, [1]K Ward, [1]S Wordingham-Baker, [1]R Angus, [1]B Chakrabarti, [1]N Duffy, [1]N Nwosu, [1]R Parker, [1]PK Plant, [1]A Manuel. *[1]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [2]The Walton Centre NHS Foundation Trust, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.81

Introduction Respiratory failure is the primary cause of mortality in Motor Neurone Disease (MND), associated with significant symptom burden. Studies demonstrate improved quality of life with use of non-invasive ventilation (NIV), along with survival benefit in some MND subgroups (Bourke et al. *Lancet Neurol*. 2006;5(2):140–7). Inpatient NIV set-up represents a marked burden for patients, and reduces acute bed availability; we report on three years' outcomes of our community-based ambulatory model of NIV initiation for MND patients, set up in 2020 in response to the emerging CoVid-19 pandemic.

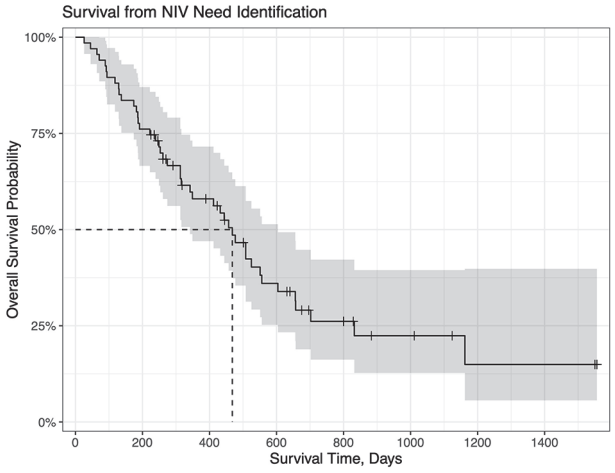
Methods Retrospective review of patients with physician-diagnosed MND started on NIV through our ambulatory service from 2020–2023. We collected: baseline parameters (age, sex, BMI, MND subtype); reason for NIV requirement (presence of symptoms, abnormal overnight oximetry, raised PaCO2); baseline investigations (median overnight SpO2, arterial blood gas analysis, oxygen desaturation index, time below SpO2 90% on overnight oximetry); survival from NIV need identification; and adherence, defined as use ≥4h/night for ≥75% nights.

Survival analysis was completed using the Kaplan-Meier method, and the Cox proportional hazards model was used to identify significant variables affecting survival.

Results From 2020–23, 67 patients were established on NIV (age 64.5±10.6, 52% male, BMI 26.6±5.8, 33% bulbar onset). 51 patients (76%) reported dyspnoea or orthopnoea at time of referral, with all asymptomatic patients demonstrating REM-associated hypoxia on sleep studies. Average time from NIV need identification to trial was 17 days. 46% of patients were adherent to overnight NIV following initiation.

Overall median survival from NIV set up was 468 days (95% CI: 342–604, range 26–1556), and 1-year survival was 58% (95% CI 47–72%) – see figure 1. In the Cox proportional hazards model, compliance was associated with improved survival (HR = 0.37, 95% CI 0.20–0.70, p=0.002); age, sex, MND subtype, presence of symptoms, and baseline investigation results were not significantly associated with changes in survival.

Conclusion Within our centre, an ambulatory model is a feasible delivery method for NIV set-up among patients with MND. Adherence rates were similar to those previously reported in literature (Jackson et al. *ALS Frontotemporal*



Abstract S75 Figure 1

Degener. 2021). Patients adherent to NIV demonstrated significantly improved survival.

S76 AN EVALUATION OF THE USE OF LARYNGEAL ENDOSCOPY IN THE IMPLEMENTATION OF NON-INVASIVE VENTILATION IN PATIENTS WITH MOTOR-NEURONE DISEASE

NZ Eastwood, B Messer, L Stephenson. *Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK*

10.1136/thorax-2024-BTSabstracts.82

Introduction Respiratory failure is the commonest cause of death in patients with Motor Neurone Disease (MND). Non-invasive ventilation (NIV) has been shown to reduce symptom burden from hypoventilation and improve survival and quality of life in MND.

In addition to NIV, many patients with MND are also treated with mechanical insufflation-exsufflation (MI-E) to improve cough.

On initiation of NIV and MI-E treatment, the application of positive airway pressure has been shown to provoke inducible laryngeal obstruction (ILO) with laryngeal adduction observed to severely compromise the size of the laryngeal inlet in some patients.

Treatment induced laryngeal obstruction (TILO) may be more likely in patients with compromised laryngeal control and hyper-regulated upper airway reflexes, for example MND patients with bulbar involvement.

The use of laryngeal endoscopy to visualise laryngeal movements during positive airway pressure treatment helps to identify mechanisms of obstruction. Under visualisation, the clinician is able to adjust pressures to improve the quality of ventilation. This gives potential for patients to receive NIV, who previously would not have tolerated the treatment.

Methods We evaluated clinical data from 39 patients who presented to the Assisted Ventilation Service with MND and laryngeal symptoms. Descriptive statistics were conducted.

Results There were 39 patients in total.

51% (n=20) of patients presented with symptoms of ILO.

65% (n=13) presented with TILO on initiation of NIV or MI-E

85% (n=11) of patients with TILO presented with laryngeal weakness; observed as incomplete vocal cord abduction.

Under laryngeal endoscopy, 82% (n=9) of patients with TILO had reduced symptoms and increased tolerance of NIV/MI-E when airway pressures were gently titrated.

Other laryngeal presentations included dysphonia, refractory cough, persistent throat symptoms, sialorrhea, and panic-induced breathing pattern change.

Conclusion Initiation of NIV/MI-E may be associated with TILO. Laryngeal endoscopy may support the implementation of individually customised settings, improving and extending the use of NIV/MI-E for patients who previously would not have tolerated this treatment. Further research is needed to validate these findings and further consider the mechanisms for obstruction (e.g. optimal positive pressures, mask type, prevalence of hypersensitivity).

S77 PATIENT REPORTED OUTCOME MEASURES OF MOUTHPIECE VENTILATION IN NEUROMUSCULAR CONDITIONS: A PILOT STUDY

[1]AM Chowdhury, [2]D Draicchio, [2]C Goodin, [2]P Smith, [2]J Treesa, [2]S Byers, [2]B Rosser, [2]M Sovani. [1]*School of Medicine, Nottingham University Hospital, Nottingham, UK*; [2]*Nottingham University Hospital, Nottingham, UK*

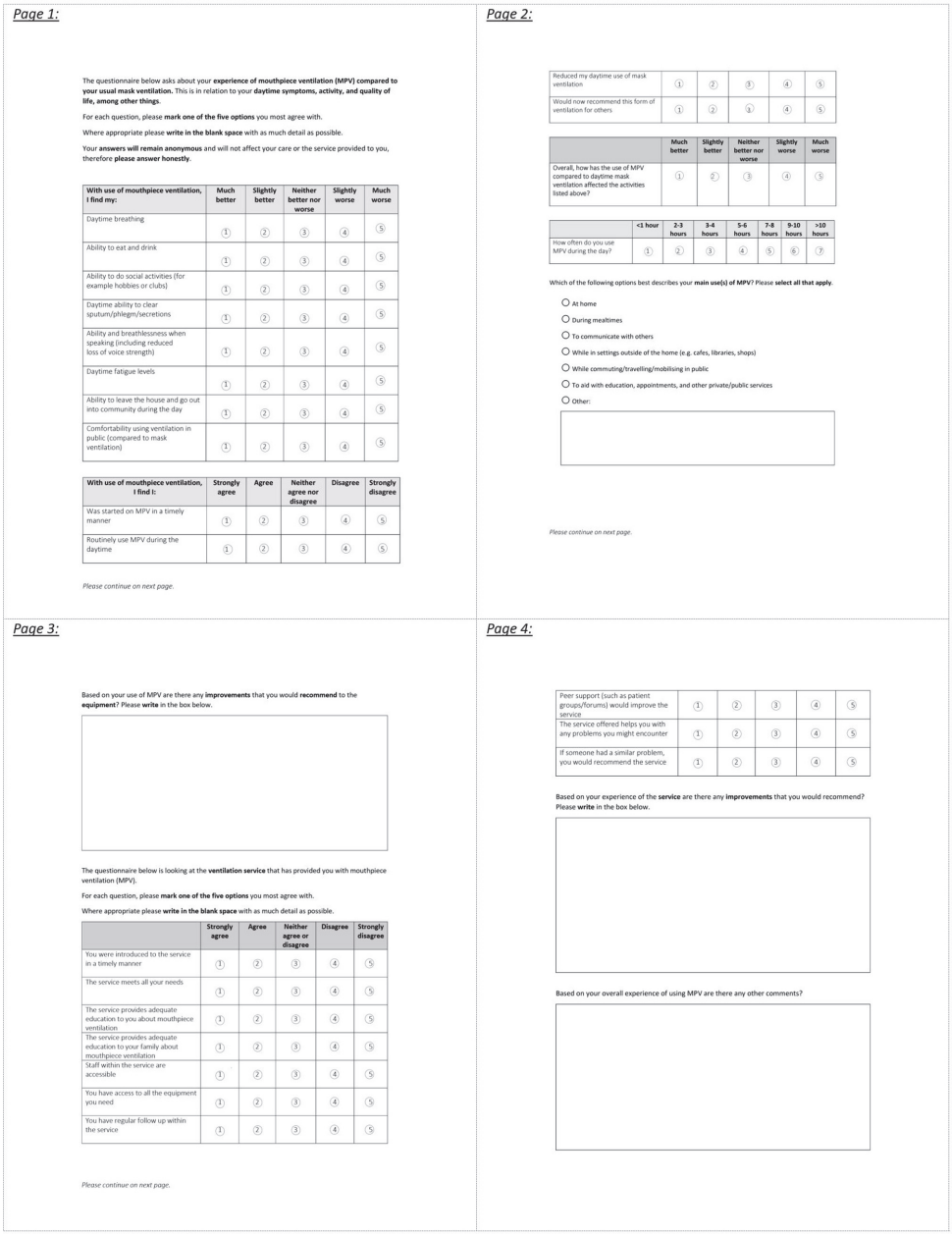
10.1136/thorax-2024-BTSabstracts.83

Background Patients with progressive neuromuscular diseases eventually require daytime ventilatory support. The use of a facemask (FM) interface has a negative impact on day-to-day activities and mouthpiece ventilation (MPV) can be an effective alternative.[1] Despite this, it is underutilised clinically[2] and patient reported outcome measures (PROMS) regarding its use are of limited availability.

Method A questionnaire (figure 1) was developed in collaboration with physicians, physiotherapists and ventilation nurses based on care outcomes and service provision.

Results Of 146 patients with complex ventilation needs, 16 use MPV and 4 more patients were identified who are suitable for MPV. Of the 16 MPV users, 10 (mean age 40 years) completed the questionnaire; with muscular dystrophy (50%) and motor neurone disease (30%) being the commonest diseases. Patients used non-invasive ventilation (NIV) for an average of 7.9 years and MPV for an average of 9.8 months. Ventilation systems used were the Nippy 4+ (10%) and Trilogy EVO (90%), with a daily average usage of 2.4 hours. For FM, the average inspiratory positive airway pressure (IPAP) was 20.2 cmH_2O and the average expiratory positive airway pressure (EPAP) was 4.0 cmH_2O. For MPV, the average IPAP was 25.9 cmH_2O, EPAP was 0 cmH_2O, and 1 patient was on volume settings of 600 ml. When rating MPV experience; 70% of patients reported an overall positive impact, with improvements in leaving the home (90%), ability to speak (80%), daytime fatigue (60%), and eating and drinking (60%). When rating the ventilation service, 90% of categories received positive feedback. Areas highlighted for improvement were educating family & friends, when MPV is initiated, and stock shortages.

Conclusion MPV improves patient independence and quality of life when daytime ventilatory support is needed. Further work is needed to increase awareness and improve patient experience.



Page 1:

The questionnaire below asks about your **experience of mouthpiece ventilation (MPV) compared to your usual mask ventilation.** This is in relation to your **daytime symptoms, activity, and quality of life, among other things**.

For each question, please **mark one of the five options** you most agree with.

Where appropriate please **write in the blank space** with as much detail as possible.

Your **answers will remain anonymous** and will not affect your care or the service provided to you, therefore **please answer honestly**.

With use of mouthpiece ventilation, I find my:	Much better	Slightly better	Neither better nor worse	Slightly worse	Much worse
Daytime breathing	①	②	③	④	⑤
Ability to eat and drink	①	②	③	④	⑤
Ability to do social activities (for example hobbies or clubs)	①	②	③	④	⑤
Daytime ability to clear sputum/phlegm/secretions	①	②	③	④	⑤
Ability and breathlessness when speaking (including reduced loss of voice strength)	①	②	③	④	⑤
Daytime fatigue levels	①	②	③	④	⑤
Ability to leave the house and go out into community during the day	①	②	③	④	⑤
Comfortability using ventilation in public (compared to mask ventilation)	①	②	③	④	⑤

With use of mouthpiece ventilation, I find I:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Was started on MPV in a timely manner	①	②	③	④	⑤
Routinely use MPV during the daytime	①	②	③	④	⑤

Please continue on next page.

Page 2:

Reduced my daytime use of mask ventilation	①	②	③	④	⑤
Would now recommend this form of ventilation for others	①	②	③	④	⑤

	Much better	Slightly better	Neither better nor worse	Slightly worse	Much worse
Overall, how has the use of MPV compared to daytime mask ventilation affected the activities listed above?	①	②	③	④	⑤

	<1 hour	2-3 hours	3-4 hours	5-6 hours	7-8 hours	9-10 hours	>10 hours
How often do you use MPV during the day?	①	②	③	④	⑤	⑥	⑦

Which of the following options best describes your **main use(s) of MPV**? Please **select all that apply**.

- ○ At home
- ○ During mealtimes
- ○ To communicate with others
- ○ While in settings outside of the home (e.g. cafes, libraries, shops)
- ○ While commuting/travelling/mobilising in public
- ○ To aid with education, appointments, and other private/public services
- ○ Other:

Please continue on next page.

Page 3:

Based on your use of MPV are there any **improvements** that you would **recommend** to the **equipment**? Please **write** in the box below.

The questionnaire below is looking at the **ventilation service** that has provided you with mouthpiece ventilation **(MPV)**.

For each question, please **mark one of the five options** you most agree with.

Where appropriate please **write in the blank space** with as much detail as possible.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
You were introduced to the service in a timely manner	①	②	③	④	⑤
The service meets all your needs	①	②	③	④	⑤
The service provides adequate education to you about mouthpiece ventilation	①	②	③	④	⑤
The service provides adequate education to your family about mouthpiece ventilation	①	②	③	④	⑤
Staff within the service are accessible	①	②	③	④	⑤
You have access to all the equipment you need	①	②	③	④	⑤
You have regular follow up within the service	①	②	③	④	⑤

Please continue on next page.

Page 4:

Peer support (such as patient groups/forums) would improve the service	①	②	③	④	⑤
The service offered helps you with any problems you might encounter	①	②	③	④	⑤
If someone had a similar problem, you would recommend the service	①	②	③	④	⑤

Based on your experience of the **service** are there any **improvements** that you would recommend? Please **write** in the box below.

Based on your overall experience of using MPV are there any other comments?

Abstract S77 Figure 1 Questionnaire created to assess the utility, effectiveness and experience of mouthpiece ventilation, as well as assess care outcomes and the ventilation service.

REFERENCES

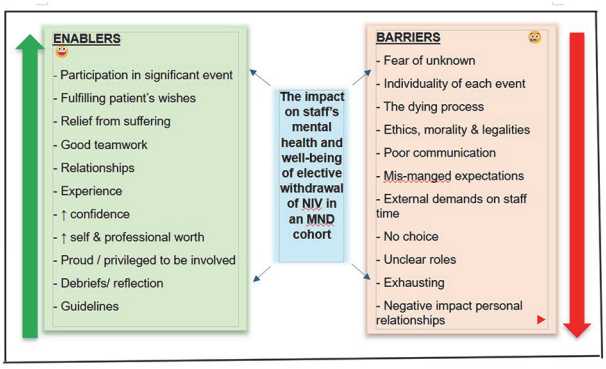
1. Pinto T, *et al*. Mouthpiece ventilation and complementary techniques in patients with neuromuscular disease: a brief clinical review and update. *Chronic Respiratory Disease* 2017;**14**(2):187–193.
2. Obi J, SM Pastores. Mouthpiece Ventilation, in Teaching Pearls in Noninvasive Mechanical Ventilation: Key Practical Insights, AM Esquinas, Editor. 2022, *Springer International Publishing: Cham*. p. 21–26.

S78 AN INVESTIGATION INTO MEDICAL, NURSING AND ALLIED HEALTH PROFESSIONAL EXPERIENCES OF ELECTIVE WITHDRAWAL OF NON-INVASIVE VENTILATION IN A MOTOR NEURONE DISEASE COHORT: A QUALITATIVE SERVICE EVALUATION

GE Cox. *Musgrove Park Hospital, Taunton, UK*

10.1136/thorax-2024-BTSabstracts.84

Rationale, Aims and Objectives With absence of a cure, the mainstay of management for patients with motor neurone disease (MND) is holistic supportive care and symptom control. Non-invasive ventilation (NIV) can provide relief from the distressing dyspnoea which often accompanies progressive respiratory muscle weakness. Some patients using NIV will become dependent on it, with a small proportion of these patients going on to request its withdrawal. Despite being legal in the UK, elective withdrawal of NIV can be emotionally and ethically challenging for the staff involved. To guide the process of symptom-controlled withdrawal, in 2015 the Association for Palliative Medicine (APM) released clinical guidelines. The aim of this study is to explore the experiences of the multidisciplinary team (MDT) involved in elective withdrawal of NIV in an MND cohort following the publication of these guidelines.



Abstract S78 Figure 1 The impact on staff's mental health and well-being of elective withdrawal of NIV in an MND cohort

Method A qualitative semi-structured interview study of eight NHS qualified staff members (3 Doctors, 4 nurses, 1 allied health professional (AHP)). Clinicians were asked questions relating to their experiences of the withdrawals. After full transcription, data was analysed thematically.

Results Six main themes emerged, each of which offered insight into how the withdrawals affected staff's well-being. The degree of preparation for, and location of the event was important, as was the depth and longevity of the clinician's investment in the patient. Positive aspects arose from the sense of fulfilling the patient's wishes, from good teamwork, presence of an experienced clinician and awareness of the APM (2015) guidelines. Conversely, barriers to well-being were expressed through the unpredictability of eachscenario, moral and ethical uncertainties, external pressures on time, mismatched expectations, poor communication and the emotional intensity of the act.

Conclusion Elective withdrawal is highly emotive, both positively and negatively influencing staff well-being. By addressing the potential mitigating factors, the overall impact on staff's mental health and well-being maybe improved and thus, subsequently, patient care.

'The Never-Ending Story' (of long COVID)

S79 BAL LYMPHOCYTOSIS IS ASSOCIATED WITH A HIGHER PREDICTED FVC IN PATIENTS WITH PERSISTENT RESIDUAL LUNG ABNORMALITIES AFTER COVID-19

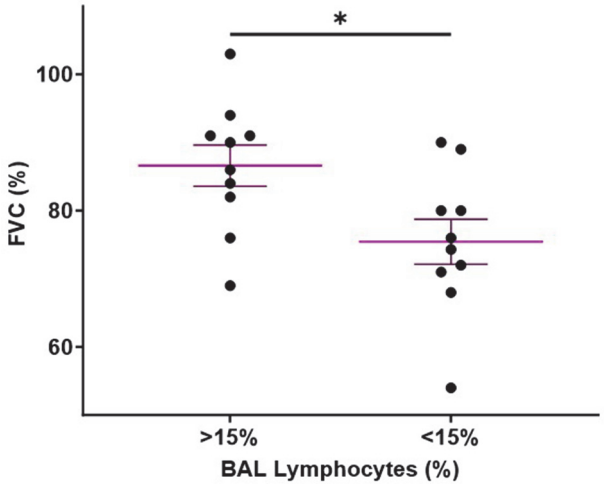
[1]SC Stanel, [2]DJF Smith, [3]P Mehta, [3]E Denneny, [4]LP Ho, [3]RC Chambers, [3]J Porter, [2]PL Molyneaux, [2]RG Jenkins, [5]N Chaudhuri, [6]P Rivera-Ortega, [1]KP Hanley, [1]JF Blaikley. *[1]University of Manchester, Manchester, UK; [2]National Heart and Lung Institute, Imperial College London, London, UK; [3]University College London, London, UK; [4]University of Oxford, Oxford, UK; [5]Ulster University, Derry, UK; [6]Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.85

Introduction Residual lung abnormalities (RLAs) can develop following COVID-19 infection with an estimated prevalence of up to 11% in hospitalised patients. The long-term effects of these RLAs remain unclear. In interstitial lung disease (ILD), bronchoalveolar lavage (BAL) lymphocytosis has a role in the diagnostic pathway and is associated with a favourable prognosis. BAL lymphocytosis has also been reported in some patients following COVID-19, the significance of this is unclear.

Methods Patients were recruited from three hospital sites as part of the post COVID-19 ILD (POSTCODE) cohort. All patients had a confirmed COVID-19 diagnosis, persistent respiratory symptoms and RLAs. The cohort was then further evaluated using pulmonary function tests combined with BAL to ascertain the presence of lymphocytosis. Pulmonary function tests were performed a median 55 (range 2–146) days before BAL. BAL lymphocytosis was identified using flow cytometry, defined as a count above 14%. RNA-sequencing was also performed on BAL specimens.

Results Twenty patients were recruited, predominantly male (90%), with a mean interval of 315 days between COVID-19 diagnosis and BAL. Ten patients had been admitted to intensive care during their hospital stay. Participants with BAL lymphocytosis had a higher mean predicted forced vital capacity (%FVC) compared to those without lymphocytosis (86.6% vs 74.4% p=0.02 (figure 1)). If lymphocyte count was plotted as a continuous variable a non-significant trend (p=0.07, r^2=0.17) was observed between%predicted FVC and BAL lymphocyte proportion (%). RNA sequencing of BAL cells was performed in 16 of these subjects. Participants with BAL lymphocytosis had repression of pathways which regulate cell cycle and TREM1 signalling, along with increased activation of pathways involved in antigen presentation. Several receptors, including the tyrosine kinase receptor ERBB2 ($p<2.04x10^{-7}$), were predicted to regulate these effects.



Abstract S79 Figure 1 Difference in FVC according to the presence or absence of BAL lymphocytosis

Conclusion BAL lymphocytosis occurs in some patients with persistent RLA after COVID-19 beyond 6 months. In this study BAL lymphocytosis was associated with a higher predicted FVC and reduced cell cycle activation. These associations were not observed if BAL lymphocyte proportion was treated as a continuous variable.

S80 THE POST-COVID LUNG MICROBIOME RESEMBLES THAT OF HEALTHY VOLUNTEERS. INSIGHTS FROM THE POST COVID-19 INTERSTITIAL LUNG DISEASE (POSTCODE) STUDY

[1,2,3]DJF Smith, [1]NMY Teng, [4,5]EK Denneny, [4,5]P Mehta, [6,7]SC Stanel, [6,7]JF Blaikley, [4]RC Chambers, [8]N Chaudhuri, [1,2]PM George, [1,2]OM Kon, [4,5]JC Porter, [7]P Rivera-Ortega, [9]LN Segal, [1]I Stewart, [1,2]RG Jenkins, [1,2]PL Molyneaux. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Royal Brompton and Harefield Hospitals, London, UK; [3]Imperial College Healthcare NHS Trust, London, UK; [4]University College London, London, UK; [5]University College London Hospitals NHS Foundation Trust, London, UK; [6]University of Manchester, Manchester, UK; [7]Manchester University NHS Foundation Trust, Manchester, UK; [8]Ulster University, Belfast, UK; [9]Division of Pulmonary and Critical Care Medicine, New York University, New York City, USA*

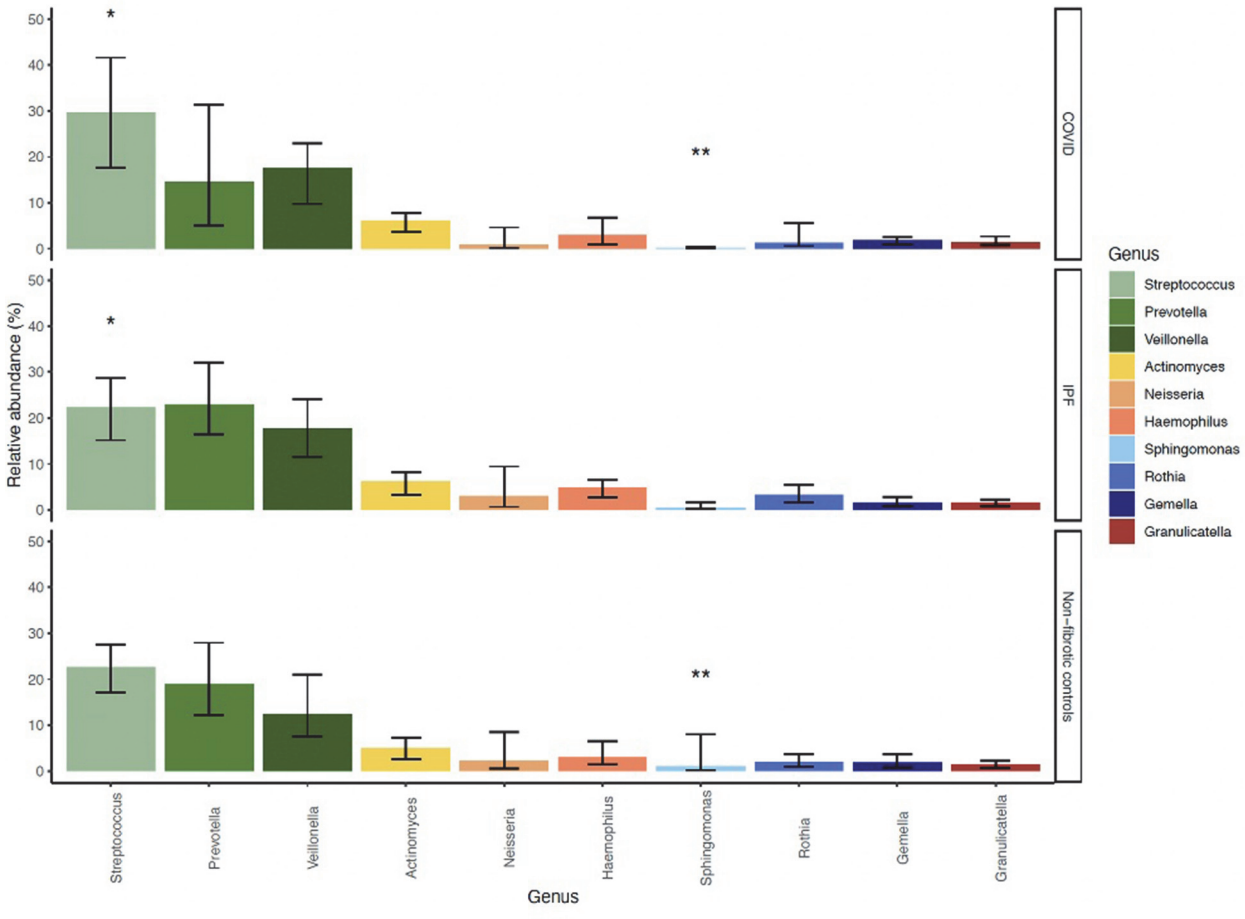
10.1136/thorax-2024-BTSabstracts.86

Introduction A cohort of patients are left with residual lung abnormalities (RLA) following COVID-19 infection. It is unclear whether these changes resolve over time or progress to fibrotic disease. The airway microbiome compared to health is altered in interstitial lung disease (ILD). These changes are believed to contribute to pathogenesis and can predict disease progression. We therefore hypothesised that there may be an altered microbiome in the airways of patients with RLA following COVID-19 infection.

Methods The POST COVID-19 interstitial lung DiseasE (POSTCODE) Study recruited subjects with RLA following COVID-19 infection to undergo bronchoscopy. 16S rRNA gene amplicon sequencing was performed on DNA extracted from bronchoalveolar lavage (BAL) and compared with control groups, including patients with idiopathic pulmonary fibrosis (IPF), fibrotic hypersensitivity pneumonitis (fHP) and non-fibrotic controls.

Results Twenty-eight subjects with RLA post-COVID-19 were recruited and underwent bronchoscopy an average of 11 months following initial infection. There were no significant associations found between the lower airway microbiome or bacterial burden and the severity of RLA, lung function, subsequent disease trajectory or resolution. There was no difference in the lower airway bacterial burden or microbial composition between post-COVID-19 patients and non-fibrotic controls. When compared with other ILDs, no differences were observed between subjects with RLA following COVID-19 and those with fHP. However, there was an increased abundance of *Streptococcus sp.* in the lower airways (figure 1) and higher a-diversity when compared to IPF.

Conclusions There are no persistent alterations in the lung microbiome or lower airways bacterial burden in subjects with RLA following COVID-19 infection compared to controls.



Abstract S80 Figure 1 Bar plot of the top ten most abundant genera of post-COVID-19, non-fibrotic controls and IPF patients. Error bar denotes median +/- Q1/Q3. Bar plot shows combined results for all patients by their respective diagnoses. Significantly higher abundance of *Streptococcus* seen in post-COVID-19 subjects in comparison with IPF (p=0.03)

This and the absence of associations between microbial features and disease severity or outcomes suggests that the microbiome is unlikely to contribute to RLA in patients recovering from post-COVID-19 infection.

S81 INNOVATIVE METHODOLOGY TO ASSESS REGIONAL QUADRICEPS MUSCLE OXYGENATION DURING EXERCISE IN POST-HOSPITALISED PATIENTS WITH LONG COVID AND HEALTHY PARTICIPANTS

[1]D Megaritis, [1]E Hume, [1]C Alexiou, [1]L Bernert, [2]E Daynes, [2]R Evans, [2]S Singh, [3]C Echevarria, [1]I Vogiatzis. [1]*Faculty of Health and Life Sciences, Northumbria University, Newcastle upon Tyne, UK*; [2]*NIHR Leicester Biomedical Research Centre, University Hospitals of Leicester, Leicester, UK*; [3]*The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK*

10.1136/thorax-2024-BTSabstracts.87

Background In the lungs, the concept of how ventilation is distributed relative to blood flow (Q) is well established. In the muscle, how Q is distributed relative to regional muscle metabolic rate (VO_2) is important to overall muscle function. We have previously validated an approach using near-infrared spectroscopy (NIRS) to investigate the heterogeneity of VO_2 to Q in healthy quadriceps muscle during exercise. Using the coefficient of variation (CV) of regional NIRS-derived oxygenation index ($StiO_2$) from optodes placed on vastus lateralis, we have shown a tight matching between Q and VO_2 during exercise in healthy participants.

Aims To evaluate the degree of local quadriceps muscle VO_2/Q heterogeneity and assess the performance of a machine learning (ML) model in distinguishing muscle oxygenation patterns between long COVID and healthy participants during exercise.

Methods Twelve patients with long COVID and seven healthy individuals (age mean(SD): 54(9) and 57(10), respectively) undertook 4-min constant-load graded exercise bouts sustained at 20, 50 and 80% of peak work rate. Four pairs of NIRS optodes were placed on the vastus lateralis muscle. Regional muscle VO_2/Q heterogeneity was calculated as the CV of $StiO_2$ during the last 30 seconds of each workload. Two-way ANOVA compared muscle VO_2/Q heterogeneity between cohorts across workloads. A linear regression ML model with a 5-fold cross-validation was implemented to distinguish raw $StiO_2$ data between healthy and long COVID participants using each NIRS channel and workload as features; performance metrics included Cohen's Kappa, F1 Score, Sensitivity, Precision, Accuracy, and Receiver Operating Characteristic Area Under the Curve (ROC-AUC).

Results Regional quadriceps muscle VO_2/Q heterogeneity did not differ (p=0.95) between cohorts across exercise workloads (figure 1a). The ML model demonstrated moderate discriminatory ability (AUC=0.71) between groups (figure 1b).

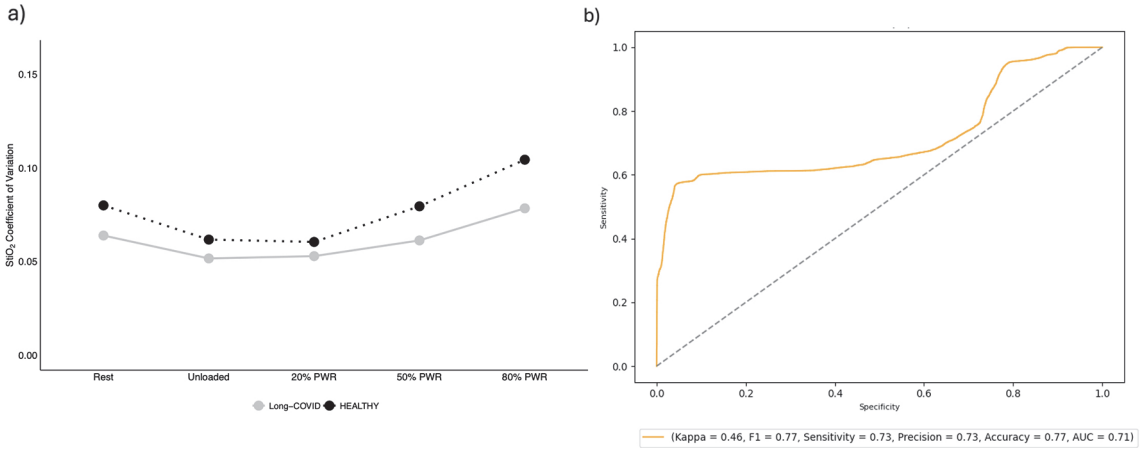
Conclusion Regional quadriceps muscle VO_2/Q heterogeneity analysis suggests that this cohort of long COVID patients does not exhibit impaired local muscle oxygen supply relative to metabolic demand across a range of exercise intensities. The ML model demonstrated a moderate ability to distinguish raw muscle $StiO_2$ signals between the two cohorts, potentially presenting a novel approach to investigate the pattern of locomotor muscle oxygenation response to exercise in long COVID.

S82 PERSISTENTLY RAISED SERUM AMYLOID A IN NEVER-HOSPITALISED LONG-COVID PATIENTS WITHOUT ASSOCIATION WITH LUNG OR COAGULATION ABNORMALITIES: THE EXPLAIN STUDY (HYPERPOLARISED XENON MAGNETIC RESONANCE PULMONARY IMAGING IN PATIENTS WITH LONG-COVID)

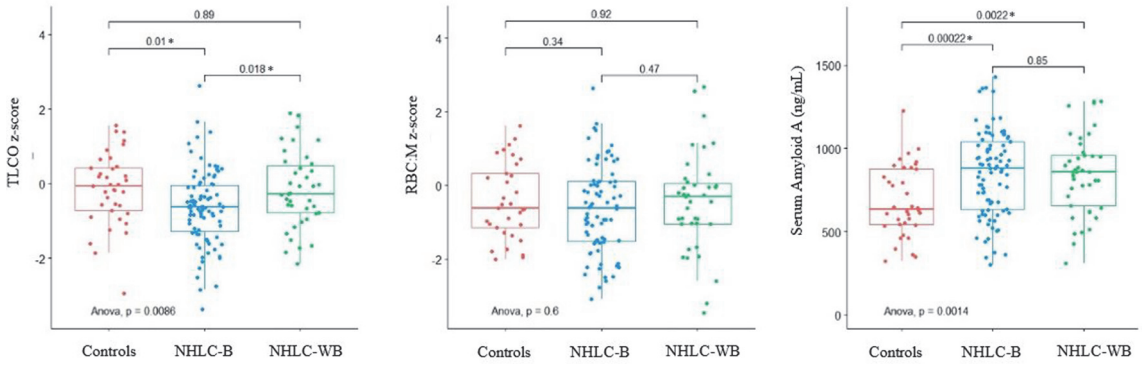
[1]KL Ng, [2]L Saunders, [2]G Collier, [1]J Grist, [1]I Dunstan, [3]R Evans, [3]M Lachut, [2]J Ablott, [4]S Strickland, [4]L Gustafsson, [2]L Smith, [4]S Thomas, [2]J Rodgers, [3]G Vuddamalay, [3]N Kainth, [3]A Laws, [1]E Hedley, [5]S Jones, [2]P Hughes, [4]T Newman, [4]M Plowright, [2]L Dryhurst-Pearce, [6]A Elbehairy, [3]K Jacob, [3]A McIntyre, [2]D Capener, [2]J Bray, [3]M Durrant, [1]K Yeung, [3]H Walters, [2]L Watson, [3]B Johnson, [2]O Rodgers, [2]R Munro, [3]V Madhusudhan Stisova, [3]M Cox, [2]D Jakymelen, [1]V Harris, [3]V Matthews, [3]G Abu-Eid, [3]N Mulvey, [3]W Hickes, [1]D Parramon, [1]N Rahman, [7]A Horsley, [5]H Davies, [2]J Wild, [1]F Gleeson, [3]E Fraser, [2]AAR Thompson, [1]S Shapiro. [1]*University of Oxford, Oxford, UK*; [2]*University of Sheffield, Sheffield, UK*; [3]*Oxford University Hospitals NHS Foundation Trust, Oxford, UK*; [4]*Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK*; [5]*Cardiff and Vale University Health Board, Cardiff, UK*; [6]*Manchester University NHS Foundation Trust, Manchester, UK*; [7]*University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.88

Introduction Persistent breathlessness is commonly reported in Long-COVID, even by those who were never hospitalised for



Abstract S81 Figure 1 a) Coefficient of variation in regional quadriceps muscle VO_2/Q distribution between post-hospitalised patients with long COVID (mean (SD) 10 (9) days of hospital stay; 651 (114) days from hospital discharge) and healthy cohorts across different fractions of peak work rate (PWR); b) ROC curve illustrating the performance of the machine learning model in discriminating the population from the raw $StiO_2$ signals



Abstract S82 Figure 1 TLCO z-score was significantly lower in the NHLC-B group but no difference in RBC:M z-score was observed between groups. Serum Amyloid A was significantly higher in the NHLC-B and NHLC-F groups than controls (one-way ANOVA)

COVID-19 (NHLC). The multicentre, prospective EXPLAIN study explored whether NHLC breathlessness was associated with abnormalities in multinuclear MRI assessment of gas transfer using hyperpolarised xenon gas (HPX-MRI) or with blood markers of coagulopathy (D-dimer, fibrinogen), fibrinolysis (soluble thrombomodulin, PAI-1), platelet (p-selectin, sCD40L) and endothelial (vWF antigen) activation, NETosis (myeloperoxidase, citrullinated-H3) and serum amyloid-A (SAA).

Methods Data from three groups were studied; NHLC with breathlessness (NHLC-B, n=91), NHLC without breathlessness (NHLC-WB, n=41) and fully-recovered controls (n=37). Data from questionnaires, sit-to-stand exercise test, pulmonary function tests, chest CT and HPX-MRI were analysed. HPX-MRI measures the transfer of xenon between the interstitial membrane and red blood cells (RBC:M). Plasma biomarkers were measured using commercial ELISAs except fibrinogen, D-dimer and routine biochemistry panel which were analysed by a hospital laboratory.

Results No differences in prothombotic biomarkers were found between groups. SAA concentration was significantly higher in NHLC-B and NHLC-WB groups compared to controls (mean=851.4,842.7 and 682.2ng/mL respectively, p=0.0014). No significant correlations were observed between SAA and exercise capacity (sit-to-stand test), gas transfer (TLCO and RBC:M z-scores) and breathlessness (Dyspnoea-12 score). There was no correlation between SAA and number of days post-infection in all groups. In some breathless cases, the SAA concentration of >1000ng/mL was seen beyond 2 years.

TLCO z-score was significantly lower in the NHLC-B group compared with NHLC-WB and control groups (mean=-0.644,-0.173 and -0.141 respectively, p=0.0086). However, no significant difference in RBC:M z-score was observed between groups (mean=-0.641,-0.454 and -0.425 respectively, p=0.6). Median CT score was 0 in all groups. Age, sex, and BMI were comparable between groups.

Conclusion This is the first study exploring NHLC breathlessness with HPX-MRI metrics and its correlation with blood biomarkers. There were no differences in prothrombotic biomarkers between groups, and therefore no evidence that NHLC is associated with increased activation of the coagulation system. Interestingly, the persistent elevation of SAA in NHLC patients without structural lung abnormalities did not correlate with HPX-MRI metrics or TLCO implying that the presence of ongoing inflammation in NHLC is not associated with gas transfer abnormalities.

S83 AN ONLINE BREATHING AND WELLBEING PROGRAMME (ENO BREATHE) FOR PEOPLE WITH LONG COVID BREATHLESSNESS: RESULTS FROM 1433 PARTICIPANTS

[1]KEJ Philip, [1]H Owles, [2]S McVey, [2]T Pagnuco, [2]K Bruce, [2]H Brunjes, [2]J Mollica, [3]A Lound, [2]S Zumpe, [4]AM Abrahams, [5]V Padmanaban, [2]TH Hardy, [6]A Lewis, [1]A Lalvani, [5]S Elkin, [1]NS Hopkinson. *[1]NHLI, Imperial College London, London, UK; [2]Learning and Participation, English National Opera, London, UK; [3]Patient Experience Research Centre, Imperial College London, London, UK; [4]Clinical Health Psychology, Imperial College Healthcare NHS Trust, London, UK; [5]Respiratory Medicine, Imperial College Healthcare NHS Trust, London, UK; [6]Southampton University, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.89

Background Breathlessness can be a complex and debilitating symptom in people with long COVID, and the evidence base for interventions is limited. A previous randomised controlled trial found that participation in a six-week online breathing and wellbeing programme (ENO Breathe) that uses singing techniques, was associated with improvements in health-related quality of life (HRQoL) and breathlessness compared to usual care, in people with long COVID. The impact of this intervention outside of a trial setting has not been assessed.

Methods We compared baseline and post-intervention evaluation data to assess the impact of the ENO Breathe programme on HRQoL (RAND SF-36) Mental and Physical Health Composite (MHC, PHC) scores, breathlessness (Dyspnoea-12, Visual Analogue Scores (VAS) for breathlessness at rest, walking, stairs, running), anxiety (GAD-7 score), and respiratory symptoms (CAT score). Paired t-tests and Wilcoxon signed rank tests were used as appropriate. Analysis was approved by the NHS HRA Stanmore 19/LO/0418.

Results 1433 programme participants, referred after assessment from 51-UK based long-COVID clinics, were included. Participants had a mean(SD) age 49(11.9), BMI 28(7.2), 80% female, 83% white ethnicity, reporting long COVID symptom duration at time of registration of 433(216) days. 1202 participants provided follow-up data on completion of the 6-week programme. Completing ENO-Breathe was associated with improvements (mean difference, 95% CI) in RAND-36 MHC (p<0.001; 3.59, 3.14 to 4.05), PHC (p<0.001, 2.22, 1.89 to 2.56), Dyspnoea-12 (p<0.001; -4.33, -4.68 to -3.98), VAS breathlessness scores walking (p<0.001; -5.05, -6.26 to -3.84), stairs (p<0.001; -10.87, -12.15 to -9.59), and running (p<0.001; -9.34 to -6.63), GAD-7 score (p<0.001; -1.69, -1.92 to -1.46), CAT score (p<0.001; -2.54, -2.85 to -2.23). The VAS breathlessness score at rest had not significantly changed (p=0.29; 1.26, -0.016 to 2.54).

Discussion and Conclusion These results indicate, in a large cohort outside of a clinical trial setting, that the ENO-Breathe online breathing and wellbeing programme can improve health-related quality of life, breathlessness, anxiety and respiratory symptoms in people with long COVID and breathlessness.

S84 POST-HOSPITAL COVID-19 REHABILITATION (PHOSP-R): A RANDOMISED CONTROLLED TRIAL

[1]E Daynes, [1]RA Evans, [1]MM Baldwin, [1]NJ Greening, [1]A Singapuri, [2]C Echevarria, [3]I Vogiatzis, [4]LV Wain, [1]CE Brightling, [1]SJ Singh, [1]On behalf of the PHOSP collaborative group. *[1]NIHR Leicester Biomedical Research Centre- Respiratory, Leicester, UK; [2]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK; [3]Northumbria University, Newcastle, UK; [4]Department of Respiratory Sciences, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.90

Introduction Patients hospitalised with COVID-19 often experience on-going symptoms that reduce exercise capacity. We hypothesised that rehabilitation (supervised or digital) would support recovery and improve exercise capacity compared to usual care in adults with Long COVID.

Methods Adults with Long COVID after a hospital admission with COVID-19 were recruited from two UK NHS hospitals. Participants were randomised to receive either eight weeks of supervised or digital rehabilitation, or usual care. Rehabilitation comprised of individually prescribed aerobic and strength exercise, and education sessions either delivered as twice weekly supervised sessions, or through a digital web-app. The primary outcome was exercise capacity measured using the Incremental Shuttle Walking Test (ISWT) distance (metres). Secondary outcomes include physical measures (Short Physical Performance Battery, quadriceps strength, handgrip strength and 4 meter gait speed) and questionnaires. Intention to treat analysis compared supervised rehabilitation to usual care, and digital rehabilitation to usual care. 44 participants were required in each group to show a between group change of 50m.

Abstract S84 Table 1 Change in secondary outcomes intervention – usual care.

	Supervised vs Usual care	Digital vs Usual care
SPPB (median)†	1·2 [-0·01 to 2·38]	1·5 [0·27 to 2·66]
4MGS (m/s)†	0.12 [0.02 to 0.21]	0.04 [-0.05 to 0.14]
Handgrip (kg)†	2·06 [0·07 to 4·18]	-0·62 [-2·72 to 1·50]
QMVC (kg)†	3·33 [-0·55 to 7·10]	3·35 [0·43 to 7·10]
EQ5D Utility Index†	-0·02 [-0·11 to 0·07]	-0·05 [-0·14 to 0·04]
EQ5D Thermo-meter†	-1·08 [-7·65 to 5·46]	0·97 [-7·38 to 5·73]
Patient Health Questionnaire 9	-0·41 [-1·08 to 1·91]	-0·52 [-1·02 to 2·02]
Generalised Anxiety Depression 7	-0·56 [-2·07 to 0·96]	-0·52 [-2·09 to 1·02]
Montreal Cognitive Assessment †	0·15 [-0·82 to 1·10]	0·81 [-0·16 to 1·79]
FACIT-FS†	2·93 [-0·31 to 6·16]	-1·75 [-4·97 to 1·57]
Dyspnoea-12	-2·11 [-4·33 to 0·13]	1·68 [-4·00 to 0·55]
DSQ Severity	1·05 [-7·00 to 7·11]	-5·72 [-13·73 to 2·13]
DSQ Frequency	0·22 [-1·43 to 1·88]	-0·6 [-2·24 to 1·02]

Presented as mean[CI] unless otherwise stated. SPPB Short Physical Performance Battery, 4MGS 4-Meter Gait Speed, QMVC Quadriceps Maximal Voluntary Contraction, EQ5D Euroqol 5 Domain, FACIT-FS Functional Assessment of Chronic Illness Therapy Fatigue Score, DSQ Depauls Symptom Questionnaire. †*Outcomes where a higher score is an improvement*

Results Of the 181 participants recruited (mean [SD] age 59 [12] years, n=99(55%) male), 149 participants completed the trial. The ISWT improved from baseline in the supervised and digital rehabilitation groups from mean [SD] 285[248]m to 312[252]m, and 353[227]m to 388[214]m, respectively, but no improvements were seen in usual care 328[201]m to 330 [198]m. Improvements for supervised and digital interventions compared with usual care were mean [SD] change 52.3[16.7] m $p<0.01$ and 33.6[16.8]m $p=0.04$, respectively. Between group differences in secondary outcomes are presented in table 1.

Conclusion Rehabilitation delivered through either supervised sessions or digitally, improved exercise capacity compared to usual care in previously hospitalised adults with Long COVID. There are improvements in handgrip strength and 4-meter gait speed in favour of the supervised rehabilitation group compared to usual care. There are no differences between groups for quality of life.

'The Very Breathless Caterpillar' – Paediatric diagnostics

S85 CLINICALLY PHENOTYPING CHILDHOOD LUNG FUNCTION TRAJECTORIES

RM Scott, GW Nava, J Grenville, J Dodd. *Academic Respiratory Unit, University of Bristol, Bristol, UK*

10.1136/thorax-2024-BTSabstracts.91

Introduction and Objectives Distinct lung function trajectories tracking from childhood to adulthood have been identified. Subnormal trajectories confer an increased risk of later respiratory, cardiovascular and metabolic morbidity, and all-cause mortality. Recognised predictors of subnormal trajectories include smoking, low birthweight, atopy, and self-reported childhood asthma and respiratory infections. However, clinical data on the respiratory history of these groups is scarce, limiting diagnostic certainty and opportunities to improve lung function. This study aims to clinically phenotype lung function trajectory groups from a large birth cohort, using primary and secondary healthcare coding.

Methods Spirometry was measured at 8, 15 and 24 years in the Avon Longitudinal Study of Parents and Children (ALSPAC). Four lung function trajectories were previously derived (n=4828): persistently high (PH), average (Av), below average (BA) and persistently low (PL). Linked general practice and hospital episode codes were searched for respiratory diagnoses and medications.

Results Prevalence of coded diagnosis of asthma was higher in subnormal trajectories (table 1: PH 20%, Av 22.6%, BA 26.9%, PL 40.3%, $p<0.05$). Asthma exacerbations, inhaled corticosteroid and salbutamol prescriptions were increased in subnormal groups. There was no evidence of a difference in respiratory infections, other respiratory diagnoses, or hospital admissions between trajectories. Only 47.5% of the PL group had a coded respiratory diagnosis.

Among those with an asthma diagnosis, those in the PL trajectory more commonly received higher level asthma maintenance medication and were more likely to have been prescribed oral steroids or nebulisers compared to other

Abstract S85 Table 1 Demonstrating prevalence of coded respiratory disease between ALSPAC FEV1 (% predicted) lung function trajectory groups and differences in medication prescribing in those with a diagnosis of asthma

	ALSPAC Lung Function Trajectory Group								
	Persistently high (n = 355)		**Average (n = 2449)**		**Below average (n = 1848)**		**Persistently low (n = 176)**		χ^2
Respiratory diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**p value**
Asthma	71	(20.0)	554	(22.6)	497	(26.9)	71	(40.3)	**0.000**
Asthma exacerbation	<5	(<1.4)	27	(1.1)	26	(1.4)	6	(3.4)	**0.048**
ICS use	51	(14.4)	421	(17.2)	372	(20.1)	53	(30.1)	**0.000**
SABA use	95	(26.8)	693	(28.3)	595	(32.2)	70	(39.8)	**0.000**
Bronchiectasis	<5	(<1.4)	18	(0.7)	15	(0.8)	<5	(<2.8)	0.900
COPD	<5	(<1.4)	<5	(<0.2)	5	(0.3)	<5	(<2.8)	0.490
Neonatal respiratory disease	<5	(<1.4)	16	(0.7)	14	(0.8)	<5	(<2.8)	0.854
Diaphragmatic hernia	6	(1.7)	22	(0.9)	15	(0.8)	<5	(<2.8)	0.476
Total LRTI episodes (≤ 8yr)									
None	211	(59.4)	1470	(60.0)	1048	(56.7)	104	(59.1)	0.120
Tertile 1 (1 episode)	38	(10.7)	286	(11.7)	227	(12.3)	22	(12.5)	0.889
Tertile 2 (2–3 episodes)	30	(8.5)	165	(6.7)	153	(8.3)	14	(8.0)	0.889
Tertile 3 (4–66 episodes)	22	(6.2)	131	(5.3)	115	(6.2)	10	(5.7)	0.889
Hospital admission (≤ 8yr)									
Any cause	6	(1.7)	83	(3.4)	72	(3.9)	7	(4.0)	0.189
ICU admission	7	(2.0)	45	(1.8)	44	(2.4)	<5	(<2.8)	0.643
NICU admission	19	(5.4)	129	(5.3)	71	(3.8)	11	(6.3)	0.118
	Confirmed GP or HES diagnosis of asthma								
	Persistently high (n =71)		**Average (n = 554)**		**Below average (n = 497)**		**Persistently low (n =71)**		χ^2
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**p value**
BTS asthma ladder treatment									
No treatment	14	(19.7)	77	(13.9)	58	(11.7)	8	(11.3)	0.471
SABA only	17	(23.9)	106	(19.1)	110	(22.1)	12	(16.9)	0.397
ICS	32	(45.1)	305	(55.1)	266	(53.5)	33	(46.5)	0.988
Montelukast	<5	(<7.0)	10	(1.8)	8	(1.6)	<5	(<7.0)	**0.007**
ICS/LABA	7	(9.9)	56	(10.1)	55	(11.1)	17	(23.9)	**0.004**
Additional treatment									
Oral steroids	17	(23.9)	170	(30.7)	159	(32.0)	33	(46.5)	**0.013**
Nebuliser use	<5	(<7.0)	24	(4.3)	36	(7.2)	8	(11.3)	**0.024**

trajectories. 33% of those with asthma in subnormal trajectories had never received maintenance medication.

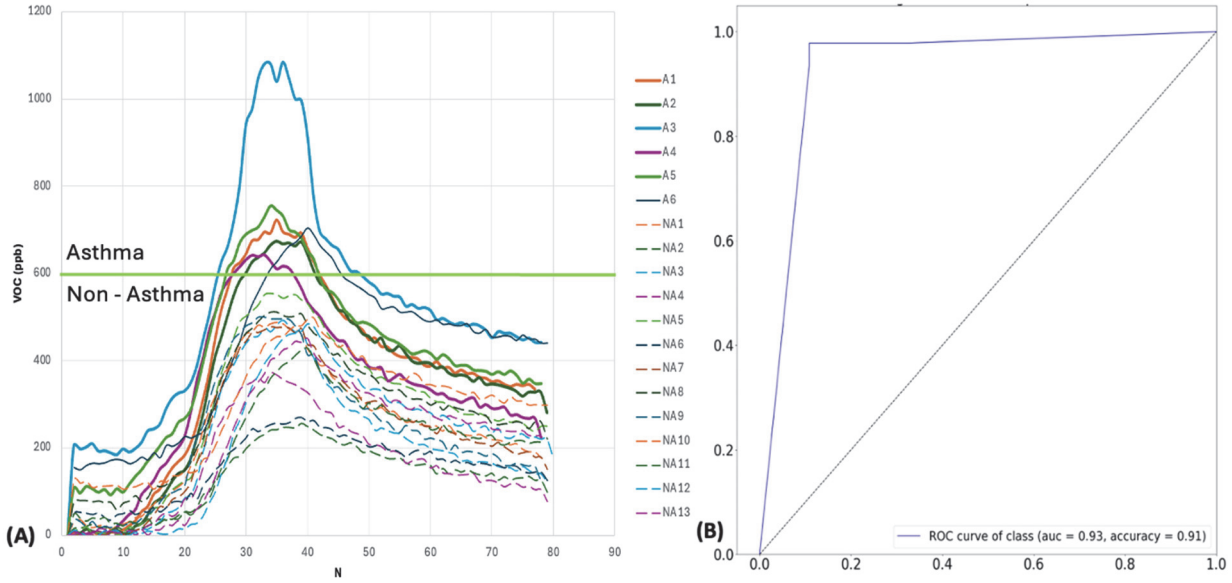
Conclusions This study confirms that asthma, evidenced by clinical diagnosis, plays a key role in subnormal lung function trajectories. Furthermore, a third of asthma patients in these groups remain untreated. Optimising their treatment could improve trajectories and attenuate the associated risk of future morbidity and mortality. Finally, most members of the PL trajectory group lack a clinical respiratory diagnosis. Future work should seek to better characterise this group with further assessment of lung structure and function, to establish if low lung function trajectory results from undiagnosed respiratory disease, or other potentially modifiable risk factors.

S86 REVOLUTIONIZING PAEDIATRIC ASTHMA DIAGNOSIS WITH A POINT-OF-CARE BREATH TEST UTILIZING DEEP NEURAL NETWORKS AND VOLATILE ORGANIC COMPOUNDS

H Ahmed, V Higgs, JA Flavier. *Applied Nanodetectors Ltd, London, UK*

10.1136/thorax-2024-BTSabstracts.92

Introduction and Objectives Diagnosing asthma in children remains a significant clinical challenge due to the absence of a definitive gold-standard test. Consequently, both over-diagnosis and under-diagnosis of asthma are common in paediatric populations. Current diagnostic methods are very challenging for children, delaying accurate diagnosis. Our innovative initiative



Abstract S86 Figure 1 A) VOCs analysis graph B) ROC of DNN results

seeks to transform paediatric asthma diagnosis by developing a Point-of-Care (POC) breath test that integrates deep neural networks (DNN) and volatile organic compounds (VOCs) for early detection. Our test requires only relaxed breathing, making it suitable for children of all ages. An end-tidal breath collection method was used to maximise the concentration of VOC biomarkers. The VOC sensors were calibrated using chemical standards to ensure all sensors functioned correctly.

Methods We collected VOC biomarkers, capnographic waveforms, and clinical lung function parameters from 22 children aged 6–16 years, including 9 asthmatic (GP diagnosed) and 13 without any respiratory conditions. The study involved obtaining end-tidal breath samples, analysed using nanosensors to measure 13 distinct parameters. The properties of VOC waveforms were utilised to refine the learning process of the DNN model.[1] We employed a 13-layer multiclass classification DNN model, trained with a 60%:30%:10% split for training, validation, and testing, incorporating biomarkers and lung function parameters, adopting a big data approach.

Results Our DNN model demonstrated excellent performance, achieving 93% accuracy and Area Under the Curve (AUC) of 0.95, highlighting its ability to identify individuals with asthma accurately (figure 1B). We found that children with asthma had higher VOC biomarkers than healthy controls (figure 1A). This is consistent with our previous study on adults with asthma.[1]

Conclusion This achievement underscores VOCs and carbon dioxide (CO2) 's significant role in diagnosing paediatric asthma. The DNN model proved adept at accurately distinguishing asthma patients from healthy controls. These preliminary findings validate our test as an innovative diagnostic tool for asthma in children. Moreover, its simplicity and minimal patient cooperation requirements suggest potential reliability for monitoring asthma control in young children.

REFERENCE

1. V Higgs, *et al. Am J Respir Crit Care Med* 2024;**209**:A1380.

S87 CONTACTLESS AND AUTOMATED MONITORING TO STUDY CHANGES IN NOCTURNAL PARAMETERS BEFORE AND AFTER ASTHMA ATTACKS IN CHILDREN

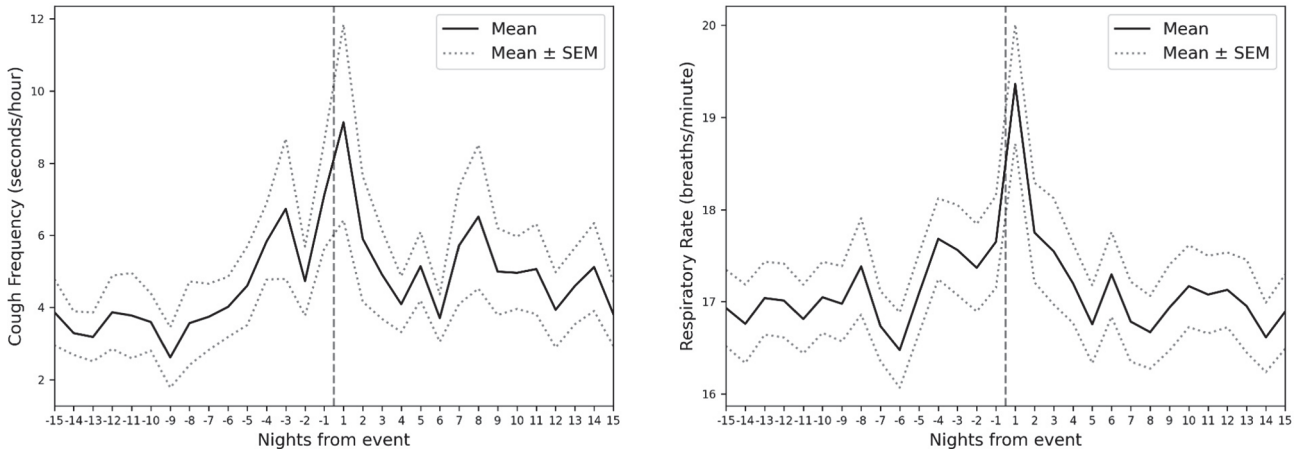
[1]P Nagakumar, [2]W Do, [2]O Carr, [2]M Udani, [3]L Fleming, [4]S Saglani. *[1]Birmingham Women's and Children's NHS Foundation Trust, Birmingham, UK; [2]Albus Health, Oxford, UK; [3]Royal Brompton Hospital, London, UK; [4]Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.93

Background Early detection of asthma attacks in children is limited by recognition and reporting of symptoms by the carer or the child. Moreover, the time taken for resolution of symptoms post attack in children is unknown. A contactless, bedside device which continuously monitors respiratory parameters at night may help early detection and identify resolution of an attack. We hypothesised that the Albus Home device can be used to detect changes in cough and respiratory rate pre and post attacks in children.

Methods Children aged 6–16 years with asthma were recruited into the Childhood Home Asthma Monitoring Study (CHAMP). Participants with >3 months data meeting the quality control criteria were included. Changes in nocturnal cough frequency and respiratory rate were analysed as the daily aggregate 15 days before, and after, an asthma attack. Asthma attack was defined as a course of systemic steroids taken for asthma, and the attack day (dotted vertical lines) defined as the first day of starting steroids. Steroid courses which occurred within 3 weeks of each other were treated as one event, with the first pre-attack and last post-attack period included in analysis.

Results Forty-seven attacks from 28 children (18 males) with a mean (SD) age 10.5 years (±2.7) were analysed. There was increased nocturnal cough frequency from 5 days before the attack, which improved post attack but did not reach baseline by day 15 (figure 1a). The nightly respiratory rate (RR) increased from 5 days prior to the attack but normalised by day 7 post attack (figure 1b).



Abstract S87 Figure 1 a) Mean and SEM of cough frequency. b) Men and SEM of respiratory rate.

Conclusion The Albus device detected increased respiratory symptoms early, providing a potential therapeutic window to prevent asthma attacks in children and provides insight to the time taken for resolution of the symptoms.

S88 PARS STUDY: PAEDIATRIC ADVANCED RESPIRATORY SERVICE STUDY- AN OBSERVATIONAL DIAGNOSTIC FEASIBILITY STUDY OF NOVEL ACCELEROMETER-BASED RESPIRATORY SENSOR FOR SLEEP DIAGNOSTICS

[1,2]H Vennard, [2]E Buchan, [2]N Gibson, [2]P Davies, [1]DJ Lowe, [3]B Henderson, [3]O Meredith, [3]J Miller, [3]C Cowan, [1,2]RL Langley. *[1]College of Medicine Veterinary and Life Sciences, University of Glasgow, Glasgow, UK; [2]Department of Paediatric Respiratory and Sleep Medicine, Royal Hospital for Children, Glasgow, UK; [3]PneumoWave Ltd, Glasgow, UK*

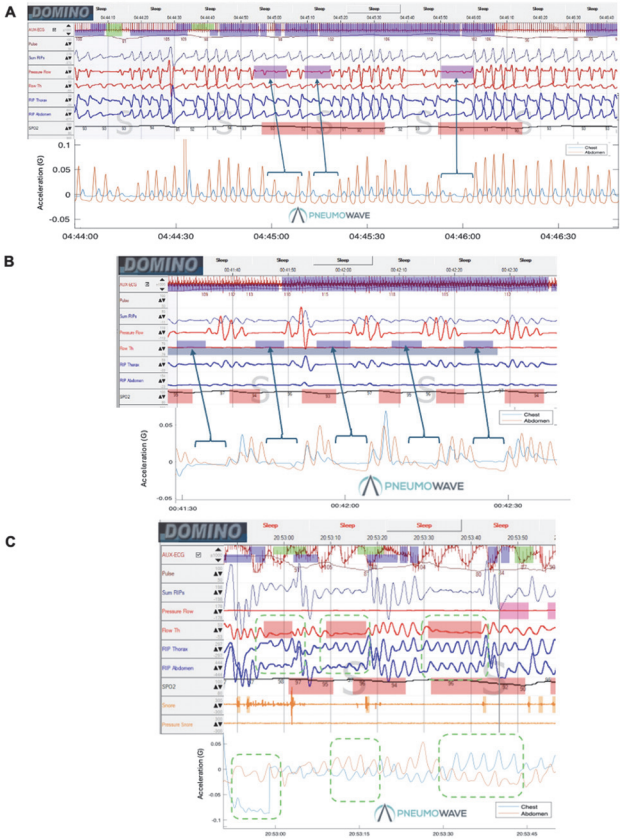
10.1136/thorax-2024-BTSabstracts.94

Introduction Paediatric sleep diagnostics uses complex multi-channel tests in specialised centres, limiting access, delaying diagnosis and management. Children with neurodevelopmental disorders, at increased risk of sleep disordered breathing (SDB), often find tolerating standard diagnostic equipment challenging. Novel wearable technology has the potential to enhance diagnostic accuracy in paediatric sleep diagnostics.

Objectives Determine the feasibility of collecting respiratory rate/effort data from a novel, accelerometer-based respiratory sensor, Pneumowave (Pneumowave Ltd, UK) in paediatric patients attending for cardiorespiratory sleep studies at the Royal Hospital for Children, Glasgow.

Methods Pre-clinical work captured clinically relevant extremes of respiratory parameters using a pediatric mannequin and mechanical ventilation. Biosensor data was compared to ventilator-measured parameters. During the clinical phase, paediatric patients attending for cardio-respiratory sleep study (CRSS) wore a chest and abdominal biosensor, in addition to standard RIP-bands. Biosensor data was compared to CRSS data. Accelerometer data is transferred via Bluetooth to a mobile device and algorithms are applied.

Results A strong positive statistically significant correlation was observed between Pneumowave respiratory rate (RR) and ventilator frequency (6–80bpm), R= 0.9999, R squared= 0.9999, P<0.0001. 50 paediatric patients have been recruited from 7 weeks to 16 years of age, typically developing and those with comorbidities. Comparing chest biosensor respiratory rate (RR) with RIP thorax and abdominal biosensor RR with RIP abdomen for 6 CRSS patients data gave Bland-Altman bias of -0.03150, 95% CI (-2.204 to 2.141) and -0.05422, 95% CI (-1.852 to1.744) respectively. Of 867 respiratory events (obstructive apnoea/hypopnea, central apnoea/hypopnea) in 13 patients, [3]99% of each event was identified by biosensor data (figure 1). The Pneumowave biosensors were tolerated by 100% of patients.



Abstract S88 Figure 1 Respiratory events identified in Pneumowave data. Cardiorespiratory sleep study data shown on DOMINO™ software with Pneumowave data below shown on MATLAB (A) Central hypopnea, 12 year old with Emery- Dreifuss muscular dystrophy (B) Central apnoea, periodic breathing in a 9-week-old infant (C) Obstructive apnoea in a 4 year old with Pierre Robin sequence

Conclusion The Pneumowave biosensor can accurately measure respiratory pattern across a range of paediatric breathing frequencies in ventilated mannequins. Initial analysis shows the feasibility of collecting respiratory data from chest and abdominal biosensors, Pneumowave measured RR is within target accuracy of +/-2bpm and data suggests high sensitivity for respiratory event identification. There is potential for biosensor data to be used in combination with other sleep measurements to improve diagnostic accuracy and support clinical decision making.

S89 COMPLICATIONS OF PAEDIATRIC FLEXIBLE BRONCHOSCOPY WITH 6-LOBE BRONCHOALVEOLAR LAVAGE PERFORMED UNDER GENERAL ANAESTHESIA

[1]M van Veelen, [1]CWA Jolley, [1]K Bakewell, [2]R Kumar, [1]FJ Gilchrist. *[1]Academic Department of Child Health, Staffordshire Children's Hospital, Stoke-on-Trent, UK*; *[2]Department of Paediatric Anaesthesia, Staffordshire Children's Hospital, Stoke-on-Trent, UK*

10.1136/thorax-2024-BTSabstracts.95

Background The microbiological yield from paediatric flexible bronchoscopy is increased if bronchoalveolar lavage (BAL) samples are obtained from all six lobes (including lingula) compared to the historical practice of only sampling one or two lobes. However, there is a paucity of evidence regarding the complications associated with this practice.
Aim To undertake a prospective review to identify the intra-procedure complications in children undergoing flexible bronchoscopy with 6-lobe lavage and a retrospective review to identify the rates of delayed discharge and readmission.
Methods The retrospective review analysed consecutive paediatric flexible bronchoscopies at a single tertiary paediatric centre from October 2014 to August 2023 identifying discharge delays and readmissions. The prospective review analysed consecutive procedures from August 2023 to May 2024 and collected data on intra-procedure and immediate post-procedure desaturations, laryngospasm, bronchospasm/wheeze, tachypnoea, pyrexia, hypothermia and vomiting. All children underwent flexible bronchoscopy under general anaesthesia (GA) with a single aliquot BAL obtained from all 6-lobes. When cytology was required, the BAL from the right middle or most affected lobe was changed to triple aliquot.
Results 582 procedures performed on 496 children were analysed. This included 502 in the retrospective review and 80 in the prospective review. 217 children had recurrent protracted bacterial bronchitis and 138 children had cystic fibrosis (CF). The mean (SD) age at time of FB-BAL was 4.5 (4.0) years. 478 of the procedures were day-cases and 104 were performed at the beginning of an elective admission for intravenous antibiotics. 3/80 (4%) children in the prospective group experienced a significant (<90%) desaturation requiring anaesthetic intervention although all of these were discharged home as planned. 9/80 (11%) experienced an immediate post-procedure complication such as desaturation, pyrexia, tachypnoea, wheeze or vomiting. 45/582 (8%) had their discharge delayed overnight. A further 15/582 (3%) children re-attended hospital within 48 hours of discharge.
Conclusion Flexible bronchoscopy with bronchoalveolar lavage in all six lobes under GA in children is a safe procedure with low incidence of major complications when performed by expert clinicians. Parents should be advised of an 8% risk of delayed overnight discharge.

'A Tale of Two Biologics' – Monoclonal antibodies in COPD and asthma

S90 FRONTIER-3: A RANDOMIZED, PHASE 2A STUDY TO EVALUATE THE EFFICACY AND SAFETY OF TOZORAKIMAB (AN ANTI-INTERLEUKIN-33 MONOCLONAL ANTIBODY) IN EARLY-ONSET ASTHMA

[1]J Corren, [2]F Reid, [3]R Moate, [4]E Jimenez, [5]MW Sadiq, [6]A Williams, [7]M Rytelewski, [8]D Muthas, [9]D Brooks, [10]E Lindqvist, [2]C Kell, [11]A Platt, [12]MG Belvisi, [2]HC Pandya. *[1]David Geffen School of Medicine, University of California, Los Angeles, CA, USA*; *[2]Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK*; *[3]Respiratory and Immunology, Biometrics and Statistical Innovation, Late Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK*; *[4]Clinical Pharmacology and Quantitative Pharmacology, Clinical Pharmacology and Safety Sciences, RandD, AstraZeneca, Barcelona, Spain*; *[5]Clinical Pharmacology and Quantitative Pharmacology, Clinical Pharmacology and Safety Sciences, RandD, AstraZeneca, Gothenburg, Sweden*; *[6]Integrated Bioanalysis, Clinical Pharmacology and Safety Sciences, RandD, AstraZeneca, Cambridge, UK*; *[7]Translational Science and Experimental Medicine, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gaithersburg, MD, USA*; *[8]Translational Science and Experimental Medicine, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden*; *[9]Patient Safety Pharmacovigilance, AstraZeneca, Gaithersburg, MD, USA*; *[10]Early Respiratory and Immunology, Clinical Development, Biopharmaceuticals RandD, AstraZeneca, Mölndal, Sweden*; *[11]Translational Science and Experimental Medicine, Respiratory and Immunology, BioPharmaceuticals RandD, Cambridge, UK*; *[12]Research and Early Development, Respiratory and Immunology, Biopharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden*

10.1136/thorax-2024-BTSabstracts.96

Introduction Genetic and clinical evidence has shown that interleukin-33 plays a key role in the susceptibility and progression of asthma. The phase 2a FRONTIER-3 study (NCT04570657) investigated the effect of tozorakimab on lung function in patients with moderate-to-severe uncontrolled asthma with early-onset disease (asthma diagnosed before 25 years of age).
Methods Patients were randomized 1:1:1 to receive subcutaneous injections of tozorakimab 600 mg or 300 mg or placebo every 4 weeks for 12 weeks (four doses total). The primary endpoint was the change from baseline to week 16 in pre-BD FEV_1 measured in-clinic. Other exploratory endpoints included home spirometry, rescue medication use, pharmacodynamic biomarkers and safety.
Results The FRONTIER-3 ITT population comprised 235 adults with moderate-to-severe uncontrolled asthma. The median time since asthma diagnosis was 34 years, and most patients (76.2%) had a baseline BEC of < 300 cells/µL.

Tozorakimab did not significantly improve in-clinic measurements of pre-BD FEV_1 compared with placebo at week 16 in the ITT population. However, in a pre-specified analysis, in-clinic pre-BD FEV_1 was numerically improved compared with placebo in patients with $\geq$ 2 exacerbations in the previous 12 months, most notably for the tozorakimab 600 mg treatment arm (**table 1**). Numerical improvements were also seen for FEV_1 and peak expiratory flow measured at home, and rescue medication use compared with placebo at week 16 in the ITT population, with a greater effect observed in the tozorakimab 600 mg dose for home FEV_1 and peak expiratory flow in patients with $\geq$ 2 exacerbations in the previous 12 months (**table 1**). Results suggest tozorakimab had numerical benefits for home spirometry and rescue medication use endpoints across the BEC strata. Biomarker data showed that tozorakimab significantly reduced type 2 inflammatory biomarker levels, including

fractional exhaled nitric oxide and BEC. Tozorakimab was well-tolerated.

Conclusions The FRONTIER-3 results suggest that tozorakimab improved lung function in patients with early-onset asthma and mostly BEC of < 300 cells/μL, representing a population who are potentially less responsive to currently approved biologics. A trend towards greater numerical improvements was observed for the tozorakimab 600 mg dose compared with the 300 mg dose for several endpoints.

Abstract S90 Table 1 Efficacy endpoints in the ITT population and patients with at least two exacerbations in previous 12 months

Endpoint	Treatment group	n	LS mean (SE)	Difference vs placebo (80% CI; one-sided *p* value)
ITT population				
Change from baseline in pre-BD FEV_1 in clinic at week 16, mL	Tozorakimab 600 mg	77	116 (48)	4 (−71, 79; $p = 0.473$)
	Tozorakimab 300 mg	76	148 (47)	36 (−38, 111; $p = 0.267$)
	Placebo	81	112 (46)	–
Change from baseline in mean FEV_1 at home at week 16, mL	Tozorakimab 600 mg	73	104 (39)	105 (43, 166)
	Tozorakimab 300 mg	72	12 (38)	12 (−50, 74)
	Placebo	76	0 (38)	–
Change from baseline in mean PEF at home at week 16, L/min	Tozorakimab 600 mg	73	9.416 (5.996)	7.957 (−1.976, 17.890)
	Tozorakimab 300 mg	72	−1.401 (6.003)	−2.860 (−12.875, 7.156)
	Placebo	76	1.459 (5.809)	–
Change from baseline in mean daily rescue medication use at week 16, puffs/day	Tozorakimab 600 mg	77	−1.474 (0.241)	−0.542 (−0.936, −0.147)
	Tozorakimab 300 mg	76	−1.146 (0.242)	−0.214 (−0.611, 0.184)
	Placebo	81	−0.932 (0.233)	–
Patients with at least two exacerbations in the previous 12 months				
Change from baseline in pre-BD FEV_1 in clinic at week 16, mL	Tozorakimab 600 mg	30	194 (65)	212 (102, 322)
	Tozorakimab 300 mg	31	59 (67)	77 (−34, 187)
	Placebo	29	−18 (69)	–
Change from baseline in mean FEV_1 at home at week 16, mL	Tozorakimab 600 mg	29	128 (72)	146 (21, 270)
	Tozorakimab 300 mg	29	43 (73)	61 (−65, 187)
	Placebo	28	−18 (75)	–
Change from baseline in mean PEF at home at week 16, L/min	Tozorakimab 600 mg	29	22.080 (9.932)	24.493 (7.261, 41.724)
	Tozorakimab 300 mg	29	11.656 (10.154)	14.069 (−3.578, 31.717)
	Placebo	28	−2.413 (10.422)	–
Change from baseline in mean daily rescue medication use at week 16, puffs/day	Tozorakimab 600 mg	30	−1.622 (0.412)	−0.461 (−1.186, 0.264)
	Tozorakimab 300 mg	30	−1.646 (0.425)	−0.486 (−1.22, 0.248)
	Placebo	29	−1.161 (0.433)	–
Patients with one exacerbation in the previous 12 months				
Change from baseline in pre-BD FEV_1 in clinic at week 16, mL	Tozorakimab 600 mg	47	42 (70)	−123 (−224, −22)
	Tozorakimab 300 mg	45	188 (65)	23 (−78, 124)
	Placebo	52	165 (62)	–
Change from baseline in mean FEV_1 at home at week 16, mL	Tozorakimab 600 mg	44	52 (53)	60 (−29, 150)
	Tozorakimab 300 mg	43	−16 (54)	−8 (−99, 84)
	Placebo	48	−9 (51)	–
Change from baseline in mean PEF at home at week 16, L/min	Tozorakimab 600 mg	44	−1.440 (7.491)	-1.586 (-13.570, 10.398)
	Tozorakimab 300 mg	43	−10.972 (7.440)	-11.118 (-23.380, 1.143)
	Placebo	48	0.146 (7.017)	–
Change from baseline in mean daily rescue medication use at week 16, puffs/day	Tozorakimab 600 mg	47	−1.265 (0.274)	−0.441 (−0.845, -0.037)
	Tozorakimab 300 mg	46	−0.871 (0.260)	−0.047 (−0.449, 0.355)
	Placebo	52	−0.824 (0.246)	–

BD, bronchodilator; CI, confidence interval; FEV_1, forced expiratory volume in 1 second; ITT, intent-to-treat; LS, least-squares; PEF, peak expiratory flow; SE, standard error.

S91 TOZORAKIMAB (ANTI-IL-33 MAB) REDUCES MUCUS PLUGGING IN COPD: AN IMAGING SUB-STUDY IN THE FRONTIER-4 PHASE 2A COPD TRIAL

[1]LH Nordenmark, [2]P Guller, [3]F Reid, [3]S Doffman, [2]U Seppälä, [4]I Psallidas, [5]R Moate, [5]R Smith, [6]J Kiraga, [4]C Kell, [7]MG Belvisi, [3]HC Pandya, [8]D Singh. *[1]Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Oslo, Norway; [2]Clinical Development, Research and Early Development, Respiratory and Immunology, AstraZeneca, Gothenburg, Sweden; [3]Clinical Development, Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [4]Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [5]Early Biostatistics and Statistical Innovation, Data Science and AI, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [6]Early Phase Clinical Operations, Respiratory and Immunology, Biopharmaceuticals RandD, AstraZeneca, Warsaw, Poland; [7]Research and Early Development, Respiratory and Immunology, Biopharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden; [8]Medicines Evaluation Unit, Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.97

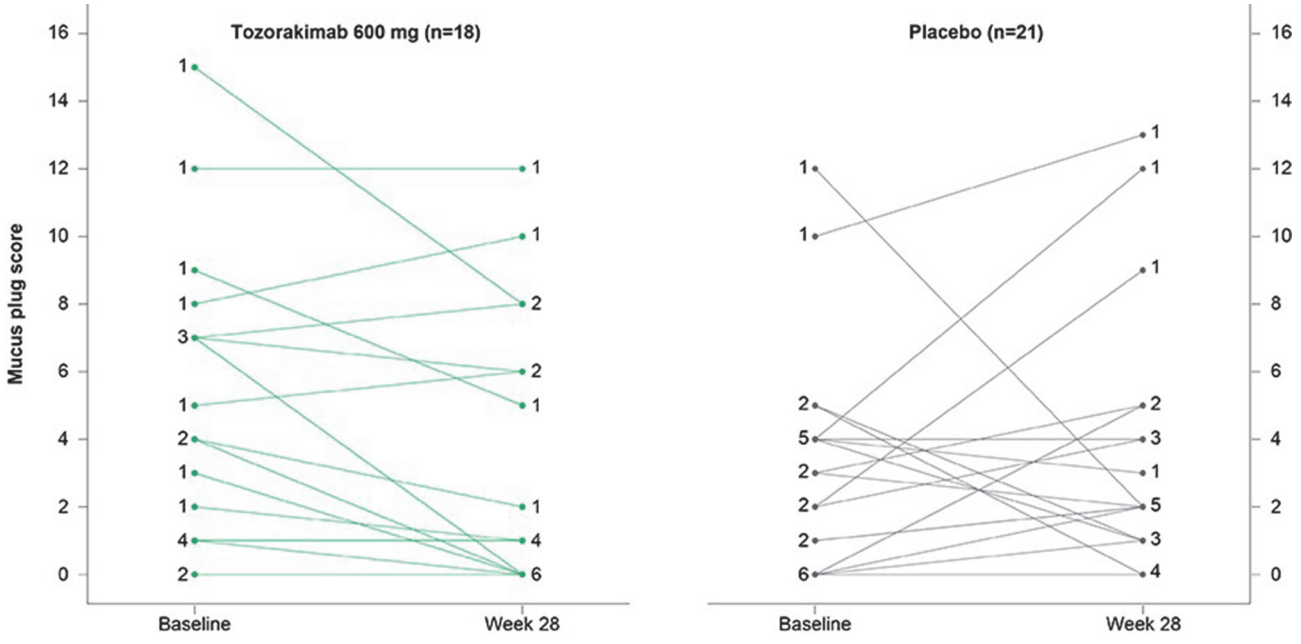
Introduction Mucus plugging in COPD is associated with airflow obstruction, poor health-related quality of life and high all-cause mortality. Preclinical studies have shown that tozorakimab reduces mucus hypersecretion in cultured COPD epithelial cells.

Objective Assess the impact of tozorakimab on mucus plugs using computed tomography (CT) imaging.

Methods The FRONTIER-4 phase 2 study (NCT04631016) investigated tozorakimab in COPD patients with chronic bronchitis on dual- or triple-inhaled maintenance therapy. Patients were randomized 1:1 to receive tozorakimab 600 mg or placebo s.c. Q4W. In an exploratory sub-study, mucus plugging was assessed in lung segments by CT imaging at baseline and week 28, in patients receiving tozorakimab (n=18) or placebo (n=21).

Results Mucus plug score was reduced in patients receiving tozorakimab versus placebo (LS mean difference: –1.5; 80% CI: –3.0, 0.0; p=0.097). This result was further supported in a post-hoc non-parametric analysis stratified by baseline score (p=0.0312; figure 1).

Conclusion This exploratory study offers the first insights into the effect of tozorakimab on mucus plugging in COPD, using CT imaging. Ongoing phase 3 studies (NCT05166889, NCT05158387, NCT06040086) provide further opportunity



Baseline mucus score category	Tozorakimab, n	Placebo, n
Zero	2	6
Low (1–3)	6	6
High (≥4)	10	9

Change in mucus score in the imaging sub-study from baseline to week 28 for tozorakimab (n=18) and placebo (n=21). Each line may represent more than one patient (annotated numbers indicate the number of patients at each data point). Mean baseline mucus scores were 4.4 and 3.1 for tozorakimab and placebo, respectively.
Nominal one-sided p=0.0312. Change from baseline in mucus score reduction was compared between treatment groups using a Van-Elteren test stratified for baseline mucus score subgroup (zero [0], low [1–3] and high [4–18]). Number of patients with a CT scan at both baseline and week 28 in each baseline mucus score subgroup are included in the table above.

Abstract S91 Figure 1

to investigate the effect of tozorakimab on mucus plugging and the impact on symptoms, quality of life and lung function.

S92 FRONTIER-4: A PHASE 2A STUDY TO INVESTIGATE TOZORAKIMAB (ANTI-IL-33 MAB) IN COPD

[1]D Singh, [2]P Guller, [3]F Reid, [3]S Doffman, [2]U Seppälä, [4]I Psallidas, [5]R Moate, [5]R Smith, [6]J Kiraga, [7]E Jimenez, [8]D Brooks, [9]A Kelly, [10]MW Sadiq, [4]C Kell, [11]MG Belvisi, [3]HC Pandya. *[1]Medicines Evaluation Unit, Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [2]Clinical Development, Research and Early Development, Respiratory and Immunology, AstraZeneca, Gothenburg, Sweden; [3]Clinical Development, Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [4]Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [5]Early Biostatistics and Statistical Innovation, Data Science and AI, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [6]Early Phase Clinical Operations, Respiratory and Immunology, Biopharmaceuticals RandD, AstraZeneca, Warsaw, Poland; [7]Clinical Pharmacology and Quantitative Pharmacology, Clinical Pharmacology and Safety Sciences, RandD, AstraZeneca, Barcelona, Spain; [8]Office of Chief Medical Officer, Patient Safety Pharmacovigilance, AstraZeneca, Gaithersburg, MD, USA; [9]Translational Science and Experimental Medicine, Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [10]Clinical Pharmacology and Quantitative Pharmacology, Clinical Pharmacology and Safety Sciences, RandD, AstraZeneca, Gothenburg, Sweden; [11]Research and Early Development, Respiratory and Immunology, Biopharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden*

10.1136/thorax-2024-BTSabstracts.98

Introduction FRONTIER-4 (NCT04631016) examined the effect of tozorakimab on lung function in COPD patients with chronic bronchitis on dual- or triple-inhaled maintenance therapy.

Methods Patients were randomized 1:1 to receive tozorakimab 600 mg or placebo (PBO) s.c. Q4W. The primary endpoint was change in pre-BD FEV_1 from baseline to week 12. Secondary outcomes included post-BD FEV_1, time-to-first COPD-CompEx event and safety.

Results The ITT population included 135 patients (tozorakimab, n=67; PBO, n=68). Baseline mean (SD)% predicted pre-BD FEV_1 was 44.0% (15.2) for tozorakimab; 45.2% (12.9) for PBO. Former smokers comprised 64.2% (n=43) for tozorakimab; 52.9% (n=36) for PBO. Most patients (>88%) had baseline blood eosinophil counts (BEC) <300 cells/μL. Although the primary endpoint was not met, at week 12 tozorakimab numerically improved pre-BD FEV_1 vs PBO (LS mean: 24mL [80% CI −15, 63] p=0.216). Greater effects were observed in patients with ≥2 exacerbations in the prior 12 months (LS mean: 69mL [80% CI 9, 130] n=59) and in those with BEC ≥150 cells/μL (LS mean: 82mL [80% CI 26, 138] n=62). Tozorakimab improved post-BD FEV_1 vs PBO at week 12 (LS mean: 67mL [80% CI 17, 116] p=0.044). In a time-to-event analysis, tozorakimab numerically reduced risk of COPDCompEx events vs PBO at week 28 (HR=0.79 [80% CI 0.57, 1.11] p=0.186), with greater effect in patients with ≥2 exacerbations in the prior 12 months (HR=0.61 [80% CI 0.37, 1.00]). Numerical improvements in all endpoints presented here were seen in both former and current smokers. Tozorakimab was well tolerated.

Conclusion Tozorakimab may improve lung function and reduce COPD exacerbations, especially in patients with frequent exacerbation history.

S93 PHASE 3 NOTUS TRIAL: DUPILUMAB EFFICACY AND SAFETY IN PATIENTS WITH MODERATE-TO-SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND TYPE 2 INFLAMMATION

[1]SP Bhatt, [2]KF Rabe, [3]NA Hanania, [4]CF Vogelmeier, [5]M Bafadhel, [6]SA Christenson, [7]A Papi, [8]D Singh, [9]E Laws, [10]P Dakin, [10]J Maloney, [9]X Lu, [9]D Bauer, [10]A Bansal, [11]RM Abdulai, [11]LB Robinson. *[1]University of Alabama at Birmingham, Birmingham, Alabama, USA; [2]LungenClinic Grosshansdorf (member of the German Center for Lung Research [DZL]), Airway Research Center North (ARCN), Grosshansdorf, Germany; [3]Baylor College of Medicine, Houston, Texas, USA; [4]University of Marburg, German Center for Lung Research, Marburg, Germany; [5]King's Centre for Lung Health, King's College London, London, UK; [6]University of California San Francisco, San Francisco, California, USA; [7]Respiratory Medicine Unit, University of Ferrara, S. Anna University Hospital, Ferrara, Italy; [8]Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [9]Sanofi, Bridgewater, New Jersey, USA; [10]Regeneron Pharmaceuticals Inc., Tarrytown, New York, USA; [11]Sanofi, Cambridge, Massachusetts, USA*

10.1136/thorax-2024-BTSabstracts.99

Introduction Patients with type 2 inflammation in COPD suffer from frequent exacerbations and high symptom burden. Dupilumab, a fully human monoclonal antibody, blocks the shared receptor component of interleukin (IL)-4 and IL-13, key and central drivers of type 2 inflammation. The second pivotal phase 3 NOTUS (NCT04456673) trial aimed to evaluate the efficacy and safety of dupilumab in patients with COPD and type 2 inflammation.

Methods The NOTUS trial was a 52-week phase 3, randomized, double-blind, placebo-controlled trial of efficacy and safety of subcutaneous add-on dupilumab 300 mg q2w or placebo. Enrolled patients had COPD with moderate-to-severe airflow limitation and type 2 inflammation (blood eosinophils ≥300 cells/μL at screening) and were on triple therapy with inhaled corticosteroids (ICS), long-acting β_2-agonists (LABA), and long-acting muscarinic antagonists (LAMA) (or LABA/LAMA if ICS was contraindicated). Primary analysis was performed on interim data, with 92% information fraction for the primary endpoint (annualized rate of moderate or severe exacerbations). Secondary endpoints included change from baseline in pre-bronchodilator forced expiratory volume in 1 second (FEV_1) at Weeks 12 and 52, change from baseline in St George's Respiratory Questionnaire (SGRQ) total score, exacerbation-associated annualized total systemic corticosteroid (SCS) courses, and safety.

Results Participants (N=935) were randomized to placebo (n=465) or dupilumab (n=470). Compared with placebo, dupilumab reduced the annualized rate of moderate or severe exacerbations by 34% (relative risk vs placebo [95% confidence interval {CI}] 0.66 [0.54–0.82], P<0.001). Over the 52-week period, adjusted annualized total exacerbation-associated SCS courses were reduced by 39% in patients receiving dupilumab (relative risk vs placebo [95% CI] 0.61 [0.47–0.80], nominal P<0.001). At Week 12, dupilumab significantly increased pre-BD FEV_1 (least-squares [LS] mean difference 82 mL, P<0.001) compared with placebo, and this was maintained at Week 52 (LS mean difference 62 mL, P=0.018). Dupilumab improved SGRQ total score at Week 52 (LS mean difference −3.37, nominal P=0.007) vs placebo. Safety findings were similar to BOREAS and treatment-emergent adverse events were balanced between groups.

Conclusions Dupilumab significantly reduced moderate or severe exacerbations, decreased SCS exposure, and improved lung function, in patients with COPD and type 2 inflammation in 2 phase 3 trials.

S94 DUPILUMAB IMPROVES QUALITY OF LIFE IN PATIENTS WITH MODERATE-TO-SEVERE COPD AND TYPE 2 INFLAMMATION IN PHASE 3 BOREAS TRIAL

[1]A Papi, [2]SP Bhatt, [3]KF Rabe, [4]NA Hanania, [5]CF Vogelmeier, [6]M Bafadhel, [7]SA Christenson, [8]D Singh, [9]E Laws, [10]J Maloney, [9]X Lu, [9]D Bauer, [10]A Bansal, [11]LB Robinson, [11]RM Abdulai. *[1]University of Ferrara, Ferrara, Italy; [2]University of Alabama at Birmingham, Birmingham, AL, USA; [3]LungenClinic Grosshansdorf and Christian Albrechts University of Kiel, Airway Research Center North, German Center for Lung Research, Grosshansdorf, Germany; [4]Baylor College of Medicine, Houston, TX, USA; [5]University of Marburg, German Center for Lung Research (DZL), Marburg, Germany; [6]King's Centre for Lung Health, King's College London, London, UK; [7]University of California San Francisco, San Francisco, CA, USA; [8]Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [9]Sanofi, Bridgewater, New Jersey, USA; [10]Regeneron Pharmaceuticals Inc., Tarrytown, New York, USA; [11]Sanofi, Cambridge, Massachusetts, USA*

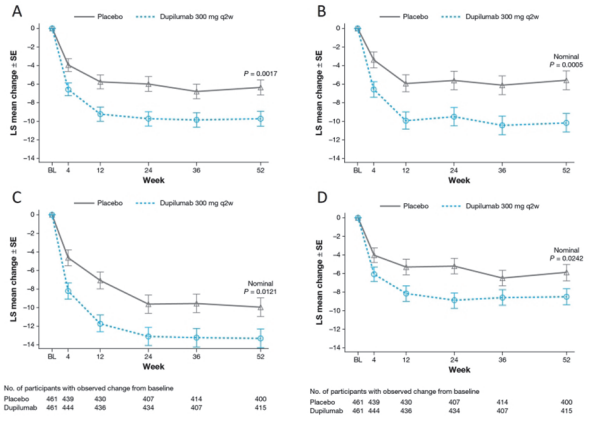
10.1136/thorax-2024-BTSabstracts.100

Introduction and Objectives IL-4 and IL-13 are two key and central drivers of type 2 inflammation. Dupilumab, a fully human monoclonal antibody that blocks the shared receptor component for IL-4 and IL-13, improved symptoms and health-related quality of life in patients with COPD with type 2 inflammation in the phase 3 BOREAS trial (NCT03930732). This analysis evaluates the effect of dupilumab on quality of life using the St. George's Respiratory Questionnaire (SGRQ).

Methods In BOREAS, patients with COPD with moderate-to-severe airflow limitation and type 2 inflammation (screening blood eosinophils ≥300 cells/μL), on triple therapy, received add-on dupilumab 300mg q2w or placebo for 52 weeks. SGRQ total and domain scores (activity, symptoms, impacts) were assessed at baseline (BL) up to Week 52.

Results In the ITT population, SGRQ total score change from baseline at Week 52, for dupilumab (n=468) vs placebo (n=471), was significantly greater (least squares [LS] mean difference −3.363; P=0.0017). Dupilumab led to early improvements in all SGRQ domains vs placebo that were sustained up to Week 52 (**figure 1**). Dupilumab demonstrated an acceptable safety profile in the ITT population.

Conclusions Dupilumab improved quality of life across all SGRQ domains (activity, symptoms, impacts) and total score in patients with moderate-to-severe COPD and type 2 inflammation on triple inhaler therapy in BOREAS.



Abstract S94 Figure 1 LS mean change over time for SGRQ: (A) total, (B) activity, (C) symptoms, (D) impacts.

S95 EFFECT OF DUPILUMAB TREATMENT ON MUCUS PLUGGING AND MUCUS VOLUME IN TYPE 2 ASTHMA: THE PHASE 4 VESTIGE TRIAL

[1]C Porsbjerg, [2,3]EM Dunican, [4]NL Lugogo, [5]M Castro, [6]A Papi, [7]V Backer, [8]CE Brightling, [9]A Bourdin, [10]JC Virchow, [11]M Zhang, [12]X Soler, [11]PJ Rowe, [12]Y Deniz, [13]L de Prado Gómez, [12]H Sacks, [11]JA Jacob-Nara. *[1]Bispebjerg and Frederiksberg Hospital, Copenhagen, Denmark; [2]Education and Research Centre, St. Vincent, Dublin, Ireland; [3]UCD School of Medicine, University College Dublin, Dublin, Ireland; [4]University of Michigan, Ann Arbor, USA; [5]University of Kansas School of Medicine, Kansas City, USA; [6]Respiratory Medicine Unit, University of Ferrara, S. Anna University Hospital, Ferrara, Italy; [7]Rigshospitalet, Copenhagen University, Copenhagen, Denmark; [8]Institute for Lung Health, NIHR Leicester Biomedical Research Center, University of Leicester, Leicester, UK; [9]University of Montpellier, PhyMedExp INSERM CNRS, Montpellier, France; [10]Universitätsmedizin Rostock, Rostock, Germany; [11]Sanofi, Bridgewater, USA; [12]Regeneron Pharmaceuticals Inc, Tarrytown, USA; [13]Sanofi, Madrid, Spain*

10.1136/thorax-2024-BTSabstracts.101

Introduction Mucus hypersecretion resulting from type 2 cytokines (e.g., interleukin [IL]-13) drives intermittent airway obstruction and remodeling. Dupilumab blocks the shared receptor component for IL-4/IL-13, improved lung function, and reduces rates of severe exacerbations in patients (≥12 years) with moderate-to-severe asthma for up to 3 years, or for up to 2 years in children (6–11 years). The VESTIGE study (NCT04400318) assessed the dupilumab's impact on mucus airway plugging, volume, inflammation, and related lung function changes in patients with asthma.

Methods Patients (aged 21–70 years) with uncontrolled moderate-to-severe asthma, elevated type 2 biomarkers (baseline blood eosinophils ≥300 cells/μL and fractional exhaled nitric oxide [FeNO] ≥25 ppb), pre-bronchodilator percent predicted forced expiratory volume in 1 second (pre-BD ppFEV$_1$) ≤80%, with ≥1 exacerbation in the year prior, were randomized 2:1 to add-on dupilumab 300 mg (n=72) or matched placebo (n=37) every 2 weeks (q2w) for 24 weeks. A validated mucus scoring system was used to quantify the number of bronchopulmonary segments completely occluded with mucus, resulting in a mucus plug score [0–20]. Quantification of voxels per mucus plug, measured by computed tomography, determined mucus volume. We also assessed the proportion of patients achieving FeNO <25 ppb and the least squares (LS) mean change in pre-BD FEV$_1$ at Week 24.

Results At Week 24, patients treated with dupilumab had reduced airway mucus scores (LS mean difference [standard error, SE] from baseline was −4.9 [0.8] points vs placebo; nominal P<0.001) and reduced airway mucus volumes (−0.107 [0.020] mL vs placebo; nominal P<0.001). Patients receiving dupilumab were 9.8 times more likely to achieve FeNO <25 ppb by Week 24 than those on placebo (P<0.001). In addition, an improvement in pre-BD FEV$_1$ was observed at Week 24 (LS mean difference [SE] vs placebo: 0.38 [0.11] L; nominal P<0.001). Furthermore, improvements from baseline to Week 24 in pre-BD FEV$_1$ were strongly associated with decreases in airway mucus scores in dupilumab-treated patients (Pearson's correlation coefficient −0.618; P<0.0001) (table 1).

Conclusion Dupilumab treatment led to a significant reduction in mucus airway plugging and mucus volume, as well as

Abstract S95 Table 1 Effect of dupilumab on mucus plugging and mucus volume, airway inflammation, and lung function

	Placebo q2w (n=37)	Dupilumab 300 mg q2w (n=72)
LS mean (SE) change from baseline in mucus score[a] at Week 24		
Baseline, mean (SD)	6.9 (5.0)	7.2 (5.1)
Change from baseline to Week 24, LS mean (SE)	1.4 (0.7)	−3.5 (0.5)
LS mean difference (SE) vs placebo		−4.9 (0.8)
P value vs placebo		*P*<0.001[b]
LS mean (SE) change from baseline in mucus volume at Week 24		
Baseline, mean (SD), mL	0.170 (0.292)	0.192 (0.272)
Change from baseline to Week 24, LS mean (SE), mL	−0.033 (0.017)	−0.139 (0.012)
LS mean difference (SE) vs placebo		−0.107 (0.020)
P value vs placebo		P<0.001[b]
Proportion of patients achieving FeNO <25 ppb at Week 24		
n (%)	4 (10.8)	41 (56.9)
Odds ratio (95% CI) vs placebo		9.8 (3.1, 30.8)
P value vs placebo		*P*<0.001
LS mean change from baseline in pre-BD FEV_1 at Week 24		
Baseline, mean (SD), L	1.9 (0.7)	1.9 (0.7)
Change from baseline to Week 24, LS mean (SE), L	0.27 (0.09)	0.66 (0.06)
LS mean difference (SE) vs placebo		0.38 (0.11)
P value vs placebo		*P*<0.001[b]

[a]Mucus score ranging from 0 to 18, with 0 indicating no mucus plugging and values above 4 indicating high mucus plugging.
[b]Nominal *P* values.

BD, bronchodilator; CI, confidence interval; FeNO, fractional exhaled nitric oxide; FEV_1, forced expiratory volume in 1 second, LS, least squares; ppb, parts per billion; SD, standard deviation; SE, standard error; q2w, every two weeks.

reduction in airway inflammation, contributing to improvements in lung function.

'War and Peace' – Neutrophil responses across diseases

S96 CIRCULATING NEUTROPHILS IN IDIOPATHIC PULMONARY FIBROSIS HAVE A DISTINCT BIOMECHANICAL PHENOTYPE OF SYSTEMIC ACTIVATION THAT CORRELATES WITH DISEASE SEVERITY

[1]KM Lodge, [1]S Nakanishi, [1]L Yazbeck, [2]J Guck, [1]PL Molyneaux, [1]AS Cowburn. [1]*Imperial College London, London, UK*; [2]*Max Planck Institute for the Science of Light, Erlangen, Germany*

10.1136/thorax-2024-BTSabstracts.102

Background Idiopathic Pulmonary Fibrosis (IPF) is a chronic interstitial lung disease associated with impaired gas transfer and systemic hypoxia. Elevated peripheral neutrophil counts correlate with increased morbidity and mortality in IPF. Real-Time Deformability Cytometry (RT-DC) is a novel, sensitive high-throughput approach that measures quantitative biomechanical parameters of single cells with minimal manipulation and maintenance of physiological normoxia, thus enabling indirect determination of basal cellular activity. We hypothesized that biomechanical profiling can identify phenotypic diversity in patients with IPF.

Methods Real-Time Deformability Cytometry (RT-DC) was used to measure quantitative biomechanical parameters of neutrophils in whole blood from patients with IPF (N=37) and age-matched healthy controls (HC) (N=16) with maintenance of physiological venous oxygen tension (5% O_2). Gene profiles of isolated neutrophils were analysed by RNA-sequencing.

Results Neutrophils from IPF patients were larger ($p = 0.0148$) and stiffer ($p = 0.0197$) than HC. Neutrophil size correlated with disease severity: IPF patients with larger neutrophils had lower percentage predicted forced vital capacity ($p = 0.0299$ $R^2 = 0.1277$) and lower oxygen saturation ($p=0.05$, $R=-0.3546$). There was a larger standard deviation of neutrophil size in IPF patients compared to HC ($p=0.0196$). RNA-seq showed that younger IPF patients had increased expression of hypoxia inducible factor (HIF)2 and genes associated with glycogen metabolism, and suggested a transcriptional signature consistent with a myeloid-derived suppressor cell phenotype.

Conclusion Neutrophils from patients with IPF have a distinct biomechanical profile with larger variability, suggesting increased cell activation and subpopulation diversity. The larger, stiffer phenotype may cause neutrophil trapping in the microvasculature, increasing opportunity for neutrophil-driven lung injury. Metabolic dysregulation and impaired neutrophil biomechanics may drive IPF disease progression. Increased carbohydrate metabolism and hypoxia signalling in a subset of

younger patients could underpin IPF endotypes and be exploited for precision medicine.

S97 HOSPITALISED OLDER ADULTS WITH COMMUNITY ACQUIRED PNEUMONIA AND SEPSIS HAVE DYSREGULATED NEUTROPHIL FUNCTION BUT PRESERVED GLYCOLYSIS

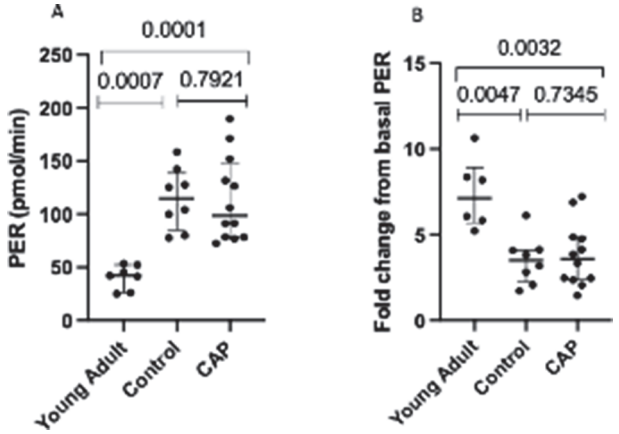
FS Grudzinska, AA Faniyi, KB Belchamber, C Chen, R Stockley, A Jasper, D Parekh, E Sapey, A Scott, DR Thickett. *University of Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.103

Background Community acquired pneumonia (CAP) is a leading cause of hospitalisation in older adults and is associated with greater likelihood of adverse outcomes. Given the ageing population and lack of therapeutic advances in CAP, new strategies to manage the burden of this disease are needed. Neutrophil dysfunction has been widely demonstrated in CAP and is associated with poor outcomes. Neutrophil functions such as migration, phagocytosis and NETosis require glycolysis for effective pathogen control. There is a scarcity of literature addressing neutrophil immunometabolism, especially in disease states. We hypothesised that dysfunctional neutrophil responses in older adults with CAP were due to aberrant glycolytic metabolism.

Methods Prospective observational single site recruiting adults ≥65 years of age with hospitalised but non-intensive care unit CAP, age and frailty matched controls and healthy young adults. Neutrophil functions (chemotaxis to Interleukin 8, respiratory burst, degranulation and cell surface expression) were assessed *ex-vivo*. Glycolysis was assessed using extracellular flux and RNA sequencing.

Results 25 CAP donors and 32 age matched controls were recruited. CAP participants had severe CAP with median CURB65 score 3 (IQR 3–4) and 30-day mortality was 36%. *Ex vivo* neutrophils from CAP donors displayed inaccurate migration, impaired respiratory burst in response to PMA and increased spontaneous degranulation compared to age matched controls. Glycolysis was not altered between age matched groups; however, basal rates of neutrophil glycolysis are significantly higher in CAP patients and older adult controls compared to healthy young adults. Also, stimulated glycolysis was significantly higher in young adults compared to older adults with and without CAP (figure 1). RNA sequencing confirmed that expression of glycolytic enzymes were not altered, and glycolytic pathways were not significantly different. Together these data demonstrate that the altered neutrophil function seen in older adults with CAP is not related to glycolysis. Further work to explore the underlying mechanisms is needed.



Abstract S97 Figure 1 Neutrophil PER is significantly different in CAP and controls compared to younger adults. (A) Basal PER is unchanged in CAP compared to controls (p=0.7921), however basal PER is significantly lower in young adults compared to controls (p=0.0007) and CAP donors (p=0.0001) (B) Fold change in PER after PMA injection is unchanged between CAP and controls (p=0.7345), fold change in PER after stimulation is significantly higher in young adults (p=0.0047) compared to controls, and CAP donors (p=0.0032. CAP n=12, control n=8 and healthy young adults n=6. Each point represents a single subject with median and IQR. Healthy young adults had a median age of 24 years, were healthy with no comorbid condition

S98 INVESTIGATING THE ROLE OF NEUTROPHILS IN PLEURAL INFECTION: PRELIMINARY DATA FROM THE PIRATE STUDY

A Gilmour, L Marshall, H Lind, K Viligorska, H Liddicoat, M Crichton, R Galloway, MB Long, JD Chalmers, P Short. *University of Dundee, Dundee, UK*

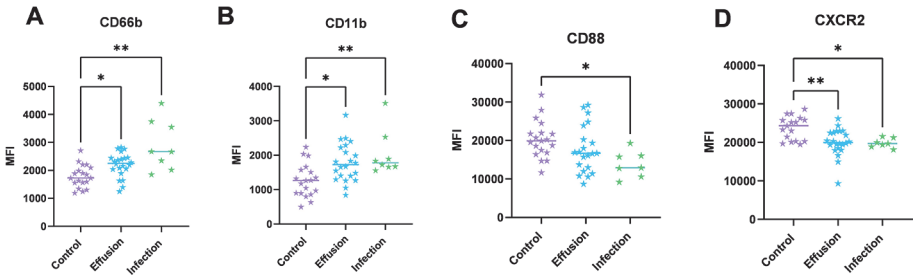
10.1136/thorax-2024-BTSabstracts.104

Introduction Pleural infections are dominated by migration of neutrophils to the pleural space. Other severe acute infections such as COVID-19 can be associated with altered neutrophil phenotypes, and excessive neutrophil extracellular traps (NETs) contribute towards the pathophysiology of disease. However, there is little research into neutrophilic inflammation and neutrophil function in pleural disease.

The PIRATE study aims to profile neutrophil function in pleural infection with the hypothesis that these patients have a dysregulated phenotype and may benefit from neutrophil-targeting therapies.

Methods Observational cohort study recruiting patients with pleural infection, non-infective pleural effusion, and healthy controls with no current infection. Blood and pleural fluid samples were obtained within 24 hours of consent, at the time of clinically-necessary pleural procedure. Peripheral blood neutrophils were isolated by immunomagnetic separation, a panel of cell-surface markers (CD63, CD66b, CD11b, CD88, CXCR1, CXCR2, CXCR4, ICAM-1) were analysed by flow cytometry, and key functional capabilities of neutrophils including neutrophil-mediated killing of *S. aureus* and NETosis were assessed.

Results 61 patients have been recruited to the ongoing PIRATE study: 11 with pleural infection (age 63.8 ± 19.18 [mean ± SD], 54.54% female), 29 with non-infective pleural effusion (age 70.9 ± 11.51, 58.62% female), and 21 controls (age 66.04 ± 18.65, 38.09% female). Cell-surface markers of neutrophil activation were significantly increased on blood neutrophils from patients with pleural infection compared with controls, including CD66b (effusion p=0.0156, infection p=0.0016) as marker of degranulation, and CD11b (effusion p=0.0122, infection p=0.0059). Blood neutrophil expression of C5aR1 (CD88; figure 1C) and chemokine receptor CXCR2 were significantly decreased in patients with pleural infection (infection p=0.0113, effusion p=0.004, infection p=0.0130, respectively).



Abstract S98 Figure 1

Conclusion Initial results from the ongoing PIRATE study profiling neutrophilic inflammation and neutrophil function in pleural disease suggests an activated, altered blood neutrophil phenotype in patients with pleural infection.

S99 PLEURAL FLUID PROTEOMICS FROM PATIENTS WITH PLEURAL INFECTION SHOWS SIGNATURES OF DIVERSE NEUTROPHILIC RESPONSES: THE OXFORD PLEURAL INFECTION ENDOTYPING STUDY (TORPIDS 2)

[1]NI Kanellakis, [2]K Cano-Gamez, [1]E Antoun, [1]J Chu, [1]N Manoharan, [3]G Betteridge, [3]I Vemdrell, [4]J Corcoran, [4]E Alguili, [1]T Dong, [3]R Fischer, [2]JC Knight, [5]J Whalley, [4]NM Rahman. *[1]CAMS Oxford Institute, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Centre for Human Genetics, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [3]Clinical Proteomics Laboratory, Target Discovery Institute, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [4]Oxford Centre for Respiratory Medicine, Churchill Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [5]Center for Cancer Cell Biology, Immunology and Infection, Chicago Medical School, Rosalind Franklin University of Medicine and Science, Chicago, USA*

10.1136/thorax-2024-BTSabstracts.105

Background Pleural infection is a severe disease with increasing incidence worldwide. The subphenotypes of pleural infection remain unknown. A better understanding of patient variation in the underlying biological response to infection may lead to improved treatments and clinical outcomes. We designed a study to endotype the disease and assess the association between patient phenotype, microbiology and clinical outcome.

Methods We subjected 80 pleural fluid samples from the PILOT study, a prospective study on pleural infection, to unlabelled mass spectrometry. Proteins were retained if they were detected in at least 50% of the samples resulting in 449 proteins. Data normalization and bias correction were performed using the Variance Stabilization Normalization method. The k-nearest neighbour algorithm was used to impute the missing values. Proteomic profiles were compared with adjudicated clinical outcomes.

Results UMAP plotting separated the samples in two different and distinct cohorts. Pathway analysis of the differentially expressed proteins identified the neutrophil degranulation, glycolysis, pentose phosphate pathway, and the liver and retinoid X receptors (LXR-RXR) activation. Higher neutrophil degranulation was associated with increased glycolysis and pentose phosphate activation. Specimens dominated by *Streptococcus Pneumoniae* exhibited high neutrophil degranulation. increased activity of the LXR-RXR pathway were associated with better survival.

Conclusion Pleural infection patients exhibit proteomic signatures indicating diverse responses of neutrophil mediated immunity, glycolysis, and pentose phosphate activation which were associated with microbiology and clinical outcomes. Therapeutic targeting the LXR-XRX pathway with agonists may improve survival.

S100 ALPHA-1 ANTITRYPSIN DEFICIENCY – AN ACCELERATED FORM OF NON-DEFICIENT CHRONIC OBSTRUCTIVE PULMONARY DISEASE LARGELY DRIVEN BY PROTEINASE 3?

[1]CH Chen, [2]E Sapey, [3]RA Stockley, [4]A Scott. *[1]Acute Care Research Group, Inflammation and Ageing, Birmingham, UK; [2]Centre for Translational Inflammation Research, Birmingham, UK; [3]Department of Sleep and Lung Function, Birmingham, UK; [4]National Institute for Health and Care Research, Institute of Translational Medicine, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.106

Introduction and Objectives Emphysema is a frequent manifestation of chronic obstructive pulmonary disease (COPD) considered a result of a disrupted proteinase/antiproteinase balance. Alpha-1 antitrypsin (AAT) is an abundant plasma anti-serine proteinase. Mutations in the AAT gene cause alpha-1 antitrypsin deficiency (AATD). AATD patients display reduced circulating AAT and have an increased risk of developing early-onset COPD. The inability of AAT augmentation therapy to completely halt disease progression in AATD suggests the pathophysiology of emphysema in such patients is not fully understood. It is possible that AATD shares the same pathway to emphysema as non-deficient COPD. Hence, we investigated the plasma profiles of oxidative stress and proteinases to determine whether AATD is the same as non-deficient COPD.

Methods Plasma samples from AATD (n=52), non-deficient COPD (n=56), and healthy subjects (n=13) were assessed for the following biomarkers: metalloproteinase 2 and 9, transforming growth factor β1, malonaldehyde, and 4-hydroxynonenal using commercial ELISA kits. Neutrophil elastase and Proteinase 3 (PR3) activities were measured with in-house ELISAs by detecting proteinase-specific fibrinogenic peptides $A\alpha Val^{360}$ and $A\alpha Val^{541}$, respectively. Statistical significance was determined by Kruskal-Wallis tests.

Results The plasma profile was similar between AATD and non-deficient COPD except for PR3 activity which was at least 10 times higher than in non-deficient COPD and healthy subjects. Median (IQR) PR3 activity for AATD, non-deficient COPD, and healthy subjects was 134.3 (86.41–222.7) nM, 14.14 (8.38–21.12) nM, and 13.57 (9.58–30.20) nM, respectively (COPD v. AATD $p<0.0001$; AATD v. healthy, $p<0.001$; COPD v. healthy, $p>0.999$). Subgroup analysis found that in AATD patients without COPD had an 8.5-fold higher PR3 activity compared to non-deficient COPD patients with or without emphysema (104.3 [79.9–144.6] nM for

AATD without COPD; 12.24 (10.37–16.92) nM for COPD, p=0.10; 15.03 [6.48–22.71] nM for COPD with emphysema, p<0.01). In these limited cohorts, PR3 activity tended to increase with disease severity although not statistically significant.

Conclusions AATD and non-deficient COPD had similar plasma biomarker profiles except for PR3 activity. Our findings suggest AATD likely is an accelerated form of non-deficient COPD predominately driven by PR3 and further substantiates that PR3 is inadequately controlled in AATD patients.

'Harry Potter and the Goblet of Monoclonals' – Asthma biologics (2)

S101 ABSTRACT WITHDRAWN

S102 EFFECT OF DUPILUMAB ON AIRWAY OSCILLOMETRY, VENTILATION/PERFUSION, AND MUCUS PLUGGING IN MODERATE-TO-SEVERE ASTHMA: THE VESTIGE TRIAL

[1]GR Washko, [2]BJ Lipworth, [3]D Saralaya, [4]M Zhang, [5]X Soler, [5]H Sacks, [5]Y Deniz, [4]PJ Rowe, [6]L de Prado Gómez, [4]JA Jacob-Nara. *[1]Division of Pulmonary and Critical Care Medicine, Brigham and Women's Hospital, Boston, MA, USA; [2]Scottish Centre for Respiratory Research, University of Dundee, Dundee, UK; [3]Bradford Institute for Health Research, Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK; [4]Sanofi, Bridgewater, NJ, USA; [5]Regeneron Pharmaceuticals Inc, Tarrytown, NY, USA; [6]Sanofi, Madrid, Spain*

10.1136/thorax-2024-BTSabstracts.107

Rationale Asthma is characterized by type 2 (T2) inflammation, small airway dysfunction (SAD), mucus plugging, and remodeling. Airway remodeling is poorly responsive to current therapies, contributing to airflow obstruction. VESTIGE (NCT04400318) is a phase 4 imaging study to demonstrate the effects of dupilumab on airway inflammation through assessment of lung imaging and function, including airway oscillometry (AO).

Methods 109 adult patients with uncontrolled T2-high moderate-to-severe asthma were randomized to dupilumab 300 mg (n=72) or placebo (n=37) q2w for 24 Weeks. Endpoints reported here include changes from baseline to Week 24 in air trapping at functional residual capacity (FRC), the ventilation/perfusion ratio (iV/Q) at total lung capacity (TLC), peripheral airway resistance as heterogeneity between 5 and 20 Hz (R5-R20) and peripheral compliance as reactance area (AX) using AO (Thorasys Tremoflo), mucus plugging, and pre-bronchodilator forced expiratory flow at 25 and 75% of pulmonary volume (pre-BD $FEF_{25–75\%}$).

Results Baseline demographic and disease characteristics were comparable in the dupilumab and placebo groups. Substantial improvements in iV/Q at TLC in upper/lower lungs were achieved with dupilumab vs placebo at Week 4, and these improvements became significant by Week 24. Dupilumab vs placebo also led to significant improvements in SAD, as measured by peripheral airway resistance and compliance, and to significant improvements in mucus plug score (**table 1**). Notably, the mean differences in peripheral resistance and compliance exceeded their respective biological values (BVs) of 0.04 kPa/L/s and 0.39 kPa/L, indicating clinical relevance. In addition, the mean improvement in SAD as measured by $FEF_{25–75\%}$ also exceeded the BV of 0.21 L/s. Safety was similar to the known dupilumab profile.

Abstract S102 Table 1 Efficacy at Week 24 as change from baseline: dupilumab 300 mg q2w vs placebo

Endpoint	Dupilumab mean	Placebo mean	LSMD vs PBO (95% CI)
Air trapping at FRC (%)	–9.15	41.07	–50.22 (–105.56, 5.12)
Ventilation/perfusion UL at TLC, iV/Q	1.42	–0.45	1.87 (0.04, 3.71)*
Ventilation/perfusion LL at TLC, iV/Q	1.75	–0. 910	2.66 (0.69, 4.64)**
Peripheral resistance R5-R20 (kPa/L/s)	–0.05	0.01	–0.06 (–0.10, –0.02)**
Reactance area AX (kPa/L)	–0.76	0.67	–1.43 (–2.45, –0.40)**
Pre-BD $FEF_{25–75\%}$ (L/s)	0.67	0.16	0.51 (0.21, 0.80)***
Mucus plug score	–3.48	1.44	–4.92 (–6.50, –3.34)**

*nominal $P<0.05$, **nominal $P<0.01$, ***nominal $P<0.001$.
CI, confidence interval; FRC, functional residual capacity; LL, lower lung; LSMD, least-square mean difference; PBO; placebo; pre-BD $FEF_{25–75\%}$, pre-bronchodilator forced expiratory flow at 25 and 75% of pulmonary volume; q2w, every 2 weeks; TLC, total lung capacity; UL, upper lung.

Conclusions Dupilumab produced clinically relevant improvements in measures of SAD, including peripheral lung resistance and compliance, forced mid expiratory flow, along with ameliorated ventilation/perfusion and mucus plugging.

S103 CLINICAL EFFECTIVENESS OF TEZEPELUMAB ON UPPER AND LOWER RESPIRATORY SYMPTOMS IN PATIENTS WITH ASTHMA AND CO-MORBID NASAL POLYPOSIS

[1,2]J Gates, [1,2]F Haris, [1]L Green, [1]J Lam, [1]M Fernandes, [1]L Thomson, [1]C Roxas, [1]G d'Ancona, [1]J Dhariwal, [1,2]AM Nanzer, [1,2]C Hopkins, [1,2]DJ Jackson. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK; [2]School of Immunology and Microbial Sciences, Kings College London, London, UK*

10.1136/thorax-2024-BTSabstracts.108

Introduction Chronic rhinosinusitis with nasal polyposis (CRSwNP) affects a significant proportion of people with severe asthma (SA). Despite the effectiveness of anti-IL5/5R therapies in the treatment of SA, the impact of eosinophil depletion on comorbid CRSwNP has been less impressive. However, the efficacy of anti-IL4R for CRSwNP supports a role for T2 but non-eosinophil driven pathways. As such, the broad anti-T2 mechanism of action of the anti-TSLP therapy tezepelumab is of considerable interest in this subgroup of patients.

Methods 100 sequential patients treated with tezepelumab for SA were categorised according to the presence or absence of co-morbid CRSwNP. Sinonasal Outcome Test (SNOT22) and asthma outcome measures were recorded at baseline and at 6 months post-initiation. Clinical remission of asthma was assessed and defined as no exacerbations or OCS use, an ACQ6<1.5 and stable lung function.

Results 45 patients with SA and co-morbid CRSwNP and 55 patients with SA alone were identified. In patients with CRSwNP, the SNOT22 improved by a mean of 24 points from 48 to 24 p<0.0001) (MCID of SNOT22 = 8.9), with 70% of patients having an improvement of >8.9. Clinical remission was also significantly higher in patients with co-morbid CRSwNP (47% vs 22%, p=0.01).

Conclusion In a real-world cohort of SA patients, tezepelumab led to significantly improved sinonasal symptom scores in patients with co-morbid CRSwNP. In addition, the effectiveness with regards to SA outcomes was significantly greater in this subgroup, highlighting TSLP as an important therapeutic target for SA patients with co-morbid CRSwNP.

S104 STUDY OF ASTHMA EXACERBATIONS IN PATIENTS ON THE IL-5 RECEPTOR BLOCKER, BENRALIZUMAB – THE BENREX STUDY

[1]J Logan, [2]K Wetherall, [3]L Gillespie, [2]A McConnachie, [1]WTN Lee, [4]H Burhan, [5]T Brown, [6]S Faruqi, [7]DJ Jackson, [8]R Kurukulaaratchy, [9]AH Mansur, [10]D Saralaya, [11]SJ Fowler, [12]P Patel, [13]J Brown, [14]J Lordan, [15]S Siddiqui, [1]SJ Smith, [16]V Mistry, [17]V Brown, [16]PA Shah, [8]R Djukanovich, [18]ID Pavord, [19]LG Heaney, [16]CE Brightling, [20]R Chaudhuri. *[1]Gartnavel General Hospital, Glasgow, UK; [2]Robertson Centre for Biostatistics, School of Health and Wellbeing, University of Glasgow, Glasgow, UK; [3]NHS GGC Research and Innovation, Glasgow, UK; [4]Royal Liverpool University Hospital, Liverpool, UK; [5]Queen Alexandra Hospital, Portsmouth, UK; [6]Hull Royal Infirmary, Hull, UK; [7]School of Immunology and Microbial Sciences, Guy's Hospital, King's College London, London, UK; [8]University of Southampton, Southampton, UK; [9]Heartlands Hospital, Birmingham, UK; [10]NIHR Patient Recruitment Centre – Bradford, Bradford, UK; [11]University of Manchester, Manchester, UK; [12]Royal Brompton and Harefield Hospitals, London, UK; [13]Royal Free London NHS Foundation Trust, London, UK; [14]Freeman Hospital, Newcastle, UK; [15]Imperial College London, Royal Brompton and Hammersmith Hospitals, London, UK; [16]University of Leicester, Leicester, UK; [17]Centre for Experimental Medicine, Queen's University, Belfast, Belfast, UK; [18]University of Oxford, Oxford, UK; [19]Queen's University Belfast, Belfast, UK; [20]University of Glasgow, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.109

Background Exacerbations cause morbidity and mortality for patients with severe asthma. Furthermore, their treatment with oral corticosteroids (OCS) can lead to toxicity. Raised blood eosinophils are associated with increased frequency of exacerbations. In clinical trials, benralizumab, an Interleukin-5 receptor-α blocker, reduced exacerbations by approximately 50%.

Exacerbations on mepolizumab have been studied and dichotomised into eosinophilic and infective events. The aim of BenRex (Benralizumab Exacerbation Study) was to study inflammatory and physiological features of exacerbations while on benralizumab.

Methods The study was conducted at 15 UK centres. Benralizumab was initiated as per NICE/SMC guidance. Participants were asked to contact the site in the event of an exacerbation, before starting OCS/antibiotics. Exacerbation visits consisted of clinical review, spirometry, and fractional exhaled nitric oxide (FeNO) and sampling of sputum, nasosorption, gargle, urine and blood.

Results Of 156 subjects enrolled, 91 (58%) experienced an exacerbation during the 12–18 month follow up. Of 273 exacerbations, 121 visits were conducted on-site. 152 exacerbations were categorised as 'missed', where participants did not attend an exacerbation visit but available data was collected at soonest opportunity. There were 29 emergency department attendances, 22 hospital admissions and 2 HDU/ITU admissions related to asthma exacerbations.

Abstract S104 Table 1 Baseline (pre-benralizumab) characteristics of participants who had an exacerbation versus those who did not

	Experienced an exacerbation	Did not experience an exacerbation	P value
No. participants, n (%)	91 (58%)	65 (42%)	-
Age, years; Mean (SD)	52.0 (13.3)	57.2 (11.6)	**0.024**
Female gender, n (%)	61 (67.0%)	29 (44.6%)	**0.0083**
BMI > 30, n (%)	59 (65.6%)	26 (40.0%)	**0.0019**
Exacerbations in last 12 months; Mean (SD)	5.85 (2.97)	5.11 (2.73)	0.14
GP out of hours attendances in last 12 months – Mean (SD)	0.87 (1.54)	0.14 (0.50)	**0.0002**
Depression/Anxiety, n (%)	32 (35.2%)	21 (32.3%)	0.73
Baseline FeNO (ppb); Median [Q1, Q3]	43.0 [23.0 , 83.0]	65.00 [32.5 , 123.0]	**0.014**
Baseline FEV_1% predicted, Median [Q1, Q3]	77.4 [57.1 , 88.3]	73.2 [62.4 , 87.0]	0.81
Highest blood eosinophils ($x10^9$/L) Median [Q1, Q3]	0.52 [0.37 , 0.82]	0.60 [0.48 , 0.97]	**0.016**
CRP (mg/L); Median [Q1, Q3]	3.00 [1.0 , 6.0]	2.00 [1.0 , 5.0]	0.15
Sputum eosinophils% Median [Q1, Q3] n= 71	1.88 [0.00 , 9.50]	5.00 [0.00 , 16.00]	0.59
Sputum neutrophils% ; Median [Q1, Q3] n= 71	42.3 [16.0 , 75.0]	20.0 [0.0 , 39.0]	**0.017**

Baseline characteristics of participants who had an exacerbation versus those who did not are shown in table 1.

At exacerbation, median [IQR] for blood eosinophils ($x10^9$/L) was 0 [0,0], sputum eosinophils (%) was 0 [0,0]. Median [IQR] sputum neutrophil% was 68.75 [34.00, 86.25] and CRP (mg/L) was 7.0 [2.5, 15.5].

Median [IQR] FeNO (ppb) was 52.0 [29.0, 92.0] at exacerbation compared to 34.0 [18.0, 78.0] at baseline, p=0.043.

Investigators were asked to assess clinical features at exacerbation for probable cause. 76 (62.8%) exacerbations were felt to be secondary to infections. 39 (32.2%) were classified clinically as non-infective exacerbations of asthma.

Conclusion During asthma exacerbations on benralizumab, eosinophils remain suppressed in the blood and in the airways. The presence of sputum neutrophilia suggests infection could play a significant role in these events.

S105 IMPACT OF SOCIOECONOMIC STATUS ON MONOCLONAL OUTCOMES IN SEVERE ASTHMA: A TWO-YEAR RETROSPECTIVE ANALYSIS

F Fyles, R Burton, A Nuttall, H Joplin, H Burhan, L Watkins. *Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.110

Introduction Socioeconomic status (SES) is one of a range of social determinants of health that appear to impact asthma rates (AL Kozyrskyj et al. *Am J Public Health*. 2010) . The impact of SES on outcomes of monoclonal antibody (MAb) therapy in patients with severe asthma (SA) is under-explored. We completed a retrospective analysis exploring the impact of SES on MAb outcomes.

Methods Retrospective review of patients with physician-confirmed SA completing ≥24 months' MAb therapy 2013–2021. Clinical outcomes (annualized exacerbation rate [AER], maintenance oral corticosteroids [mOCS], fractional exhaled nitric oxide [FeNO], Asthma Control Questionnaire [ACQ-6], and Asthma Related Quality of Life Questionnaire [AQLQ]) were collected at baseline (T0), 12 months (T1), and 24 months (T2). Rates of remission – defined as mOCS = 0, AER = 0, and ACQ-6 ≤1.5 – were collected.

Postcode data were cross-referenced against Index of Multiple Deprivation (IMD), the official measure of relative deprivation in England. Outcomes for patients living in above- and below-average IMD areas were compared using Student's T-test/Chi squared testing

Results 282 patients completed ≥24 months MAb therapy (age 52.1±15.7 years, 62% female, BMI 32.8±7.7 kg/m^2). 279 had available IMD data, with 217 (77.8%) below the UK IMD average. These patients were more likely to be on oral steroids at baseline, and had higher BMI (33.1 v 31.2, p<0.05). These patients also had lower baseline adherence (83% v 86%), measured by medicine possession ratio.

At T0, patients in lower SES areas had increased AER (5.9 v 4.5, p<0.01), higher ACQ (3.7 v 3.1, p<0.001), and lower AQLQ (2.8 v 3.4, p<0.01). Differences in ACQ and AQLQ persisted despite 24 months' MAb therapy. Patients in higher SES areas were more likely to demonstrate remission at T1 (OR: 5.42, 95% CI 2.71–10.85) and T2 (3.85, 95% CI 1.70–8.71).

Conclusion SES appears to impact both baseline asthma control and MAb outcomes over 24 months. Patient reported outcome measures at 24 months were worse among patients in lower SES areas, despite no difference in objective measures of asthma control, suggesting these outcomes may be multifactorial. Further work is required to assess the impact of SES on remission.

S106 DO OLDER PEOPLE WITH SEVERE ASTHMA RESPOND TO ASTHMA BIOLOGICS?

[1]W Soe, [2]R Mittal, [1]P Cook, [1]C Eames, [1]S Kerley, [1]C Whitfield, [1]M Pantaleon, [1]J Mccreery, [2]A Freeman, [2]H Haitchi, [2]R Kurukulaaratchy, [1]P Dennison, [1]H Rupani. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]University of Southampton, Southampton, UK*

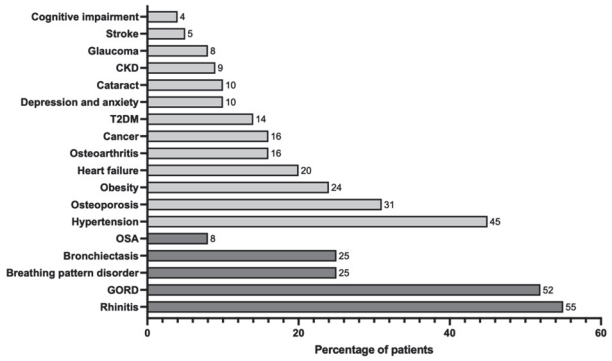
10.1136/thorax-2024-BTSabstracts.111

Background Older patients with severe asthma often have more comorbidities and are at higher risk of treatment-related side effects. Biologics have transformed severe asthma treatment by reducing exacerbations, hospital admissions, steroid dependence, and steroid-related side effects. Most phase 3 biologic studies excluded patients ≥75 years. We therefore evaluated clinical outcomes in patients ≥75 years receiving biologic therapy at our centre.

Methods Retrospective review of all patients ≥75 years treated with biologics for severe asthma between January 2017 and August 2023. Results are median (IQR).

Results Of 74 patients, 44 (59%) were male, aged 79 (77–82) years. 69 (95%) had adult-onset asthma. 30 (45%) patients were on benralizumab, 39 (53%) mepolizumab, 4 (5%) omalizumab, and 1 (1%) dupilumab. 71 (95%) were self-administering biologics at home.

After 12 months of treatment, 64 (86%) had a positive response to biologics defined as ≥50% reduction in exacerbations and/or maintenance oral corticosteroids. Exacerbations reduced from 4 (0–14) >(4–7.5) in the year pre-mAb to 0(0–5)> (0–1), p<0.001. Of the 36 patients on m OCS, 20 (55%) weaned off OCS for asthma. ACQ6 improved: 2.8 (0.0–5.5) >(1.9–3.3) to 1.5 (0.0–4.5)>(0.8–2). Asthma remission (off-maintenance oral corticosteroid, no exacerbations, and ACQ <1.5) was achieved by 10 (14%) patients. 6 (8.1%) were biologics non-responders.



Abstract S106 Figure 1 Prevalence of comorbidities in older people with severe asthma. CKD: chronic kidney disease, GORD: gastroesophageal reflux disease, T2DM: type 2 diabetes mellitus, OSA: obstructive sleep apnoea

There was a high prevalence of polypharmacy- 89% were prescribed ≥5 medications. Multi-morbidity was common: 100% had ≥2 comorbidities, 96% had ≥3 comorbidities and 90% had ≥4 comorbidities. Figure 1 shows the prevalence of co-morbidities. 8 patients died during the review period, none due to asthma. Adverse events were rare (4 patients, 5%): rash, joint pains, hair loss, and weight loss.

Conclusion Despite a high prevalence of comorbidities and polypharmacy, biologics use in patients ≥75 years with severe asthma has similar, good clinical outcomes to patients <75 years in clinical trials and real-world studies. Even with significant comorbidities, patients tolerate the biologics. Despite polypharmacy in our chohort, few side effects were reported, possibly refleting the low levels of side effects associated with biologics. Our study indicates the short-term safety of biologics, but further research is needed on long-term effects in this specific population.

'The Famous Five' – Emerging clinical trial data

S107 MOLGRAMOSTIM IMPROVES PULMONARY GAS EXCHANGE IN PATIENTS WITH AUTOIMMUNE PULMONARY ALVEOLAR PROTEINOSIS (APAP): RESULTS FROM THE IMPALA-2 PHASE 3 CLINICAL TRIAL

[1]C McCarthy, [2]BC Trapnell, [3,4]Y Inoue, [5]F Bonella, [6]T Wang, [7]B Robinson, [7]R Fleming, [7]Y Wasfi, [7]R Pratt. *[1]School of Medicine, University College Dublin, St. Vincent's Univeristy Hospital, Dublin, Ireland; [2]Translational Pulmonary Science Center, Cincinnati Children's Hospital, Cincinnati, OH, USA; [3]Clinical Research Center, NHO Kinki Chuo Chest Medical Center, Osaka, Japan; [4]Internal Medicine, Osaka Anti-tuberculosis Association Osaka Fukujuji Hospital, Osaka, Japan; [5]Center for Interstitial and Rare Lung Diseases, Pneumology Department, Ruhrlandklinik University Hospital, University of Duisburg-Essen, Essen, Germany; [6]Division of Pulmonary and Critical Care Medicine, University of California Los Angeles, Los Angeles, CA, USA; [7]Savara Inc., Langhorne, PA, USA*

10.1136/thorax-2024-BTSabstracts.112

Background Alveolar macrophages require granulocyte-macrophage colony-stimulating factor (GM-CSF) to maintain normal function. aPAP, a rare lung disease caused by autoantibodies to GM-CSF, is characterised by surfactant accumulation in the alveoli resulting in impaired oxygen transfer. Molgramostim nebuliser solution is an investigational inhaled non-glycosylated recombinant human GM-CSF. In a Phase 2/3 clinical trial (IMPALA), daily administration of inhaled molgramostim for 24 weeks resulted in greater mean improvements in pulmonary gas exchange and functional health status compared with placebo.
Objective Report primary results from IMPALA-2, a Phase 3 clinical trial being conducted to investigate the efficacy and safety of inhaled molgramostim for the treatment of aPAP.
Methods IMPALA-2 is a global, randomised, double-blind, placebo-controlled Phase 3 trial of molgramostim conducted in adult aPAP patients who received nebulised molgramostim 300 μg or placebo once daily for 48 weeks. The primary endpoint was mean change in haemoglobin-adjusted percent predicted diffusing capacity of the lungs for carbon monoxide (DLco%) from baseline to Week 24. Secondary endpoints were mean changes from baseline in DLco% at Week 48, St. George's Respiratory Questionnaire (SGRQ) total score, SGRQ Activity score, and exercise capacity (EC) expressed as peak metabolic equivalents (METs) at Weeks 24 and 48.
Results A total of 164 patients received molgramostim (n=81) or placebo (n=83). Molgramostim significantly improved DLco% compared with placebo at Week 24 (difference in least squares mean change 6.0%, p=0.0007) and at Week 48 (6.9%, 95% CI 2.9, 10.9). Molgramostim treated patients had greater mean improvements than placebo patients at Week 24 and at Week 48 in SGRQ total score (difference in least squares mean change at Week 24: -6.59 points, 95% CI -11.4, -1,79; Week 48: -4.87 points, 95% CI -10.76, 1.01) and EC (Week 24: 0.41 METs, 95% CI -0.06, 0.89; Week 48: 0.55 METs, 95% CI 0.07, 1.03). SGRQ Activity was also improved at Week 24. Molgramostim was well tolerated; most adverse events were mild or moderate in severity. All patients who completed double-blind treatment continued in the open-label period.
Conclusions Molgramostim was well tolerated and improved pulmonary gas exchange, respiratory health-related quality of life, and EC of patients with aPAP.

S108 AT-RISK REGISTERS INTEGRATED INTO PRIMARY CARE TO STOP ASTHMA CRISES IN THE UK (ARRISA-UK)

[1]AM Wilson, [1]S Musgrave, [1]P-A Ashford, [2]M Noble, [2]JR Smith, [1]AB Clark, [1]S Stirling, [1]G Barton, [3]A Sheikh, [3]H Pinnock, [4]D Price. *[1]Norwich Medical School, Norwich, Norfolk, UK; [2]University of Exeter Medical School, Exeter, UK; [3]University of Edinburgh, Edinburgh, UK; [4]Observational and Pragmatic Research Institute, Southbank, Singapore*

10.1136/thorax-2024-BTSabstracts.113

Background Avoiding emergency hospital admissions is a crucial aspect of asthma care. A small-scale regional trial suggested that the implementation of at-risk registers for asthma in primary care may improve hospital admission rates.
Aim To assess, via a national study, whether the ARRISA-UK intervention reduced asthma crisis events.
Methods Cluster randomised trial of a complex intervention across 275 UK primary care practices. The intervention comprised of identification of those at-risk, practice-based training regarding at-risk asthma, a clinical decision support system alerting practice staff to patients' at-risk status to facilitate prompt and opportunistic care, and practice support. Control practices continued with usual care. Patients (n=10945) were included if they were identified as being at-risk unless they declined data sharing. Routine data, with linkage between primary and secondary care, captured the primary endpoint of asthma-related crisis events (hospitalisation, A&E attendances or death). The number of prescriptions of prednisolone for asthma attacks was captured amongst other processes of care.
Results Data from 185 practices (6207 patients) were available for a complete case analysis. There was no significant effect on the asthma crisis events: intervention 185/2959 (6.3%) control 235/3248 (7.2%) odds ratio (OR) 0.87 (95% CI 0.69,1.09; p=0.220), nor for the components of this composite endpoint. When adjusting for any baseline asthma-related hospitalisation and A&E attendance the adjusted OR was 0.82 (0.66,1.03; p=0.088). There was no significant difference in prescriptions of prednisolone: intervention 1116, control 1234 OR 1.2(0.99,1.5; p=0.062) nor when adjusted OR 1.17 (0.98, 1.4; p=0.074).
Conclusion The primary analysis did not show a statistically significant effect of the ARRISA intervention on the primary outcome. Further analysis is required to determine whether this intervention is cost-effective and to identify subgroups that may have benefitted.

S109 TREATING EOSINOPHILIC EXACERBATIONS OF ASTHMA AND COPD WITH BENRALIZUMAB: A DOUBLE BLIND, DOUBLE DUMMY, ACTIVE-PLACEBO CONTROLLED RANDOMISED TRIAL (ABRA)

[1,2]S Ramakrishnan, [2,3]REK Russell, [2]HR Mahmood, [2]K Krassowska, [2]J Melhorn, [2]C Mwasuku, [2]ID Pavord, [2]L Bermejo-Sanchez, [2]I Howell, [2]M Mahdi, [5]S Peterson, [5]T Bengtsson, [3,5]M Bafadhel. *[1]Institute for Respiratory Health, University of Western Australia, Perth, Australia; [2]Respiratory Medicine Unit and Oxford NIHR Biomedical Research Centre, University of Oxford, UK; [3]King's Centre for Lung Health, School of Immunology and Microbial Sciences, King's College London, UK; [4]StatMind, Lund, Sweden; [5]Nuffield Department of Medicine, University of Oxford, UK*

10.1136/thorax-2024-BTSabstracts.114

Background Exacerbations of asthma and COPD are critical events. Eosinophilic inflammation is a treatable trait commonly found during acute exacerbations of asthma and COPD. We hypothesised that for patients with eosinophilic exacerbations, a single injection of benralizumab, a humanised monoclonal antibody against interleukin-5 receptor-alpha alone or in combination with prednisolone will improve clinical outcomes compared to prednisolone.
Methods ABRA was a multicentre phase-2 double-blind double-dummy active-controlled randomised controlled trial conducted in the United Kingdom. At the time of an acute exacerbation of asthma or COPD, adults with blood eosinophil counts ≥300 cells/μL in a 1:1:1 ratio received acute treatment with: prednisolone 30mg once daily for 5 days +100mg benralizumab subcutaneous injection once; *or* placebo tablets once daily for 5 days+100mg benralizumab subcutaneous injection once; *or* prednisolone 30mg once daily for 5 days+placebo subcutaneous injection once. The co-primary outcomes were proportion of treatment failures over 90 days and total visual analogue scale (VAS) symptoms at day 28 in the pooled benralizumab arms compared to the prednisolone alone arm. Secondary endpoints included time to treatment

failure, and lung function. Intention to treat analyses was performed and reported on all data. The trial was registered on Clinicaltrials.gov NCT04098718.

Findings 158 patients were randomised at acute eosinophilic exacerbation of asthma and/or COPD. At 90 days, treatment failures occurred in 39/53 (73.6%) and 47/105 (44.8%) in the prednisolone only and pooled benralizumab group respectively (OR 0.264, 95%CI 0.125–0.556, p<0.001). The 28-day total VAS mean difference (95%CI) was 49mm (14–84) (p=0.006), favouring the pooled benralizumab group. The time to treatment failure was longer in the pooled benralizumab group (HR 0.393, 95%CI 0.252–0.612, log-rank p-value<0.001). There was no difference in lung function between treatments. Benralizumab was well tolerated.

Interpretation Benralizumab can be used as a treatment of eosinophilic exacerbations with better outcomes than systemic glucocorticoids alone.

S110 THE EFFECT OF PVC13 AND PPV23 ON NASOPHARYNGEAL COLONISATION FOLLOWING HUMAN PNEUMOCOCCAL CHALLENGE WITH SEROTYPE 3 AND SEROTYPE 6B: THE PNEUMO 2 STUDY

[1]K Liatsikos, [1,2,3]A Hyder-Wright, [1]K Davies, [1]D El Safadi, [1]M Farrar, [1,4]A Goncalves, [5]SB Gordon, [1]A Howard, [6]M Lesosky, [1]E Mitsi, [1]C Myerscough, [7]TK Nyazika, [1,4]J Reine, [1,2]RE Robinson, [1,4]C Solorzano-Gonzalez, [1,4]B Urban, [8]E Begier, [8]J Catusse, [8]BD Gessner, [8]M Lahuerta, [8]C Theilacker, [8]I Kanevsky, [8]Y Tan, [1,2]AM Collins, [1,4]DM Ferreira, PNEUMO 2 study group[1,2,3,4]. *[1]Liverpool Vaccine Group, Liverpool School of Tropical Medicine, Liverpool, UK; [2]Respiratory Research Group, Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [3]Clinical Research Network (CRN) North West Coast, UK; [4]Oxford Vaccine Group, Department of Paediatrics, Oxford, UK; [5]Malawi Liverpool Wellcome Trust Clinical Research Programme, Liverpool School of Tropical Medicine, Blantyre, Malawi; [6]Global Health Trials Unit, Liverpool School of Tropical Medicine, Liverpool, UK; [7]Department of Biomedical Sciences and Physiology, School of Life Sciences, Faculty of Science and Engineering, University of Wolverhampton, Wolverhampton, UK; [8]Pfizer Vaccines, Pfizer Inc, Collegeville, Pennsylvania, USA*

10.1136/thorax-2024-BTSabstracts.115

Background Serotype 3 (SPN3) remains a frequent cause of pneumococcal disease and colonisation globally. A lineage shift from clade 1a to clade 2 with differential protection by 13-valent pneumococcal conjugate vaccine (PCV13) potentially contributing.

Methods Participants were randomised to PCV13, 23-valent pneumococcal polysaccharide vaccine (PPV23) or saline. Using a human challenge model, participants were inoculated with SPN3 at 1-month and serotype 6B (SPN6B) at 6-months post-vaccination. PCV13 and saline arms were also randomised to SPN3 clades 1a and 2. Following inoculation, colonisation status, density and duration were assessed for 23 days. The primary endpoint was the SPN3 colonisation ratio (clades combined), comparing each vaccine with saline. The above comparisons were performed for individual clades and SPN6B.

Results 407 and 243 participants were included in the analysis for SPN3 and SPN6B, respectively. At 1-month post-vaccination, PCV13 resulted in a non-significant reduction of SPN3 colonisation (clades combined, PCV13 84/153[56%] vs saline 101/155[65%], RR 0.84[0.7–1.01], p=0. 068), and 29% reduction of SPN3 clade 2 colonisation (RR 0.71[0.54–0.91], p=0.009). No protection was observed for density. 6-months post-vaccination, PCV13 showed a 60% reduction of SPN6B colonisation (PCV13 13/81[16%] vs saline 31/78[40%], RR 0.4[0.22, 0.69], p=0.002), and a 5-fold reduction in colonisation density. PPV23 did not show protection against any of the above outcomes.

Conclusions We found limited direct protection against SPN3 colonisation by PCV13 and no protection by PPV23. PCV13 protection against SPN6B persists for at least 6 months. Future evaluation of immune responses in blood and nasal mucosa will help identify correlates of protection against SPN3 colonisation.

S111 EFFECTIVENESS AND COST EFFECTIVENESS OF LOW DOSE ORAL MODIFIED RELEASE MORPHINE *VERSUS* PLACEBO ON PATIENT-REPORTED WORST BREATHLESSNESS IN PEOPLE WITH CHRONIC BREATHLESSNESS: A MULTI-SITE, PARALLEL GROUP, DOUBLE-BLIND, RANDOMISED, PLACEBO-CONTROLLED TRIAL (MABEL)

[1]MJ Johnson, [2]RA Evans, [3]C Keerie, [3]S Tuck, [3]J Norrie, [4]J Cohen, [4]B Williams, [3]P Hall, [3]M Atter, [4]N Chaudhuri, [5]S Bajwah, [5]I Higginson, [1]M Pearson, [6]DC Currow, [3]MT Fallon. *[1]Wolfson Palliative Care Research Centre, Hull York Medical School, University of Hull, Hull, UK; [2]Department of Respiratory Sciences, University of Leicester, Leicester, UK; [3]Edinburgh Clinical Trials Unit, The Usher Institute, University of Edinburgh, Edinburgh, UK; [4]Hull Health Trials Unit, Hull York Medical School, University of Hull, Hull, UK; [5]Cicely Saunders Institute, King's College London, London, UK; [6]University of Wollongong, NSW, Australia*

10.1136/thorax-2024-BTSabstracts.116

Background Despite a strong basic science rationale, the effectiveness of opioids for chronic breathlessness and exercise endurance seen in laboratory-based studies has not been replicated in clinical trials.

Methods Multicentre, Phase-3, parallel-group, double-blind, randomised placebo-controlled titration trial (5–10mg twice-daily oral long-acting morphine; blinded laxative), for chronic breathlessness due to cardio-respiratory conditions (MMRC ≥3, performance ≥40 AKPS; eGFR >25mLs/min). Site clinicians completed a training course regarding morphine initiation, monitoring and management of opioid-related side-effects. Primary endpoint; Day-28 worst breathlessness/24 hours numeric rating scale (NRS). Key secondary outcomes assessed at Day-28 and Day-56: daily activity levels assessed by accelerometery; worst cough NRS; average pain NRS; ShortForm12; EuroQoL5D-5L; EuroQoL -Visual Analogue Scale. Primary analysis used repeated measures of covariance (stratified by site, causal disease), adjusted for baseline worst breathlessness. Sample size (90% power): 63 participants per group. A health economic analysis reported cost-effectiveness planes and acceptability curves (not reported here).

Results 148 participants were consented, and 143 randomised from 11 sites. 140 participants formed the intention-to-treat population (males 66%; mean age 70.5 years [SD 9.4]; 96% chronic lung disease; primary endpoint analysis set [morphine n=65; placebo n=62]). Morphine was well-tolerated with ≥90% adherence by 93% (Day 28).

There was no difference in the primary endpoint for breathlessness (outcomes are shown in table 1). However, there was evidence of more time spent in daily moderate/vigorous physical activity and improved cough in the morphine group. Morphine-related side-effects were similar in both groups except for excess constipation (34% vs 7%) and vivid dreams (11% vs 3%) in the morphine group. There were excess hospital admissions in the morphine arm

Abstract S111 Table 1 Primary and key secondary outcome group differences between morphine and placebo

Measure	Day	Adjusted mean difference (95% confidence intervals)	p value
Worst breathlessness (NRS 0-10)	28	0.09 (-0.57, 0.75)	0.781
	56	-0.26 (-0.93, 0.42)	0.453
	Overall effect	-0.20 (-0.60, 0.20)	0.322
Levels of physical activity (minutes/day)	28		
sedentary light moderate/		-21.4 (-78.1, 35.30)	0.456
vigorous		11.96 (-17.4, 41.34)	0.421
		9.51 (0.54, 18.48)	**0.038**
Cough (NRS 0-10)	28	-0.36 (-1.11, 0.40)	0.353
	56	**-1.41 (-2.18, -0.64)**	**<0.001**
	Overall effect	**-0.70 (-1.22, -0.17)**	**0.009**
Pain (NRS 0-10)	28	-0.16 (-0.97, 0.66)	0.704
	56	-0.17 (-0.99, 0.66)	0.694
	Overall effect	-0.41 (-1.01, 0.18)	0.172
SF12 physical subscale	28	-0.39 (-2.58, 1.79)	0.724
	56	-0.80 (-3.02, 1.42)	0.479
	Overall effect	-0.60 (-2.46, 1.27)	0.530
SF12 mental subscale	28	0.97 (-1.99, 3.93)	0.520
	56	1.38 (-1.62, 4.39)	0.365
	Overall effect	1.17 (-1.32, 3.67)	0.354
EQ-VAS	28	4.93 (-0.95, 10.81)	0.100
	56	3.42 (-2.55, 9.39)	0.260
	Overall effect	4.18 (-0.74, 9.10)	0.096
EQ5D-5L	28	0.04 (-0.01, 0.09)	0.112
	56	0.01 (-0.04, 0.07)	0.612
	Overall effect	0.03 (-0.01, 0.07)	0.198

NRS: numeric rating scale, SF12: 12 item short form survey, EQ: Euroqol questionnaire, VAS: Visual Analogue Scale, EQ5D-5L: Euroqol 5 dimension 5 level questionnaire

(15 vs 4); 4/15 vs 0/4 were attributed to study drug by site investigators.

Conclusions The primary outcome of breathlessness showed no difference between groups, but there was potential benefit of morphine on daily moderate/vigorous physical activity levels and cough. Morphine was well-tolerated.

'Jane Air' – Pneumothorax management

S112 CT FEATURES ASSOCIATED WITH CONTRALATERAL RECURRENCE OF SPONTANEOUS PNEUMOTHORAX

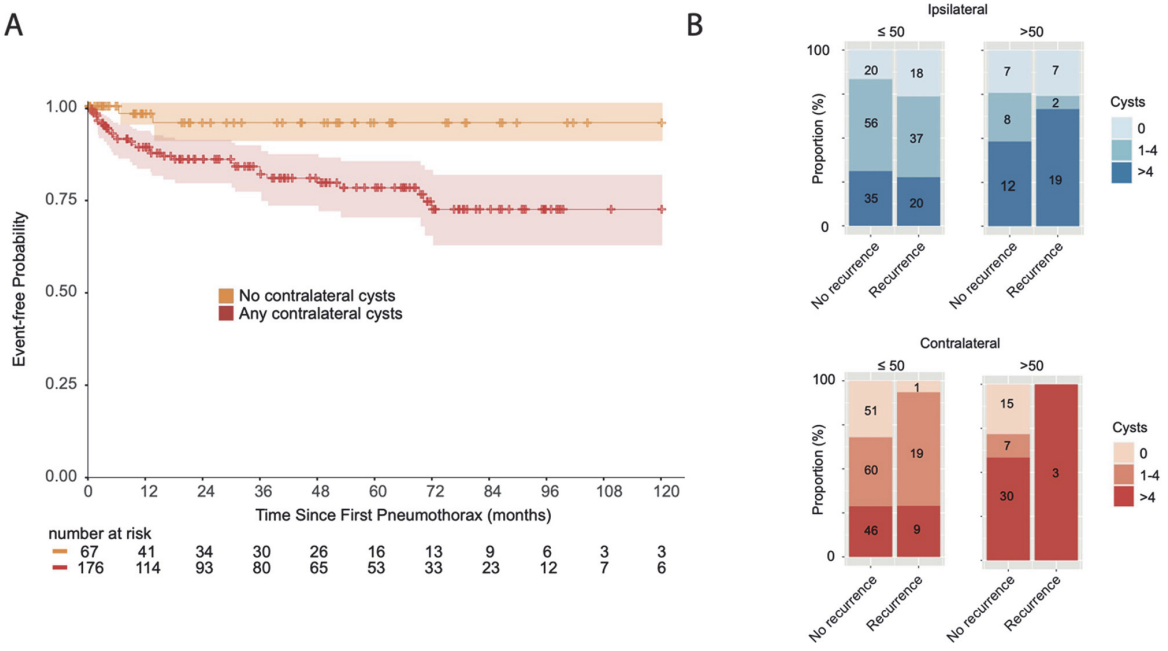
[1]LA Burn, [1]MTA Wetscherek, [2]PD Pharoah, [1,3,4]SJ Marciniak. *[1]Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [2]Department of Computational Biomedicine, Cedars-Sinai Medical Centre, Los Angeles, USA; [3]Cambridge Institute for Medical Research (CIMR), University of Cambridge, Cambridge, UK; [4]Royal Papworth Hospital, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.117

Introduction Spontaneous pneumothorax recurs in an estimated 45% of patients without surgery. Identifying individuals likely to suffer a recurrence, who might benefit from pre-emptive surgery, is challenging. Our previous meta-analysis suggested a relationship between contralateral recurrence and specific computed tomography (CT) findings.[1]

Aim To validate CT predictors of pneumothorax recurrence in a UK population.

Methods We analysed 243 individuals attending a tertiary referral pneumothorax service between 12/11/2014 and 02/02/2022 for whom CT imaging and follow-up data were available. Radiological risk factors for pneumothorax recurrence were investigated using cox regression analysis and multivariable modelling.



Abstract S112 Figure 1 Lung cysts and their association with pneumothorax recurrence. **(A)** Kaplan Meier survival curves illustrating event-free probability of contralateral recurrence over time in months for no contralateral cysts (orange) and any contralateral cysts (red). Crosses indicate censored points. **(B)** Proportional stacked bar graphs showing pulmonary cyst number in lungs ipsilateral and contralateral to the first pneumothorax, stratified by laterality-specific recurrence and age

Results In our cohort, there was a total of 1670 person-years of follow-up with a median of 5.34 years. 133 invidivuals (55%) suffered at least one recurrence, most commonly ipsilateral to the initial pneumothorax (n = 99; 74%). Univariable cox regression analysis revealed associations of overall recurrence risk for family history of pneumothorax (HR 1.77, 95% CI 1.14–2.73, P = 0.01), a history of cannabis smoking (HR 0.66, 95% CI 0.44–0.98, P = 0.04) and cigarette pack-years (HR 0.99, 95% CI 0.97–1.00, P = 0.04). Contralateral cystic features (blebs, bullae, parenchymal cysts) were associated with contralateral recurrences in both univariable and multivariable analyses (1–4 cysts HR 7.07, 95% CI 1.65–30.3, p = 0.008; >4 cysts HR 5.44, 95% CI 1.17–25.2, P = 0.03, figure 1A). When stratified by age, this association was limited to younger individuals (P = 0.007, figure 1B). Larger cyst size in the contralateral lung was associated with contralateral recurrence (p = 0.002); ROC curve analysis revealed a Youden's threshold of 10.5mm.

Conclusion We show that contralateral lung cysts are associated with contralateral pneumothorax recurrence in younger individuals. Furthermore, the size of contralateral cysts is associated with increased contralateral recurrence risk in younger patients. The findings may help identify younger patients more likely to benefit from pre-emptive surgery.

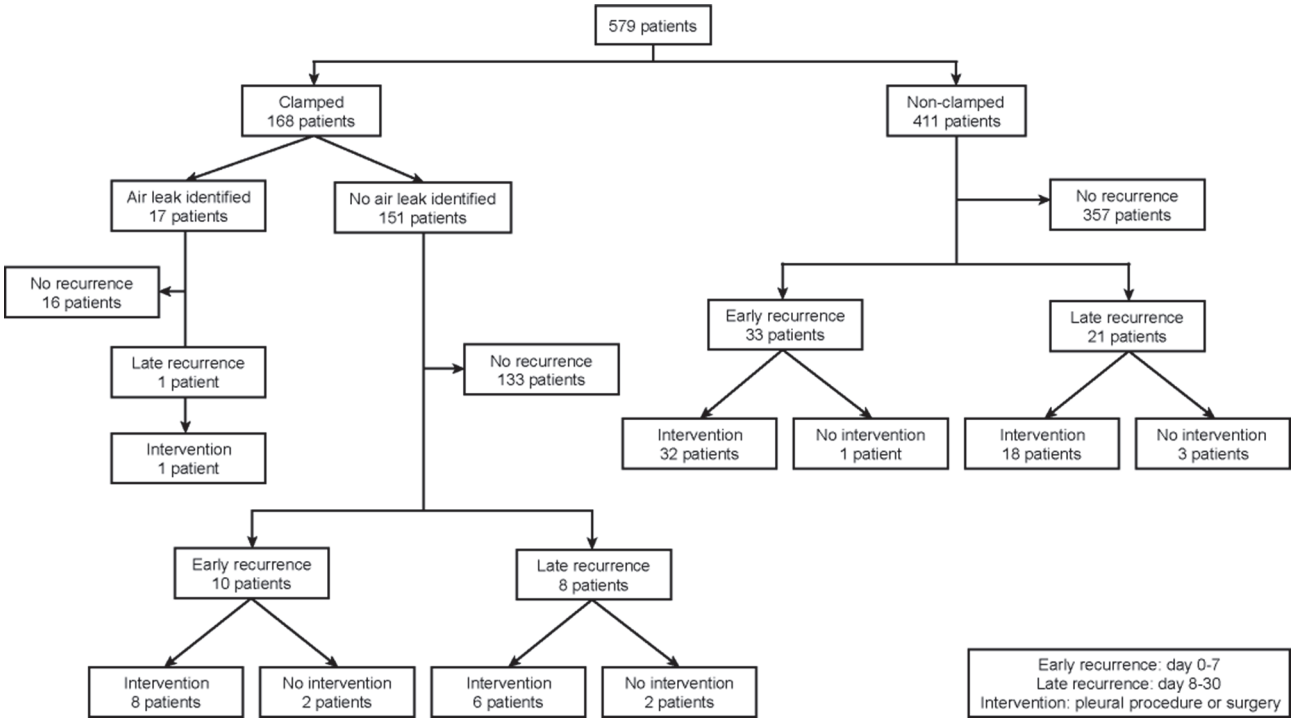
REFERENCE

1. M Girish, PD Pharoah, SJ Marciniak. 'Meta-analysis of the association between emphysematous change on thoracic computerised tomography scan and recurrent pneumothorax'. *QJM* Feb. 2021:Hcab020. doi: 10.1093/qjmed/hcab020.

S113 THE CLAMP PROJECT: A NATIONAL EVALUATION OF INTERCOSTAL CHEST DRAIN REMOVAL

[1,2]N Veale, [1,2,3]AW Martinelli, [4]D Sethi, [4]PDe Souza, [4]KZ Mon, [5]JOI Cheng, [5]D Morrow, [5]M Sam, [5]I Saleem, [6]KP Yip, [7]J Kerks, [8]DE Henshall, [8]T Smitherman-Cairns, [8]K Smith, [9]D Mitchell, [10]K Jackson, [11]B Pippard, [11]S Paul, [11]W Mohammad, [12]J Hyman, [13]B Rowlands, [13]S Bosence, [14]C Pearce, [14]B Probyn, [14]R Thorley, [15]M Mitchell, [15]A Griffiths, [16]R Westley, [17]A Huda, [17]A Mehmood, [17]A Khan, [17]V Tee, [18]R Crooks, [18]P Minnis, [19]L Standing, [19]WH Ong, [20]MS Rashid, [21]A Salih, [22]EL Koh, [22]CK Ho, [23]M Hayes, [23]C Holmes, [23]A Saad, [23]B Iqbal, [24]E Barton, [25]A Sundaralingam, [25]O Kankam, [17]J Quinn, [14]JP Corcoran, [24]SP Walker, [10]A Aujayeb, [1]J Herre, [26]A Jha, [2,1]SJ Marciniak, [23]NM Rahman, [23]RJ Hallifax. *[1]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [2]Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK; [3]Cambridge Institute of Therapeutic Immunology and Infectious Disease, University of Cambridge, Cambridge, UK; [4]Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK; [5]Mid and South Essex NHS Foundation Trust, Chelmsford, UK; [6]Institute of Inflammation and Ageing, University of Birmingham, Birmingham, UK; [7]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [8]Maidstone and Tunbridge Wells NHS Trust, Tunbridge Wells, UK; [9]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK; [10]Northumbria Healthcare NHS Foundation Trust, Northumberland, UK; [11]South Tyneside and Sunderland NHS Foundation Trust, Sunderland, UK; [12]County Durham and Darlington NHS Foundation Trust, Darlington, UK; [13]Royal Devon University Healthcare NHS Foundation Trust, Exeter, UK; [14]University Hospitals Plymouth NHS Trust, Plymouth, UK; [15]Aneurin Bevan University Health Board, Gwent, UK; [16]Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; [17]Mid Yorkshire Teaching NHS Trust, Wakefield, UK; [18]Northern Health and Social Care Trust, Antrim, UK; [19]North Tees and Hartlepool NHS Foundation Trust, Stockton-on-Tees, UK; [20]Calderdale and Huddersfield NHS Foundation Trust, Huddersfield, UK; [21]James Paget University Hospitals NHS Foundation Trust, Great Yarmouth, UK; [22]North Cumbria Integrated Care NHS Foundation Trust, Carlisle, UK; [23]Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [24]North Bristol NHS Trust, Bristol, UK; [25]East Sussex NHS Trust, East Sussex, UK; [26]Victor Phillip Dahdaleh Heart and Lung Research Institute, University of Cambridge, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.118



Abstract S113 Figure 1 Flowchart of patients included in the CLAMP study. Early recurrence is defined as pneumothorax identified on or before day 7 from time of clamping (clamping group) or chest drain removal (non-clamping group), whilst late is from day 8–30. Intervention is inclusive of any attempted pleural procedure or surgery for pneumothorax

Introduction To confirm resolution of air leak after intercostal chest drain (ICD) insertion for pneumothorax, physicians may clamp the ICD to mimic removal and/or use digital suction devices to quantify air leak. The CLAMP project aims to assess whether these strategies impact rates of recurrent pneumothorax, repeat pleural procedures, or length of stay.

Methods Sites were recruited via INSPIRE, the UK's respiratory trainee-led research network. Patients included were admitted with primary or secondary spontaneous pneumothorax requiring ICD insertion from May 2021-October 2023. Exclusion criteria included age <16 years, iatrogenic/traumatic pneumothoraces, and pleurodesis during the admission. Data collected via retrospectively included demographics, use of suction and clamping trials, adverse events, recurrent pneumothorax, and repeat pleural procedures.

Results 579 admissions with pneumothorax (203 primary, 376 secondary) from 22 sites were included (figure 1). Suction was applied in 174 cases (30.1%), with 42 using digital suction. Clamping trials were undertaken in 168 cases (29.0%). In 10.1% (n=17) of cases clamping revealed ongoing air leak, of which one patient required intervention. Of 151 cases with a clamping trial showing resolution of air leak, 18 (11.9%) had recurrent pneumothorax, of which 14 underwent a further pleural procedure/surgery. Of 411 cases where clamping was not performed, recurrent pneumothorax was identified in 54 cases (13.1%), of which 50 (12.1%) underwent further intervention. Overall pneumothorax recurrence within 30 days of ICD removal or clamping was not significantly different between the two groups (11.3% vs 13.1%; $x^2=0.22$, p=0.64) and overall need for recurrent procedure was not significantly different (8.9% vs 12.1%; $x^2=1.47$, p=0.23). Adverse events associated with clamping occurred in 1.8% (n=3) and included pain, breathlessness and subcutaneous emphysema, but there were no episodes of tension pneumothorax. Median length of stay during the index admission was 6 days in patients with clamping trials and 5 in those without (p=0.12).

Conclusions Clamping trials appear to be safe and associated with non-significantly lower rates of recurrent pneumothorax and repeat pleural intervention, but longer length of stay. A prospective trial of ICD removal assessing clamping, digital suction devices, and clinically-guided strategies is now warranted to assess their utility individually and in combination.

S114 PRELIMINARY RESULT OF A DUTCH MULTICENTER STUDY SHOWS HIGH PREVALENCE OF BHD IN SP PATIENTS. TIME TO CHANGE PNEUMOTHORAX GUIDELINES

[1]BPC Hoppe, [2]JWK van den Berg, [3]W Thijs, [4]SE Smulders, [5]NJM Claessens, [6]SRS Ramai, [7]FMNH Schramel, [8]D Schippers, [9]WJB Blox, [10]M Nagtegaal, [11]RN van Rossem, [1]LJM Kroft, [1]JL Stöger, [1]FAT de Vries, [1]CJ van Asperen, [1]CL Klop, [1]PE Postmus. *[1]Leiden University Medical Center, Leiden, Netherlands; [2]Isala, Zwolle, Netherlands; [3]NWZ, Alkmaar, Netherlands; [4]JBZ, Den Bosch, Netherlands; [5]Rijnstate, Arnhem, Netherlands; [6]Alrijne, Leiderdorp, Netherlands; [7]Antonius Ziekenhuis, Nieuwegein, Netherlands; [8]Haga Ziekenhuis, Den Haag, Netherlands; [9]ASZ, Dordrecht, Netherlands; [10]GHZ, Gouda, Netherlands; [11]RDGG, Delft, Netherlands*

10.1136/thorax-2024-BTSabstracts.119

Introduction Investigation to diagnose Birt-Hogg-Dubé (BHD) syndrome in primary spontaneous pneumothorax (PSP) patients is not routine despite the possibility of a prevalence of BHD as high as 3.4–10 percent.[1 2] The lifetime risk in BHD patients for renal cell cancer is high (up to 35%) and may therefore justify screening for BHD in PSP patients. Furthermore, for each affected SP patient 3–4 affected family members were found. Screening might therefore result in detecting 4- 5 new patients at high risk of developing renal cell cancer per PSP patient.

Objectives The aim of this study is to establish the prevalence of BHD syndrome in patients presenting with a 'primary' SP. The second aim of the study is to detect other abnormalities likely related to the SP. In this study a total of 350 patient will be included from 11 hospitals in the Netherlands.

Methods Patients with a PSP are tested for the existence of BHD through FLCN mutation testing and low dose CT Thorax. In addition a questionnaire at start, 1 and 4 years is performed. We present the preliminary results of screening for BHD in PSP patients.

Results From September 2020 till April 2024 296 PSP patients were included and analyzed in this study. Thirteen (4%) patients were found to carry a FLCN mutation (table 1). The number of affected family members is not yet known. Twelve patients carrying FLCN mutation showed characteristic cystic lung lesions.

Abstract S114 Table 1

FLCN mutations	
Nucleotide	**Aminoacids**
c.1183_1198del (he)	p.Leu395Serfs*68
c.610_611delinsTA (he)	p.Ala204*
c.1285delC (he)	p.His429Thrfs*39
c.610_611delinsTA (he)	p.Ala204*
c.250-2A>T (he)	Splice Variant
c.1280C>G (he)	p.Pro427Arg
c.610_611delinsTA (he)	p.Ala204*
c.1177-5_1177-3del	probably Splice Variant
c.610_611delinsTA (he)	p.Ala204*
c.610_611delinsTA (he)	p.Ala204*
c.610_611delinsTA (he)	p.Ala204*
c.499C>T (he)	p.Gln167*
c.995_998delTCTC (he)	p.Leu332Glnfs*20

Conclusion These early findings suggest that the prevalence of BHD in SP patients might be as high as 4 percent. As the lifetime risk in BHD patients for renal cell cancer is high, and through each affected person asymptomatic family members may be found, this justifies screening for BHD in SP patients. In this study both modalities (CT and FLCN screening) are analyzed. Characteristic cystic lung lesions were found in most but not all BHD patients. Probably both CT and FLCN screening needs to be considered for PSP patients.

REFERENCES

1. Ren HZ, *et al. Clin Genet* 2008;**74**:178–1832.
2. Shiram JD, *et al. BMC Pulm Med* 2022 Aug 26;**22**(1):325.

S115 ASSOCIATION OF POLYGENIC RISK SCORE FOR HEIGHT WITH PNEUMOTHORAX RISK

[1,2]C John, [1]J Chen, [1]N Shrine, [3,4,5]SJ Marciniak, [1,2]MD Tobin. [1]*University of Leicester, Leicester, UK*; [2]*University Hospitals of Leicester NHS Trust, Leicester, UK*; [3]*University of Cambridge, Cambridge, UK*; [4]*Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK*; [5]*Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.120

The incidence of spontaneous pneumothorax has been estimated at between 18 and 24 per 100,000 in men and 1 to 7 per 100,000 in women in varied international settings, and may have increased over time. Approximately 60% of cases have chronic lung disease (secondary spontaneous pneumothorax) and the remainder are considered as primary spontaneous pneumothorax. Ten percent of cases are familial, though monogenic causes are currently only identified in a third of affected families.[1] It is plausible that genetics plays a role in sporadic cases. Height is commonly reported to be a risk factor for primary spontaneous pneumothorax, though few studies appear to have formally tested this. We hypothesised that a polygenic risk score for height would be associated with risk of pneumothorax.

We selected UK Biobank participants with history of pneumothorax (N=3496) and controls with no reported history of pneumothorax (N=446,202). We calculated polygenic risk scores (PRS) using weights from a published genome-wide association study (GWAS) of height.[2] We tested association of pneumothorax with the PRS by logistic regression adjusted for sex, age, smoking and the first 10 principal components of genetic ancestry.

We found that the PRS for height was significantly associated with pneumothorax risk ($P=3.75x10^{-12}$), with a 1.13-fold increase in risk of pneumothorax for each standard deviation increase in the PRS.

This result provides genetic evidence to support the role of height as a risk factor for pneumothorax and demonstrates that common genetic variation contributes to pneumothorax risk. Next steps will include investigation of possible sex interaction, and differences between primary and secondary pneumothorax risk.

REFERENCES

1. Grimes HL, Holden S, Babar J, *et al*. Combining clinical, radiological and genetic approaches to pneumothorax management. *Thorax* 2022;**77**:196–198.
2. Yengo L, Vedantam S, Marouli E, *et al*. A saturated map of common genetic variants associated with human height. *Nature* 2022;**610**:704–712.

S116 WHEN IS TENSION PNEUMOTHORAX, NOT TENSION?

[1]E Vecchi, [1]B Iqbal, [2]N Bentley, [2]C Middlemass, [1]RJ Hallifax. [1]*University of Oxford, Oxford, UK*; [2]*Clinical Coding Department, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.121

Introduction and Objectives Tension pneumothorax is a life-threatening condition, occurring when an increasing pressure of air in the pleural space compresses mediastinal structures, leading to haemodynamic instability. How often tension occurs spontaneously is not clear. Our aim was to assess the incidence of true clinical spontaneous tension pneumothoraxes in one trust between 2016–2023 using clinical coding.

Methods Patients with a primary code of 'Spontaneous Tension Pneumothorax' (J93.0), ≥16 years old, between 1/1/2016 and 31/12/2023 were analysed. Data was extracted included: demographics, clinical observations on admission and after chest drain insertion (if applicable), other pleural treatments, and relevant past medical history. For each episode, the cause was classed as either primary spontaneous, secondary spontaneous, iatrogenic, or traumatic. Finally, each pneumothorax was classified as either 'true clinical tension' (with haemodynamic instability), 'radiologically described tension' (with no clinical signs of tension but mediastinal shift on chest x-ray), 'suspected tension' (if the case was borderline), or 'no signs of tension'.

Results The dataset contained 133 unique patient episodes. 17 episodes were judged to be miscoded and were excluded from analysis, leaving 116 total episodes of pneumothorax (see table 1). 56 patients (48.7%) had a traumatic or iatrogenic cause and could not be classified as spontaneous tension pneumothorax. The majority of cases (n=72, 62.6%) had no clinical signs of tension. Only 11 patients (9.6%) could be classified as true spontaneous tension pneumothorax with clinical signs (3 primary and 8 secondary). 77 patients had a chest x-ray, of

Abstract S116 Table 1 Final diagnosis of tension (or not) by pneumothorax type

n (%)	Primary	Secondary	Traumatic	Iatrogenic	Overall
True Clinical Tension	3 (13.0%)	8 (21.6%)	3 (17.6%)	12 (30.8%)	**26 (22.4%)**
Suspected Tension	5 (21.7%)	6 (16.2%)	0 (0%)	6 (15.4%)	**17 (14.7%)**
Radiological Tension only	7 (30.4%)	9 (24.3%)	2 (11.8%)	4 (10.3%)	**22 (19.1%)**
No Signs of Tension	8 (34.8%)	14 (37.8%)	12 (70.6%)	17 (43.6%)	**51 (43.5%)**
Total	**23 (100%)**	**37 (100%)**	**17 (100%)**	**39 (100%)**	**116 (100%)**

which 44 showed mediastinal shift. In those 10 patients with true spontaneous clinical signs, chest x-ray was performed only twice before pneumothorax decompression.
Conclusions To our knowledge, this largest dataset to quantify the incidence of spontaneous tension pneumothorax. Whilst true clinical spontaneous tension pneumothorax is rare, it is a genuine phenomenon which requires clinical vigilance. This has important implications for the increasing conservative management of primary spontaneous pneumothorax. Finally, this study reiterates the importance of clinical diagnosis of tension pneumothorax, showing that mediastinal shift on chest x-ray does not correlate with clinical signs of tension.

S117 CT GUIDED BIOPSY – A REVIEW OF A LARGE INTERVENTIONAL SERVICE REGARDING PNEUMOTHORAX RATES

J Sutanto, G Mussell, D Mitchell, WH Ong, A Aujayeb. *Northumbria Healthcare NHS Foundation Trust, Newcastle, UK*

10.1136/thorax-2024-BTSabstracts.122

Introduction The number of computed tomography guided biopsies (CTGB) performed to investigate lung cancer is increasing. Data regarding performance and complications are important to inform patient care. Evidence shows main risk of CTGB is pneumothorax (up to 26%). The Trust runs a large cancer and pleural service, with radiologists and physicians working in close collaboration.
Methods A service review was performed using locally available data from radiology with local Caldicott approval. Demographics and outcomes were collected regarding CTBG patients over April 2011 to July 2023. The data was analysed and presented descriptively.
Results During that period, 1492 CTGB were performed. Mean age was 71.7 years (range 25–91), with 760 (50.9%) males undergoing CTGB. There were 355 pneumothoraces (23.8%), 159 (44.8%) of those were visible on the post biopsy CT. The mean number of pleural passes was 1.8 (range 1–4). Of those who had pneumothoraces, 53.6% had radiological emphysema, mean Fev1 was 1.96 litres, 67% had no pleural contact, mean size of lesion was 32mm (26–95mm), 72% lesions were less than 3cm deep, and majority of biopsies were with 18 Fr (44%) and 17Fr (32.1%) needles. 315 pneumothoraces were managed conservatively (88.7%), 42 had a chest drain (including a vent and a Heimlich valve) - 40 at outset (and 2 up to 7 days later) – all were symptomatic.
Conclusion FEV1 has no bearing on the risk of pneumothorax for CTGB. Rate of pneumothorax is higher than expected given the lesions biopsied are often small with no pleural contact and more than 1 pleural pass is required. Conservative management is commonplace.

'Brave New World' – Asthma in the new era

S118 YOUNG-ADULTS (16–25) WITH SEVERE ASTHMA HAVE WORSE OUTCOMES WHEN COMPARED TO OTHER AGE-GROUPS IN THE UK SEVERE ASTHMA REGISTRY

[1]LJ Holmes, [2]C Redmond, [3]P Pfeffer, [2]LG Heaney, [4]T Brown, [2]J Busby, [5]R Chaudhuri, [6]DJ Jackson, [7]G Jones, [8]AH Mansur, [6]AM Nanzer, [9]S Naveed, [10]M Patel, [11]H Rupani, [12]D Subramanian, [1]SF Fowler. *[1]Manchester University Foundation NHS Trust, Manchester, UK; [2]Belfast Health and Social Care NHS Trust, Belfast, UK; [3]Barts Health NHS Trust, London, UK; [4]Portsmouth Hospitals NHS Trust, Portsmouth, UK; [5]NHS Greater Glasgow and Clyde Health Board, Gartnavel Hospital, Glasgow, UK; [6]Guy's Severe Asthma Centre, Guy's and St Thomas' Hospitals, London, UK; [7]Royal Liverpool University Hospital, Liverpool, UK; [8]University of Birmingham and Heartlands Hospital, Birmingham, UK; [9]Glenfield Hospital, Leicester, UK; [10]Department of Respiratory Medicine, University Hospitals Plymouth NHS Trust, Plymouth, UK; [11]University Hospital Southampton, Southampton, UK; [12]University Hospitals of Derby and Burton NHS Foundation Trust, Derby, UK*

10.1136/thorax-2024-BTSabstracts.123

Background Approximately 800,000 young adults suffer with asthma in the UK.[1] Young adulthood can be a challenging time, and living with severe asthma incurs an additional burden, yet little is known about the impact and outcomes of severe asthma in this cohort.
Aims To compare data on clinical outcomes from baseline to first annual review of young-adults (16–25) compared to other age groups in the UK-Severe Asthma Registry (UKSAR).
Methods Patients in UKSAR, initially seen between January 2015 and October 2023, were included if they had a

Abstract S118 Table 1 Baseline demographics & biomarkers

Baseline data	Age groupings (years)					P
	16–25	26–39	40–55	56–70	71+	
N (%)	236 (8.4%)	466 (16.6%)	1027 (36.5%)	857 (30.5%)	226 (8%)	
Exacerbations/yr (IQR)	5 (2,8)	5 (3,8)	4 (3,7)	4(2,7)	4 (2,7)	0.001
ED attendance	59.7%	54.5%	44.0%	36.4%	36.7%	<0.001
Hospital admissions	50.7%	46.4%	34.7%	31.5%	36.6%	<0.001
Invasive ventilation	13.2%	13.5%	9.0%	6.0%	3.7%	<0.001
Adherence (ICS)	71.3%	85.4%	89.6%	94.6%	95.9%	<0.001
Anxiety/Depression	15.7%	15.5%	13.8%	10.2%	4.9%	<0.001
FeNO ppb med (IQR)	51 (24–91)	38 (18,81)	40(20,72)	43 (23,74)	36 (20,63)	0.017
Maintenance OCS use.	31.1%	34.8%	43.1%	48.0%	48.0%	<0.001
ACQ-6 (IQR)	3.2 (2.2–4.2)	3.3 (2.4–4.2)	3.0 (2.0–4.0)	2.8(1.8–3.8)	2.5 (1.5–3.3)	<0.001
Blood Eosinophil Count (N-109L)	0.33 (0.17, 0.60)	0.30 (0.13, 0.60)	0.33 (0.19, 0.60)	0.30 (0.17, 0.56)	0.37 (0.15, 0.60)	0.462

confirmed severe asthma diagnosis, were >16-years at baseline and had at least one annual review (within 9–24 months of their baseline assessment). Descriptive statistics were calculated using mean with standard deviation, median (interquartile range [IQR]) and count (percentage) as appropriate.

Results 2,812 patients were included from 25 asthma centres, with age groups categorised (see table 1).

Despite having similar exacerbation rates, the young adults were more likely to have attended ED or been admitted to hospital in the previous 12 months, when compared to the older age groups (see table 1). Despite improvements across the cohorts, these differences remained after 12 months in specialist care.

Invasive ventilation was most frequently reported among the two younger categories, with 13.2% of 16–25-year-olds and 13.5% of 26–39-year-olds having been intubated, compared to <10% of patients in the older cohorts ($p<0.001$).

The younger age group also had poor asthma control (yet less frequent use of maintenance OCS), higher levels of anxiety and depression, worse adherence and higher FeNO at baseline.

Hospital admissions and ED attendance remained significant after adjusted multi-variate analysis, between the young adults and those aged 40–70years.

Conclusion In summary, young adults have worse clinical outcomes and biomarkers, when compared to other age groups, with lower levels of adherence and higher levels of anxiety and depression.

These outcomes will be driven by multi-factorial causes which require further exploration. This cohort is at an age where health behaviours (adherence and self-management) could be influenced and modified to help improve life-long outcomes and prevent longer-term complications.

REFERENCE

1. Couriel J. Asthma in adolescence. *Paediatr Respir Rev*. 2003;**4**(1):47–54.

S119 INCREASING THE USE OF ASTHMA BIOLOGICS AND FENO IN ASTHMA DIAGNOSIS AND IMPROVING OUTCOMES FOR CORE20PLUS COMMUNITIES

LA De Freitas, B Elgerray, E IDRIS. *Royal Stoke University Hospital, Newcastle Under Lyme, UK*

10.1136/thorax-2024-BTSabstracts.124

Introduction The NHS Long-Term Plan prioritizes reducing health inequalities across England and Wales, targeting conditions like asthma, which is prevalent in socioeconomically deprived communities. The National Institute for Health and Care Excellence (NICE) recommends Fractional Exhaled Nitric Oxide (FeNO) testing to improve asthma care, yet it remains underutilized in primary care. This study aimed to enhance the diagnosis, management, and referral of severe asthma cases within Core20PLUS communities through Primary Care Networks (PCNs) using FeNO testing.

Methods A convergent parallel mixed methods design was used. Work Package 1 involved interviews with asthma care stakeholders to describe FeNO testing implementation across four PCNs. Work Package 2 analyzed anonymized patient data, focusing on Core20PLUS populations. Work Package 3 synthesized the data using the Consolidated Framework for Implementation Research (CFIR) to evaluate the intervention's effectiveness and provide recommendations. This was supported by professional training and public engagement events.

Results Fourteen GP practices across four PCNs conducted 895 FeNO tests from June 2023 to March 2024, with 559 tests evaluated. Of these, 64.4% were from Core20PLUS groups. Before FeNO testing, high rates of OCS inhalers, SABA inhalers and oral steroids were utilized. Nearly half experienced symptom exacerbations, and 7.4% had A&E visits or hospital admissions. Post-FeNO testing, 37.6% had OCS changes, 16.4% had SABA adjustments, and 10.5% had oral steroid changes, leading to improved asthma control scores. Seven specialist referrals were made.

88 Healthcare professional trained in asthma care, 25 Healthcare professional trained in FeNO, 100 patients seen in joint or clinic in primary care by staff severe asthma team and 56 persons from voluntary sector informed of project.

Conclusion FeNO testing in primary care was well-received and proved beneficial, particularly for deprived communities. Effective training and community outreach were successful, though challenges like limited workforce capacity and further funding and training requirements were identified. Future projects should ensure protected learning time and comprehensive data collection to evaluate outcomes and cost-effectiveness. The low number of specialist referrals indicates a need for further investigation into referral practices and barriers.

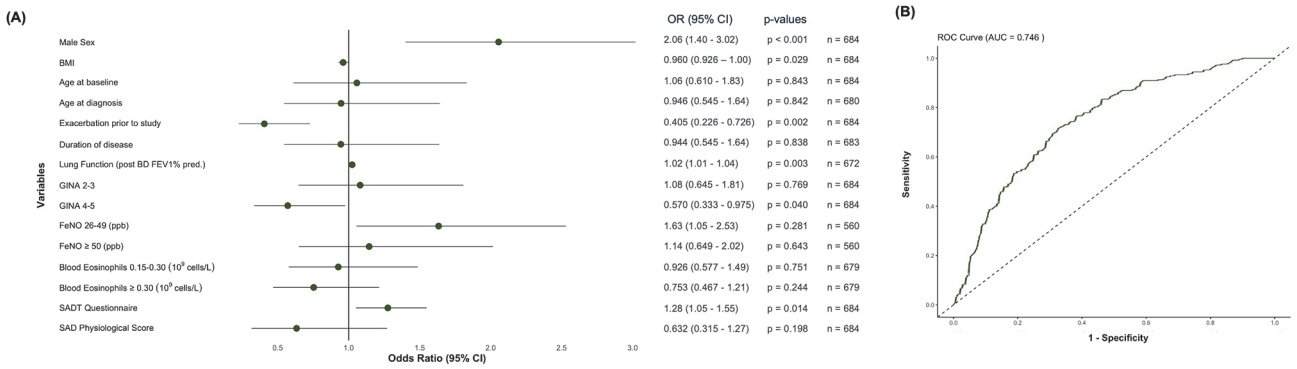
S120 POST-HOC ANALYSIS OF TRANSCRIPTOMIC AND CLINICAL PREDICTORS OF REMISSION IN THE ATLANTIS COHORT

[1]AA Kumar, [2,3]TM Kole, [2,4]MC Nawijn, [5,6]KF Rabe, [7]A Papi, [8]C Brightling, [9]D Singh, [2,10]T van der Molen, [2,10]JW Kocks, [1]IM Adcock, [1]N Zounemat-Kermani, [2,3]M van den Berge, [11]M Kraft, [1]S Siddiqui. *[1]National Heart and Lung Institute, Imperial College London, London, UK*; *[2]Department of Pulmonary Diseases, University of Groningen, University Medical Center Groningen, Groningen, Netherlands*; *[3]Groningen Research Institute for Asthma and COPD, University of Groningen, University Medical Center Groningen, Groningen, Netherlands*; *[4]Department of Pathology and Medical Biology, University of Groningen, University Medical Center Groningen, Gronigen, Netherlands*; *[5]Department of Medicine, Christian Albrechts University of Kiel, Kiel, Germany*; *[6]LungenClinic Grosshansdorf, Airway Research Center North in the German Center for Lung Research, Grosshansdorf, Germany*; *[7]Department of Respiratory Medicine and Translational Medicine, University of Ferrara, Ferrara, Italy*; *[8]Institute for Lung Health, National Institute for Health Research Biomedical Research Centre, University of Leicester, Leicester, UK*; *[9]Centre for Respiratory Medicine and Allergy, University of Manchester, Manchester University NHS Foundation Trust, Manchester, UK*; *[10]Department of General Practice and Elderly Care Medicine, University of Groningen, University Medical Center Groningen, Gronigen, Netherlands*; *[11]Division of Pulmonary, Critical Care and Sleep Medicine, Samuel Bronfman Department of Medicine, Icahn School of Medicine at Mount Sinai, New York, USA*

10.1136/thorax-2024-BTSabstracts.125

Background Asthma remission is an emerging paradigm of disease management, recently recognised as a management objective by several international guidelines. However, the baseline predictors (clinical and biological) of remission need to be further clarified, alongside the development of disease activity tools as putative treatment targets and understanding biological predictors.

Methods We conducted a retrospective, exploratory analysis of the Assessment of Small Airways Involvement in Asthma (ATLANTIS) study. Remission was, 'Asthma Control Questionnaire-6 (ACQ-6) < 1.5, no maintenance OCS, no exacerbations and a pre-bronchodilator FEV_1% predicted absolute decline < 10%' over 12 months of follow up. A multivariable logistic regression assessed potential predictors of remission.



Abstract S120 Figure 1 A clinical prediction model shows seven significant predictors of remission, with adequate discrimination between classes (remission vs non-remission). (A) Adjusted forest plots are presented with odds ratios and 95% confidence intervals. Remission defined as Asthma Control Questionnaire-6 (ACQ-6) < 1.5, no maintenance OCS, no exacerbations and a pre-bronchodilator FEV1% predicted absolute decline < 10% over 12 months of follow up. The lower classes of BEC and FeNO are used as reference categories. A higher SADT Questionnaire value and a lower SAD Physiological score represent lower levels of small airways disease. (B) ROC Curve (AUC = 0.746) shown assessing the multivariable logistic regression model. BMI: Body Mass Index; post BD FEV1: post bronchodilator forced expiratory volume in 1 second; GINA: Global Initiative for Asthma FeNO: Fractional exhaled Nitric Oxide; ppb: parts per billion; Post-BD FEV1: Post Bronchodilator Forced Expiratory Volume in 1 second % predicted; SADT: Small Airways Dysfunction Tool; SAD: Small Airways Dysfunction

The Small Airways Dysfunction Tool (SADT) questionnaire measured Small Airways Disease (SAD), with high scores representing less severe SAD. Factor analysis of the SADT, FeNO, BEC, ACQ-6 and pre-bronchodilator FEV_1 generated a Low Disease Activity (LDA) tool, with the lower quartile of scores being LDA. A subset (295/684) with nasal RNAseq transcriptomics data underwent differential gene expression, extracting differentially expressed pathways underlying remission.

Results Overall, 309/684 (45.2%) were in remission. Significantly fewer severe (GINA 4–5) asthmatics were in remission compared to non-remission (31.7% vs. 58.8%, p < 0.001). Significantly more patients with high T2 biomarkers were in non-remission (12.1% vs. 6.92%, p = 0.01). Lower FeNO (OR: 2.06, 95%CI: 1.05 - 2.53), male sex (OR: 2.06, 95% CI: 1.40–3.20), better lung function (OR: 1.02, 95%CI: 1.01–1.04) and higher SADT (OR: 1.28, 95%CI: 1.05 -1.55) were predictors of remission. Risk factors for non-remission were higher prior exacerbation history (OR: 0.405, 95%CI: 0.226–0.726), severe asthma (OR: 0.570, 95%CI: 0.333–0.975) and higher BMI (OR: 0.960, 95%CI: 0.926–1.00). A novel LDA tool related baseline LDA to better QOL, increased likelihood of remission, and fewer exacerbations. Finally, using nasal transcriptomics, we identified that upregulated 'Interleukin-4 and Interleukin-13 signalling' was the only differentially expressed pathway which passed FDR in remission patients.

Interpretation We have performed a comprehensive analysis, assessing both clinical and transcriptional predictors of remission. We show that greater SAD is associated with a lower likelihood of remission and developed an LDA tool as a potential target for remission guided therapies.

S121 SPUTUM BACTERIAL PATHOGENS AND ANTIBIOTIC RESISTANCE PATTERNS AMONG ASTHMA PATIENTS IN OXFORDSHIRE: A 27-YEAR LONGITUDINAL STUDY

J Shen, C Tiedeman, D Eyre, I Pavord, S Walker, T Hinks. *University of Oxford, Nuffield Department of Medicine, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.126

Background The respiratory microbiome is increasingly recognised as a treatable trait in asthma, due to its impacts on respiratory function and exacerbations. Antimicrobial resistance in asthma causes challenges in managing infections and appropriate treatment.

Methods We analysed bacterial pathogens in sputum cultures among patients with a primary diagnosis of asthma over a 27-year period. 1348 asthma patients, 7279 sputum bacterial pathogens tests, and 86567 antibiotic resistance tests were analysed from the Infections in Oxfordshire Research Database (IORD) from 1993 to 2019.

Results A potentially pathogenic bacterial species was identified in 24.2% of asthma patients at any time point, including *Haemophilus influenzae* (8.8%), *Pseudomonas aeruginosa* (8.3%), and *Staphylococcus aureus* (2.9%). From 1993 to 2019, the proportion of all the bacterial isolates accounted for by *P. aeruginosa* increased (6.3% to 26.0%), while those due to *M.* catarrhalis (31.2% to 6.0%) decreased. Antimicrobial resistance throughout this period fluctuated, with an average resistance prevalence to any antibiotic agent of 12.3% (12.1%-12.5%). The highest resistance rates were observed for macrolides (27.0% (25.9%-28.1%)) and penicillins (21.3% (20.7%-21.9%)). The rate of antimicrobial resistance increased from 5.3% in 1993, peaked at 27.5% in 2011 and decreased to 6.9% in 2019. Resistance rate for macrolides (1.2% to 36.8%) and tetracyclines (1.2% to 34.1%) continued to increase from 1993 to 2019. For *H. Influenzae*, 25.0% of the samples were resistant to macrolides and the resistance rate for penicillins increased from 12.3% in 1993 to 24.1% in 2019. 25.0% of the *P. aeruginosa* samples were resistant to fluoroquinolones and 56.0% of *S. aureus* samples were resistant to penicillins. Patients with an identified bacteria were associated with hospital admission and patients who were resistant to antibiotics were associated with staying in the hospital longer. For patients admitted to the hospital for over 10 days, the antibiotic-resistant rate was 16.4% compared to 9.9% among asthma outpatients.

Conclusion 24.2% of asthma patients had positive sputum samples, most commonly with *H. influenzae*, with increasing evidence of resistance to macrolides and penicillins over a 27-year longitudinal study.

Abstract S121 Table 1 The antibiotic resistance rate of different bacterial pathogens among asthma patients

	Aminoglycosides			Cephalosporins			Fluoroquinolones			Macrolides		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
Haemophilus Influenzae	/	/	/	3993	0.9%	0.6%-1.1%	985	3.1%	2.1%-4.2%	2977	25.0%	23.4%-26.5%
Pseudomonas Aeruginosa	8275	1.8%	1.6%-2.1%	2647	9.2%	8.1%-10.3%	3427	14.7%	13.5%-15.9%	/	/	/
Other bacteria	728	6.7%	4.9%-8.6%	715	24.1%	20.9%-27.2%	501	14.6%	11.5%-17.7%	110	20.0%	12.5%-27.5%
Staphylococcus Aureus	906	0.2%	0.0%-0.4%	13	23.1%	0.2%-46.0%	1309	18.1%	16.0%-20.2%	743	25.7%	22.6%-28.8%
Streptococcus Pneumoniae	1098	20.8%	18.4%-23.2%	/	/	/	1068	11.3%	9.4%-13.2%	1917	40.5%	38.3%-42.7%
Moraxella Catarrhalis	/	/	/	462	0.9%	0.0%-1.7%	3	100.0%	100.0%-100.0%	697	1.3%	0.5%-2.1%
Pseudomonas Species	1934	9.4%	8.1%-10.7%	583	8.4%	6.2%-10.7%	571	27.8%	24.2%-31.5%	/	/	/
Coliforms	725	23.2%	20.1%-26.2%	1026	38.6%	35.6%-41.6%	528	40.2%	36.0%-44.3%	/	/	/
Total	13666	5.7%	5.3%-6.1%	9439	9.5%	8.9%-10.1%	8392	15.9%	15.2%-16.8%	6444	27.0%	25.9%-28.1%

	Penicillins			Tetracyclines			Other antibiotics			Total		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
Haemophilus Influenzae	7965	13.1%	12.4%-13.9%	3982	4.8%	4.1%-5.5%	3986	1.4%	1.0%-1.7%	23888	8.8%	8.4%-9.2%
Pseudomonas Aeruginosa	2673	7.9%	6.8%-8.9%	/	/	/	4528	9.7%	8.8%-10.5%	21550	7.2%	6.9%-7.5%
Other bacteria	836	46.5%	43.1%-49.9%	46	58.7%	44.5%-72.9%	2164	13.3%	11.8%-14.7%	5100	20.0%	18.9%-21.1%
Staphylococcus Aureus	1520	56.0%	53.5%-58.5%	690	5.5%	3.8%-7.2%	4471	1.3%	1.0%-1.7%	9652	14.3%	13.6%-15.0%
Streptococcus Pneumoniae	1423	1.1%	0.6%-1.7%	1805	43.1%	40.8%-45.4%	6456	0.6%	0.4%-0.8%	13767	14.2%	13.6%-14.8%
Moraxella Catarrhalis	1178	37.6%	34.8%-14.4%	702	0.6%	0.0%-1.1%	707	1.0%	1.0%-0.3%	3749	12.5%	11.4%-13.6%
Pseudomonas Species	593	8.6%	6.3%-10.9%	/	/	/	1147	15.5%	13.4%-17.6%	4828	12.8%	11.9%-13.7%
Coliforms	1186	59.1%	56.3%-61.9%	/	/	/	568	17.3%	14.1%-20.4%	4033	39.1%	37.6%-40.6%
Total	17374	21.3%	20.7%-21.9%	7225	14.4%	13.6%-15.2%	24027	4.8%	4.5%-5.1%	86567	12.3%	12.1%-12.5%

S122 DOES THE ASTHMA BEST PRACTICE TARIFF AFFECT 30- AND 90-DAY READMISSION?

[1]AJ Adamson, [1]JK Quint, [2]T Wilkinson, [3]J Dodd. [1]*Imperial College London, London, UK*; [2]*University of Southampton, Southampton, UK*; [3]*University of Bristol, Bristol, UK*

10.1136/thorax-2024-BTSabstracts.127

Introduction NHS England's 'Best Practice Tariff' (BPT) for asthma admissions aim to promote good quality care, whereby hospitals receive monetary compensation if asthma patients receive a respiratory specialist review within 24 hours along with specific elements of the discharge bundle.[1] This study assesses whether meeting the BPT criteria and individual

Abstract S122 Table 1 The association between mandatory (M) and optional (O) Best Practice Tariff (BPT) elements and 30-day and 90-day asthma and all-cause readmission. Associations between each element and readmission are adjusted for age, gender, Index of Multiple Deprivation quintile, Charlson Comorbidity Index, smoking status, asthma severity on admission, receipt of inhaled and oral steroids at discharge, and oral steroids rescue history in the past 12 months

Individual and combined elements of good practice care	30-day all-cause readmission (Odds ratio (95% CI))	30-day asthma readmission (Odds ratio (95% CI))	90-day all-cause readmission (Odds ratio (95% CI))	90-day asthma readmission (Odds ratio (95% CI))
Receipt of discharge bundle (M)	0.80 (0.69 to 0.92)	0.61 (0.50 to 0.75)	0.92 (0.82 to 1.03)	0.77 (0.66 to 0.90)
Inhaler technique checked (M)	0.91 (0.78 to 1.06)	0.76 (0.61 to 0.95)	0.98 (0.87 to 1.10)	0.82 (0.70 to 0.97)
Maintenance medication reviewed (M)	0.85 (0.72 to 1.01)	0.76 (0.59 to 0.97)	0.92 (0.81 to 1.05)	0.87 (0.72 to 1.05)
Adherence discussed (O)	0.87 (0.75 to 1.01)	0.67 (0.54 to 0.83)	0.91 (0.81 to 1.02)	0.78 (0.66 to 0.92)
PAAP (personalised asthma action plan) issued or reviewed (M)	0.90 (0.79 to 1.04)	0.72 (0.59 to 0.89)	0.94 (0.84 to 1.04)	0.85 (0.73 to 0.98)
Tobacco dependency addressed* (M)	1.04 (0.74 to 1.45)	0.90 (0.56 to 1.47)	1.00 (0.77 to 1.29)	0.95 (0.66 to 1.37)
Asthma triggers discussed (O)	0.85 (0.73 to 0.98)	0.69 (0.56 to 0.85)	0.87 (0.78 to 0.97)	0.81 (0.69 to 0.94)
Community follow-up requested within two working days (O)	0.88 (0.77 to 1.00)	0.73 (0.60 to 0.88)	0.84 (0.76 to 0.93)	0.80 (0.70 to 0.92)
Specialist review requested within 4 weeks (M)	0.90 (0.78 to 1.03)	0.82 (0.67 to 1.01)	0.93 (0.84 to 1.03)	0.91 (0.78 to 1.06)
No elements of the discharge bundle received	1.12 (0.92 to 1.36)	1.29 (0.96 to 1.74)	1.03 (0.88 to 1.20)	1.19 (0.95 to 1.48)
Respiratory Specialist Review received in hospital	1.01 (0.84 to 1.20)	0.69 (0.53 to 0.89)	1.14 (0.99 to 1.31)	0.97 (0.79 to 1.19)
Respiratory Specialist Review received in hospital within 24 hours of arrival (M)	0.98 (0.86 to 1.11)	0.92 (0.77 to 1.10)	1.00 (0.91 to 1.10)	1.02 (0.89 to 1.16)
BPT2024 mandatory discharge bundle elements only	0.90 (0.79 to 1.04)	0.78 (0.64 to 0.95)	0.96 (0.86 to 1.06)	0.94 (0.81 to 1.09)
BPT2024 mandatory discharge bundle elements and receipt of respiratory specialist review within 24 hours	0.95 (0.82 to 1.10)	0.91 (0.73 to 1.13)	1.01 (0.90 to 1.13)	1.03 (0.89 to 1.21)

*"Tobacco dependency addressed" only relevant for current smokers and as such smoking status was not adjusted for in the model for this variable.

elements of the discharge bundle is associated with lower 30- and 90-day readmission.

Methodology The National Respiratory Audit Programme (NRAP) is a continuous national audit in primary and secondary care across England and Wales. Hospitals submit clinical data on emergency asthma admissions, which are linked to Hospital Episode Statistics, Patient Episode Dataset for Wales, and Office of National Statistics mortality data. This study used data from 2022–23. Patients were included if they: were admitted with acute asthma to hospitals in England that had taken part in NRAP; could be linked with HES; were male or female; and were alive at discharge. Patients are defined as meeting BPT for adult asthma if they receive a specialist review within 24 hours of arrival and a discharge bundle including: inhaler technique, maintenance medication and personalised asthma action plan review; referral for specialist review within 4 weeks of discharge; and smoking cessation advice. Adjusted and unadjusted mixed-effects logistic regression models accounting for clustering by hospital were used to assess the association between 30- and 90-day readmission and the BPT and its individual elements.

Results 12.964 patients from 151 hospitals were eligible for inclusion. 538 (4.1%) and 1077 (8.3%) of patients were readmitted with asthma within 30 and 90 days respectively. Adjusted odds ratios for the association between mandatory and optional BPT elements and 30- and 90-day readmission can be found in the table 1. Receipt of the mandatory discharge bundle BPT elements was associated with a reduction in 30-day asthma readmission (OR 0.78, 95%CI 0.64–0.95) after adjustment for patient characteristics and clinical care received in hospital. Additionally including RSR within 24 hours removed the association with readmission (OR 0.91, 95%CI 0.73–1.13).

Conclusion Patients who meet receive the BPT discharge bundle elements have a lower risk of readmission to hospital.

REFERENCE

1. NHSE,2022.2023/25 National Tariff Payment System.

S123 WILL YOU REGRET DUMPING YOUR X? SEX AS A BIOLOGICAL VARIABLE IN ASTHMA GENOMICS

P Rajasekar, O Iberi, S El-Toukhy, RL Clifford. *University of Nottingham, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.128

Rationale Sex disparity is present in asthma. Epigenetic gene regulation is implicated in asthmatic sexual dimorphism, yet X and Y chromosome data are excluded from DNA methylation (DNAme) analyses due to difficulty processing and interpreting the data. Here we aimed to develop an analysis pipeline to explore sex chromosome DNAme associations to test the hypothesis that XY chromosome DNAme is altered in asthma, potentially contributing to sex-related differences in asthma pathogenesis.

Methods In-house DNAme data from lung structural cells isolated from asthmatic and healthy individuals was used to produce the pipeline in R (**table 1**). Quality control and normalisation steps removed low quality probes and adjusted probe variability. Data was split into male and female samples and probe filtering was carried out. Probes were split by Female X (FXC), Male X (MXC) and Y (MYC) chromosome followed by batch effect correction (comBat) and assessed for association of DNAme with asthma via linear modelling (limma). The pipeline was used to analyse two publicly available Infinium HumanMethylation450 BeadChip datasets from bronchial (BE) and nasal (NE) epithelium (**table 1**). Pathway analysis was performed using gometh. Benjamini-Hochberg false discovery rate p-value <0.05 was taken as significant for all analyses.

Results No XY chromosome asthma-associated DNAme changes were identified in the in-house data. In BE, the FXC, MXC, and MYC showed significant asthma-associated DNAme changes (n=479, 106, and 23 probes respectively), with most probes showing increased methylation in asthmatic patients relative to controls. In NE, 2423, 1491 and 21 DNAme sites were asthma associated on the FXC, MXC and MYC respectively, with most MXC and MYC probes showing decreased methylation in asthmatic patients relative to controls, while FXC showed primarily increased methylation. BE FXC DNAme changes enriched for lipid biosynthetic pathways, whilst, in NE, FXC enriched for metabolic process pathways, and MXC for cytoskeleton and cell-adhesion pathways.

Conclusion A novel XY chromosome DNAme analysis pipeline was developed. Asthma associated DNAme changes were present on the XY chromosomes, with differences in males and females, and nasal and airway epithelial cells. Future work will profile matched GE to understand the potential functional impact of DNAme alterations.

Abstract S123 Table 1 The table describes the cell types and number of healthy and asthmatic donors in each dataset used in the study. GSE201872 and GSE65205 are GEO dataset IDs for the publicly available datasets

Datasets	Bronchial Fibroblast		Lung Fibroblast		Bronchial Epithelial cells		Nasal Epithelial Cells	
	Healthy	Asthma	Healthy	Asthma	Healthy	Asthma	Healthy	Asthma
In-house Data	17 (M-8; F-9)	9 (M-3; F-6)	23 (M-13; F-10)	8 (M-3; F-5)	18 (M-14; F-4)	17 (M-6; F-11)		
GSE201872					46 (M-16; F-30)	96 (M-26; F-70)		
GSE65205							36 (M-17; F-19)	36 (M-19; F-17)

'Of Mice and Men' – On the road to translation

S124 SINGLE-CELL TRANSCRIPTOMICS IDENTIFIES UNIQUE PATHWAYS REGULATING AIRWAY HYPERRESPONSIVENESS VIA CIRCADIAN REGULATOR REV-ERBA IN AIRWAY EPITHELIUM

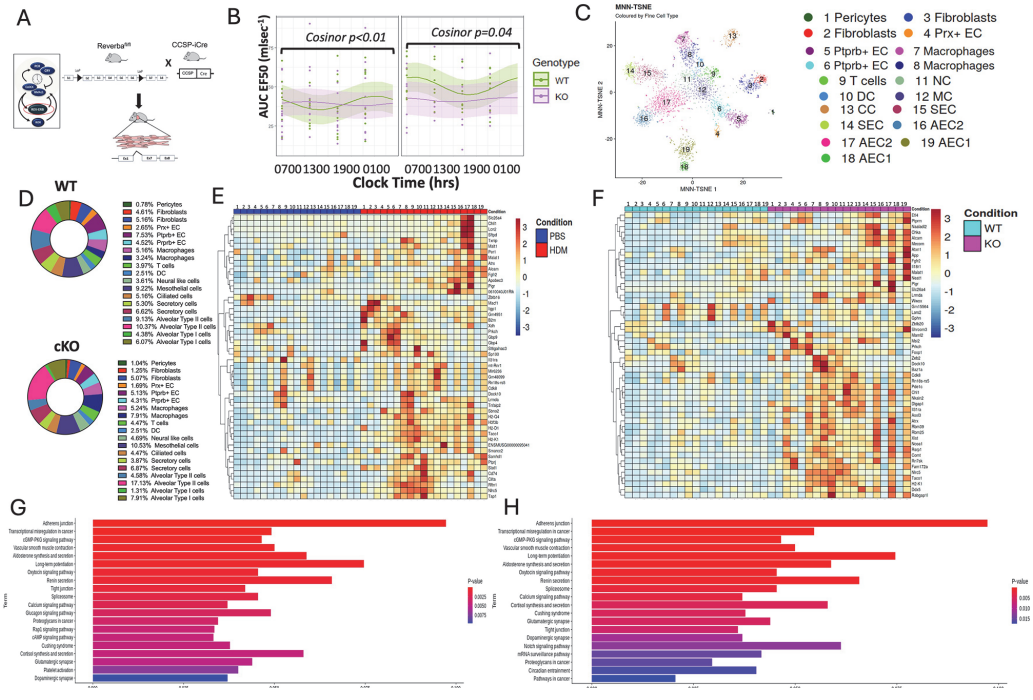
[1]A Chakraborty, [1]J Cain, [1]R Maidstone, [1]V Deugi, [2]K Krakowiak, [3]N Begley, [4]J Gibbs, [1,5]H Durrington. [1]*Division of Immunology, Immunity to Infection and Respiratory Medicine, School of Biological Sciences, University of Manchester, Manchester, UK*; [2]*Division of Cardiovascular Sciences, School of Medical Sciences, University of Manchester, Manchester, UK*; [3]*St. Mary's Hospital, Manchester University NHS Foundation Trust, Manchester, UK*; [4]*Division of Diabetes, Endocrinology and Gastroenterology, School of Biological Sciences, University of Manchester, Manchester, UK*; [5]*Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.129

Introduction and Objectives Asthma exhibits diurnal variation, with symptoms worsening at night, coincident with increased airway inflammation and narrowing overnight. Our research has highlighted the role of the molecular clock in regulating airway hyperresponsiveness (AHR), a critical feature of asthma. This study aims to investigate how the airway epithelial molecular clock regulates diurnal AHR variation.

Methods We used the Cre-lox system to generate mice with a specific deletion of *Rev-erbα* in CCSP-expressing airway epithelial cells (CCSP-Rev-erbα$^{-/-}$, cKO, figure 1A). These mice underwent a 5-week thrice-weekly intranasal HDM challenge. Lung function was assessed non-invasively every 6 hours using Dual Chamber Plethysmography (DCP). Inflammatory cell analysis and lung histology were performed. Lung tissue, harvested every 6 hours, was subjected to nuclei isolation and single-nuclei RNA sequencing (snRNAseq) using the Parse Bioscience WT v2 kit. Sequencing was performed on Illumina NovaSeq6000 to an average depth of 68,023 reads per cell.

Results DCP measurements of Tidal mid-expiratory flow (EF50), were rhythmic in wild-type (WT) animals (PBS $p=0.04$, HDM-treated, $p<0.01$), figure 1B. EF50 was reduced in HDM-treated WT mice compared to PBS controls figure 1B. Rhythmic variation in EF50 was lost in cKO mice (both PBS and HDM-treated) and was reduced in PBS-treated cKO mice. Single-nuclei analysis identified 19 cell clusters (figure 1C), with more alveolar type II cells in cKO mice (figure 1D). HDM treatment elevated genes related to allergic responses in alveolar type II cells, including *Sftpd*, *Malt1*, *CD166*, *Tnfaip2*, and *Il31ra* (figure 1E) while *Rev-erbα* deletion increased *Foxp1* expression in endothelial cells (lung function regulator), *Prx+* in endothelial cells (nerve interactions), and *slc26a4* (ion channel regulator) in alveolar type II cells (figure 1F). GSE analysis of enriched genes using KEGG2019 pathways (FDR<0.05) revealed pathways related to adherent junctions, vascular smooth muscle contraction, tight junction regulation, calcium signalling, cortisol, and glutamatergic synapse in non-immune cell subsets upon HDM treatment (figure 1G) with



Abstract S124 Figure 1 Regulation of airway hyperresponsiveness through *Rev-erbα* in airway epithelialcells. **(A)** Schematic diagram of the molecular clock feedback loop and generation of *Rev-erbα* deleted in CCSP-expressing airway epithelial cells (CCSP-Rev-erbα$^{-/-}$, KO). **(B)** Mid EF50 variation by time of day. **(C)** t-SNE plot of snRNA-seq data from PBS and HDM treated mice of each genotype across each 6 hourly time-points showing fine-cell populations identified by distinct markers, with each population represented by different colours. **(D)** Relative cell proportion (%) of each cell cluster between WT and KO mice. **(E)** Heatmap showing differentially expressed genes in each of the 19 cell clusters (1–19) between PBS (blue top colour) and HDM (red top colour) treatment. **(F)** Heatmap showing differentially expressed genes in each of the 19 cell clusters between WT (cyan top colour) and KO (magenta top colour). Gene Set Enrichment Analysis (GSEA) identified significantly enriched signalling pathways in non-immune cell clusters in **(G)** HDM treated animals compared to PBS and (H) KO animals in comparison to WT. All terms were significantly enriched (adjusted p-value <0.05, FDR<0.05). Normalised enrichment scores are shown in colour legend. Abbreviations: EC: Endothelial cells, NC: Neural like cells, DC: Dendritic cells, MC: Mesothelial cells, CC: Clara cells, SEC: Secretory cells, AEC: Airway Epithelial cells

Notch signalling and circadian entrainment being affected additionally in cKO (figure 1H).

Conclusions Our results suggest that *Rev-erbα* expression in airway epithelial cells regulates rhythmic airway responsiveness perhaps through a Notch-mediated calcium signalling pathway controlling airway innervation.

S125 ANTI-INFLAMMATORY EFFECTS OF TANIMILAST IN TWO MURINE HOUSE DUST MITE (HDM)-DRIVEN MODELS OF ASTHMA

[1]AR Pisano, [1]D Fragni, [1]M Tondelli, [2]N Rangwani, [1]A Allen, [1]A Pappani, [1]M Civelli, [1]G Villetti, [1]D Miglietta. *[1]Corporate Global Research and Early Development, Chiesi Farmaceutici S.p.A., Parma, Italy; [2]Medical Department, Chiesi Ltd, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.130

Background PDE4 inhibitors are known to elicit a broad spectrum of anti-inflammatory effects in virtually all cells of the immune system involved in respiratory diseases such as chronic obstructive pulmonary disease (COPD) and asthma. Tanimilast is an inhaled PDE4 inhibitor currently in phase 3 development for the treatment of COPD (NCT04636801 and NTC04634814) and under investigation in patients with uncontrolled asthma (NCT06029595) despite background maintenance therapy with inhaled corticosteroids (ICS).

Methods The effects of inhaled tanimilast, were studied in comparison with inhaled budesonide in two house-dust mite (HDM)-induced asthma models in mice, one characterised by Th2 and ICS-sensitive inflammation (HDM/Alum) and the other characterised by non-Th2 and ICS-resistant inflammation (HDM/CFA). Furthermore, in HDM-Alum model the compound was tested in combination with budesonide. Eosinophil (EOS) count and cytokines levels in bronchoalveolar lavage fluid (BALF) as well as the methacholine-induced airways hyperreactivity (AHR) were assessed.

Results In the HDM/alum model, tanimilast dose-dependently reduced EOS recruitment reaching the maximal effect at 3mg/kg (79.0%, $p<0.001$). This effect was associated with a significant decrease of Th2 cytokines, showing an efficacy comparable to budesonide. Tanimilast also showed a significant improvement of AHR, in terms of reduction of resistance (66%, $p<0.01$) and elastance (55%, $p<0.05$) and increase of compliance (59%, $p<0.05$) already at the 0.3mg/kg dose.

Tanimilast maintained the anti-inflammatory effect in the HDM/CFA model, by reducing at 3mg/kg the EOS count (68%, $p<0.01$) and Th2 as well as Th1 and Th17 cytokines in BALF, whereas budesonide was not effective. When tested on top of budesonide, tanimilast at 1mg/kg showed an additional anti-inflammatory effect compared to the steroid alone both on the EOS count (85% vs 31%, $p<0.001$) and on the Th2 cytokines.

Conclusion Overall, these data demonstrate that tanimilast is able to modulate both Th2 and non Th2 inflammation as well as AHR in asthma models including where ICS is not effective, suggesting that it could be a relevant therapy for asthmatic patients poorly controlled by ICS.

S126 TESTING ANTI-ADAM33 OLIGONUCLEOTIDES IN COMPLEX MOUSE AND HUMAN LUNG TISSUE AS A NOVEL DISEASE-MODIFYING ASTHMA THERAPY

[1]M Kousetti, [1]C Teh, [1]G Brazhnikov, [2]IL Chan, [1]R Abadalkareem, [3]CH Ottensmeier, [4,5]A Alzetani, [2]JK Watts, [1,5,6]HM Haitchi. *[1]Allergy and Respiratory Research Group, School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK; [2]RNA Therapeutics Institute, University of Massachusetts Chan Medical School, Worcester, MA, USA; [3]Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Liverpool, UK; [4]Cardiothoracic Surgery, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [5]National Institute for Health and Care Research (NIHR) Southampton Biomedical Research Centre, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [6]Institute for Life Sciences, University of Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.131

Background Asthma, a common chronic respiratory disease, affects over 300 million individuals globally. It is characterized by airway inflammation, remodelling and bronchial hyperresponsiveness (BHR) triggered by gene-environment interactions. Current treatment is limited to alleviating symptoms and suppressing inflammation, but there is a lack of disease- modifying therapies. *A Disintegrin And Metalloprotease (ADAM)33* is an asthma susceptibility and airway remodelling gene expressed in mesenchymal cells, including smooth muscle cells and fibroblasts. The soluble and enzymatically active form of ADAM33 (sADAM33) is increased in asthmatic airways and is associated with worse lung function. Furthermore, sADAM33 induced airway remodelling is reversible and *Adam33*-null mice are protected from developing allergic asthma (PMID: 27489884). Here, we develop anti-ADAM33 oligonucleotides (aA33Oligos) that specifically suppress *ADAM33* mRNA expression (PMID: 28918018) as a potential novel disease-modifying therapy for asthma.

Aim To test the efficiency of several aA33Oligos in *ex vivo* mouse and human culture models for future *in vivo* work.

Methods Mouse lungs (n=4) and resected human lung tissue (n=3) collected after informed consent were dissected into ~2 mm cube lung tissue pieces. These were used for lung tissue explant (LTE) cultures in cDMEM/F12 media in the presence of murine or human aA33Oligos or non-targeting control at different concentrations ranging from 0.5–8 nmol/ml, for 3 to 7 days. Total RNA was extracted for RT-qPCR of *ADAM33*, and *remodelling* and *inflammatory* gene expression.

Results In murine LTEs cultures, there was up to 95% suppression of *Adam33* ($p<0.0001$) at the highest concentration of murine aA33Oligos at 3 and 7 days. Interestingly, we observed a trend towards increased *Col1a1* expression at 7 days, suggesting a wound healing process *ex vivo*. In hLTEs cultured for 3 days, 6 out of 7 different human aA33Oligos suppressed *ADAM33* by up to 75%, without inducing remodelling genes including *ACTA2* or *COL1A1*, or inflammatory genes such as *IL-6*.

Conclusion Murine and human aA33Oligos successfully silence *ADAM33* expression by up to 95% and 75% respectively in complex lung tissue *ex vivo*, without inducing significant remodelling or inflammatory genes. We are selecting and advancing aA33Oligos into preclinical testing in mouse models of allergic asthma.

S127 ANALYSIS OF RARE EXOME SEQUENCED VARIANTS IN UK BIOBANK TO DISCOVER CAUSAL GENES AND FINE-MAP CAUSAL VARIANTS FOR LUNG FUNCTION

[1,2]N Shrine, [1,2]J Chen, [1,2]AG Izquierdo, [1,2]A Williams, [1,2]AL Guyatt, [1,2]C John, [1,2]RJ Packer, [1,2]LV Wain, [3]IP Hall, [1,2]MD Tobin. [1]*Department of Population Health Sciences, University of Leicester, Leicester, UK*; [2]*National Institute for Health Research, Leicester Respiratory Biomedical Research Centre, University of Leicester, Leicester, UK*; [3]*Division of Respiratory Medicine and NIHR Nottingham Biomedical Research Centre, University of Nottingham, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.132

Introduction Genome-wide association studies (GWAS) of quantitative lung function have increased power to detect risk loci for COPD over case/control studies and have implicated over 500 putative causal genes. Whole-exome sequencing (WES) is better suited to study rarer protein-coding variants that may not be well measured in GWAS.

Objective We aimed to fine map causal variants and identify putative causal genes for lung function, not yet detected by GWAS.

Methods We tested WES coding variants with minor allele frequency (MAF) <1% for association with four quantitative lung function traits: forced expiratory volume in 1 second (FEV_1), forced vital capacity (FVC), FEV_1/FVC and peak expiratory flow (PEF) in 343,104 European UK Biobank samples. We performed single variant and gene-based tests to enhance power to detect rare variant effects in aggregate. For gene-based tests, 2 functional classes of variants were included: (i) *predicted loss-of-function* (pLoF); (ii) pLoF + *deleterious missense*. At each gene, variants were tested in aggregate for each mask with MAF filters of <1%, <0.1%, <0.01%, <0.001% and singletons. 18,468 genes containing a qualifying variant were tested.

Results After single-variant testing of 6.7 million variants with MAF<1% and minor allele count >=4, 14 genes had a variant associated with lung function ($P<5x10^{-9}$), 4 of which were not previously implicated by GWAS (*NOTCH4, TSBP1, SLC9A9, HLA-DQA2*). In gene-based tests, using a significance threshold adjusted for 18,468 genes ($P<2.69x10^{â€˜6}$), we found 17 associated genes, 4 of which have not been reported in GWAS (*UGGT2, LPP, KDM5B, COL4A6*), giving 8 novel genes in total. We dissected the 17 gene-based associations by leave-one-variant-out analysis, which showed the gene-based association was driven by a single rare variant for 6 genes (2 novel), by a burden of several variants (2–5) for 6 genes (1 novel) and by a burden of many variants (70–900) for 5 genes (1 novel).

Conclusions We report novel genes and associations showing rare variants also have a role at known genes. The different architecture of rare-variant gene-based associations, either driven by a few or many variants, has implications for how we prioritise these genes for further mechanistic investigation.

S128 ELUCIDATING TRANSCRIPTOMIC AND FUNCTIONAL DIFFERENCES BETWEEN BASAL CELLS WITH A LOW AND HIGH MUTATIONAL BURDEN FROM TOBACCO SMOKE EXPOSURE IN THE NORMAL HUMAN AIRWAY EPITHELIUM

[1]S Clarke, [1]K Gowers, [2]K Yoshida, [2]M Przybilla, [1]D Osuna de la Pena, [1]H Selway, [1]A Pennycuick, [2]P Campbell, [1]S Janes. [1]*University College London, London, UK*; [2]*Sanger Institute, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.133

Introduction Studying the mutational landscape of histologically normal airway basal cells in children, never smokers, current smokers and ex-smokers highlighted two populations of basal cells in individuals with a smoking history. Those with a high mutational burden, including driver gene mutations and tobacco-associated mutational signatures, and those with a near-normal, or low, mutational burden, similar to those from never smokers.[1] The frequency of low mutational burden clones was four times higher in ex-smokers compared to current smokers, suggesting that these cells preferentially expand on smoking cessation and may be protective in lung cancer development.

We sought to study low and high mutational burden basal cell clones *in vitro* and evaluate their transcriptomic profile in order to shed light on both the mechanism of resistance to mutation acquisition and the relative expansion of low mutants on smoking cessation.

Methods Single-cell derived basal clones (n=77) were thawed for *in vitro* functional studies including colony forming, differentiation and Ki67 assays, as well as RNA extraction. Mutational burden status of individual clones (high or low) had been defined during previous work.[1]

Results Colony forming efficiency (p=0.81) and proliferation, measured by Ki67 (p=0.51), were comparable between high and low mutational burden clones. Both high and low mutational burden clones were able to form tracheospheres *in vitro* giving rise to both secretory and ciliated cell types. Transcriptomic analysis revealed differences in high and low mutational burden clones with regard to expression of genes related to immune modulation and detoxification of mutagenic compounds.

Conclusion The upregulation of genes related to the metabolism of cigarette smoke in the high mutational burden clones raises the possibility that low mutational burden clones may be more physically protected within the epithelium, perhaps within a niche. Functional assays suggest that low and high mutational burden clones have similar rates of turnover, however cell culture systems and media constituents that promote proliferation limit these findings. Immune surveillance may be important in understanding the expansion of low mutant clones and the difference in clonal dynamics between current and former smokers.

REFERENCE

1. Yoshida K, *et al*. Tobacco smoking and somatic mutations in human bronchial epithelium. *Nature*, 2020;**578**(7794):266–272.

S129 HOW CAN GENE EDITING OF HUMAN PLURIPOTENT STEM CELLS HELP UNDERSTAND THE EFFECT OF GENETICS ON RESPIRATORY DISEASES?

[1]S Cuevas Ocaña, [2]JY Yang, [3]M Aushev, [3]G Schlossmacher, [2]CE Bear, [1]NRF Hannan, [3]ND Perkins, [2]J Rossant, [2]AP Wong, [3]MA Gray. *[1]University of Nottingham, Nottingham, UK; [2]The Hospital for Sick Children, Toronto, Canada; [3]Newcastle University, Newcastle, UK*

10.1136/thorax-2024-BTSabstracts.134

Advances in functional genomics are leading the expansion of our knowledge on the role of genetics in respiratory conditions. However, we still need classical genetics to ultimately confirm the role of specific genes in disease. Current approaches to identify gene's roles are either not representative of the disease phenotype or highly time consuming, thus, not feasible in many cases.

We aimed to develop an efficient method to genetically manipulate human pluripotent stem cells (hPSCs), which followed by tissue specific differentiation, would speed up the process of generating mutation customised disease relevant tissue specific platforms to complete our understanding of the role of genetics in lung diseases.

Using cystic fibrosis (CF) as an example of monogenic disease and exploring hPSC culture conditions and manipulation, we introduced the most common CF mutation, ΔF508, into the CFTR gene, using TALENs into hPSCs. We also corrected the W1282X mutation using CRISPR-Cas9 in human-induced PSCs. This simple method achieved heterozygous and homozygous gene-edited hPSCs with ≤10% efficiency in 3–6 weeks, instead of months.

The developed method offers the solution to generate patient derived or mutation customised models derived from hPSCs in a timely manner to assess the function of genes identified by functional genomic approaches. Better integrating gene editing technologies of hPSCs as ultimate step to validate disease associated genes will increase our understanding of genetic determinants of disease development early and later in life, will accelerate the identification of new drug targets and will help increasing translational science applications.

'The Road Not Taken' – Optimising rehabilitation in COPD

S130 SPACE FOR COPD SELF-MANAGEMENT PROGRAMME DELIVERED AS A MAINTENANCE PROGRAMME ON PULMONARY REHABILITATION DISCHARGE: A RANDOMISED CONTROLLED TRIAL

[1]L Houchen-Wolloff, [1]A Hong, [2]K Alqhatani, [1]C Gerlis, [1]NY Gardiner, [3]CM Nolan, [4]WDC Man, [1]M Richardson, [5]A Khan, [5]A Gumber, [5]A Szczepura, [2]SJ Singh. *[1]NIHR Leicester Biomedical Research Centre, University Hospitals of Leicester NHS Trust, Leicester, UK; [2]Respiratory Sciences, University of Leicester, Leicester, UK; [3]Department of Health Sciences, Brunel University, Uxbridge, UK; [4]Respiratory Medicine, Guy's Hospital, London, UK; [5]Research Centre for Healthcare and Communities, Coventry University, Coventry, UK*

10.1136/thorax-2024-BTSabstracts.135

Introduction The benefits achieved during pulmonary rehabilitation (PR) are known to decline 6–12 months after the initial programme. There is no consensus on the best maintenance strategy.[1] Previous maintenance studies have been labour intensive and concentrated on secondary care healthcare utilisation (HCU). This led us to consider if SPACE for COPD©, a light-touch self-management programme,[2] is clinically and cost effective as a maintenance option.

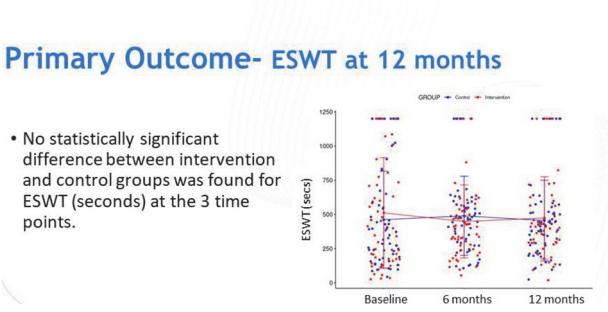
Methods We conducted a prospective, multicentre, single-blind randomised controlled trial. 116 COPD patients were randomised to usual care (control) or SPACE. The intervention was a home-based manual and 4x2hour sessions (face-to-face or telephone/online due to Covid-19) adopting motivational interviewing techniques over 12-months. Outcomes were collected at 6 and 12-months. Primary outcome: Endurance Shuttle Walking Test (ESWT) at 12-months. Secondary outcomes: maximal exercise capacity, mood, patient activation, physical activity, intervention fidelity and completion. A generalized linear mixed model was fitted, missing data imputed using a Bayesian framework. For HCU: primary and secondary care/societal costs and changes in Health Utility (EQ-5D-5L) were recorded.

Results Baseline characteristics of the 2 groups were: control (51% male, aged 71.8 years, median MRC 3, mean FEV_1/FVC ratio 56%, mean pack years 44.5, mean BMI 28.3) and SPACE (65% male, aged 71.8 years, median MRC 3, mean FEV_1/FVC ratio 58%, mean pack years 41.1, mean BMI 29.1). There were no statistically significant differences between groups for the ESWT at 12-months (figure 1).

At 12-months the intervention group retained a significantly higher EQ-5D-5L utility value compared to controls. The QALY difference was 0.0871. The mean difference between groups in NHS costs was £139.63; driven by a reduction in GP visits and prescription costs in the intervention group.

No difference between groups at 6 or 12-months for other secondary outcomes.

Intervention fidelity was excellent (100% content delivered) and 83% of intervention participants completed 3/more sessions.



Abstract S130 Figure 1

Conclusions Endurance exercise tolerance was maintained in both groups. At 12 months, EQ-5D-5L was significantly higher in the intervention group. The SPACE maintenance programme was cost-effective at 12-months. This is the first time primary care data has been explored. Intervention completion was excellent. The light-touch SPACE for COPD© maintenance programme, delivered over 12 months is a potentially effective model for future research.

REFERENCES

1. Rochester. *AmJRespirCritCareMed*. 2023. DOI:10.1164/rccm.202306-1066ST.
2. Horton. *Thorax*. 2018. DOI:10.1136/thoraxjnl-2016-208506.

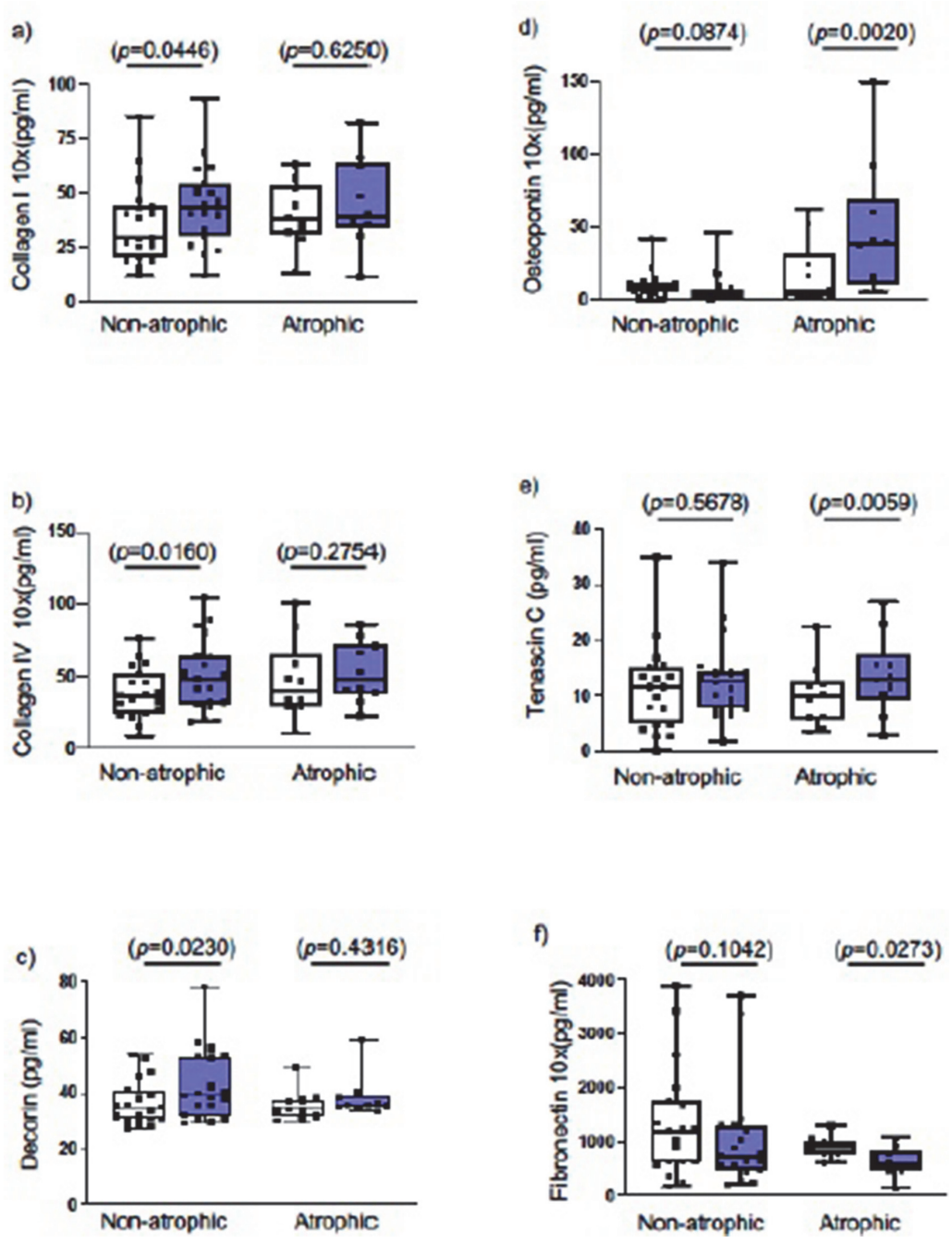
S131 **THE EFFECT OF PULMONARY REHABILITATION ON EXTRACELLULAR MATRIX PROTEIN EXPRESSION IN VASTUS LATERALIS MUSCLE IN ATROPHIC AND NON-ATROPHIC PATIENTS WITH COPD**

[1]E Kritikaki, [2]G Terzis, [1]M Soundararajan, [1]I Vogiatzis, [1]DCM Simoes. *[1]Northumbria University Newcastle, Newcastle upon Tyne, UK; [2]University of Athens, Athens, Greece*

10.1136/thorax-2024-BTSabstracts.136

Background In response to exercise-based pulmonary rehabilitation (PR), the type of muscle fibre remodelling differs between COPD with peripheral muscle wasting (atrophic COPD) compared to those without wasting (non-atrophic COPD). Extracellular matrix (ECM) proteins are major constituents of the cell microenvironment steering cell behaviour and regeneration.

We recently showed that the baseline differences in mRNA expression for several ECM molecules between atrophic and not atrophic COPD are not translated at the protein level. We interpreted this finding as an indication of an accumulation of long-lived ECM proteins and dysregulated proteostasis as it is commonly seen during deconditioning and ageing.



Abstract S131 Figure 1 Comparisons between non-atrophic and atrophic COPD patients, pre-PR (open boxplots) and post-PR (closed boxplots). Boxplot graphs depict the median (black line) and lower and upper quartiles protein levels for the following molecules: (a) collagen type I; (b) collagen type IV; (c) Decorin; (d) Osteopontin; (e) Tenansin C and (f) Fibronectin. The values for each participant are represented as filled data points

Aim To investigate whether differences in the ECM profile between atrophic and non-atrophic COPD can be modified in response to PR.
Methods Vastus lateralis muscle biopsies from 29 COPD patients (FEV_1: 55±12% predicted) classified according to their fat-free mass index as atrophic (< 17 $kg.m^{-2}$, n=10) or non-atrophic (> 17 $kg.m^{-2}$, n=19) were analysed before and after a 10-week exercise-based PR programme for myofiber distribution and size, whereas a selection of ECM molecules was quantified using ELISA and Realtime-PCR.
Results PR was associated with increased myofiber type I distribution and hypertrophy in non-atrophic COPD and with increased myofiber type IIa distribution and hypertrophy in atrophic COPD. PR induced diverse intramuscular ECM adaptations in atrophic compared to non-atrophic COPD. Accordingly, mRNA and protein levels of expression of ECM biomarkers (collagen type I and IV, and decorin) were significantly increased following PR only in non-atrophic COPD (figures 1a, 1b and 1c, respectively). Conversely, post-PR, osteopontin, a protein known for its dystrophic effects (figure 1d), and tenacin C, a necroptosis compensatory factor facilitating muscle regeneration (figure 1e), were upregulated at both mRNA and protein levels only in atrophic COPD, whereas fibronectin protein levels were decreased (figure 1f) in atrophic COPD.
Conclusions These findings suggest that the differential PR-induced myofiber adaptations in atrophic compared to non-atrophic COPD could be associated with inadequate remodelling of the intramuscular ECM environment. Furthermore, rehabilitation-induced diverse ECM protein adaptation in atrophic compared to non-atrophic COPD highlights novel mechanisms for myofiber atrophy. Identification of atrophy-specific ECM proteins can offer new treatments.

S132 LOWER LIMB SENSORIMOTOR FUNCTION EXPLAINS A GREATER PROPORTION OF BALANCE IMPAIRMENT IN PEOPLE WITH COPD COMPARED TO PEOPLE WITHOUT COPD

[1]SL Harrison, [1]KJ Loughran, [1,2]D Martin, [1,3]C Fernandes-James, [3]J Symm, [4]A Fisher, [2,5]E Kaner, [2,6]T Rapley, [7]JS McPhee. *[1]Teesside University, Middlesbrough, UK; [2]NIHR Applied Research Collaboration, North East and North Cumbria, UK; [3]University Hospital of North Tees, Stockton-on-Tees, UK; [4]South Tees Hospitals NHS Foundation Trust, Middlesbrough, UK; [5]Newcastle University, Newcastle upon Tyne, UK; [6]Northumbria University, Newcastle upon Tyne, UK; [7]Manchester Metropolitan University, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.137

Introduction Balance is impaired in people with COPD but the reasons why are largely unknown. We aimed to quantify the relationship between balance and lower limb sensorimotor function in people with COPD and compare this to people without COPD.
Methods People with COPD and those without (controls) were recruited from pulmonary rehabilitation waiting lists and public advertisements respectively. Differences between-groups were calculated for balance, sensorimotor function, strength and body composition. A multivariable linear regression was run to predict balance performance (Balance Evaluation Systems Test (BESTest) total score(%)) from measures of sensorimotor function (H-reflex latency of the femoral nerve(ms), plantar flexor maximum voluntary contraction (MVC)(Nm), involuntary activation of the quadriceps(%MVC) and sensitivity threshold of the sole of the dominant foot(v)).
Results 40 participants were recruited and 38 (19 COPD, 19 controls) included. COPD: 47% male, mean(SD) age(y) 69 (6.65), BMI 28.33 (7.81), FEV1(l) 1.45 (0.61), FEV1/FVC(%) 54.47 (15.51). Controls: 58% male, mean(SD) age(y) 67 (7.47), BMI 26.49 (4.4)1, FEV1(l) 2.89 (0.94), FEV1/FVC(%) 76.37 (4.78).

There were significant between-group differences in (mean difference (95% CIs)) BESTest total score(%) -22.81 (-30.23 to -15.39) effect size (ES)=-2.06, H-reflex latency(ms) 2.88 (0.43 to 5.32) ES=0.79, plantar flexor MVC(Nm) -22.53 (-40.20 to -4.87) ES=-0.85, quadriceps MVC(Nm) -53.38 (-88.30 to -18.47) ES -1.01 and max grip strength(kg) -8.92 (-16.95 to -0.97) ES -0.73 in favour of controls. All other differences were non-significant.

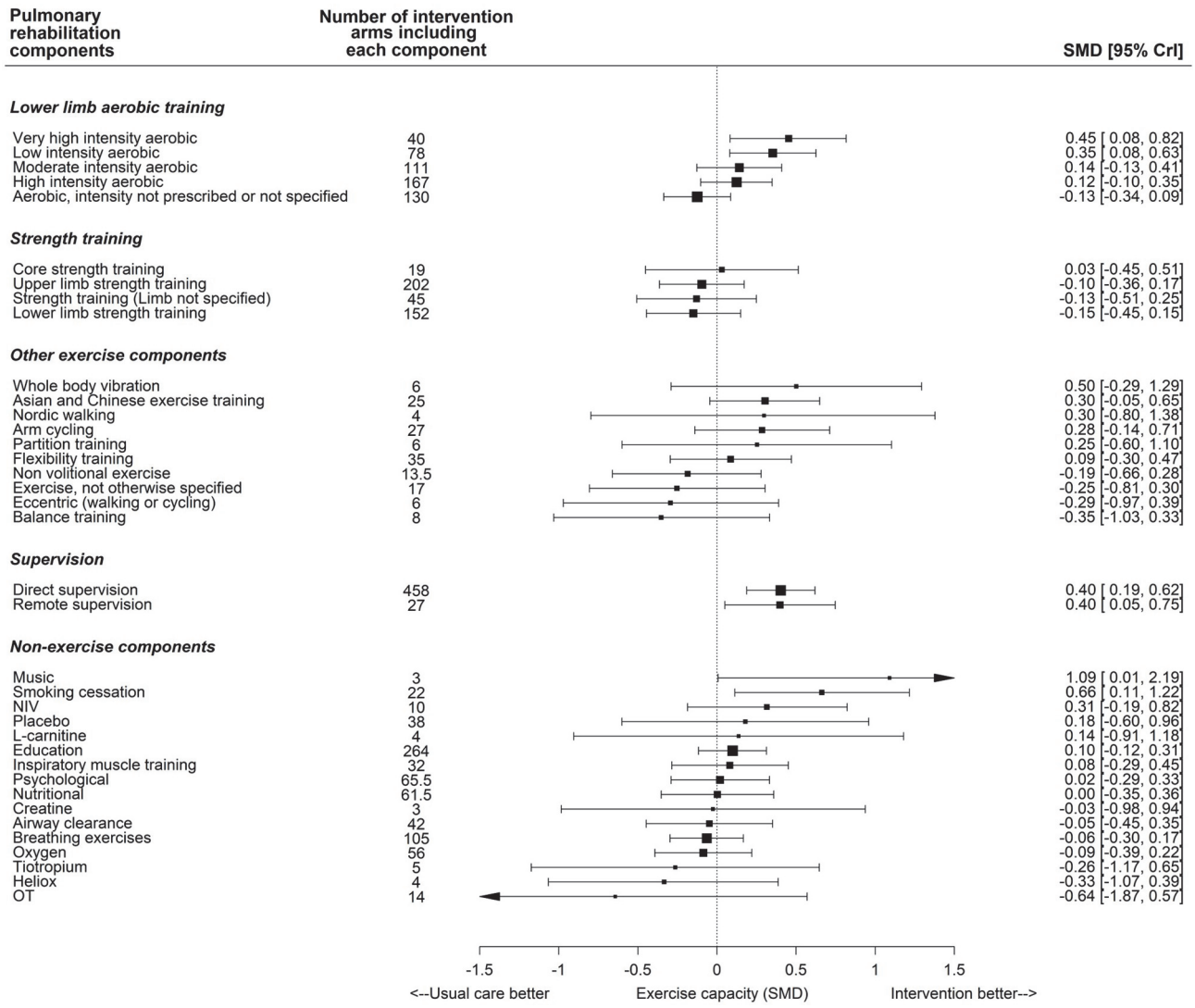
56% of the variance in balance can be explained by lower limb sensorimotor function in people with COPD ($F(4,13)=4.12, p=0.02$) compared to 46% in controls ($F(4,12)=2.56$, $p=0.09$). Plantar flexor MVC(Nm) beta (β)=0.45, H-reflex latency(ms) β=-0.63 and involuntary activation(%MVC) β=0.47 contributed to the prediction model in COPD (all $p<0.05$) while only plantar flexor MVC(Nm) β=0.63 added to the prediction in controls ($p=0.30$).
Conclusion People with COPD appear to have worse balance. Plantar flexor strength seems to be an important predictor of balance in both groups, whilst sensorimotor function, specifically stretch reflex response time and involuntary activation, only appears to be important in those with COPD. Findings offer a focus for future balance training tailored to the needs of this population.

S133 THE EFFECT OF PULMONARY REHABILITATION DESIGN ON OUTCOMES IN COPD: A SYSTEMATIC REVIEW AND COMPONENT NETWORK META-ANALYSIS

[1]TJC Ward, [1]L Latimer, [1]E Daynes, [1]S Freeman, [2]S Ward, [1]M Haris, [3]M Bakali, [1]S Reap, [1]M Iqbal, [1]L Wang, [1]A Mavilakandy, [2]A Olaiya, [1]H Aung, [4]T Harvey-Dunstan, [1]SJ Singh, [1]NJ Greening, [1]RA Evans, [1]MC Steiner, [1]A Sutton. *[1]University of Leicester, Leicester, UK; [2]University Hospitals of Leicester NHS Trust, Leicester, UK; [3]University of Bristol, Bristol, UK; [4]Nottingham University Hospitals, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.138

Background There is a lack of international consensus on the optimal programme design to maximise benefits from pulmonary rehabilitation (PR).
Aim To investigate the effect of 1) exercise modality and intensity, 2) non-exercise additions to PR, 3) type of supervision and 4) programme duration on change in exercise capacity, breathlessness and quality of life (QoL) for people with COPD.
Methods We used Bayesian component network meta-analysis and included randomised controlled trials (RCTs) in which at least one arm performed an intervention involving exercise. We included interventions of a minimum duration of 3 weeks and a minimum frequency of twice a week. Interventions delivered to specific disease phenotypes such as nutritional interventions to malnourished individuals were excluded. We controlled for effects of cohort demographics.
Results We included 338 RCTs including 18,911 participants across 46 countries. Exercise training alone (without supervision) resulted in improvements in exercise capacity (SMD 0.4, 95%CI 0.1;0.7 k=363) and QoL (SMD 0.5, 95%CI 0.2;0.8, k=269) with a trend towards improvements in breathlessness (SMD 0.2, 95%CI -0.1;0.6, k=176). Direct



Abstract S133 Figure 1 Additive component network analysis model for pulmonary rehabilitation components effectiveness on the outcome of exercise capacity. NIV; non-invasive ventilation, OT; occupational therapy, SMD; standardised mean difference

supervision enhanced gains in exercise capacity (SMD 0.4, 95%CI 0.2;0.6, figure 1), QoL (SMD 0.5 95%CI 0.2;0.7) and breathlessness (SMD 0.4 9%%CI 0.1;0.7). Remote supervision increased gains in exercise capacity (SMD 0.4 95%CI 0.05;0.75) with trends towards improvement in QoL and breathlessness, but with low to very low certainty of evidence. Aerobic training was more effective for all outcomes when intensity was prescribed than when not prescribed. Addition of structured education led to small additional improvements in QoL (SMD 0.2 95%CI -0.1:0.4) and breathlessness (SMD 0.2 95%CI -0.1;0.4) but not exercise capacity (SMD 0.1 95%CI -0.1;0.3). Addition of psychological interventions led to additional improvements in QoL (SMD 0.3 95%CI 0.0;0.7) but no other outcomes. Programme duration did not impact outcomes.

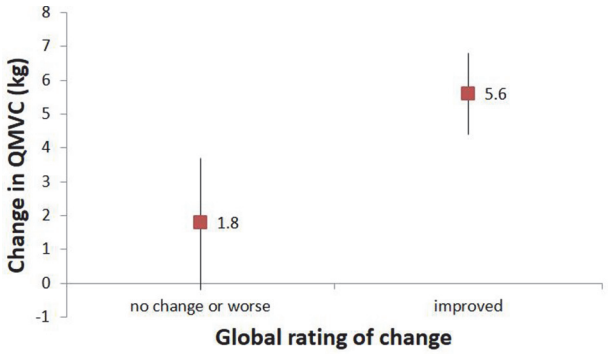
Conclusion Whilst unsupervised exercise appears effective in COPD, direct supervision enhances outcomes, with evidence less clear for remotely supervised programmes. Prescription of exercise intensity appears important to maximise benefits. Addition of structured education and psychological interventions may lead to small additional gains in patient related outcomes.

S134 MINIMAL CLINICAL IMPORTANT DIFFERENCE OF QUADRICEPS MAXIMAL VOLUNTARY CONTRACTION IN PATIENTS WITH RESPIRATORY CONDITIONS FOLLOWING PULMONARY REHABILITATION

[1]Z Mussa, [1]J Zatloukal, [2,3]E Daynes, [1]E Chaplin, [1]S Ward, [2,3]SJ Singh. *[1]Pulmonary Rehabilitation, University Hospitals of Leicester NHS Trust, Leicester, UK; [2]Centre for Exercise and Rehabilitation Science, NIHR Biomedical Research Centre – Respiratory, Glenfield Hospital, University Hospitals of Leicester NHS Trust, Leicester, UK; [3]Department of Respiratory Sciences, Institute for Lung Health, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.139

Introduction Muscle strength testing is a key outcome measure to evaluate the effectiveness of resistance training within pulmonary rehabilitation (PR).[1] Resistance training alongside other exercise-based interventions have shown significant improvements in muscle strength. However an acceptable level of effectiveness is unknown due to a lack of minimal clinical important differences (MCID) in Quadriceps Maximal Voluntary Contraction (QMVC).[2] Therefore this study aims to establish an MCID for QMVC following a 6-week PR programme using multiple techniques including global rating of



Abstract S134 Figure 1 Quadriceps Maximal Voluntary Contraction (QMVC) change anchored against modified global rating of change scale (GRCS)

change scale (GRCS), anchor and distribution-based approaches.

Methods QMVC was measured pre and post PR programme using a strain gauge. The best of 3 measurements was recorded. At discharge, participants reported on perceived change using a 7-point GRCS (significantly worse-significantly better). MCID for QMVC was calculated using anchor-based analyses with the GRCS, Incremental Shuttle Walking Test (ISWT) and Endurance Shuttle Walk Tests' established MCIDs, and a distribution-based method (0.5xSD).

Results 224 participants with confirmed respiratory conditions, COPD (n=154), asthma (n=13), bronchiectasis (n=14) and ILD (n=43) (male n=128, 57%, mean(SD) age 67.7(±10.3) years, BMI 27.5(±6.2) kg/m^2, $FEV_1$57.3(±24.6) L) completed a PR programme. There were no significant differences in the QMVC change across diagnoses therefore all participants were grouped together. The GRCS categories had to be merged into 'no change or worse' and 'improved' category due to statistical similarities between original categories. The change in QMVC when anchored with the modified GRCS resulted in MCID of 5.6kg (figure 1), however the correlation was weak (r=0.282, p=<0.001). There were weak correlations between QMVC change and ISWT and ESWT MID's anchors (r= 0.052, r= 0.063 respectively) and therefore these were not included in further analyses. The distribution-based method yielded an MCID of 4.2kg.

Conclusion Based on the results we propose an MCID of between 4.2–5.6 kg following completion of 6-week PR programme.

REFERENCES

1. Man W, Chaplin E, *et al.* BTS Clinical Statement on pulmonary rehabilitation. *Thorax* 2023;**78**:s2-s15.
2. Oliveira A, Rebelo P, *et al.* Minimal clinically important difference for quadriceps muscle strength in people with COPD following pulmonary rehabilitation. *COPD: Journal of Chronic Obstructive Pulmonary Disease*, 2021;**18**:35–44.

'Fifty Shades of Grey' – Targeted lung health check

S135 COMPARING CHANGES IN SOLID COMPONENT DIAMETER AND MASS FOR DETECTING INVASIVE ADENOCARCINOMA IN SUB-SOLID PULMONARY NODULES (SSNS): THE SUMMIT STUDY

[1]CR Khaw, [1]DO Cheng, [1]A Creamer, [1]H Hall, [1]A Bhamani, [1]P Verghese, [1]R Prendecki, [1]M Mullin, [1]JL Dickson, [1]C Horst, [1]S Tisi, [1]A Pennycuick, [1]H Selway-Clarke, [1]Z Frazer, [1]KEJ Davies, [1]C Percival, [2]K Gyertson, [2]A Hacker, [2]L Hughes, [2]S Galani, [2]L Farrelly, [3]J McCabe, [4]W Ricketts, [3]J Jacob, [2]A Hackshaw, [5]A Nair, [1]SM Janes. *[1]Lungs for Living Research Centre, UCL Respiratory, University College London, London, UK; [2]CRUK and UCL Cancer Trials Centre, University College London, London, UK; [3]Satsuma Lab, Centre for Medical Image Computing, University College London, London, UK; [4]Barts Thorax Centre, Barts Health NHS Trust, London, UK; [5]University College London Hospitals NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.140

Introduction and Objectives Evolution in size, density and morphology of sub-solid pulmonary nodules (SSNs) instigate conclusive management as they herald invasive adenocarcinoma (IA). Solid component diameter (SCD) correlates with the degree of invasion, but changes in SCD density and overall nodule mass (the product of nodule volume and density), are under-studied. We compare the accuracy of recommended thresholds (alone and in combination) for absolute SCD, and changes in SCD and mass, for detecting IA in SSNs.

Methods Participants with persistent SSNs were monitored with Low-Dose Computed Tomography (LDCT) in the

Abstract S135 Table 1 Performance of the recommended absolute SCD, SCD change, mass change thresholds, and combined thresholds for detecting invasive adenocarcinoma in sub-solid pulmonary nodules (SSNs). Abbreviations: SCD, Solid Component Diameter; AUROC, Area Under the Receiver Operating Characteristic Curve; 95% CI, 95% Confidence Intervals; TP, True Positives; FN, False Negatives; TN, True Negatives; FP, False Positives

Threshold	TP/TP+FN	Sensitivity (95% CI)	TN/TN+FP	Specificity (95% CI)	AUROC (95% CI)
Absolute SCD ≥ 8mm	34/54	63.0% (49.0-76.0)	727/759	96.0% (94.0-97.0)	0.79 (0.73-0.86)
SCD change ≥ 2mm	27/54	50.0% (36.0-64.0)	715/759	94.0% (92.0-96.0)	0.72 (0.65-0.79)
Mass change ≥ 30%	28/54	52.0% (38.0-66.0)	596/759	79.0% (75.0-81.0)	0.65 (0.58-0.72)
Combined threshold					
SCD ≥ 8mm or SCD < 8mm + SCD change ≥ 2mm	41/54	76.0% (62.0-87.0)	696/759	92.0% (90.0-94.0)	0.84 (0.78-0.90)
SCD ≥ 8mm or SCD < 8mm + Mass change ≥ 30%	47/54	87.0% (75.0-95.0)	570/759	75.0% (72.0-78.0)	0.81 (0.76-0.86)

SUMMIT LDCT lung screening study (NCT03934866). Semi-automated segmentation provided volume and SCD measurements, and nodule mass (mg) derived by [volume (mm^3) × (Hounsfield Units + 1000)/1000]. Changes in SCD and mass from initial detection to either the last study scan or the final scan before intervention were compared against recommended thresholds of absolute SCD ≥ 8mm, SCD change ≥ 2mm and mass change ≥ 30%. Sensitivity, specificity, and AUROC for histologically proven IA were calculated. No proven IA was defined as absence of a lung cancer diagnosis in national cancer registries.

Results In 590 participants with 813 SSNs [559 (68.8%) non-solid, 254 (31.2%) part-solid, median overall diameter 10.2mm (IQR 7.6–14mm), follow-up 4.3 years (IQR 4.0–4.5years)], 54 (6.6%) had IA, and 759 (93.4%) had no proven IA. SCD change ≥2mm and mass change ≥30% achieved sensitivities of 50% (95%CI 36–64%) and 52% (95%CI 38–66%) respectively, but SCD change was more specific (table 1). The absolute SCD threshold of ≥8mm improved sensitivity to 63% (95%CI 49–76%); combining it with mass change ≥30% or SCD change ≥2mm for cases where SCD <8mm, further enhanced sensitivity to 87% and 76% respectively. Only the combination of SCD ≥8mm and SCD change ≥2mm retained high specificity (92% (95%CI 90–94%)) and had the highest AUROC (0.84).

Conclusion A combined strategy using SCD ≥ 8mm and SCD change ≥ 2mm in nodules under the 8mm threshold potentially provides the best balance of sensitivity, specificity and accuracy for diagnosing invasive adenocarcinoma in SSNs. While combining an SCD 8mm threshold with mass change ≥ 30% optimised sensitivity, this came at the expense of specificity.

S136 PREVALENCE OF FRAILTY AND COMORBIDITY AND ITS ASSOCIATION WITH LCS INVITATION RESPONSE AND LDCT UPTAKE

[1,2]A Almatrafi, [3]R Gabe, [1,4]RJ Beeken, [1,5]RD Neal, [6]A Clegg, [6]KE Best, [1]S Relton, [7]M Brown, [3]HZ Tam, [1]N Hancock, [8]PAJ Crosbie, [1,9]MEJ Callister. *[1]Leeds Institute of Health Sciences, School of Medicine, University of Leeds, Leeds, UK; [2]Department of Epidemiology, Faculty of Public Health and Health Informatics, Umm Al-Qura University, Makkah, Saudi Arabia; [3]Center for Evaluation and Methods, Wolfson Institute of Population Health, Queen Mary University of London, London, UK; [4]Department of Behavioural Science and Health, University College London, London, UK; [5]Medical School, University of Exeter, Exeter, UK; [6]Academic Unit of Ageing and Stroke Research, University of Leeds, Leeds, UK; [7]Leeds Office of Data Analytics, Leeds Health and Care Partnership, NHS West Yorkshire Integrated Care Board, Leeds, UK; [8]Division of Immunology, Immunity to Infection and Respiratory Medicine, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK; [9]Department of Respiratory Medicine, Leeds Teaching Hospitals, St James's University Hospital, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.141

Background Low-dose CT screening reduces lung cancer-specific mortality in people at higher risk. Factors that contribute to lung cancer risk are also associated with comorbid disease; frailty and comorbidity are, therefore, important considerations for lung cancer screening (LCS). Here, we describe the prevalence of frailty and comorbidity in LCS invitees and evaluate their associations with invitation response to telephone risk assessment and subsequent LCS uptake.

Methods Analysis was based on the intervention arm of an LCS trial, where individuals aged 55–80 who had ever smoked were invited to telephone risk assessment followed by community-based LCS if at higher risk. The electronic frailty index (eFI) was used to compute individual frailty scores (categorised as fit, mild, moderate, and severe) and derive

Abstract S136 Table 1 Relationship of frailty and comorbidities with invitation response and LDCT screening uptake in those aged 55–80 years

	Response to invitation for risk assessment			Uptake of LDCT screening if eligible		
	n	OR_{adj}[1] (95% CI)	p-value	n	OR_{adj}[1] (95% CI)	p-value
Frailty (eFI)						
Fit	18,247	1(Ref)		2,628	1	
Mild frailty	6,702	1.34 (1.26–1.42)	<0.001	1,599	0.92 (0.76–1.12)	0.408
Moderate frailty	2,353	1.28 (1.16–1.40)	<0.001	668	0.75 (0.59–0.96)	0.024
Severe frailty	459	1.32 (1.08–1.61)	0.006	146	0.67 (0.43–1.04)	0.072
Comorbidity count[2]						
0	12,876	1		1,553	1	
1	7,278	1.21 (1.14–1.29)	<0.001	1,496	0.89 (0.72–1.08)	0.299
2	3,922	1.18 (1.10–1.27)	<0.001	886	0.88 (0.68–1.13)	0.316
3	2,072	1.15 (1.04–1.27)	0.007	566	1.04 (0.77–1.41)	0.794
≥4	1,613	1.26 (1.13–1.41)	<0.001	540	0.79 (0.59–1.06)	0.122

[1]Adjusted for Age, IMD quintile, Smoking status, Sex and Ethnicity. [2]The twelve comorbidities that were summed to produce the comorbidity count are: cancer, stroke, chronic obstructive pulmonary disease, heart failure, peripheral vascular disease, inflammatory arthritis, liver problems, mono hemiparesis, peptic ulcer disease, chronic kidney disease, diabetes, and ischaemic heart disease.

comorbidity data. The trial invited participants aged up to 80 at the time of data extraction from primary care records, whereas the current NHS England Targeted Lung Health Check programme only includes participants up to 74 years.

Results Of 27,761 individuals invited, 24.1% (n=6,702), 8.5% (n=2,353) and 1.7% (n=459) had mild, moderate, and severe frailty, respectively. Over half responded to the invitation to telephone risk assessment (n=14,523,52.5%) with frailty associated with higher response rate compared to fit individuals (OR_{adj} 1.34 95%CI 1.26–1.42 p-value<0.001 for mild frailty, OR_{adj}1.28 95%CI 1.16–1.40 p-value<0.001 for moderate frailty, and OR_{adj}1.32 95%CI 1.08–1.61 p-value<0.006 for severe frailty). After assessment, moderate (OR_{adj} 0.75 95%CI 0.59–0.96 p-value<0.024) and severe (OR_{adj} 0.67 95%CI 0.43–1.04 p-value<0.072) frailty were associated with reduced screening uptake. Similar patterns were seen for comorbidities with individuals with 1, 2, 3, or ≥4 comorbidities showed higher response to risk assessment invitations compared to individuals with no comorbidities (table 1). The same associations between frailty and comorbidity with response to invitation and LDCT uptake were seen when the analysis was limited to a population aged 55–74 years (as used in the English TLHC programme)

Conclusion These data suggest that fit people (who may have the most life years gain by participating in screening programmes) seem less likely to participate, and further research is needed to encourage uptake in this group to maximise benefit at a population level.

S137 MACHINE LEARNING MULTI-MODAL ALGORITHM FOR PREDICTION OF NEW PRIMARY LUNG CANCER VERSUS METASTASIS IN PATIENTS WITH PREVIOUS CANCER

[1]HS Kalsi, [1]S Hindocha, [2]K Linton-Reid, [1]B Hunter, [2]M Chen, [3]E Alemu, [4]V Crowe, [1]RW Lee, [5]D Gibeon, [5]A Procter, [3]M Hajhosseiny, [1]C Owens, [6]E Bartlett, [7]S Doran, [1]B Sharma, [2]E Aboagye, [6]A Devaraj, [5]A Nair, [3]S Mahboobani. *[1]Royal Marsden Hospital NHS Foundation Trust, London, UK; [2]Imperial College London University, London, UK; [3]Imperial College London NHS Healthcare Trust, London, UK; [4]Chelsea and Westminster Hospital NHS Foundation, London, UK; [5]University College London Hospitals, London, UK; [6]Royal Brompton and Harefield Hospital, London, UK; [7]Institute for Cancer Research, London, UK*

10.1136/thorax-2024-BTSabstracts.142

Introduction With improving cancer outcomes, indeterminate pulmonary lesions following radically-treated cancer are increasingly common, posing a diagnostic challenge of underlying aetiology. Existing prediction tools are dominated by cancer naïve cohorts. Diagnostic uncertainty can delay diagnosis, increase resource use and cause patient anxiety.

Hypothesis Improved understanding of radiological traits and radiomics machine learning (ML) could improve accuracy in diagnosing new second primary lung cancer vs lung metastasis in patients presenting with a new lung lesion after prior radically-treated cancer.

Objective

- Define radiological traits delineating new lung cancer vs metastasis
- Compare radiomics based machine learning model with existing clinical approaches/clinical models
- Evaluate multi-modal prediction models in determining aetiology

Methods The AI-SONAR study curated 649 CT thorax scans with new lung lesions within 10 years of prior radically-treated cancer (IRAS 300424). CT scans were pre-processed, resampled with manual segmentation of regions of interest. Seven visual variables were reviewed by 9 thoracic radiologists (three reading pairs with third radiologist as referee for discordant readings). Logistic regression analysis was performed on radiologist-defined variables against malignant lesion class and compared against clinical reader diagnostic accuracy.

Radiomics analysis was performed using feature-reduction, selection and ML to 1) Evaluate a radiomics predictive vector, 2) Analyse a cross-validation of varying feature selection processes with different ML models.

Results Multivariate logistic regression identified variables significant in prediction of new lung cancer versus metastasis: presence of emphysema(p>0.0001), lesional contour (p>0.0001), spiculation(p>0.05) and ROI distribution (p>0.01). A prediction model using these identified variables achieved a training set AUC of 0.74 (95% CI 0.71–0.78) and validation set AUC of 0.77 (95% CI 0.71–0.83).

Interim radiomics analysis on 200 cases confirmed feasibility (training set AUC of 0.77 and validation set AUC of 0.82) with remaining cases (N=649) analysis underway, alone and

Abstract S137 Table 1 Multivariable logistic regression analysis versus outcome class

	LR Est	CI 2.5%	CI 97.5%	P-value	Odds Ratio	CI 2.5%	CI 97.5%
Emphysema	-1.61	-1.98	-1.23	<0.0001	0.20	0.14	0.29
Contour	-1.18	-0.16	-0.74	<0.0001	0.31	0.20	0.48
Spiculation	-0.67	-1.21	-0.12	<0.05	0.51	0.30	0.89
Lobulation	-0.31	-0.71	+0.10	0.14	0.74	0.49	1.10
Cavitation	-0.33	-1.03	+0.36	0.35	0.72	0.36	1.43
Feeding Vessel	-0.08	-0.48	+0.32	0.7	0.92	0.62	1.38
Distribution	+0.60	+0.20	+1.01	<0.01	1.83	1.22	2.73

Multivariable (MV) logistic regression (LR) analysis of visual features versus outcome class with odds ratio and confidence intervals following reading by radiology pairs with independent referee adjudicating disagreements (Total cohort N = 649). Abbreviations: LR: Logistic Regression, CI: Confidence Interval.

combined with statistically significant radiologist reported variables in a multi-modal approach.

Conclusions

- Distinct radiologist-reported CT thorax features define new primary vs. metastasis in the context of prior radically treated cancer
- Visual feature-based model shows comparable diagnostic performance versus radiologists
- Combined visual and radiomics features present a valuable opportunity for explainable and multimodal, radiomics-based ML prediction

Abstract S138 Table 1

a) **Feature of interest**	**Number selected**	
Demographic	3	
Protein	12	
Cytokine	6	
Autoantibody	29	
Methylation DMRs	183	
WGS	Pending	
b) **Machine learning models**	**Features selected**	**AUC (95% CI)**
Random Forest	195	0.72 (0.5, 0.94)
Lasso regression	84	0.75 (0.56, 0.91)

S138 MULTIPARAMETRIC INVESTIGATION AND STRATIFICATION OF INDETERMINATE LUNG NODULES (MISIL1)

[1]C Harris, [2]A Surani, [2]S Østrip Jensen, [2]W Cooper, [2]D Shcherbo, [2]H Thomas, [3]P Bradley, [4]K Ashurst, [3]J Selley, [3]D Knight, [5]A Bisquera, [1]J Nathan, [6]S Rashid, [6]J Felce, [6]C Dive, [3]R Unwin, [7]N Rosenfeld, [3]P Crosbie, [1]F McCaughan. *[1]University of Cambridge, Cambridge, UK; [2]Cancer Research UK Cambridge Institute, Cambridge, UK; [3]University of Manchester, Manchester, UK; [4]Norfolk and Norwich University NHS Foundation Trust, Norwich, UK; [5]Exploristics Ltd, Belfast, UK; [6]Cancer Research UK Manchester Institute Cancer Biomarker Centre, Manchester, UK; [7]Barts Cancer Institute, London, UK*

10.1136/thorax-2024-BTSabstracts.143

Background Low-dose CT screening increases the number of lung cancers detected early but also the number of indeterminate pulmonary nodules (IPN) identified.

A key question is whether a non-invasive (blood) biomarker can stratify IPNs into cancer and not-cancer.

Prior studies have typically focused on a single biomarker modality and results have been modest.

We have taken an entirely different approach and applied multiple cutting-edge discovery biomarker modalities to the same cohort in a 'deep-dive' approach to define which biomarkers perform best. We then applied machine learning (ML) techniques to iteratively improve the performance of a multiparametric biomarker.

Methods We recruited 90 patients meeting typical screening criteria from multiple centres. The three groups were: 30 negative controls (normal CT), 30 positive controls (T1A-CN0M0 biopsy-confirmed NSCLC) and 30 with IPNs (<20mm).

We performed the following analyses: shotgun proteomics (n=380), targeted cytokine analysis (n=31), autoantibody analyses (n=1607), whole genome sequencing of paired cell-free DNA/tumour (27x), customised novel lung cancer specific targeted methylation sequencing, circulating tumour cell detection.

We performed univariate logistic regression comparing cancer and negative control cohorts and applied ML techniques (ADA Boost/Lasso/Random Forest) to pilot multivariate analyses pending the cfDNA WGS data (due 07/2024).

Results Results are summarized in table 1. Univariate proteomic and cytokine analyses identified 12 and 6 unique discriminator candidates respectively. The EarlyCDT® assay had a sensitivity of 12.7% and specificity of 100%. The discovery autoantibody panel identified 29 potential hits and the methylation panel 183 differentially methylated regions.

Pilot multiparametric analysis with Random Forest and Lasso regression defined models with AUC of 0.72 and 0.75.

Conclusion We performed the first head-to-head comparison of an extensive panel of multiparametric biomarkers in early lung cancer addressing a key clinical question – can a blood test distinguish benign from malignant IPNs.

We used ML to demonstrate that combining circulating biomarker modalities can differentiate cancer from non-cancer, pending the incorporation of a key modality - cell-free DNA. With a full dataset the predictive model will be iteratively optimised using these ML algorithms and applied to the IPN cohort to determine the model's performance. These data will be presented at conference.

S139 FRAILTY, COMORBIDITY, AND SURVIVAL DIFFERENCES BETWEEN THE USPSTF 2021 RISK CRITERIA AND PLCOM2012 AND LLPV2 RISK MODELS

[1,2]A Almatrafi, [3]R Gabe, [1,4]RJ Beeken, [5]RD Neal, [6]A Clegg, [6]KE Best, [1]S Relton, [7]M Brown, [3]HZ Tam, [3]D Vulkan, [1]N Hancock, [8]PAJ Crosbie, [1,9]MEJ Callister. *[1]Leeds Institute of Health Sciences, School of Medicine, University of Leeds, Leeds, UK; [2]Department of Epidemiology, Faculty of Public Health and Health Informatics, Umm Al-Qura University, Makkah, Saudi Arabia; [3]Centre for Evaluation and Methods, Wolfson Institute of Population Health, Queen Mary University of London, London, UK; [4]Department of Behavioural Science and Health, University College London, London, UK; [5]Medical School, University of Exeter, Exeter, UK; [6]Academic Unit of Ageing and Stroke Research, University of Leeds, Leeds, UK; [7]Leeds Office of Data Analytics, Leeds Health and Care Partnership, NHS West Yorkshire Integrated Care Board, Leeds, UK; [8]Division of Immunology, Immunity to Infection and Respiratory Medicine, Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK; [9]Department of Respiratory Medicine, Leeds Teaching Hospitals, St James's University Hospital, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.144

Introduction Lung cancer screening (LCS) with low-dose CT reduces mortality, but the presence of frailty and comorbidities in eligible subjects might limit the overall life years gained by LCS due to competing causes of death. Here, we compare frailty, comorbidity, and 3-year survival between populations identified by different LCS eligibility criteria.

Methods Participants from the intervention arm of a LCS trial who underwent telephone lung cancer risk assessment were identified retrospectively. Data entered into primary care records prior to randomisation was extracted to allow calculation of the electronic frailty index (eFI) and an overall comorbidity count. Populations aged 55–74 years, who met the $USPSTF_{2021}$ criteria or the thresholds currently in use in the UK ($PLCO_{M2012} \geq 1.51\%$ or $LLP_{v2} \geq 2.5\%$) were identified. Also, because comorbidity and frailty are known to vary with

Abstract S139 Table 1 Baseline factors by risk strategy among those aged 55–74 years

Eligibility criteria	$USPSTF_{2021}$	PLCO ≥1.32%*	LLP_{V2} ≥2.96%*	$PLCO_{m2012}$ ≥1.51%	LLP_{V2} ≥2.5%
eligible subjects	n=3521	n= 3515	n= 3518	n= 3163	n= 3992
Age, years	64.2 ±5.5	66.3 ±5.4	67.7 ±4.9	66.5 ±5.3	67.5 ±5.0
Age group					
55–59	1,019 (28.9%)	572 (16.3%)	318 (9.0%)	480 (15.2%)	390 (9.8%)
60–64	919 (26.1%)	789 (22.4%)	638 (18.1%)	701 (22.2%)	825 (20.7%)
65–69	918 (26.1%)	1,058 (30.1%)	1,197 (34.0%)	979 (31.0%)	1,257 (31.5%)
70–74	665 (18.9%)	1,096 (31.2%)	1,365 (38.8%)	1,003 (31.7%)	1,520 (38.1%)
eFI category					
Fit	2,187 (62.1%)	2,008 (57.1%)	1,922 (54.6%)	1,770 (56.0%)	2,223 (55.7%)
Mild	957 (27.2%)	1,062 (30.2%)	1,099 (31.2%)	974 (30.8%)	1,231 (30.8%)
Moderate	323 (9.2%)	375 (10.7%)	416 (11.8%)	355 (11.2%)	452 (11.3%)
Severe	54 (1.5%)	70 (2.0%)	81 (2.3%)	64 (2.0%)	86 (2.2%)
Moderate/Severe combined	**377 (10.7%)**	**445 (12.7%)**	**497 (14.1%)**	**419 (13.2%)**	**538 (13.5%)**
p-value**	-	0.071	**0.002**	**0.024** (0.841)$	**0.009**
Comorbidity count					
0	1,392 (39.5%)	1,176 (33.5%)	1,063 (30.2%)	1,017 (32.2%)	1,260 (31.6%)
1	1,049 (29.8%)	1,103 (31.4%)	1,094 (31.1%)	1,001 (31.6%)	1,240 (31.1%)
2	542 (15.4%)	602 (17.1%)	659 (18.7%)	553 (17.5%)	728 (18.2%)
3	284 (8.1%)	339 (9.6%)	367 (10.4%)	314 (9.9%)	400 (10.0%)
≥4	254 (7.2%)	295 (8.4%)	335 (9.5%)	278 (8.8%)	364 (9.1%)
≥2	**1080 (30.7%)**	**1236 (35.2%)**	**1361 (38.7%)**	**1145 (36.2%)**	**1492 (37.4%)**
p-value**	-	**0.005**	**<0.001**	**<0.001** (0.468)$	**<0.001**
3-Year survival rate,% (95%CI)	96.1 (95.4–96.7)	95.7 (95.0–96.3)	95.6 (94.8–96.2)	95.3 (94.5–96.0)	95.9 (95.2–96.5)

*: $USPSTF_{2021}$ equivalent population
**: p-value for the difference in selection rates between $USPSTF^{2021}$ as a reference group and $PLCO_{m2012}$ or LLP_{v2} thresholds.
$: p-value between parentheses is for the difference in selection rates between $PLCO_{m2012}$ ≥1.51% and LLP_{v2} ≥2.5%.
$USPSTF_{2021}$: the US Preventive Services Task Force 2021 lung cancer screening criteria. $PLCO_{m2012}$: Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial risk model. LLP_{v2}: the Liverpool Lung Project risk model (version 2).

lung cancer risk, equivalent thresholds were determined which selected the same number of people for screening as $USPSTF_{2021}$. Finally, three-year survival from all causes was examined.

Results Of 11,994 individuals aged 55–74 undergoing risk assessment, 3,521 were eligible by $USPSTF_{2021}$, 3,163 by $PLCO_{M2012}$ ≥1.51% and 3,992 by LLP_{v2} ≥2.5%. The thresholds that identified an equivalent population to $USPSTF_{2021}$ were ≥1.32% for $PLCO_{M2012}$ and ≥2.96% for LLP_{v2}. The proportions of individuals with moderate/severe frailty were 10.7%, 13.2% and 13.5% and with two or more comorbidities were 30.7%, 36.2%, and 37.4% for $USPSTF_{2021}$, $PLCO_{M2012}$ ≥1.51% and LLP_{v2} ≥2.5% respectively. The $USPSTF_{2021}$ identifies fewer individuals with frailty and comorbidity than $PLCO_{m2012}$ and LLP_{v2}, but there was no statistically significant difference between the two risk models (table 1). Proportions for the equivalent populations are shown in table 1. Three-year survival rates were similar across the eligible populations analysed (all between 95.3% and 96.1%).

Conclusion There is concern that lung cancer risk scores identify a more comorbid population for screening and may limit life years gained as a result. These data indicate that whilst populations identified by both $PLCO_{M2012}$ and LLP_{v2} criteria have higher proportions of people with moderate/severe frailty and two or more comorbidities than $USPSTF_{2021}$, this does not appear to result in differences in 3-year survival rates.

S140 ADHERENCE IN A COMMUNITY-BASED LUNG CANCER SCREENING PROGRAMME – RESULTS FROM THE YORKSHIRE LUNG SCREENING TRIAL

[1]SQ Ahmad, [2]F Pesola, [3]PAJ Crosbie, [4]R Gabe, [5]N Hancock, [1]MPT Kennedy, [5]C Marshall, [6]SL Quaife, [7]S Rogerson, [5]I Simmonds, [5,8]MEJ Callister. *[1]Department of Respiratory Medicine, Leeds Teaching Hospitals NHS Trust, Leeds, UK; [2]Centre for Evaluation and Methods, Wolfson Institute of Population Health, Queen Mary University of London, London, UK; [3]Division of Immunology, Immunity to Infection and Respiratory Medicine, Faculty of Biology, Medicine and Health, The University of Manchester, Manchester, UK; [4]Centre for Evaluation and Methods, Wolfson Institute of Population Health, Queen Mary University of London, London, UK; [5]Leeds Institute of Health Sciences, University of Leeds, Leeds, UK; [6]Centre for Prevention, Detection and Diagnosis, Wolfson Institute of Population Health, Queen Mary University of London, London, UK; [7]Department of Research and Innovation, Leeds Teaching Hospitals NHS Trust, Leeds, UK; [8]Department of Respiratory Medicine, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.145

Introduction Lung cancer screening (LCS) saves lives by detecting cancers early, but continued adherence to screening is necessary for participants to realise maximum clinical benefit. Pooled adherence in US LCS programmes was only 55%.[1] The logistics of screening provision differ significantly between geographical areas, so it is important for individual programmes to review adherence and associated factors. Here we describe factors associated with adherence in the Yorkshire Lung Screening Trial.

Methods All eligible individuals following baseline (prevalence) screening were invited for a further incidence screen at two years in mobile units in community-based locations. Participants were contacted by phone (two attempts) to arrange an appointment. If they were non-contactable, a pre-arranged appointment letter was sent. Characteristics of attenders versus non-attenders were compared using univariate and multivariable models.

Results Of 6,650 individuals who attended baseline screening, 5,975 were eligible for the second round. Reasons for non-eligibility included participant death (n=206), diagnosis of thoracic malignancy since baseline round (n=159), or recent CT thorax performed outside screening (n=182). The mean age of those eligible for the second round was 70.5 years, 45.2% were female, 31.7% were from the most socio-economically deprived quintile, and 33.9% of people were current smokers. Of these, 5,184 (87%) attended their second screen and 791 (13%) did not. Factors associated with lower attendance following multivariable analysis were socio-economic deprivation (OR 0.78, 95% CI 0.60–1.02, most versus least deprived quintile) and current smoking (OR 0.57, 95% CI 0.48–0.66, currently smoking versus previously quit). Sex, age, and ethnicity were not associated with attendance. Attendance was more likely in people who had an indeterminate (OR 2.10, 95% CI 1.61–2.73; n=871) or positive (OR 3.16, 95% CI 0.98–10.19; n=60) baseline scan compared to those with a negative scan.

Conclusion Adherence to screening in our study was better than in a meta-analysis of US studies. However, lower adherence amongst people who currently smoke and those from deprived populations is a concern due to their greater risk of lung cancer death. Further research is needed into interventions that increase adherence in these high-risk populations.

Abstract S140 Table 1 Factors associated with adherence at T2 screening: univariate and multivariable analyses

	Univariate	Wald test p-value	Multivariable (n=5968)	Wald test p-value
Age group*				
<60	Ref	0.12		
60-64	1.05 (0.77-1.43)			
65-69	1.23 (0.91-1.68)			
70-74	1.29 (0.96-1.74)			
75+	1.02 (0.77-1.36)			
Gender		0.07		0.27
Female	Ref		Ref	
Male	1.15 (0.99-1.33)		1.09 (0.94-1.27)	
IMD quintile		<0.001		**0.01**
1 (most deprived)	0.65 (0.50-0.84)		0.78 (0.60-1.02)	
2	0.74 (0.55-0.98)		0.82 (0.61-1.10)	
3	0.86 (0.64-1.16)		0.92 (0.69-1.24)	
4	1.13 (0.84-1.53)		1.16 (0.86-1.57)	
5 (least deprived)	Ref		Ref	
Missing #				
Ethnicity (derived)§		0.51^		
White	Ref			
Black	1.28 (0.51-3.25)			
Asian	0.65 (0.36-1.18)			
Other^	1.59 (0.63-3.98)			
Prefer not to say	0.99 (0.22-4.40)			
COPD code§	0.85 (0.71-1.01)	0.07	1.03 (0.84-1.25)	0.80
Smoking status§		<0.001		**<0.001**
Current smoker	0.54 (0.47-0.63)		0.57 (0.48-0.66)	
Ex-smoker	Ref		Ref	
T0 Screening outcome		<0.001		**<0.001**
Negative	ref		ref	
Indeterminate	1.95 (1.50-2.53)		2.10 (1.61-2.73)	
Incidental	0.82 (0.59-1.16)		0.86 (0.61-1.22)	
Positive	3.13 (0.98-10.03)		3.16 (0.98-10.19)	
COPD CAT score	0.98 (0.97-0.99)	<0.001	1.00 (0.98-1.01)	0.68
EQ VAS**	1.00 (1.00-1.01	0.02	1.00 (0.99-1.00)	0.19
MRC Dyspnoea		<0.001		0.15
Strenuous exercise only	Ref		Ref	
When hurrying	0.91 (0.77-1.08)		0.98 (0.81-1.19)	
Slower than people	0.77 (0.59-0.99)		0.92 (0.67-1.27)	
Stop for breath	0.61 (0.44-0.84)		0.76 (0.51-1.14)	
Too breathless	0.43 (0.30-0.62)		0.56 (0.35-0.91)	
WHO Performance		<0.001%		0.45
No restrictions	Ref		Ref	
Restricted strenuous	0.81 (0.68-0.96)		0.84 (0.68-1.04)	
Up for 50% time	0.61 (0.46-0.83)		0.76 (0.53-1.09)	
In bed > 50% time	0.53 (0.35-0.79)		0.73 (0.44-1.22)	
Disabled	0.55 (0.06-4.91)		0.74 (0.08-7.07)	

*Age from randomisation to T2 expected screen
#5 respondents who adhered to treatment had missing information on IMD
^Category 'other' includes one respondent who identified as Hispanic
§Data obtained during eligibility rechecks during T0, hence based on self-report
** Data missing for two respondents

REFERENCE

1. doi:10.1001/jamanetworkopen.2020.25102.

'A Winter's Tale' – Mechanisms of viral infection

S141 NOVEL IN VITRO INFLUENZA MUCOSAL VACCINATION MODEL BY CO-CULTURE OF AIR LIQUID INTERFACE HUMAN NASAL EPITHELIUM AND PBMC

J Cheng, K Ito, S Hassibi. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.146

Background Despite vaccination, influenza infection is still a major health burden, especially in people aged >65 years, immunocompromised or with respiratory disease. Current intramuscular influenza vaccines only induce systemic immunity and limited effects on local mucosal immunity. Hence vaccinated individuals are still susceptible to infection/illness and transmission. Intranasal vaccinations have the potential to induce mucosal immunity at the nasal epithelium (primary site of infection). However, an *in vitro* model is required to be able to test these mucosal vaccines.

Aim To set up an *in vitro* influenza mucosal vaccination model using human nasal epithelium and peripheral blood mononuclear cells (PBMC) co-culture system.

Methods PBMC were pre-treated with L-leucyl-L-leucine methyl ester (LLME) and then sensitised with recombinant H1H1 hemagglutinin (rHA) antigen ± adjuvant (Cholera Toxin B (CTB)+ CPG-ODN). Sensitised PBMC were co-cultured with nasal epithelial cells at air-liquid interface (ALI) for 10 days. IgM release from PBMC was determined using ELISPOT. Hemagglutination inhibition (HI) titre and total and H1N1 specific Secreted IgA (sIgA) were assessed in apical washes at day 4 and day 10, using H1N1 PR8 virus HI assay and ELISA respectively.

Results IgM release from PBMC after 10-day co-culture with ALI nasal epithelium, was increased in cells sensitised to H1N1 rHA and adjuvant (CTB+CPG-ODN) treatment (4-fold, $p<0.05$), compared to PBMC stimulated with LLME only. Also, sensitisation using H1N1 rHA with CTB+CPG-ODN induced total sIgA and H1N1 specific secretion from the apical surface of nasal epithelial cells at day 10 of co-culture. H1N1 rHA with the addition of adjuvant, CTB+CPG-ODN, had increased HI titre on day 10 apical wash after co-culture.

Conclusion In PBMC- nasal epithelium co-culture, the addition of adjuvant CTB+CPG-ODN to H1N1 rHA for sensitisation increases IgM, total and H1N1 specific sIgA and total anti-H1N1 antibodies indicated by increased HI titre. Thus, this co-culture system will be a useful model to test influenza mucosal vaccination *in vitro*.

S142 NASAL CELLS FROM OLDER ADULTS EXHIBIT EARLY PRO-FIBROTIC RESPONSES TO SARS-COV-2, WHICH FACILITATES VIRAL REPLICATION AND SPREAD

[1]M Woodall, [2]A Cujba, [3]K Worlock, [1]T Masonou, [4]S Teichmann, [2]K Meyer, [3]M Nikolić, [3]C Smith. *[1]Great Ormond Street UCL Institute of Child Health, London, UK; [2]Wellcome Sanger Institute, Cambridge, UK; [3]UCL Respiratory, Division of Medicine, London, UK; [4]Department Medicine and Cambridge Stem Cell Institute Clinical School, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.147

Introduction Older adults (>75y) infected with SARS-CoV-2 have a heightened risk of developing severe COVID-19 and mortality, compared to younger age groups. In this study, we investigated how the nasal epithelial cell (NEC) landscape and functional responses of NECs, the initial site of SARS-CoV-2 infection, contribute to age-associated disease severity.

Methods NECs from different age groups including older adult (>70 years) were cultured at air-liquid interface and infected with SARS-CoV-2. Single-cell RNA sequencing (scRNA-seq), supported by functional assays, immunofluorescence microscopy, and transmission electron microscopy (TEM) were used to profile the age-associated nasal epithelial cell response to infection.

Results Infectious virus load was x1000 fold higher (p=0.04) in older adult NECs, with a mean viral titre of 1.64×10^7 pfu/well (1.71×10^4 pfu/well in paediatrics). This corresponded with emergence of a 'Basaloid-like 2' cell, previously characterised in pulmonary fibrosis patients and associated with aberrant wound healing pathways. TEM revealed increased epithelial damage and decreased epithelial integrity, evidenced by significant epithelial thinning and cell shedding (p<0.03, n=7). Stimulation of Basaloid-like cell marker expression through wounding increased the viral load in infected NECs from younger age groups (mean ± s.d. 4.09 ±3.61% to 9.69±9.04% dsRNA+ cells; p=0.03) particularly around the wound site. Analysis of 8 in vivo COVID-19 patient datasets validated these findings, with the greatest proportion of Basaloid-like 2 cells found in older adult COVID-19 patients.

Conclusions Infected older adult NECs exhibit a bias towards a pro-fibrotic and remodelling response which facilitates further viral replication and spread. These findings highlight critical age-dependent differences in nasal epithelial cell-intrinsic immunity against respiratory infection.

S143 ELEVATED NEUTROPHIL MPO AND NE FOLLOWING REVERSE MIGRATION ACROSS RSV-INFECTED CO-CULTURES, REPLICATE LEVELS SEEN IN THE BLOOD OF INFANTS WITH RSV BRONCHIOLITIS

M Palor, AI Jacobs, S Ray, P De Coppi, RE Hynds, RL Smyth, CM Smith. *University College London, London, UK*

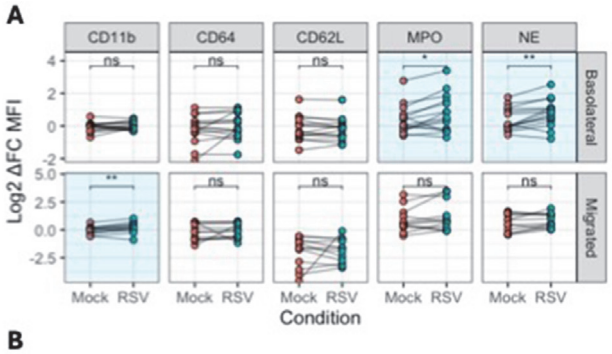
10.1136/thorax-2024-BTSabstracts.148

Introduction Respiratory syncytial virus (RSV) is a leading cause of childhood lower respiratory tract infection and hospitalisation worldwide. In infants with severe RSV bronchiolitis, excessive neutrophilic inflammation of the airways is a common pathological feature. Yet, the contribution of neutrophils to host defence and/or disease remains to be elucidated. Uncovering new biomarkers could help to address the urgent need for more effective therapeutic strategies.

Methods We developed a novel co-culture model of the blood:airway barrier using human vasculature endothelial cells (HUVECs) and differentiated paediatric bronchial epithelial cells (BECs) to study neutrophil (n=12 donors) migration across mock or RSV-infected epithelial cells with and without the addition of antiviral agents (RSV604, remdesivir). We used flow cytometry to analyse neutrophil marker expression and compared this to neutrophils obtained from venous blood of RSV-positive (n=5) or control infants (n=5).

Results We found that neutrophil migration across RSV-infected co-cultures led to higher expression of myeloperoxidase (MPO) and neutrophil elastase (NE) on basolateral ('blood side') neutrophils (figure 1A), which we showed was due to the reverse migration of neutrophils. Elevated MPO and NE expression were also observed in peripheral blood neutrophils from infants hospitalized with RSV (figure 1B&C). Antiviral treatment reduced infectious viral load in RSV-infected co-cultures but did not affect MPO or NE expression on basolateral neutrophils (n = 6).

Conclusions This study demonstrates that the co-culture neutrophil trans-endothelial epithelial migration (TEEM) model effectively replicates key inflammatory outcomes associated with RSV bronchiolitis. The model shows potential for investigating the mechanisms underlying neutrophil-mediated inflammation and disease severity, and for the use of neutrophil MPO and NE as potential biomarkers for pre-clinical antiviral drug screening.



C

	Study Population			
	Animal-free model (Basolateral)		GOSH ICU (Blood)	
	Mock	RSV	Control	RSV
Donors (n)	12		5	5
% Male	42		20	40
Age (years)	20-40		0-1	0-3
MFI ± SD				
CD11b	39,662 ± 15,092	42,125 ± 14,518	28,181 ± 9,245	28,128 ± 7,671
CD64	2,464 ± 909	3,003 ± 1,038	23,484 ± 19,811	14,779 ± 4,456
CD62L	192,814 ± 77,976	188,340 ± 74,166	189,988 ± 40,746	212,946 ± 36,233
MPO	195,759 ± 91,410	**288,490 ± 170,846****	155,203 ± 61,823	**403,327 ± 90,324****
NE	45,561 ± 16,820	**70,305 ± 36,698****	59,432 ± 31,899	**117,098 ± 38,376***

Abstract S143 Figure 1

S144 VIRAL INFECTION MODULATES BRONCHIAL EPITHELIAL CELL METABOLISM IN COPD

[1]LJ Finney, [1]P Fenwick, [1]E Calamita, [2]SV Kemp, [1]LE Donnelly, [1]JA Wedzicha, [1]AJ Byrne. *[1]Imperial College London, London, UK; [2]Nottingham University Hospitals NHS Trust, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.149

Background Respiratory viral infections are common causes of COPD exacerbations with the airway epithelium being the primary site of infection and viral replication. Metabolic shifts in mitochondrial respiration and glycolysis are central to cellular adaption to regional stress. However, little is known about the effect of viral infection on bronchial cell metabolism in COPD.

Aims This study aimed to assess the effect of viral infection on mitochondrial and glycolysis metabolism in bronchial epithelial cells (BECs) from COPD patients or healthy donors.

Methods Primary bronchial epithelial cells (BECs) were obtained by bronchoscopy from COPD participants (n=6) and age matched healthy participants (n=4). BECs were stimulated with TLR3 agonist Poly I:C (10 μg/mL), or media control, for 4 hours. Mitochondrial and glycolytic metabolic activity was assessed using a Seahorse XF Analyzer to investigate the effect of viral infection on cellular oxygen consumption rate (OCR) and extracellular acidification rate (ECAR).

Results Without stimulation, BECs from COPD donors had significantly lower spare respiratory capacity compared to healthy BECS (23 vs 44 ECAR/mpH/min/Cells $P=0.024$). In addition, there was a reduction in basal respiration and proton leak in COPD-BECs compared to those from healthy controls, without stimulation. There was no significant difference in glycolysis when comparing unstimulated COPD and healthy BECs cells. Stimulation with Poly I:C led to an increase in glycolysis (14 v 20 ECAR/mpH/min14 $P=0.01$) and glycolytic capacity in COPD BECs but not healthy BECs.

Conclusion Poly I:C stimulation was associated with increased glycolysis in BECs from COPD but not healthy donors. Shifts in glycolysis metabolism may contribute to an exaggerated inflammatory response to viral infection in COPD which may be a novel therapeutic target to reduce the severity of COPD exacerbations.

S145 SARS-COV-2 INFECTION AND PRO-FIBROTIC SIGNALING IN THE LUNG – DEFINING THE ROLE OF Î±VÎ²6

[1]E Lopez-Jimenez, [1]Y Zhang, [2]J Calver, [3]S Ramadurai, [1]Y Liu, [4]F Monduzzi, [1]TP Peacock, [1]W Barclay, [1]RG Jenkins. *[1]Imperial College London, London, UK; [2]University of Nottingham, Nottingham, UK; [3]Rosalind Franklin Institute, Harwell, UK; [4]University of Modena and Reggio-Emilia, Modena, Italy*

10.1136/thorax-2024-BTSabstracts.150

Background and Aims The SARS-CoV-2 (COVID-19) pandemic caused significant global mortality and morbidity. Recent studies report residual lung abnormalities (RLA) and evidence of lung fibrosis in some patients up to 2 years post-hospitalization. It is unclear if RLA resolve or develop into progressive fibrotic lung disease. IPF patients had particularly poor outcomes following COVID infection. IPF patients have high levels of the RGD-binding integrin αvβ6 in alveolar epithelium but low levels of ACE2, the primary receptor for the virus. We previously showed αvβ6 could bind SARS-CoV-2 spike protein via its RGD domain but the role of this interaction in infection was unclear. We hypothesised that αvβ6 can facilitate infection of alveolar epithelial cells with SARS-CoV-2 alone or in combination ACE2, promoting activation of fibrogenic pathways.

Methods HEK293T cells were co-transfected with ACE2 and αvβ6 protein and exposed to pseudoviruses containing luciferase reporter and spike protein from three strains of SARS Cov-2 virus: wild-type (D614G), or omicron variants BA.1 and BA.2 (lacks RGD motif). Vesicular stomatitis virus glycoprotein (VSV-G) was used as control. Pseudovirus internalization was measured by luciferase assay. Cell surface protein expression was assessed by immunofluorescence. Induction of fibrotic markers following pseudovirus exposure was assessed by western blot (pSmad2) and qPCR.

Results Cells expressing high levels of ACE2 internalised all three virus strains with 3.8–5 fold increases in luciferase expresion relative to VSV-G control across the variants (n=3, p≤0.0001). No luciferase increase was detected in cells expressing only αvβ6. However, cells co-expressing low levels of ACE2 but high αvβ6, showed significantly increased luciferase activity compared with ACE2 alone for all three strains of virus (n=3, p≤0.001). Spike protein, ACE2 and integrin αvβ6 were shown to co-localize in transfected cells by immunofluorescence staining. αvβ6-mediated pseudovirus internalisation in low ACE2 expressing cells was associated with increased TGF-β activation (phosphorylation of Smad2) and elevated transcriptional expression of profibrotic markers COL1A1, PAI1, and αSMA.

Conclusions Epithelial cells co-expressing high αvβ6 integrin and low levels of ACE2 show increased SARS-CoV-2 internalisation and αvβ6-mediated virus internalisation promotes profibrotic signalling. These findings suggest that SARS-CoV2 infection, facilitated by αvβ6, may contribute to lung fibrogenesis.

S146 INTEGRATING SPATIAL TRANSCRIPTOMICS, HIGH-PLEX PROTEIN AND SINGLE CELL RNA SEQUENCING HIGHLIGHTS THE CXCR6-CXCL16 AXIS IN RECRUITING DYSREGULATED MONOCYTES IN IDIOPATHIC PULMONARY FIBROSIS

[1]L Pearmain, [2]E Jokl, [3]N Scott, [4]P Rivera-Ortega, [5]J Blaikley, [6]S Murtuza Baker, [3]ER Mann, [2]K Piper Hanley. *[1]Centre for cell-matrix research, University of Manchester, Manchester, UK; [2]Division of diabetes, endocrinology and gastroenterology, University of Manchester, Manchester, UK; [3]Lydia Becker Institute for Immunology and Inflammation, University of Manchester, Manchester, UK; [4]ILD Unit, Wythenshawe Hospital, Manchester Foundation Trust, Manchester, UK; [5]Division of respiratory inflammation and immunity to infection, University of Manchester, Manchester, UK; [6]Bioinformatic core facility, Faculty of Biology Medicine and Health, University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.151

Background Knowledge underpinning immune mechanisms in IPF remains incomplete, with no effective immune-targeted therapies. Monocyte recruitment is critical to fibrosis progression, and a dysregulated pro-fibrotic macrophage gene signature is present in IPF.

We aim to elucidate mechanisms of myeloid dysregulation through multi-omic (single-cell RNA, high-plex protein, spatial transcriptomic [ST]) computational approaches, validating discoveries with immunophenotyping.

Methods We used the 10x Genomics platform to perform ST and high-plex protein measurement on healthy and IPF FFPE human lung tissue. Healthy controls, post-influenza/RSV and

IPF patient circulating monocytes were treated +/- LPS and characterised by flow-cytometry.

Results To provide mechanistic insight into IPF myeloid dysregulation we performed ST on healthy (n=1) and IPF (n=3) lung. ST resolved fibrotic lung into discrete gene expression clusters that correlate with histological landmarks. We added additional published healthy ST samples (n=4)[1] and integrated scRNA-seq data[2] to increase ST data resolution. *Cxcl16* expression is spatially enriched and, alongside its receptor *Cxcr6*, upregulated ($p<0.05$) in unique fibrotic gene clusters. *Cxcr6* expression is significantly upregulated in fibrotic T, B lymphocytes and myeloid cells. *Cxcl16* is upregulated in fibrotic epithelium, endothelium and, importantly, myeloid cells.

Flow-cytometry confirmed the novel finding of CXCR6 expression on IPF monocytes (n=13) compared to healthy (n=20) or post-viral (n=9) controls. CXCL16 expression was increased in fibrotic (n=4) compared to control (n=4) lung immunohistochemistry. IPF monocyte phenotype was dysregulated with increased CD16+ monocytes and low TNFÉ‘ and COX-2 expression compared to controls.

Conclusions We use cutting edge ST and computational approaches to spatially resolve cell populations and identify the CXR6-CXCL16 axis in dysregulated monocyte lung recruitment. Immunophenotyping indicates fibrotic macrophage monocyte precursors are abnormal prior to lung migration. Shared *Cxcr6* and *Cxcl16* spatial clustering and expression indicates this axis may act as a feed-forward loop in pulmonary fibrosis and requires prioritisation for therapeutic targeting.

REFERENCES

1. E Madissoon, *et al.* A spatially resolved atlas of the human lung characterizes a gland-associated immune niche. *Nat Genet* 2023;**55**:66–77.
2. TS Adams, *et al.* Single-cell RNA-seq reveals ectopic and aberrant lung-resident cell populations in idiopathic pulmonary fibrosis. *Sci Adv* 2020;**6**:eaba1983.

‘The Signalman’ – Mechanisms of lung disease

S147 UNDERSTANDING THE ROLE OF ENDOTHELIAL SENESCENCE AND ENDOTHELIAL TO MESENCHYMAL TRANSITION IN DEVELOPMENT OF ATHEROSCLEROSIS IN PATIENTS WITH CHRONIC LUNG DISEASE

[1]D Gresham, [1]J Dong, [1]K Lodge, [1]M Macleod, [1]A Braddy-Green, [1]R Lopez, [1]J Sidhu, [1]V Ho, [1]A Randi, [1]L Donnelly, [1]PJ Barnes, [2]AW Wells, [2]P George, [1]W Wedzicha, [1]C Pericleous, [1]K Paschalaki. [1]*National Heart and Lung Institute, Imperial College London, London, UK*; [2]*Royal Brompton and Harefield Clinical Group, Guy’s and St. Thomas’ NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.152

Background Cellular senescence drives the pathophysiology of age-related disorders. Cardiovascular disease (CVD) is a leading cause of morbidity and mortality in both chronic obstructive pulmonary disease (COPD) and in idiopathic pulmonary fibrosis (IPF). Senescent endothelial cells are dysfunctional, exhibit a proinflammatory ‘senescence-associated-secretory-phenotype’ (SASP) and promote CVD. TGFβ signaling plays a key role in COPD, IPF and development of **endothelial to mesenchymal transition (EndMT)** promoting atherosclerosis. Recent literature suggests evidence of EndMT in COPD and IPF.

We hypothesized that endothelial senescence promotes endothelial dysfunction and EndMT, contributing to the development of atherosclerosis in COPD and IPF.

Methods Endothelial colony forming cells (ECFC) are circulating endothelial progenitors and provide non-invasive access to endothelial cells. We have provided **evidence of accelerated endothelial senescence** in COPD patients due to epigenetic dysfunction that can be targeted pharmacologically (Paschalaki et al, Stem Cells 2013; Thorax 2022). We isolated ECFC from COPD cohort (n=16), IPF (n=5) and age-matched healthy non-smokers (n=11). ECFC were characterised for endothelial markers, proliferation, senescence and selected SASP mediators by immunofluorescence (IF) and western blotting. We used a high-throughput ‘organ-on-a-chip’ microfluidic platform (OrganoPlate-MIMETAS) that allows formation of microvessels for functional and IF analysis.

Results TGF-β2 treatment of endothelial cells (ECFC and human umbilical endothelial cells: HUVEC) induced premature senescence (increased senescence-associated-β-galactosidase activity: SA-β-gal activity, p21 and p16), increased expression of proinflammatory (IFN-γ-inducible-protein-10: IP-10), prothrombotic (von Willebrand Factor: vWF) and fibrotic mediators (plasminogen activator inhibitor-1: PAI-1), as well as markers of EndMT (increased expression of the mesenchymal marker SM22α). ECFC from COPD and IPF patients exhibited reduced proliferation (Ki-67), increased expression of senescence markers (SA-β-gal activity, p21, p16), IP-10, PAI-1 and vWF compared to ECFC from healthy non-smokers. In 3D cultures maintained for 14 days, microvessels formed with patients’ ECFC showed increased permeability, increased expression of markers of senescence and disruption of endothelial junctions.

Conclusion ECFC from COPD and IPF patients exhibit a dysfunctional, senescent and prothrombotic phenotype that may contribute to the increased risk of cardiovascular comorbidities. TGF-β signaling pathway promotes endothelial senescence and EndMT and may drive vascular ageing and CVD in patients with chronic lung disease.

S148 DIFFERENTIAL EFFECTS OF TSLP, IL-33 AND IL-25 ALONE OR IN COMBINATION ON MURINE AIRWAY SMOOTH MUSCLE (ASM) RESPONSIVENESS

A Mengash, Y Amrani. *University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.153

Background Asthma is a heterogeneous disease characterized by hyperresponsiveness and inflammation. Alarmin cytokines have emerged as potential therapeutic targets due to their involvement in driving airway inflammation. Here, we examined whether TSLP, IL-33 and IL-25 alone or in combination play a role in modulating airway smooth muscle (ASM) responsiveness in isolated murine tracheal rings.

Methods BL6/C57 murine tracheal rings divided into groups representing the upper and lower halves and cultured in DMEM media with recombinant mouse TSLP, IL-33 or/and IL-17E (100 ng/ml), for 24 hrs. Contraction to carbachol (Cch) and relaxation to formoterol were assessed using the DMT organ bath system. All results were expressed as dose-

response curves of tracheal contraction in n=6–8 different animals/condition.
Main Results Contractile responses to Cch exhibiting increased responsiveness in lower tracheal halves when compared to the responses of the upper tracheal halves. Incubation of tracheal rings with individual alarmin cytokines showed that TSLP was enhancing and IL-17E reducing maximum ASM contractile responses to Cch in both upper and lower tracheal halves. IL-33 did not affect Cch-evoked ASM responses. Moreover, incubation of tracheal rings with all three alarmin cytokines had minimal impact on ASM responses of the upper parts while significantly reducing responses of the lower parts. Additionally, formoterol-induced ASM relaxation was not affected by incubation with alarmin cytokines.
Conclusion These findings suggest a differential effect of alarmin cytokines on ASM responsiveness with IL-33 having no effect, while TSLP augmenting, and IL-25 decreasing contractile responses to muscarinic M3 activation.

S149 ANTIFIBROTIC MECHANISMS OF TREPROSTINIL

J May, JA Mitchell, RG Jenkins. *National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.154

Background Idiopathic pulmonary fibrosis (IPF) is a disease with a poor prognosis and no cure. New therapeutic approaches in IPF are urgently needed. Treprostinil sodium is a synthetic prostacyclin-analogue used to treat pulmonary hypertension and the INCREASE trial (2021) suggested potential as an antifibrotic. The antifibrotic mechanisms exerted by Treprostinil are not understood. Treprostinil signals through the IP receptor, a cell-surface G-protein coupled receptor (GPCR) increasing levels of cAMP. However, the antifibrotic effects are not proportional to the amount of cAMP generated, and Treprostinil is also an agonist for PPARβδ. The aim of these studies is to identify the antifibrotic mechanisms of Treprostinil.
Methods IP and PPARβδ receptor expression was determined in immortalised human bronchial epithelial cells (iHBECs) and primary lung fibroblasts (HLF) using qPCR and Western blotting. Active RhoA was measured by GLISA™ assay. Fibroblast proliferation was measured using PrestoBlueä, BrdU incorporation, and time-lapse live cell imaging. Treprostinil was used as an agonist of both IP and PPARβδ, MRE-269 as an IP-specific agonist, forskolin as a cAMP generator, and GW0742 as a PPARβδ-specific agonist. Nintedanib was used as a positive control in proliferation assays.
Results PPARβδ is expressed in both cell types and expression was upregulated at the message and protein level by LPA. In contrast IP receptor expression was very low or absent in both cell types. Treprostinil inhibited LPA-induced RhoA activation by 22%, however GW0742 inhibited LPA-induced RhoA activation by 37% in fibroblasts. No effect was seen with MRE-269. Treprostinil is only a modest inhibitor of fibroblast proliferation when compared with Nintedanib in all three assays. The inhibitory effects of Treprostinil were similar to GW0742. MRE-269 had no effect on proliferation, whereas forskolin did.
Conclusions PPARβδ expression was expressed significantly more than IP in iHBECs and HLFs. Both Treprostinil and GW0742 inhibited RhoA activation and proliferation, whereas MRE-269 did not. This suggests that in cells with high levels of PPARβδ and low levels of IP receptor that the effects of Treprostinil are mediated via PPARβδ. Further characterisation of these mechanisms is important to define the antifibrotic therapeutic potential of prostacyclin agonists.

S150 EFFECTS OF PUTATIVE SENOTHERAPIES, FISETIN AND NAVITOCLAX, ON SENESCENT SMALL AIRWAY FIBROBLASTS IN COPD

KL Cox, PS Fenwick, JV Devulder, PJ Barnes, LE Donnelly. *National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.155

Background Chronic obstructive pulmonary disease (COPD) is associated with accelerated lung ageing and cellular senescence. Small airway fibroblasts (SAF) are senescent in COPD and may be implicated in small airways disease. Senescent cells are in a permanent state of cell cycle arrest with increased expression of cell cycle inhibitors $p16^{Ink4a}$ and $p21^{Cip1}$. Senotherapeutics can remove or alter the phenotype of senescent cells. We hypothesised that two senotherapeutics, fisetin and navitoclax, could reduce the senescence markers, $p16^{Ink4a}$ and $p21^{Cip1}$, associated with senescent SAF in COPD.
Objective Investigate effects of fisetin and navitoclax on $p16^{Ink4a}$ and $p21^{Cip1}$ expression in COPD SAF.
Methods SAF were isolated from lung resection tissue of COPD patients (n=6) and non-smokers (n=8). Cells were cultured with fisetin (1–100 μM) and navitoclax (0.1–10 M). Cellular senescence was induced using 300 MH_2O_2. Expression of senescence markers, $p16^{Ink4a}$ and $p21^{Cip1}$, was measured using western blots. Cell viability was assessed using MTT assays.
Results $p21^{Cip1}$, but not $p16^{Ink4a}$, was significantly increased in COPD SAF compared to non-smoker SAF (p=0.02). Cell viability was decreased in COPD SAF treated with navitoclax by 60.2% (p=0.11, n=4). COPD SAF treated with 100 M navitoclax showed a concentration-dependent decrease in expression of $p16^{INK4}$ by 83.3% (p=0.13, n=4) and $p21^{Cip1}$ by 86.4% (p=0.13, n=4), which was not seen at any concentration of fisetin. Next, H_2O_2 was used to induce senescence further in COPD SAF. Treatment of COPD SAF with 300 M H_2O_2increased the expression of senescence marker $p21^{Cip1}$ by 101.5% (p=0.58, n=7). In this model, the highest concentrations of navitoclax, but not fisetin, significantly reduced cell viability in senescence-induced COPD SAF (by 83.7 ± 2.1%, p=0.038). Both fisetin and navitoclax significantly reduced expression of $p16^{Ink4a}$ (by 77.1± 8.7%, p=0.024 and 99.8 ± 0.2%, p=0.0082, respectively) and $p21^{Cip1}$(by 88.6 ± 2.5%, p=0.024 and 95.4 ± 4.5%, p=0.018, respectively) in senescence-induced COPD SAF. Similar results were seen in senescence-induced non-smoker SAF.
Conclusion Fisetin and navitoclax both reduce $p16^{Ink4a}$ and $p21^{Cip1}$ expression in senescent COPD SAF. Further work is needed to investigate if these drugs alter other markers of senescence or induce apoptosis.

S151 INVESTIGATING THE INTERACTION BETWEEN HEMICENTIN-1 AND TGF-BETA IN IDIOPATHIC PULMONARY FIBROSIS

H Yao, H Ding, B Liu, E Lopez, D Wang, G Jenkins, I Stewart, AE John. *Margaret Turner Warwick Centre for Fibrosing Lung Disease, National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.156

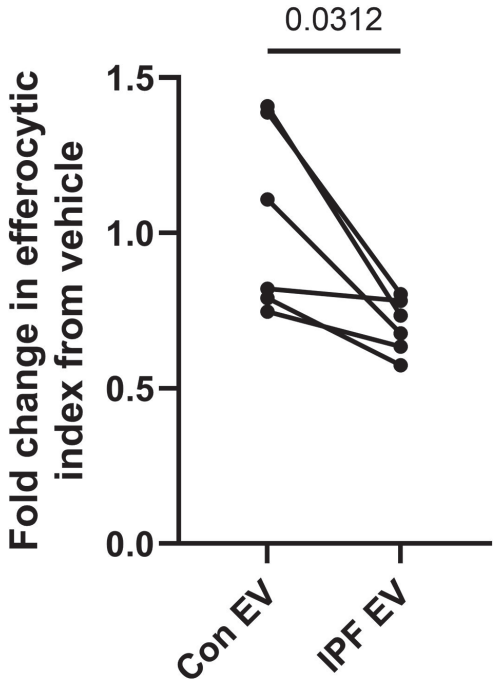
Background Idiopathic pulmonary fibrosis (IPF) is a chronic and progressive lung disease for which there is currently no cure. A key characteristic of IPF is the accumulation of the fibrotic extracellular matrix (ECM). HMCN1 is an ECM protein found within the basement membrane and previously reported to promote TGF-beta profibrotic signalling in mouse neonatal cardiac fibroblasts. Previous studies have shown genetic burden of rare variants in hemicentin-1 (HMCN1) in IPF, upregulated HMCN1 gene expression in IPF tissues compared to controls, and association of HMCN1 genetic burden with lung function. We hypothesised that HMCN1 interacts with, and regulates, TGF-beta activity in IPF.
Methods Primary human lung fibroblasts (n=3) and immortalised human bronchial epithelial cell lines (iHBECs; n=3) were cultured in the presence or absence of TGF-beta for up to 24 hours (h) and expression of *HMCN1* mRNA analysed using RT-qPCR. HMCN1 protein expression was assessed in lung tissue samples from IPF patients (n=11) and non-IPF controls (n=4) using immunohistochemistry. 61 rare missense variants of *HMCN1* identified through burden testing in pulmonary fibrosis were used to predict structural alteration of HMCN1 protein domains with AlphaFold3.
Results TGF-beta treatment upregulated *HMCN1* expression in both cell lines with iHBECs showing the highest 6-fold change at 24h and fibroblasts a 2-fold increase peaking at 8h. In IPF tissues, HMCN1 localised with fibrotic alveolar and airway epithelial cells and endothelial cells but very little with fibroblasts. Expression was lower and restricted primarily to blood vessels and airways in non-IPF tissue. AlphaFold3 complex prediction revealed an interaction between the wild-type thrombospondin type-1 (TSP1) repeat domain of HMCN1 and the latent-associated peptide of pro-TGF-beta, while the rs371095992 variant (Cys>Trp) leads to an aberrant interaction with mature TGF-beta.
Conclusion TGF-beta mediated upregulation of HMCN1 mRNA was observed in fibroblasts and epithelial cells, with protein staining associated primarily with epithelial cells in IPF lung. Our findings suggest that variant rs371095992 of HMCN1 may affect binding affinity to TGF-β , leading to dysregulation of downstream pro-fibrotic signalling. Future functional genomic studies will further investigate the pathogenic mechanisms of HMCN1 variants in IPF.

S152 EXTRACELLULAR VESICLES MEDIATE MACROPHAGE FUNCTIONAL IMPAIRMENT IN IDIOPATHIC PULMONARY FIBROSIS

C Mafham, KL Spencer, E Jenkins, LE Crowley, DR Thickett, D Parekh, A Scott, RY Mahida. *University of Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.157

Infiltrating monocyte-derived macrophages (MDMs), and cellular crosstalk via extracellular vesicles (EVs), have been implicated in the pathogenesis of idiopathic pulmonary fibrosis (IPF), however specific mechanisms have not been elucidated. We sought to characterise plasma EVs from IPF patients and investigate their effect on macrophage effector functions. We isolated EVs from the platelet-free plasma of 8 IPF patients and 8 age-matched healthy controls (HCs). EV size and concentration were assessed by Nanoparticle Tracking Analysis, EV phenotype assessed by Exoview. Alveolar macrophages (AMs) were isolated via lavage from the lung tissue resections of 4 non-smoking patients undergoing lobectomy. Monocytes isolated via Percoll gradient from the blood of 6 healthy volunteers were differentiated into MDMs *in vitro* using GM-CSF. Macrophages were treated with pooled EVs from each patient group for 24 hours, prior to functional assessment of efferocytosis and phagocytosis via flow cytometry. There was no difference in EV concentration and size profile between IPF patients and HCs. However, IPF patients had a greater proportion of epithelial cell derived EVs compared to HCs. Treatment with IPF patient EVs decreased MDM efferocytosis (figure 1, p=0.0312) compared to healthy control EVs. Treatment with EV-depleted plasma from both groups had no effect on MDM efferocytosis. MDM phagocytosis was unchanged following treatment with IPF or healthy control



Abstract S152 Figure 1 MDM efferocytosis following EV treatment. Monocyte derived macrophages (MDMs) when treated for 24 hours with pooled extracellular vesicles (EVs) isolated from idiopathic pulmonary fibrosis (IPF) patients have a reduced efferocytic index. Efferocytic index calculated by subtracting cytochalasin D control value from percentage cells allophycocyanin (APC) positive. Age-matched healthy control EVs (Con EV) compared to IPF patient EVs (IPF EV). Data presented as fold change of efferocytic index from saline vehicle treatment of paired samples. Statistical analysis performed by Wilcoxon t-test (p=0.0312, n=6)

EVs. AM efferocytosis was unchanged following treatment with IPF patient EVs. Thus, treatment with IPF EVs induces a specific impairment of MDM efferocytosis, however this impairment is not global, and is not shared across tissue-resident alveolar macrophage populations. Impaired macrophage efferocytosis is associated with a pro-fibrotic phenotype[1]; thus EV-mediated macrophage dysfunction may contribute to IPF pathogenesis. Further work is necessary to investigate whether the functional defect is linked to macrophage phenotype and metabolic profile. Characterisation of EV cargo is also required. These findings provide a basis for investigation into targeting pro-fibrotic EV signalling, to restore macrophage function and prevent disease progression in IPF.

REFERENCE

1. She Y, Xu X, Yu Q, *et al.* Elevated expression of macrophage MERTK exhibits pro-fibrotic effects and results in defective regulation of efferocytosis function in pulmonary fibrosis. *Respir Res* 2023;**24**:118. https://doi.org/10.1186/s12931-023-02424-3.

'Foundation's Edge' (2) – Role of genetics in IPF

S153 CLINICAL AND GENETIC PHENOTYPING OF TELOMERE DYSFUNCTION WITHIN A FAMILIAL ILD COHORT

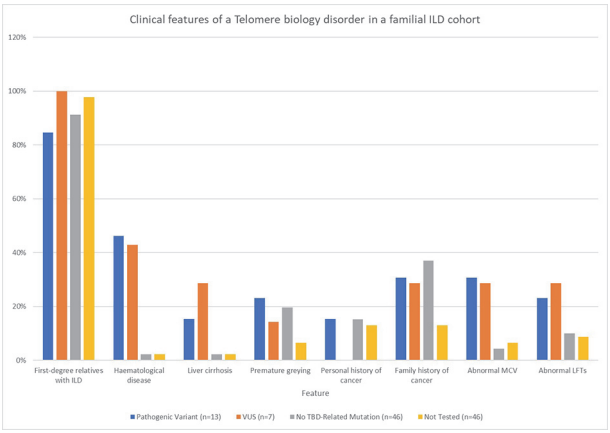
I Mobein, H Parfrey, JA Dickens. *Royal Papworth Hospital, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.158

Background Telomere maintenance is vital for genomic stability. Impairment results in premature telomere shortening, causing a multisystem phenotype with accelerated aging, often including interstitial lung disease (ILD) due to the impact of short telomeres on alveolar epithelial function. Pathogenic variants in telomere maintenance-related genes account for >50% of familial ILDs. Some individuals with familial ILD, however, lack an identifiable monogenic variant but exhibit clinical features of telomere biology disorder (TBD). Identifying this cohort is crucial for their holistic care.

Methods We analysed data from 112 patients in our familial ILD cohort and categorized them into four groups based on genetic testing using the R421 familial ILD panel: pathogenic telomere-related variant identified, variant of uncertain significance (VUS) identified, no pathogenic variant identified, and those who did not have the panel (unavailable/declined). Clinical features of a TBD were defined as ILD/history of ILD in a first-degree relative plus $\geq$ 1 of premature greying, abnormal liver function, abnormal FBC, or personal/family history of cancer.

Results Of the 112 patients, 13 (12%) had a pathogenic TBD-related mutation, 7 (6%) had a VUS, 46 (41%) had no TBD-related mutation, and 46 (41%) did not have the R421 panel. The proportion of patients with clinical features of a TBD was 62% for those with a pathogenic variant, 57% for those with a VUS, 48% for those with no pathogenic variant, and 35% for the untested cohort. Hematological disease, liver disease and abnormal FBC most closely correlated with the presence of a pathogenic variant or VUS. Other clinical features did not appear to correlate with the presence of a genetically defined TBD.



Abstract S153 Figure 1

Conclusion Those with genetically defined TBDs were most likely to demonstrate clinical features of a short telomere syndrome, particularly hematological disease or liver dysfunction. Importantly, many of those without an identified genetic cause also had clinical features of a short telomere syndrome. This underscores the need for functional telomere length assessments in those without an identifiable monogenic cause and those who do not wish to undergo genetic testing. This is particularly important when considering personalised medicine, including assessment of immunosuppression risk and clinical trial eligibility.

S154 THE IMPACT OF THE IPF-ASSOCIATED VARIANT RS62025270 ON AKAP13-MEDIATED SIGNALLING AND EPITHELIAL CELL DYSFUNCTION IN IDIOPATHIC PULMONARY FIBROSIS

B Liu, SY Wang, E Pyman, A Vairon, M Zarcone, EL Lopez Jimenez, RG Jenkins, AE John. *National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.159

Background and Aims The variant rs62025270 (G>A) near the A-kinase anchoring protein 13 (*AKAP13*) gene has been associated with an increased risk of idiopathic pulmonary fibrosis (IPF). The A allele of this polymorphism is linked to elevated *AKAP13* mRNA expression in human lung tissue, although the exact mechanism remains uncertain. AKAP13 is a multifunctional scaffold protein that orchestrates complex signalling networks within cells by anchoring signalling molecules such as RhoA and Protein Kinase A (PKA), thereby maintaining cellular homeostasis and function. This study aims to understand how rs62025270 variant modulates the function of lung epithelial cells and promotes fibrogenesis.

Methods Immortalized human bronchial epithelial cells (iHBECs) were CRISPR-Cas9 edited to introduce rs62025270 variant. AKAP13 expression was measured by immunoblotting and Immunofluorescence (IF) staining. Effects on cell adhesion and proliferation were compared with wild type cells using xCELLigence RTCA. Following stimulation with lysophosphatidic acid (LPA), nCounter® gene expression analysis was used for transcriptional profiling of both cell types. Intracellular cyclic AMP (cAMP) levels were assessed using Förster resonance energy transfer (FRET). Active RhoA was measured via

the G-LISA activation assay while SMAD2 phosphorylation was assessed by immunoblotting.

Results The IPF-associated variant rs62025270 led to the expression of a truncated form of AKAP13, which lacks the PKA binding motif. Real-time cell impedance measurements indicated a 50% increase in cell adhesion in mutant iHBECs, coupled with a 40% reduction in cell proliferation rate compared to the wild type. Following LPA treatment, mutant cells exhibited enhanced RhoA activation and increased SMAD2 phosphorylation. Additionally, these cells showed lower intracellular cAMP levels compared to the wild type. Transcriptomic analysis revealed elevated mRNA levels of SAA1 (serum amyloid A1), MMP1 (matrix metallopeptidase 1), and CDKN1A (cyclin-dependent kinase inhibitor 1A) in the mutant cells.

Conclusions Our findings indicate that the rs62025270 variant leads to a number of profibrotic processes. It promotes epithelial cell adhesion, reduces proliferation, and consistent with increased TGFβ activation shows enhanced LPA-induced RhoA activation and SMAD2 phosphorylation, and reduced intracellular cAMP levels. Collectively, these data provide a range of mechanisms through which rs62025270 may contribute to the pathogenesis of IPF.

S155 RADIOLOGICAL AND GENETIC DIVERSITY OF INHERITED ILDS REVEALED WITHIN A REGIONAL FAMILIAL PULMONARY FIBROSIS SERVICE

[1]H Parfrey, [1]C Fiddler, [2]S Holden, [1]JA Dickens. *[1]Royal Papworth Hospital, Cambridge, UK; [2]Cambridge University Hospitals, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.160

Background It is increasingly recognised that IPF and other fibrosing ILDs have a genetic basis in a significant proportion of patients. Those with monogenic inherited disease must be identified to offer them genetic counselling, monitoring of pulmonary/extra-pulmonary features and allow access to other specialities, transplant services and clinical trials. By establishing a familial pulmonary fibrosis clinic at Royal Papworth Hospital we aimed to facilitate personalised care and encourage clinical and scientific research.

Methods and Results We defined familial disease as $\geq$1 affected 1st degree relative or a known pathogenic mutation, identifying 128 patients to date (85 of whom are alive). This comprises 10–15% of our total IPF cohort. With an average age at diagnosis of 62 (range 0–86), they are younger than our standard cohort. The commonest radiological pattern is UIP-like (67%) but NSIP, hypersensitivity pneumonitis, PPFE, organising pneumonia and sarcoid-like patterns are all seen. 95% of eligible living individuals have been offered genetic testing, of which 75% accepted. 37% individuals with a genetic test results have a pathogenic variant or likely pathogenic VUS (4 TERT, 1 TERC, 3 RTEL1, 5 PARN, 3 SFTPC). These results have led to family screening, referrals to allied specialties, creation of a telomere biology disorder MDT, transplant planning as well as disease modelling of novel variants in cell models.

Conclusions Through this service we have been able to phenotype our familial ILD cohort and provide individualised clinical care. Ongoing follow-up will provide valuable information on variant-specific longitudinal disease behaviour and provide ongoing clinical and scientific research opportunities.

S156 IPF ASSOCIATED DNA METHYLATION AND GENE EXPRESSION CHANGES IN LUNG FIBROBLASTS: AIRWAY AND PARENCHYMAL DISTINCTION AND XY CHROMOSOME PROFILING

[1]A Valand, [1]P Rajasekar, [1]AL Lagan, [1]J Patel, [2]B Barksby, [2]RA Burgoyne, [3]JL MacIsaac, [3]DTS Lin, [4]ST May, [4]M Castellanos-Uribe, [3]MS Kobor, [5]TL Hackett, [6]AJ Halayko, [1]AJ Knox, [2]A Fisher, [2]L Borthwick, [1]R Clifford. *[1]Centre for Respiratory Research, Translational Medical Sciences, School of Medicine and NIHR Biomedical Research Group, University of Nottingham, Nottingham, UK; [2]Fibrosis Research Group, Biosciences Institute, Newcastle University, Newcastle upon Tyne, UK; [3]BC Children's Hospital Research Institute, Centre for Molecular Medicine and Therapeutics, University of British Columbia, Vancouver, Canada; [4]Nottingham Arabidopsis Stock Centre, School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, UK; [5]Centre for Heart Lung Innovation, University of British Columbia, Vancouver, Canada; [6]Department of Physiology and Pathophysiology, University of Manitoba, Winnipeg, Canada*

10.1136/thorax-2024-BTSabstracts.161

Rationale Idiopathic pulmonary fibrosis (IPF) is a progressive, fibrotic lung disease, that is predominant in men and has been associated with cell specific alterations to DNAm. Fibroblasts isolated from airways (AF) and parenchyma (PF) are phenotypically different. While most DNAm studies discard XY chromosome data during preprocessing, due to difference in profile compared to autosomal chromosomes, we developed a pipeline to interrogate XY DNAm. Here we investigated differential IPF associated gene expression (GE) and DNAm in AF and PF, including the XY chromosomes.

Methods DNA and RNA were isolated from AF (8 non-IPF, 8 IPF) and PF (14 non-IPF, 8 IPF) at passage 4 (AllPrep DNA/RNA Mini Kit (Qiagen)). DNA was bisulphite-converted and DNAm profiled using the Illumina HumanMethylation EPIC BeadChip array. RNA was profiled by Affymetrix Human Gene 2.1 ST Array. IPF associations irrespective of fibroblast type (~Disease+CellType+Gender+Age) and specific to fibroblast type (~Disease*CellType+Gender+Age) were identified by linear modelling of autosomal and male X and male Y chromosomes separately (Benjamini-Hochberg, $p<0.05$). Expression quantitative trait methylation (eQTM) was used to investigate the association between differential GE and DNAm.

Results On autosomal chromosomes, 12,287 probes and 166,329 methylation sites (CpGs) were differentially expressed and methylated in IPF fibroblasts compared to non-IPF fibroblasts, regardless of subtype (AF/PF). 92.87% of differentially expressed probes correlated with a methylation change in at least one CpG site (10,209,277 individual CpG-gene pairs). 249 probes and 20,522 CpGs were differentially associated with IPF in AF versus PF. 93.98% of cell specific IPF associated gene expression probes correlated with a methylation change (846,718 CpG-gene pairs).

On the male X chromosome 4159 of 16,217 CpGs and 212 of 1542 probes showed differential methylation and expression in IPF versus non-IPF fibroblasts. On the male Y chromosome, 13 CpGs and 39 probes were differentially methylated and expressed. Fibroblast sub-type had minimal

impact on differential expression and methylation on XY chromosomes.

Conclusion DNAm is potentially an important cell-specific mechanism underlying differential GE in IPF, including changes on the XY chromosomes. Future work will further define XY chromosome DNAm and GE associations, and functionally characterise the role of DNAm in IPF GE in vitro.

S157 EXPLORING THE FUNCTION OF PKN2 IN IDIOPATHIC PULMONARY FIBROSIS

[1,2,3,4]CE McMullan, [5,6,7]P Rajasekar, [1]AJ Hall, [1,2]P Stylianou, [5,6,7]R Clifford, [2,3]RJ Allen, [2,3]LV Wain, [1,2]KM Roach. *[1]Department of Respiratory Sciences, University of Leicester, Leicester, UK*; *[2]National Institute for Health Research Leicester Biomedical Research Centre, The Institute for Lung Health, University of Leicester, Leicester, UK*; *[3]Department of Population Health Sciences, University of Leicester, Leicester, UK*; *[4]Institute for Precision Health, University of Leicester, Leicester, UK*; *[5]Centre for Respiratory Research, Translational Medical Sciences, School of Medicine, University of Nottingham, Nottingham, UK*; *[6]Nottingham NIHR Biomedical Research Centre, Nottingham, UK*; *[7]Biodiscovery Institute, University of Nottingham, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.162

Background and Aims Idiopathic pulmonary fibrosis (IPF) is a chronic interstitial lung disease with unknown aetiology. Variant rs115982800 was identified in a GWAS of decline in forced vital capacity in individuals with IPF. PKN2 was identified as the nearest gene. We aim to investigate the role of PKN2 in TGFβ1-dependent pro-fibrotic processes in human lung myofibroblasts (HLMFs).

Methods The genotype-tissue expression (GTEx) project and IPF cell atlas were used to investigate PKN2 gene expression in bulk tissue, at cellular level and in single-cell RNA-sequencing data. PKN2 expression was analysed using Affymetrix Human Gene 2.1 ST genome-wide microarray generated from IPF and non-IPF fibroblasts from airway and parenchymal origin. PKN2 expression was assessed in TGFβ1-stimulated HLMFs. The effect of PKN2 inhibition and knockdown on HLMF fibrotic gene expression and function was investigated.

Results GTEx detected PKN2 in lung tissue and cultured fibroblasts. IPF cell atlas showed increased expression of PKN2 in myofibroblasts compared to alveolar macrophages. Affymetrix gene expression analysis of airway and parenchymal fibroblasts showed higher PKN2 expression in non-IPF-fibroblasts compared to IPF-fibroblasts irrespective of origin.

PKN2 inhibition at 16nM reduced basal HLMF wound healing at 24-hours and 48-hours. Preliminary data indicates PKN2 knockdown increases fibrotic gene expression.

Conclusion We confirmed PKN2 expression in lung and IPF-associated cells, finding higher expression in non-IPF fibroblasts. TGFβ1 stimulation reduced PKN2 expression. Our preliminary data indicates PKN2 is protective of fibrosis, lower PKN2 expression was associated with increased pro-fibrotic gene expression. Further work is required to determine the exact role PKN2 may play in IPF.

S158 DISCOVERING LINKS BETWEEN IDIOPATHIC PULMONARY FIBROSIS GENETIC RISK AND THE HUMAN PHENOME TO UNCOVER GENETICALLY-INFLUENCED DISEASE BIOLOGY

[1]S Moss, [2]I Stewart, [1]RJ Allen, [1]G Parcesepe, [1]R Packer, [1]LV Wain, [2]RG Jenkins. *[1]University of Leicester, Leicester, UK*; *[2]Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.163

Introduction and Objectives Idiopathic pulmonary fibrosis (IPF) is a disease of progressive lung scarring with a poor prognosis and limited treatment options. Genome-wide associations studies (GWAS) over the past decade have identified multiple genetic variants associated with IPF risk. The disease biology implicated by many of these genetic variants is unclear.

A phenome-wide association study (PheWAS) is a statistical approach that aims to capture the spectrum of traits that are affected by a particular genotype. PheWAS analyses were performed for multiple IPF genetic risk variants, with the aim of characterising the genetically-influenced biology associated with IPF risk.

Methods PheWAS analyses were performed for 18 single nucleotide polymorphisms (SNPs) associated ($p<5\times10^{-8}$) with IPF risk, using public databases such as IEU OpenGWAS. The range of phenotypes associated with each IPF SNP were filtered using a $p<5\times10^{-8}$ threshold. Colocalisation analyses using the coloc method were subsequently used to evaluate overlapping signals for shared causal variants. A posterior probability of colocalisation over 80% was used to define colocalised signals. This study aims to assess for colocalisation across all results, however initial investigations prioritised the most statistically significant phenotypic associations when results were grouped either by trait or by predicted SNP function.

Results Despite application of a strict p-value threshold, over 500 phenotypic associations were identified with IPF SNPs. Based on a prioritised sample of phenotypes, IPF risk signals were found to colocalise with increased total testosterone (effect size (*beta*)=0.03, p-value (*p*)=7.00×10^{-24}), increased COVID-19 severity (beta=0.23, p=3.75×10^{-12}), shortened telomere length (beta= -0.08, p=7.00×10^{-294}), and decreased systolic blood pressure (beta= -0.28, p-value=1.33×10^{-15}). Associations with decreased IGF-1 (beta= -0.01, p=3.32×10^{-9}), decreased monocyte count (beta= -0.01, p=2.85×10^{-9}), and increased mean corpuscular volume (beta= 0.02, p =1.27×10^{-14}) were also found to share causal SNPs with IPF risk. Ongoing investigations are likely to identify additional colocalised signals.

Conclusions At this stage, results highlight potential for involvement of hormone-linked effects in IPF risk and support previously indicated mechanistic relationships with COVID-19 severity, blood pressure, and short telomeres. Genetic mechanisms of IPF risk also appear to influence blood and immune cell traits, supporting the potential for genetically-informed blood biomarkers.

'The CAP in the Hat' – Pneumonia in 2024

P1 HOST RISK FACTORS DETERMINING SEVERITY IN RESPIRATORY VIRAL INFECTIONS (RVIS): PRELIMINARY DATA FROM UNIVERSAL A MULTICENTRE PROSPECTIVE OBSERVATIONAL STUDY

[1,2]T Morelli, [1,2]M Purcell, [3]P Lee, [4]N Greening, [5]S Marciniak, [6]M Crooks, [7]C Daneshvar, [8]J Myerson, [8]M Pavitt, [8]M Gil, [9]P Mitchelmore, [10]JD Chalmers, [11]S Siddiqui, [1,2]A Freeman, [1,2]T Clark, [1,2]T Wilkinson. *[1]School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK; [2]NIHR Southampton Biomedical Research Centre, University Hospital Southampton, Southampton, UK; [3]Southampton Clinical Trials Unit, University of Southampton, Southampton, UK; [4]Institute for Lung Health, NIHR Leicester Biomedical Research Centre, Department of Respiratory Sciences, University of Leicester, Leicester, UK; [5]Cambridge Institute for Medical Research, Cambridge Biomedical Campus, University of Cambridge, Cambridge, UK; [6]Hull York Medical School, Hull, UK; [7]Respiratory Medicine Department, University Hospitals Plymouth NHS Trust, Plymouth, UK; [8]Department of Respiratory Medicine, Brighton and Sussex University Hospitals NHS Trust, Brighton, UK; [9]Department of Respiratory Medicine, Royal Devon and Exeter NHS Foundation Trust, Exeter, UK; [10]Division of Molecular and Clinical Medicine, University of Dundee, Ninewells Hospital and Medical School, Dundee, UK; [11]National Heart and Lung Institute, Imperial College, London, UK*

10.1136/thorax-2024-BTSabstracts.164

Introduction and Objectives Understanding factors associated with severity in respiratory viral infections (RVIs) is essential to effectively target future therapies. UNIVERSAL aims to identify risk factors driving severe outcomes in adults with RVIs.

Methods A total of 640 adults admitted with acute respiratory infection and PCR-confirmed RVI were recruited. Comprehensive clinical data, including Ordinal Scale for Clinical Improvement (OSCI) scores (indicating severity), were collected daily.

Multiple logistic regression calculated odds ratios (OR) and 95% confidence intervals (CI) for OSCI >4 on admission and during hospitalisation. Adjustments were made for virus group, age, sex, smoking status, asthma, COPD, previous myocardial infarction, diabetes, obesity, C-reactive protein (CRP), and neutrophil-lymphocyte ratio (NLR).

Results Table 1 shows patient characteristics. RVIs included SARS-CoV-2 (n=180), influenza (n=141), rhino/enterovirus (n=115), respiratory syncytial virus (n=98), other viruses (n=67), and viral coinfections (n=39). The median age was 68 years (IQR: 55–76), and 51.6% were female.

The median NLR was 7.5 (IQR: 4.2–12.9), and the median CRP was 45 mg/L (IQR: 14–109). An OSCI >4 was observed in 57.5% on admission and 66.4% during hospitalisation.

Age was categorised into the following groups <=55, 56–65, 66–75 and >75 years. Age groups over 55 were associated with increased risk of OSCI >4 on admission (ORs: 2.29–2.67, CIs: 1.35–4.52) and during hospitalisation (ORs: 2.02–2.97, CIs: 1.18–5.24). Female sex was an independent risk factor for OSCI >4 on admission (OR: 1.59, CI: 1.08–2.33) and during hospitalisation (OR: 1.51, CI: 1.01–2.26).

CRP >45 mg/L was an independent risk factor for OSCI >4 on admission (OR: 1.50, CI: 1.03–2.19) and during hospitalisation (OR: 1.56, CI: 1.05–2.32). Similarly, NLR >7.5 was a risk factor on admission (OR: 1.41, CI: 0.98–2.03) and during hospitalisation (OR: 1.57, CI: 1.07–2.29). Previous smoking (OR: 1.55, CI: 1.01–2.37) and current smoking (OR: 2.01, CI: 1.15–3.51) were associated with OSCI >4 on admission only. Virus group and comorbidities did not significantly increase the risk of OSCI-defined severity.

Conclusion The severity of RVIs results from complex host-pathogen interactions, influenced by factors such as age, sex, and inflammatory profiles, rather than the viral pathogen class alone. Novel therapies are needed for a range of RVIs.

Abstract P1 Table 1 Clinical characteristics of 640 adults hospitalised with Respiratory Viral Infection

Variable (Column N %)		SARS-CoV-2 n=180	Influenza n=141	RhV /EV n=115	RSV n=98	Other Viruses n=67	Viral Coinf n=39	P
Age Group	<=55	18.9%	34.0%	33.0%	19.4%	22.4%	20.5%	<0.001
	56-65	14.4%	24.8%	23.5%	23.5%	23.9%	15.4%	
	66-75	22.8%	23.4%	25.2%	32.7%	32.8%	30.8%	
	>75	**43.9%**	17.7%	18.3%	24.5%	20.9%	33.3%	
Male Sex		56.7%	42.6%	47.8%	40.8%	49.3%	51.3%	0.097
Asthma		28.3%	37.1%	**45.6%**	44.3%	29.9%	38.5%	**0.022**
COPD		23.9%	25.5%	29.8%	37.1%	37.3%	35.9%	0.100
Prev MI		11.7%	7.1%	4.4%	9.3%	10.4%	10.3%	0.363
Diabetes		**35.0%**	17.9%	20.2%	23.5%	23.9%	20.5%	**0.008**
Obesity		35.6%	32.1%	27.2%	35.7%	32.8%	25.6%	0.617
CRP>45mg/L		**57.2%**	**52.9%**	41.8%	40.2%	46.9%	40.5%	**0.037**
NLR>7.5		49.8%	51.8%	49.6%	45.4%	37.5%	53.8%	0.259
OSCI>4 day 1		55.0%	61.7%	59.1%	59.2%	45.5%	66.7%	0.222
OSCI >4 any day		64.4%	70.9%	66.1%	70.4%	53.7%	71.8%	0.147

P values calculated using Chi-Square Test.
MI (Myocardial Infarction), NLR (Neutrophil-Lymphocyte Ratio), OSCI (Ordinal Scale for Clinical Improvement), RSV (Respiratory Syncytial Virus), RhV/EV (Rhino/enterovirus), SARS-CoV-2 (Severe Acute Respiratory Virus Syndrome Coronavirus 2), Viral Coinf (Viral Co-Infection).
OSCI score definitions: 4=hospitalisation without oxygen, 5=supplemental oxygen, 6–9=higher dependency care, 10=death.

P2 RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION IN HOSPITALISED ADULTS: WHO SHOULD BE VACCINATED?

[1,2]T Morelli, [1,2]M Purcell, [3]P Lee, [4]N Greening, [5]S Marciniak, [6]M Crooks, [7]S Siddiqui, [8]C Daneshvar, [9]J Myerson, [9]M Pavitt, [9]M Gil, [10]P Mitchelmore, [11]JD Chalmers, [1,2]T Clark, [1,2]A Freeman, [1,2]T Wilkinson. *[1]School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK; [2]NIHR Southampton Biomedical Research Centre, University Hospital Southampton, Southampton, UK; [3]Southampton Clinical Trials Unit, University of Southampton, Southampton, UK; [4]Institute for Lung Health, NIHR Leicester Biomedical Research Centre, Department of Respiratory Sciences, University of Leicester, Leicester, UK; [5]Cambridge Institute for Medical Research, Cambridge Biomedical Campus, University of Cambridge, Cambridge, UK; [6]Hull York Medical School, Hull, UK; [7]National Heart and Lung Institute, Imperial College, London, UK; [8]Respiratory Medicine Department, University Hospitals Plymouth NHS Trust, Plymouth, UK; [9]Department of Respiratory Medicine, Brighton and Sussex University Hospitals NHS Trust, Brighton, UK; [10]Department of Respiratory Medicine, Royal Devon and Exeter NHS Foundation Trust, Exeter, UK; [11]Division of Molecular and Clinical Medicine, University of Dundee, Ninewells Hospital and Medical School, Dundee, UK*

10.1136/thorax-2024-BTSabstracts.165

Introduction and Objectives Respiratory Syncytial Virus (RSV infection) is increasingly recognized as a significant cause of morbidity and hospitalisation in adults. The introduction of RSV vaccinations in the UK is imminent, with the JCVI recommending targeting adults aged ≥75 years, whilst other countries have included younger age groups for RSV vaccination.

This study aims to characterise RSV disease severity in hospitalised UK adults and identify factors associated with outcome including prolonged length of stay (LOS).

Abstract P2 Table 1 Clinical characteristics of 98 adults hospitalised with RSV

Variable		RSV Column %	MLR LOS>4 OR	95%CI Lower	95%CI Upper
	≤55	19.4%	Ref	Ref	Ref
Age Group	56–65	23.5%	3.734	.758	18.388
	***66-75**	32.7%	**7.754**	**1.269**	**47.390**
	>75	24.5%	**10.300**	**1.381**	**76.824**
	Never	37.6%	Ref	Ref	Ref
Smoking Status	Prev	44.1%	2.077	.601	7.181
	Current	18.3%	1.761	.390	7.952
Female Sex		59.3%	.935	.321	2.723
Asthma		44.3%	1.676	.452	6.213
COPD		37.1%	1.888	.561	6.353
Prev MI		9.3%	.494	.087	2.818
Diabetes		23.5%	.862	.246	3.025
Obesity		35.7%	2.575	.875	7.573
OSCI>4 day 1		59.2%			
OSCI >4 any day		70.4%			
RHDU/ICU admission		4.3%			
Pneumonia reported		20.4%			
Readmitted within 30 days		10.2%			

P values calculated using Chi-Square Test/Fischer's exact test
95% CI (95% Confidence Interval), ICU (Intensive Care Unit), LOS (Length of Stay), MLR (Multiple Logistic Regression), MI (Myocardial Infarction), OSCI (Ordinal Scale for Clinical Improvement), OR (Odds Ratio), RHDU (Respiratory High Dependency Unit,) RSV (Respiratory Syncytial Virus)
*One patient aged 75 years.
OSCI score definitions: 4=hospitalisation without oxygen, 5=supplemental oxygen, 6–9=higher dependency care, 10=death

Methods UNIVERSAL is a UK multicentre prospective observational study. Adults hospitalised with acute respiratory infection were tested for respiratory viral infection using PCR. Detailed clinical data including Ordinal Scale for Clinical Improvement (OSCI) scores, indicating severity, were collected daily.

Multiple logistic regression was performed to calculate odds ratios (OR) and 95% confidence intervals (CI) associated with prolonged LOS. Adjustments included age, sex, smoking status, asthma, COPD, previous myocardial infarction, diabetes, and obesity.

Results Ninety-eight patients had RSV identified by PCR. Table 1 demonstrates clinical characteristics of the recruited patients. The median age of RSV-positive patients was 67 years (IQR: 58–75). Notably, only 24.5% of adults with RSV over 75 years old. Ninety-three patients had completed LOS data at the time of writing. The median LOS was 4 days (IQR: 3–7 days). An OSCI >4 was observed in 59.2% on admission and 70.4% during hospitalisation, with 4.3% requiring HDU/ICU admission, 20.4% developing pneumonia, and 10.2% being readmitted within 30 days.

Risk factors for prolonged LOS (>4 days) included age over 65 years. The OR for prolonged LOS in the 66–75 age group was 7.75 (CI: 1.27–47.39), while in adults over 75, it was 10.30 (CI: 1.38–76.82). Comorbidities did not significantly increase the risk of prolonged LOS.

Conclusion RSV infection is associated with significant morbidity in hospitalised adults. Interestingly, around three-quarters of this cohort of hospitalised adults with RSV would not have been eligible for vaccination under current JCVI recommendations. Age over 65 years were significantly associated with prolonged hospitalisation. There should be a debate on whether younger patients should receive RSV vaccination in the UK.

P3 RESPIRATORY SYNCYTIAL VIRUS (RSV) ASSOCIATED ADMISSIONS AND RELEVANT CO-MORBIDITIES IN ADULTS: DATA FROM TWO NHS TRUSTS

[1]J Panaguiton, [2]R Patel, [1]S Denny, [1]G Rolph, [2]T Hill, [2]T Lewis, [1]D Wiseman. *[1]Chelsea and Westminster NHS Foundation Trust, London, UK; [2]Royal Devon University Healthcare NHS Foundation Trust, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.166

Background Recognition of the health burden Respiratory Syncytial Virus (RSV) causes seasonally amongst adults is growing each year because of greater awareness and improved testing. Vaccines have recently entered the market targeting RSV and approved for use in adults. The Joint Committee on Vaccination and Immunisation (JCVI) have recently proposed vaccination in 75-to-80-year-olds in the UK. The aim of this study is to correlate which co-morbidities are more related to RSV-associated admission to hospital and to length-of-stay (LOS) and inpatient mortality.

Methods Adult patients (≥ 18 years of age) with respiratory symptoms hospitalised in two demographically different trusts, Chelsea and Westminster NHS Foundation Trust (CWH) and the Royal Devon University Healthcare NHS Foundation Trust (RDUH) from January 2023 to January 2024 were routinely screened for RSV by PCR on admission. Their respective co-morbidities, LOS and survival were retrospectively identified using the electronic patient databases employed at these trusts.

Abstract P3 Table 1

Co-morbidities	Combined number of cases with co-morbidities N=235	LOS CWH – mean, median, IQR (Days)	LOS RDUH – mean, median, IQR (Days)	p-value	Combined LOS mean, median, IQR (Days)	Total inpatient deaths N=37
Cardiac	12 (5.11%)	12.00, 6, (3.50–18.00)	53.33, 62, (27.00)	p=0.004	22.33, 9, (4.25–41.25)	2
Respiratory	45 (19.15%)	8.15, 3, (1.00–7.00)	11.33, 6, (1.00–12.25)	p=0.461	9.42, 4, (1.00–8.00)	3
CVA	3 (1.28%)	17.33, 4, (2.00)	0	X	17.33, 4, (2.00)	0
Diabetes	11 (1.28%)	7.10, 5.5, (1.00–9.50)	23.00, 23, (23.00–23.00)	p=0.094	8.55, 6, (1.00–14.00)	0
Renal	13 (5.53%)	20.29, 6, (5.00–24.00)	10.17, 11.5, (6.25–13.25)	p=0.469	15.62, 8, (5.50–14.50)	3
Other	15 (6.38%)	7.50, 6, (2.75–12.50)	27.43, 12, (3.00–49.00)	p=0.097	16.80, 7, (3.00–18.00)	6
Multiple	80 (34.04%)	16.26, 6, (2.00–23.25)	17.39, 10.5, (9.00–26.75)	P=0.842	16.51, 8, (3.00–23.00)	16
None	57 (24.26%)	8.61, 5.5, (2.00–11.75)	3.67, 2, (1.00–6.00)	p=0.048	6.79, 4, (1.00–8.50)	7

Abbreviations: LOS, length of stay; IQR, interquartile range; CVA, cerebral vascular accident/stroke; CWH, Chelsea and Westminster NHS Foundation Trust; RDUH, Royal Devon University Healthcare NHS Foundation Trust; X, no value. Cardiac co-morbidities included patients with myocardial infarction and congestive cardiac failure. Respiratory co-morbidities included asthma, COPD and other chronic lung conditions. Other co-morbidities included dementia, cancer, peptic ulcer disease, liver disease; Multiple are those with more than one co-morbidity as previously defined identified. Statistics were analysed using the IBM SPSS Statistics 29 program

Ethical approval was obtained from both trusts prior to study initiation.

Results 235 RSV-positive associated admissions were identified, with 89.7% of patients admitted between September and February. The average age of these patients was 71.46 years old (median 76, interquartile range 63 – 84 years).

Respiratory co-morbidities (n=45) had a mean LOS of 9.42 days, similar to those without co-morbidities (6.79 days). The longest LOS was seen in patients with other co-morbidities (16.80 days), stroke disease (17.33 days), and cardiac disease (22.33 days) (table 1).

Conclusions RSV is associated with seasonal hospitalisation in adults, and those adults with respiratory, multiple or no co-morbidities showed the highest number of admissions, however LOS was longest with cardiac, stroke and other co-morbidities and inpatient death highest with multiple co-morbidities. The results showed no significant difference between CWH and RDUH. These data indicate that co-morbidities other than lung disease need to be considered as important markers of poor outcomes from RSV related admissions in adults. With the recent decision of the JCVI these data may help future vaccine initiative modifications to focus on co-morbidities in those younger than the vaccine cut-off, yet still at risk.

P4 ABSTRACT WITHDRAWN

P5 ABSTRACT WITHDRAWN

P6 THE CLINICAL OUTCOMES IN PATIENTS HOSPITALISED WITH RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION

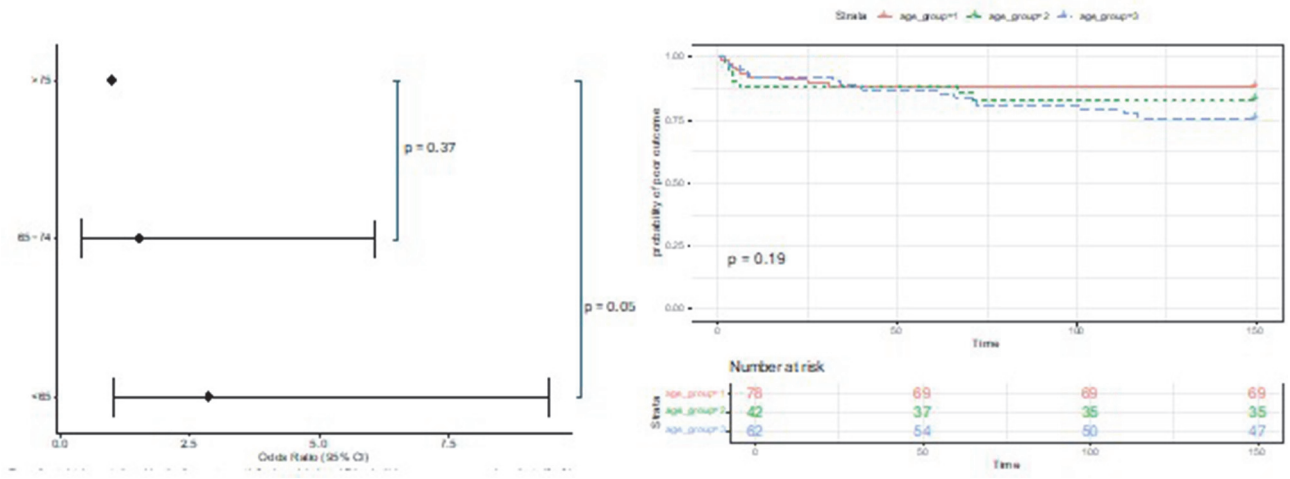
S Weinberg, G Hulston, E Davies, R Robey, E Melon, H Siy-Yap, I Saidy, R Lord, H Ellis. *Wythenshwe Hospital, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.167

Introduction A recent meta-analysis has identified RSV as a major cause of life-threatening respiratory illness in developed counties and estimated it is responsible annually for 470,000 hospitalisations and 33,000 in-hospital deaths (Savid M, 2023). In contrast, the Joint Committee on Vaccination and Immunisation (JCVI) has advised based on its modelling a programme to vaccinate only adults aged 75 to potentially commence in winter 2024. The objective of this study was to determine the incidence and outcomes across different age groups for hospitalisation with RSV infection in Manchester University NHS Foundation Trust, the largest hospital trust in the UK.

Method A retrospective multicenter observational cohort study was conducted between 1 November 2023 and 31 December 2023 for adults patients aged greater than years admitted with PCR positive RSV infection. Clinical data was collected, including length of stay, ICU admission and mortality.

Results A total of 182 patients were included. The mean age was 64.5 (range 19 -99). There were 62 patients aged 75 and above, 42 patients aged 65 – 74 and 78 patients under 65. 31 patients suffered poor outcome defined as either ICU admission or death. The mean age of patients in the poor outcome group was 70.9 vs 63.2 (*p-value* = 0.04). The median length of stay in the <65 age group was 5 days, 6 days in 65–74 and 11 in >75 (*p-value* = 0.001). The odds ratio of poor outcome was 1.57 in the 65–74 years group (*p-value* = 0.37) and 2.42 (*p-value* = 0.05). Kaplan-meier analysis of poor outcome showed poorer outcomes by age although these were not statistically significant (*p-value* = 0.19).



Abstract P6 Figure 1 Forest plot demonstrating odds ratio of poor outcome (defined as admission to ICU or death) and kaplan-meier plot demonstrating time to poor outcome by age groups (age group 1 = patients 16–64 years; age group 2 = 65–74; age group 3 = 75 and over)

Conclusion Our data shows poor outcomes with RSV infection in hospitalised patients. There are poorer outcomes and length of stay in those aged >75, supporting JCVI recommendations. However, the mean age of patients with a poor outcome was 70, compared to 63 for those without a poor outcome. Our Kaplan-meier curve shows a trend to age predicting poor outcome, but this was not significant likely due to a small sample size. Our data suggest the JCVI should lower the age of vaccination

P7 THE HIDDEN BURDEN OF RESPIRATORY SYNCYTIAL VIRUS (RSV) ON ADULT RESPIRATORY ADMISSIONS AND POTENTIAL BENEFITS OF NATIONAL VACCINATION PROGRAMME

N Mooney, A Wight. *Wirral University Teaching Hospital, Wirral, UK*

10.1136/thorax-2024-BTSabstracts.168

Introduction The covid pandemic has further highlighted the role of viral infections in respiratory disease and importance of recognition and testing, including for Respiratory syncytial virus (RSV). RSV is prevalent in childhood respiratory admissions however the role of RSV in adult populations and hospital admissions is not fully understood. It is estimated that the mortality is as high as 178 per 100,000 in high risk groups.[1] A vaccination programme for adults aged 75 years and above is due to commence in the UK in Autumn 2024.

Methods We performed a retrospective review of all adult admissions with positive testing for RSV over a 3-month winter period (dec-feb 2024). Testing for RSV is not local standard practice, therefore only patients with a significant respiratory illness underwent extended viral screening, including RSV. Local testing kits included '*Cepheid GeneXpert® Xpress SARS-CoV-2/Flu/RSV plus*' and '*Biomerieux BioFire® Respiratory Panel 2.1 plus (RP2.1plus)*'.

Abstract P7 Table 1 RSV positive patients on admission

RSV positive on admission (within 5 days of admission date)				
	Average length of stay (days)	% Requiring oxygen during admission	% Requiring additional respiratory support	% Mortality
>75 years old	15.6	100%	40%	20%
<75 years old	14.9	82%	45%	9%

Results 16 adult patients were identified as having RSV on admission (within 5 days of admission date), 5 of these patients (42%) were >75 years old, with average length of stay of 15.6 days (table 1), 40% (2 patients) requiring advanced respiratory support and we found a 20% (1 patient) mortality rate. 2 of these patients (40%) had underlying respiratory disease. 8 (67%) of patients who were <75 years old had underlying respiratory disease.

Discussion The clinical impact on RSV on adult hospital admissions, length of stay and mortality is significant. The quoted efficacy of current RSV vaccinations in preventing lower respiratory tract infections ranges from 66–83%.[1] We suggest this could have significant impact on hospital admissions in the elderly population who may have less severe respiratory infections but with associated frailty a longer length of stay. We feel that our data underestimates the true burden in the elderly and at-risk populations related to RSV due to our testing selection. We therefore feel the potential impact of the RSV vaccination (dependent on uptake) is likely to be far greater of what we have reported.

REFERENCE

1. Respiratory syncytial virus (RSV) Immunisation Programme for infants and older adults: JCVI full statement, 11 September 2023, GOV.UK.

P8 THE INCIDENCE AND IMPACT OF INFLUENZA, RSV AND SARS-COV2 ON A SCOTTISH HEALTH BOARD BETWEEN 2022 AND 2024

M Martin, J Woods, V Austin, J Shone, D Connell. *NHS Tayside, Dundee, UK*

10.1136/thorax-2024-BTSabstracts.169

Introduction and Objectives SARS-CoV2, Influenza A/B, and Respiratory Syncytial Virus (RSV) are now widely prevalent post-pandemic. Analysing the detailed outcomes of patients in secondary care with these viruses can provide granular data on their current impact on hospital performance and social care provision. This is of relevance given the planned adult RSV vaccine programme for winter 2024–25.

Methods Admission data and clinical outcomes were analysed in 3956 adult patients who were tested for SARS-CoV2, Influenza A/B and RSV at the acute medical unit (AMU) of a teaching hospital in Scotland, between September 2022 to April 2023 (Winter 22/23). Outcomes were compared between those positive for a virus (total 450) with those who were negative (total 3506). We analysed the clinical features of positive patients and undertook a further comparative analysis of positive patients between September 2023 to April 2024 (total 413, Winter 23/24).

Results 36% of all AMU assessments in Winter 22/23 underwent PCR for the four viruses, with 13% positivity. Virus prevalence peaked at different points throughout winter, and Influenza A positive patients were typically younger and female. 10% of patients >65y positive for any virus did not survive beyond 30 days from their PCR result, with RSV carrying the highest mortality at 11.3%. Requirement for discharge into new 24-hour care was higher for viral-positive patients, especially those with SARS-CoV2 at 5.1%. In total, 4062 bed days were used for viral-positive patients, who had longer admission lengths and re-admission rates than viral-negative. Winter 23/24 showed different incidence trends, and even higher mortality of those >65y from RSV at 14%; however, the rest of the post-viral infection outcomes were broadly comparable between the two winters.

Conclusions Seasonal viruses have major impacts on secondary care and social care in the UK. RSV carried the highest mortality rate in elderly patients, with the lowest amongst Influenza infections. SARS-CoV2 remained prevalent and highly burdensome on the hospital and social care sectors. This work demonstrates that a detailed understanding of the effects of these viruses in health and social care could inform decisions on vaccines and therapeutic approaches in the future.

P9 THE PRESENTATION AND OUTCOME OF COMMUNITY ACQUIRED PNEUMONIA REQUIRING HOSPITALISATION IN PATIENTS OF SOUTH ASIAN ETHNICITY

[1]B Chakrabarti, [2]T Jenks, [2]A Khalid, [2]J Higgins, [3]D Wootton. *[1]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [2]Advancing Quality Alliance, Salford, UK; [3]University of Liverpool, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.170

Background Whilst Community Acquired Pneumonia (CAP) represents a significant burden in terms of morbidity and mortality, little is known regarding the outcome of CAP requiring hospitalisation in those of South Asian ethnicity.

Methodology An analysis was performed of CAP admissions in the Advancing Quality Pneumonia Program from October 2010– January 2024. For submission, the diagnosis of CAP must be made by a consultant physician within 24 hours of hospital admission along with compatible CXR findings.

Results 102,239 cases of CAP (Median age 76 (IQR 84–65) years, 51% female) requiring hospitalisation were analysed. 96,736 cases (96.5%) were observed in those of White ethnicity and 2235 cases (2.2%) were observed in those of South Asian ethnicity (see table 1). The South Asian ethnic group were younger and had a significantly higher Charlson Comorbidity Index when compared with those of White ethnicity. The South Asian group had significantly higher rates of Diabetes Mellitus, Chronic Kidney Disease and Ischaemic Heart Disease whereas Dementia, Mental Health conditions, Cancer and Metastatic Cancer were significantly less common in South Asian ethnicities compared to White ethnicities. White ethnicity patients were more likely to have 'severe' pneumonia (CURB65 $\geq$3) compared to South Asian ethnicity patients (29% v 25%; p<0.001). Consistent with those CURB65 scores, in-hospital mortality was significantly lower in South Asian patients compared with those of White ethnicity (7.2% v 12.6%; p<0.001). When taking Indices of Multiple Deprivation (IMD) quintiles (1 being most deprived 5 being least deprived), 41.4% of all in-hospital deaths were from patients

Abstract P9 Table 1

	White ethnicity patients (n=96,736)	South Asian ethnicity patients (n=2,235)	P value
Age (Median & IQR years)	76 (IQR 85–65)	70 (79–52)	P<0.001
Gender (%)	51% Female 49% Male	46% Female 54% Male	P<0.001
CURB-65 score	0&1 (Mild)=18,683 (37%) 2 (Moderate) =17,180 (34%) >=3(Severe) =14,657 (29%) *(documented in 50,520 cases)*	0&1 (Mild)=565 (47%) 2 (Moderate) =334 (28%) >=3 (Severe) =303 (25%) *(documented in 1202 cases)*	P<0.001
Charlson Comorbidity Index (CCI; Mean & SD)	1.88 (1.67)	1.99 (1.78)	P=0.003
CKD present	11,575 (12%)	373 (16.7%)	P<0.001
Diabetes Mellitus present	17,336 (17.9%)	898 (40.2%)	P<0.001
Ischaemic Heart Disease present	10,841 (11.2%)	296 (13.2%)	P<0.001
COPD present	33,594 (34.7%)	380 (17%)	P<0.001
Stroke present	4578 (4.7%)	110 (4.9%)	NS
Dementia present	5244 (5.4%)	47 (2.1%)	P<0.001
Mental Health diagnosis present	8289 (8.6%)	119 (5.3%)	P<0.001
Cancer present	10,759 (11.1%)	120 (5.4%)	P<0.001
Metastatic Cancer present	3539 (3.7%)	34 (1.5%)	P<0.001
Liver disease present	2183 (2.3%)	58 (2.6%)	NS
Learning Disability present	1246 (1.3%)	31 (1.4%)	NS
IMD quartile distribution (1=most deprived quartile; 5=least deprived quartile)	1=43.8% 2=18.6% 3=13.1% 4=14.2% 5=10.4% (Available in 57,693 cases)	1=65.9% 2=17.1% 3=5.7% 4=7.9% 5=3.5% (Available in 1242 cases)	P<0.001

in Quintile 1 with 11.2% being from patients in Quintile 5 ($p<0.001$) with a significantly greater proportion of South Asian ethnicity patients occupying Quintile 1.

Conclusion In patients hospitalised due to CAP, our analysis demonstrates that despite exhibiting a greater burden of comorbidity and deprivation, those of South Asian ethnicity were less likely to present with Severe CAP and also demonstrated a lower in-hospital mortality when compared with those of White ethnicity. Further studies are required to examine the reasons behind these observed ethnic differences in presentation and outcome in CAP and to extend them to other populations and ethnic groups.

P10 PREDICTORS OF OUTCOMES INCLUDING READMISSION IN COMMUNITY ACQUIRED PNEUMONIA

KM Heenan, R Crooks, M Drain, P Minnis. *Antrim Area Hospital, Northern HSC Trust, UK*

10.1136/thorax-2024-BTSabstracts.171

Introduction and Aims Community-acquired pneumonia (CAP) has a huge impact on healthcare systems. Readmission rates following hospital admission with CAP have increased in the UK over the past decade. We aim to assess admission variables that would predict outcome measures including length of stay (LOS), mortality and readmission rates.

Methods We recorded the incidence of inpatient CAP within the Northern HSC Trust throughout 2018. We collected baseline demography, relevant past medical history including anticoagulation; CXR evaluation stratified by descriptors of burden of disease; admission investigations including FBP, Max CRP, CRP trend, renal function, Glucose and Neutrophil Lymphocyte Ratio; and outcome including length of stay, readmission within 30 and 90 days and survival. We interrogated the relationship of combinations of admission investigations and characteristics to outcome measures.

Results During the study period 2008 index cases were identified. Accepting 22% of all CAP are admitted this represents a burden of ~ 1900 cases per 100,000 population per year within the Trust. Baseline characteristics: mean age 71.9 (SD 15.4), 48% male (n 961), median length of stay 6 days (IQR 3–11), with 19.3% treated with anticoagulation pre-admission. The mortality rate was 12.3%, with readmission within 30 days 15.5% and 90 days 31.2%. For LOS there were correlations for age (0.202), max CRP (0.120), urea (0.64) and anticoagulation prescription (0.118) [All $p<0.001$]. Mortality correlated with age (0.159), max CRP (0.116), urea (0.217) [All $p<0.001$], there was no relationship with anticoagulation. Readmission within 30 days was weakly correlated to age however stronger trends were noted for longer length of stays and lower admission and max CRP. Table 1 presents outcomes stratified by CXR appearance. There appears to be trends towards readmission within 30 days with chronic CXR appearance, whereas a lobar appearance may have been protective.

Conclusion Readmission rates at 30 days were similar to previously published data from hospitals in England. Correlations to longer length of stay and absence of markers of more severe CAP (CRP and CXR appearance) may suggest other factors such as frailty or social care arrangements may be contributing to the rising readmission rates.

P11 TEN YEARS REVIEW OF NOVEL 'VIRTUAL' PNEUMONIA FOLLOW-UP CLINIC

[1]M White, [2]M Ahmed, [1]F Elliot, [1]R Chatterji, [1]Y Choudhury, [1]E Lyons, [1]A Joshi, [2]B Marshall. *[1]University of Southampton, Southampton, UK; [2]Southampton General Hospital, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.172

Introduction This study undertook a review of the previous 12 months of the virtual pneumonia follow-up service (VPC). Pneumonia is a significant health issue in the UK, with 220,000 cases annually, accounting for 5–12% of lower respiratory tract infections treated by GPs. Proper management and follow-up are essential to ensure patient recovery, monitor for complications, prevent relapses, and alleviate NHS pressures. Current guidelines recommend a 6-week follow-up for high-risk and/or symptomatic patients.

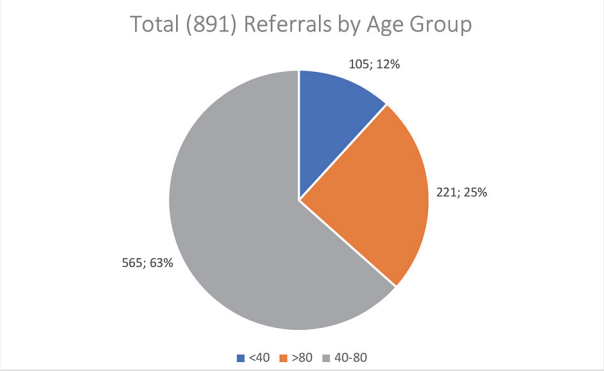
Methods This study analysed data from January 2022 to January 2023 using a dedicated VPC database. 891 patients were referred to the VPC during this period, a threefold increase from its inception in 2013. Patients were categorized into three age groups: under 40, 40 to 80, and over 80. The study focused on attendance rates and residual positive findings. Patients who defaulted on their first invitation received a second invitation; if they defaulted again, they were discharged with a safety netting letter to their GP.

Results For patients under 40, 105 referrals were made, with a 75% attendance rate for convalescent chest X-rays. Only 2

Abstract P10 Table 1 Demographics and outcome measures stratified by chest X-ray appearance

	CXR Stratification						
	Normal	Chronic	Bronchopneumonia	Lobar	Bilateral	Effusion	All
N	14.7 (295)	12.6 (253)	38.3 (770)	12.7 (256)	9.4 (189)	6.5 (130)	2008
Age	72	76	71	68	67	77	72
Gender	49 (145)	53 (135)	46 (351)	44 (112)	51 (97)	49 (64)	48 (961)
Anticoagulation	19 (56)	22 (56)	18 (140)	16 (40)	15 (29)	19 (35)	19 (387)
Max CRP	109	122	158	166	181	127	145
LOS	6 (3–11)	6 (4–11)	6 (4–11)	4 (3–9)	6 (3–11)	6 (3–11)	6 (3–11)
Readmission < 30 Days[A]	12 (36)	17 (44)	16 (126)	11 (28)	14 (27)	12 (23)	15 (302)
Readmission < 90 Days	42 (124)	44 (112)	39 (300)	47 (120)	41 (78)	47 (61)	42 (834)
Mortality	9 (26)	13 (32)	9 (64)	9 (24)	16 (30)	20 (26)[B]	11 (221)

A: Relative Risk Readmission < 30 Days: RR 0.73 Lobular CXR appearance (p 0.09), RR 1.16 Chronic CXR appearance (p 0.3)
B: Relative Risk Mortality: RR 1.82 Effusion CXR appearance (p 0.001)



Abstract P11 Figure 1 Showing the referrals made to virtual pneumonia clinic by age group

patients had residual scarring. In the 40–80 age group, 445 (79%) patients completed the chest x-ray, with 27 (6.2%) showing abnormal results, including post-pneumonia scarring, lung cancer, residual pleural effusion, bronchiectasis, and atelectasis. Among those over 80, 221 referrals were made, with a 25.78% default rate. 17 patients (7.7%) had residual findings such as scarring, bronchiectasis, effusion, pleural plaques, and lung cancer. Only 11 referrals were rejected, and 28 patients died before their appointment.

Discussion Informal feedback indicates that the VPC service is safe, efficient, and cost-effective, saving approximately 60% of outpatient tariffs per patient. It has also aided in the early detection and management of incidental pathologies, serving as an educational resource for trainees. However, the study lacks long-term outcome data and may have included unnecessary follow-ups for asymptomatic patients.

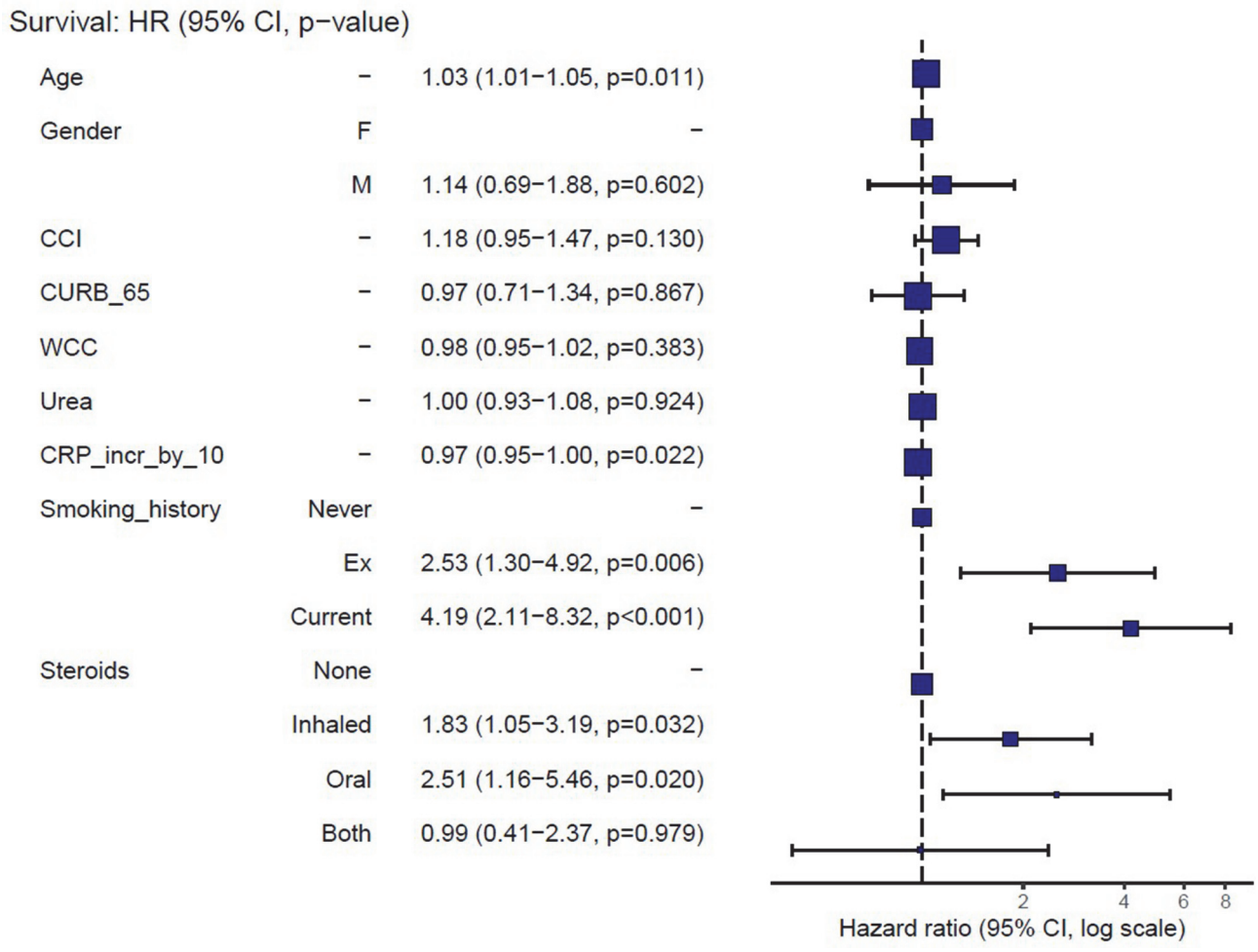
Conclusion The VPC service, receiving 300% more referrals now compared to its inception, significantly supports inpatient bed pressures and expedites treatment for serious findings like cancer. The virtual follow-up approach remains a viable, cost-efficient strategy that maintains high-quality patient care.

P12 RISK FACTORS INFLUENCING MORTALITY AND MORBIDITY IN COMMUNITY-ACQUIRED PNEUMONIA: A MULTIVARIABLE ANALYSIS

[1]SE Weinberg, [1]T Fleck, [2]G Kourounis, [1]M Injety, [1]H Melvin, [1]M Ullah, [1]S Qayum, [1]A Bikov.
[1]Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK; [2]Translational and Clinical Research Institute, Newcastle University, Newcastle upon Tyne, UK

10.1136/thorax-2024-BTSabstracts.173

Introduction Community-acquired pneumonia (CAP) significantly impacts morbidity and mortality. Identifying risk factors



Abstract P12 Figure 1

is crucial for improving patient outcomes. This study evaluates the effects of demographic characteristics, comorbidities, and clinical parameters on all-cause mortality and morbidity in radiologically confirmed CAP, aiming to inform targeted interventions and enhance strategies to reduce CAP-related complications.

Methods All hospitalized and ambulatory adult patients with radiologically confirmed pneumonia referred for outpatient follow-up clinic at a tertiary hospital between May 2023 and November 2023 were reviewed. Demographics, inhaled and oral steroid use, Charlson comorbidity index (CCI), CURB-65 score, white cell count (WCC), and C-reactive protein (CRP), and any readmission or deaths were collected. Results were analysed with a cox proportional-hazards model.

Results 221 patients were identified. Mean age at diagnosis was 65.9 (range: 27 to 97). Use of either inhaled corticosteroids (ICS) or oral corticosteroids was shown to be associated with a significantly lower admission free survival compared to no steroid use ($p<0.001$, $p=0.003$). This association remains significant in the multivariable analysis ($p=0.032$, $p=0.020$). However, the combination of oral and ICS does not show a significant association with readmission free survival in the multivariable analysis (HR 0.99, $p=0.979$). Both ex-smokers and current smokers showed a strong and significant association with increased risk of readmission compared to never smokers ($p = 0.006$, $p < 0.001$), even after adjusting for other factors, with smokers being at the highest risk. Log-transformed CRP levels were also found to be associated with a decreased risk of readmission, suggesting an inverse relationship. Factors like gender, CCI, CURB-65, and WCC did not show significant associations in the multivariable model, suggesting their effects are explained by other variables in the model.

Conclusions Use of inhaled or oral corticosteroids significantly reduces admission-free survival in adult CAP patients, though their use in combination did not appear to have additional impact. . The higher readmission risk of current and ex-smokers gives more evidence towards the importance of implementing risk-reducing strategies during and after admission to hospital. The inverse relationship between CRP and readmission rate may suggest that stronger immune response may be beneficial.

P13 THE UNIVERSAL STUDY: A DESCRIPTION OF ADULTS HOSPITALISED WITH MYCOPLASMA PNEUMONIAE IN AN EPIDEMIC WINTER YEAR AND A COMPARISON TO ADULTS WITH AND WITHOUT RESPIRATORY VIRAL INFECTION

[1]M Purcell, [2]P Lee, [1]T Morelli, [2]C Roberts, [3]L Marouzet, [3]A Gavi, [3]A Olojede, [3]A Begum, [4]N Greening, [5]J Myerson, [6]M Pavitt, [7]C Daneshvar, [8,9,10]SJ Marciniak, [1]T Clark, [1]A Freeman, [1]T Wilkinson. *[1]School of Clinical and Experimental Sciences, Faculty of Medicine, University Hospital Southampton, University of Southampton, Southampton, UK; [2]Southampton Clinical Trials Unit, University of Southampton, Southampton, UK; [3]NIHR Clinical Research Facility, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [4]Department of Respiratory Sciences, University of Leicester, Leicester, UK; [5]Department of Respiratory Medicine, Princess Royal Hospital, University Hospitals Sussex NHS Foundation Trust, Brighton, UK; [6]Department of Respiratory Medicine, University Hospitals Sussex NHS Foundation Trust, Brighton, UK; [7]Department of Respiratory Medicine, Plymouth Hospitals NHS Trust, Plymouth, UK; [8]Cambridge University Hospitals NHS Trust, Cambridge, UK; [9]Royal Papworth Hospital, Cambridge, UK; [10]Cambridge University, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.174

Introduction Mycoplasma pneumoniae (MP) is a common cause of acute respiratory infection (ARI) and can mimic other

Abstract P13 Table 1 Comparison of clinical characteristics of MP infection, RVI positive and RVI negative groups

Variable	Respiratory virus negative (n=119)	Respiratory virus positive (n=200)	Mycoplasma pneumoniae (n=13)	P value
Median age (IQR)	67 (55-75)	63 (50.5-74.3)	36 (30-48)	<0.001
Male sex, n (%)	57 (47.9)	87 (43.5)	7 (53.8)	0.62
COPD, n (%)	46 (39.3)	45 (22.6)	1 (7.7)	0.002
Asthma, n (%)	40 (34.2)	81 (40.9)	5 (38.5)	0.50
Diabetes, n (%)	16 (13.7)	51 (25.6)	1 (7.7)	0.28
Obesity, n (%)	28 (24.1)	65 (33.2)	3 (23.1)	0.02
Oxygen on admission n (%)	64 (53.7)	107 (53.5)	8 (61.5)	0.21
Median WBC $x10^9$/L (IQR)	12.4 (10-15.4)	9.3 (7.0-12.6)	9.2 (6.0-12.2)	<0.001
Median lymphocytes $x10^9$/L (IQR)	1.40 (0.85-2.00)	1.10 (0.60-1.65)	1.10 (0.7-1.5)	0.02
Median CRP mg/L (IQR)	39.0 (12.0-146.0)	38.0 (14.9-89.0)	148.5 (78.4-179.8)	0.005

pathogens including respiratory viral infections (RVIs). Recognising MP is crucial because it lacks a cell wall, rendering it unresponsive to beta-lactam antibiotics and typically requires treatment with macrolides, or other active agents. Surges in MP infection rates occur every 3–5 years, with the last UK epidemic occurring in 2019–2020. In December 2023, the ECDC reported a likely MP epidemic for winter 2023–2024 across Europe.

Objectives Compare clinical features of MP infection to patients with and without RVI in hospitalised adults across nine UK hospitals during Winter 2023–2024.

Methods Adults hospitalised with ARI underwent multiplex PCR testing within 36 hours to identify three groups, RVI positive (RVI+), RVI negative (RVI-) or MP.

Results From November 2023 to May 2024, 332 ARI subjects were recruited and sampled. Thirteen MP cases (including two co-infections: one with RSV and one with rhino/enterovirus) were identified, vs 200 RVI+ and 119 RIV- cases. (Table 1) The median age for MP cases was 36 years (IQR: 30–48), significantly lower ($p<0.001$) than the RVI+ (63 years, IQR: 50.5–74.3) and RVI- (67, IQR: 55–75) groups. There was no difference in sex distribution between the groups. Among MP cases, 38.5% (n=5) had asthma and 23.1% (n=3) had a BMI >30 kg/m^2.

Common symptoms in MP patients included difficulty breathing (100%, n=13), chest tightness (76.9%, n=10), cough (92.3%, n=12), feeling hot (76.9%, n=10), weak/tired (84.6%, n=11), and anorexia (76.9%, n=10). On admission, 61.5% (n=8) of MP patients required oxygen therapy, compared to 53.5% (n=107) in RVI+ and 53.7% (n=64) in RVI- groups. MP patients had significantly higher CRP levels (median 149, IQR: 78–180, $p<0.01$) compared to RVI+ (median 38, IQR: 15–89) and RVI- (median 39, IQR: 12–146) groups, and higher RALE scores on chest x-ray.

Conclusions MP is associated with significant morbidity in hospitalised adults and its clinical features are difficult to distinguish from other causes of ARI. Clinicians should have a low threshold for MP testing particularly during epidemics, as the diagnosis can alter antibiotic prescription and clinical management.

P14 CLINICIAN'S OPINIONS ON STARTING TREATMENT FOR OPPORTUNISTIC INFECTION PREVENTION IN ILD (STOP-ILD STUDY)

J Evans, N Weatherley, S Bianchi. *Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.175

Background Pneumocystis pneumonia (PCP) is a potentially life-threatening complication in patients receiving immunosuppressive therapy. Due to the common use of immunosuppressive therapies in patients with interstitial lung disease (ILD), the risks of opportunistic infection such as PCP should be carefully considered. We aimed to identify current specialist physician opinion on PCP prophylaxis in patients receiving immunosuppression for ILD.

Method Specialist physicians (Consultant or SAS) working in 26 ILD centres nationally were emailed a single stage survey via a website link. We posed ten clinical ILD case vignettes, asking them to rate their agreement with giving PCP prophylaxis using a Likert scale of +1 strongly disagree to +5 strongly agree.

Results We had 63 responses from 58 respiratory physicians and 5 rheumatologists. When considering a patient for immunosuppression, most physicians agreed with giving PCP prophylaxis if there was a history of PCP infection (Mean 4.27, 85.7% agree or strongly agree) or when commencing a patient on cyclophosphamide (Mean 3.92, 61.9% agree or strongly agree). In a patient commencing monotherapy mycophenolate mofetil with BAL PCP PCR low level positive, a majority agree with PCP prophylaxis (Mean 3.75, 68.2% agree or strongly agree) although some questioned the BAL results significance and favoured MDT opinion with consideration for active PCP treatment first. In patients commencing on rituximab or steroid regimes at various doses, heterogeneity of practice was apparent, with no majority consensus. Common considerations when qualifying responses included whether the patient was on dual immunosuppression, presence of cytopenias and local protocols.

Conclusion There is a lack of evidence base for PCP prophylaxis in ILD patients commencing immunosuppressive therapy. This survey shows there is substantial variation in practice but also some consensus views. Our results can help design future research studies to answer questions raised by discrepancies in practice and evolve into pragmatic guidance on best practice in the UK.

'George's Marvellous Medicine' – Biologics, biologics, biologics

P15 HOW FAR CAN WE TRUST THE SOURCE? REAL WORLD MAINTENANCE OCS REDUCTION OUTCOMES IN COMPLEX SEVERE ASTHMATICS ON TEZEPELUMAB

[1]I Berrar Torre, [2]V Brennan, [1]E Campbell, [1]B Wright, [1]S Mamo, [1]E McHugh, [1]PH Patel. *[1]Royal Brompton Hospital, London, UK; [2]Beaumont Hospital, Dublin, Ireland*

10.1136/thorax-2024-BTSabstracts.176

Introduction The detrimental effects of daily maintenance oral corticosteroid (mOCS) use on individuals with severe asthma are well recognized. Numerous RCTs have shown that biologic therapies can significantly reduce or eliminate the need for daily mOCS. However, the SOURCE RCT did not demonstrate a significant reduction in mOCS dose with Tezepelumab compared to placebo. It remains to be determined whether these results are applicable to a broader, unselected population of severe asthma patients in real-world settings.

Methods We retrospectively reviewed records of adult severe asthma patients over 6 months after initiation of Tezepelumab 210 mg s/c 4 weekly. All patients included in this study were dependent on a maintenance dose of prednisolone for asthma symptom control.

Results 73 patients received 7 doses of Tezepelumab. 43 (59%) demonstrated a favourable response to Tezepelumab achieving ≥50% mOCS dose reduction. Of those, 32 (74%) achieved successful tapering off mOCS or managed to reduce prednisolone dose by 5mg, where the reduction was constrained due to the presence or screening of adrenal insufficiency. Table 1 exhibits the demographics and co-morbities of patients who were studied.

Abstract P15 Table 1 Baseline demographics, co-morbidities and responses to tezepelumab (n=73)

		≥ 50% reduction in mOCS dose (n=43)	< 50% reduction in mOCS dose (n=30)
Age		54.1 (±8.55)	53.7 (±14.25)
BMI (kg/m^2)		31.12 (±5.17)	30.4 (±6.51)
Female sex - no (%)		24 (56%)	22 (73%)
FEV_1 (L)		1.92 (±0.72)	1.60 (±0.63)
FEV_1 (% predictive)		65.3% (±18.76)	59.4 (±17.26)
Smoking status - no (%)	*current*	1 (2%)	0 (0%)
	never	24 (56%)	18 (60%)
	Ex	18 (42%)	12 (40%)
Asthma onset (%)	*Early (<18 yo)*	25 (58%)	18 (60%)
	Adult	14 (33%)	9 (30%)
	Late (>40 yo)	4 (9%)	3 (10%)
Eosinophil blood count (x10^9)*		0.17 (0.17-0)	0.15 (0.2-0)
Total IgE (kU/L)*		227.7 (185-23)	363.8 (388-30.5)
FeNO (ppb)*		38 (44-16)	35 (49.25-11)
mOCS dose (mg)*		17.9 (22.5-10)	16.2 (15-10)
Nasal Polyposis- no (%)		8 (19%)	7 (23%)
GORD - no (%)		11 (26%)	8 (27%)
EDAC - no (%)		4 (9%)	1 (3%)
ABPA (%)		3 (7%)	3 (10%)
BPD - no (%)		9 (21%)	2 (7%)
mOCS response to Tezepelumab (n= 73)			
mOCS at dose 1 (mg)*		10 (20-10)	
mOCS at dose 7 (mg)*		6 (10-5)	p < 0.001
≥ 50% reduction in mOCS dose - no (%)		43 (59%)	
Completely weaned off mOCS/ On mOCS due to AI - no (%)		32 (44%)	

mOCS=maintenance oral corticosteroids, GORD= gastro-oesophageal reflux disease, EDAC= Excessive dynamic airway collapse, BPD= Breathing pattern disorders

Data presented as mean (±SD) unless otherwise stated
t* = non-parametric data, presented as median (IQR)

Conclusions Although the SOURCE RCT provided important insights, our study demonstrates that in a real-world cohort of patients with severe asthma, administering 7 doses of Tezepelumab enabled 59% of patients to achieve a reduction of 50% or more in their mOCS dose. Additionally, 44% of patients were able to almost completely discontinue their mOCS.

P16 CLINICAL AND BIOLOGICAL REMISSION OF SEVERE ASTHMA WITH TEZEPELUMAB

[1,2]J Gates, [1]F Haris, [1]L Green, [1]J Lam, [1]M Fernandes, [1]L Thomson, [1]C Roxas, [1]G d'Ancona, [1]J Dhariwal, [1,2]AM Nanzer, [1,2]DJ Jackson. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK*; *[2]School of Immunology and Microbial Sciences, Kings College London, London, UK*

10.1136/thorax-2024-BTSabstracts.177

Introduction Clinical remission has become a widely accepted goal of biologic treatment in severe asthma. The anti-TSLP mAb tezepelumab offers the additional prospect of biologic remission through its broad anti-T2 mechanism of action (MOA).

Methods We conducted a retrospective analysis of the rates of clinical, biological and complete remission with tezepelumab in 100 sequential patients with severe asthma (SA) who had completed a minimum of 6 months treatment. Clinical remission was defined as no exacerbations or requirement for maintenance OCS, ACQ6<1.5 and stable FEV1. Biological remission was defined as both a FeNO <25ppb and blood eosinophil count (BEC) <300. Complete remission is defined as the combination of both clinical and biological remission.

Results 100 patients (54% female, 63% atopic, 50% child-onset phenotype), including 68 who had switched from another biologic (predominantly anti IL-5/5R) were analysed. Mean (SD) AER fell from 2.7(1.7) at baseline to 0.8 (1.4) after 1 year and 60% of patients were exacerbation-free. The proportion of patients achieving an ACQ6 score <1.5 significantly improved from 17% at baseline to 58% at 1 year. The mean change in FEV1 was +197mls. Of the 20 patients who required maintence steroids (mOCS) at baseline, only 7 remained on mOCS after 6 months of treatment. Median (IQR) FeNO fell from 46ppb (27–85) to 25ppb (17–37) (p<0.001) and blood eosinophil count fell from 230 cells/mcL (10–580) to 180 cells/mcL (113–320) by 1 year.

Overall, 33% achieved clinical remission. Attainment of clinical remission was associated with presence of nasal polyposis (p=0.01) and a lower ACQ6 score at baseline (p<0.001).In a multivariate model, being a non-smoker was also associated with a a higher likelihood of achieving remission (OR 6.6,95% CI 1.43–50.22). Biological remission was achieved in 38%. Complete remission was observed in 13%. Of patients achieving biologic remission, 65% failed to acheive clinical remission.

Conclusion In a real-world cohort of SA patients, tezepelumab led to marked clinically improvements with a third of patients achieving clinical remission. However despite the MOA of tezepelumab, complete remission was only seen in 13% highlighting important alternate drivers of T2 inflammation in severe asthma.

P17 REAL-WORLD EFFECTIVENESS OF DUPILUMAB 200MG DOSE IN ORAL CORTICOSTEROID REDUCTION AND EXACERBATION IN PATIENTS WITH SEVERE ASTHMA: FINDINGS FROM THE EU-ADVANTAGE STUDY

[1]H Rupani, [2]P Pfeffer, [3]A Bourdin, [4]GW Canonica, [5]JC Virchow, [6]J Jacob-Nara, [6]K Borsos, [7]RH Stanford, [8]O Ledanois, [9]Z Wang, [9]M Soliman, [10]L Huynh, [10]S Kalia, [10]MS Duh, [6]W-H Cheng. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]Department of Respiratory Medicine, St Bartholomew's Hospital, London, UK; [3]Department of Respiratory Diseases, CHU Montpellier, University of Montpellier, PhyMedExp, INSERM, CNRS, Montpellier, France; [4]Personalized Medicine, Asthma and Allergy, Humanitas Clinical and Research Center, IRCCS, Milano, Italy; [5]Departments of Pneumology, Intensive Care Medicine, Universitätsmedizin Rostock, Ernst-Heydemann Strasse 6, Rostock, Germany; [6]Sanofi, Cambridge, MA, USA; [7]AESARA Inc., Chapel Hill, NC, USA; [8]Sanofi, Paris, France; [9]Regeneron Pharmaceuticals, Inc., Sleepy Hollow, NY, USA; [10]Analysis Group, Inc., Boston, MA, USA*

10.1136/thorax-2024-BTSabstracts.178

Introduction and Objectives Dupilumab has been approved in Europe for treating severe asthma (SA) characterised by type 2 inflammation. We assessed the association between the use of dupilumab 200mg and the reduction in oral corticosteroid (OCS) use and exacerbations among patients with SA across five EU countries in real-world settings.

Methods In the EU-ADVANTAGE study, physicians from France, Germany, Italy, Spain, and the Netherlands retrospectively reviewed medical records of patients (aged ≥12 years) who had physician-confirmed SA and initiated dupilumab (index) between May 2019 and February 2022. Patients who received dupilumab 200mg as the maintenance dose were included in this analysis. OCS use (numbers of distinct prescriptions and daily dose) and SA exacerbation defined as either systemic corticosteroid use for ≥3 and ≤14 days, or asthma-related hospitalisation/emergency room visit were assessed during the 12 months pre- and post-index period. The incidence rate ratio (IRR) for SA exacerbations was estimated using a Poisson regression model.

Results In total, 348 patients received dupilumab 200mg and were included in this analysis. Of patients with available blood eosinophil (EOS) count and fractional exhaled nitric oxide (FeNO) levels, 93.4% had EOS ≥150 cells/μL and 95.7% had FeNO ≥25 ppb at baseline (both biomarkers elevated: 94.5%). During the post-index period, Poisson regression demonstrated a 71% reduction in SA exacerbation rate (IRR 0.29, 95%CI: 0.23–0.37, $p<0.001$) compared to the pre-index period.

Of 348 patients, 36 were identified as maintenance OCS (mOCS) users (≥5mg and >6 months) during the pre-index period. The mean annualised daily mOCS dose per patient—calculated from the cumulative dose divided by 365 days/follow-up time—was significantly decreased ($p<0.001$) from 11.38mg to 0.44mg (median: 4.38mg to 0mg) during the post-index compared to the pre-index period. mOCS users ($n=36$) further exhibited a reduction in the annualised rate of SA exacerbations per patient, from 2.06 at the pre-index to 0.42 at the post-index, representing an 80% reduction (IRR 0.20, 95%CI: 0.11–0.39, $p<0.0001$).

Conclusions Our analysis revealed a significant reduction in SA exacerbations and mOCS dose among SA patients who received dupilumab 200mg. However, results should be interpreted cautiously owing to the small sample size.

P18 REAL-WORLD EXPERIENCE OF DUPILUMAB FOR THE TREATMENT OF SEVERE ASTHMA IN THE UNITED KINGDOM: A RETROSPECTIVE STUDY

[1]PE Pfeffer, [2]PH Patel, [3]DJ Jackson, [4]LG Heaney, [5]H Burhan, [6]ID Pavord, [7]N Sehgal, [8]R Gore, [9]AH Mansur, [10]R Thomas. *[1]Barts Health NHS Trust, London, UK; [2]Royal Brompton Hospital, London, UK; [3]Guy's Severe Asthma Centre, Guy's Hospital, London, UK; [4]Wellcome-Wolfson Institute for Experimental Medicine, Queen's Hospital, Belfast, UK; [5]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [6]NIHR Oxford Biomedical Research Centre, University of Oxford, Oxford, UK; [7]North Manchester General Hospital, Manchester, UK; [8]Addenbrooke's Hospital, Cambridge, UK; [9]University of Birmingham, Birmingham, UK; [10]Sanofi, Reading, UK*

10.1136/thorax-2024-BTSabstracts.179

Introduction Dupilumab binds to the alpha subunit of the interleukin (IL)-4 receptor (IL-4Rα), inhibiting both IL-4 and IL-13, key and central drivers of type 2 inflammation. In the QUEST phase 3 clinical trial, treatment of patients with uncontrolled moderate-to-severe asthma with dupilumab resulted in reduced rates of severe asthma exacerbations, improved lung function, and improved asthma control. DUPIAZA (NCT06064526), a retrospective observational real-world evidence study, is the first real-world, multi-site study of dupilumab treatment for severe asthma in the UK.

Methods 144 dupilumab-treated patients across 9 tertiary centers were assessed for patient demographics and clinical characteristics, safety, and efficacy. Recruited patients had either failed to respond to or were ineligible for other biologics. Data reported are from the pre-first biologic baseline, pre-dupilumab baseline, 12 months post-dupilumab initiation, and last recorded visit.

Results Comparing 12 months post-dupilumab to pre-dupilumab baseline, overall, patients experienced a 69% reduction in severe exacerbations (rate ratio: 0.31; $P<0.0001$), a 260-mL improvement in forced expiratory volume in 1 second (mean ratio: 1.14; $P<0.06$), a 0.80-point improvement in 6-item Asthma Control Questionnaire score (mean ratio: 0.76; $P<0.002$) and a 0.74-point improvement in Mini Asthma Quality of Life Questionnaire score (mean ratio: 1.23; $P<0.26$). At baseline, in patients dependent on oral corticosteroids (OCS), there was a 44% reduction in maintenance OCS (mean ratio: 0.56; $P<0.0001$), whilst also achieving a 58% reduction in severe exacerbations (rate ratio: 0.42; $P<0.0001$). In non-OCS dependent patients, at baseline, there was an 87% reduction in exacerbations (mean ratio: 0.13; $P<0.0001$). Additionally, in the overall population, 36 patients (25%) met

Delphi-defined super-responder criteria. Safety was consistent with the known adverse event profile of dupilumab from previous studies.

Conclusion In a real-world severe asthma population in the UK, dupilumab treatment led to a significant reduction in exacerbations and the need for maintenance OCS, as well as improvements in symptomatic asthma control and asthma-related quality of life. Notably, these positive outcomes were observed in patients with a high disease burden, not responding to other biologics or were ineligible for them, thereby highlighting the importance of treatment formularies to include biologics that target multiple pathways, including IL-4Rα signaling.

P19 5-YEAR OUTCOMES OF ASTHMA PATIENTS ON MONOCLONAL ANTIBODIES

G Lavoie, I Howell, J Melhorn, C Tiedeman, C Borg, L Bernejo-Sanchez, J Seymour, MF Jabeen, A Fries, G Hynes, ID Pavord, TSC Hink, N Petousi. *Respiratory Medicine Unit and NIHR Oxford Biomedical Research Centre, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.180

Monoclonal antibodies targeting type-2 inflammation pathways have revolutionized the management of severe asthma. These significantly reduce exacerbations and improve symptoms, but there is a paucity of long-term data on their use. We conducted an audit of all patients on biologics for asthma under the Oxford Special Airways Clinic to identify those receiving the same treatment for at least 5 years to assess response to treatment including exacerbations and changes in lung function over time. Of the 818 individuals in our cohort, 69 had at least 5 years on the same treatment (Mepolizumab in 66 and Dupilumab in 3).

Of these, 43 (62%) had lung function data available after 5 years. There was no significant change in lung function during this period with mean FEV1 (SD) going from 2.02 ± 0.79 L/s to 2.01 ± 0.83 L/s, mean paired-sample difference -0.02 ± 0.38 L/s, p=0.8. There were no significant predictors of change in lung function, but chronic daily sputum production (bronchitis) showed a non-significant association (r=-0.291, p=0.06).

Biologics has a significant and sustained effect on exacerbations in this cohort, with the median (IQR) number of exacerbations falling from 4.5 (3.0 – 6.0) in the year prior to biologics to from 0.0 (0.0 – 1.0) to (0.0 – 2.0) per year for all following years. 24 (34.8%) of subjects had no exacerbation during this period. Remaining exacerbation-free at 5 years correlated inversely with the number of exacerbations in the year prior to starting biologics (r=-0.331, p=0.006) and with FeNO at baseline (r=-0.381, p=0.002), and correlated positively with increasing FeNO over the 5-year period (r=-0.480, p=0.002).

In conclusion, in our cohort of patients on biologics, individuals who remained on the same treatment for at least 5 years had stable lung function and sustained reduction in exacerbations, and over a third did not have further exacerbations. Residual exacerbations may be related to presence of epithelial-driven inflammation as predicted by elevated FeNO.

P20 EFFECTIVENESS OF BENRALIZUMAB IN PATIENTS WITH SEVERE ASTHMA PREVIOUSLY TREATED WITH MEPOLIZUMAB IN THE UNITED KINGDOM; A BPAP STUDY POST-HOC ANALYSIS

[1,2]DJ Jackson, [3]H Burhan, [4]PE Pfeffer, [5]IJ Clifton, [6]S Faruqi, [1]AM Nanzer, [1]J Dhariwal, [7]T Morris, [7]C Lupton, [7]M Watt, [8]J Hickey, [9]H Rupani. *[1]Guy's and St Thomas' NHS Trust, London, UK; [2]King's College London, London, UK; [3]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [4]St. Bartholomew's Hospital, London, UK; [5]University of Leeds, Leeds, UK; [6]Hull University Teaching Hospitals, Hull, UK; [7]AstraZeneca UK, London, UK; [8]Open Health, London, UK; [9]University Hospital Southampton NHS Foundation Trust, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.181

Introduction and Objectives Benralizumab is indicated as an add-on maintenance treatment in adult patients with severe eosinophilic asthma (SEA) that is inadequately controlled despite high-dose inhaled corticosteroids plus long-acting β-

Abstract P20 Table 1 Key results: Annualised exacerbation rate (AER), maintenance oral corticosteroid (mOCS) use and patient-reported outcome data (asthma control [ACQ-6] and asthma-related quality of life [AQLQ])

AER	***Baseline***	***1 year***	***2 years***
Mean (95%CI) AER [a]	4.8 (4.0 to 5.6) N=92	1.5 (1.1—1.9)), N=84	1.5 (1.1—1.9), N=69
mOCS use	***Index***	***1 year***	***2 years***
mOCS use in overall cohort, n (%) [a]	63/92 (68%)	38/83 (46%)	26/68 (38%)
mOCS use in patients on mOCS at baseline, n (%) [b]	-	36/57 (63%)	25/44 (57%)
mOCS dose (mg/day) in patients on mOCS at baseline, median (IQR) [b]	10.0 (5.0–20.0), N=63	5.0 (0.0–10.0), N=62	5.0 (0.0–7.9), N=44
Asthma control (ACQ-6)	***Index***	***1 year***	***2 years***
Mean (SD) ACQ-6 score [a]	3.1 (1.6), N=86	2.2 (1.5), N=68	1.5 (1.5), N=53
Total patients with an improvement of at least 0.5 units for AQC-6 from baseline (minimal clinically important difference [MCID]), n (%) [a,c]	1.	40/67 (60%)	39/51 (76%)
Proportion of patients with ACQ score <1.5 [a]	18/86 (19%)	26/68 (38%)	32/53 (60%)
AQLQ	***Index***	***1 year***	***2 years[d]***
Mean (SD) AQLQ score [a]	3.6 (1.6), N=68	4.6 (1.6), N=51	-
Total patients with an improvement from baseline of at least 0.5 units for AQLQ(s)+12 (MCID), n (%) [a,c]	2.	28/49 (57%)	-

[a] Calculated for all patients with available data at that time-point who remained on treatment
[b] Calculated for patients on mOCS (≥5mg) at baseline only
[c] Calculated for all patients with available data at baseline and the time-point of interest who remained on treatment
[d] Not available due to lack of data

agonists. Previous publications have shown effectiveness of benralizumab following failure on an anti-IL-5 biologic. We report results here from the Benralizumab Patient Access Programme (BPAP) study describing benralizumab effectiveness in patients switching from mepolizumab.

Methods The BPAP study was a multi-centre, retrospective study of patients with SEA from eight UK centres. Data were collected May 2019 – October 2021 from the medical records of patients receiving their first benralizumab dose between April 2018 and November 2019. This analysis was limited to patients switching to benralizumab from mepolizumab. Outcomes were assessed using descriptive statistics during baseline (12 months prior to benralizumab initiation), index (benralizumab initiation), 1- and 2-years post-benralizumab initiation in patients remaining on treatment.

Results 92 patients were included in this subgroup analysis: 88% (81/92) were female; 57% (50/88) had a BMI $\geq$30; mean (SD) age at asthma onset was 34.7 (18.4) years (n=41); 50% (46/92) of patients had atopic asthma. The most common reason for mepolizumab discontinuation was lack of efficacy (85%, 78/92). At baseline, the median (IQR) FeNO count was 80.0 (56.0–120.0) ppb. The median (IQR) peak EOS count during baseline was 400.0 (200.0–700.0) cells/mcL, and median (IQR) EOS at index was 100 (IQR 0.0 to 200.0). Sixty-nine (76%) patients remained on benralizumab at 2 years. The mean (95%CI) annualised exacerbation rate (AER) was reduced by 69% from 4.8 (4.0–5.6) at baseline to 1.5 (1.1–1.9) exacerbations/patient/year at 2 years; 19% (13/69) of patients were exacerbation-free. At baseline, 68% (63/92) of patients were on maintenance oral corticosteroids (mOCS) for asthma; of these, 43% (19/44) were mOCS-free at 2 years. Key outcomes are summarised in table 1.

Conclusions Improvement in all clinical measures — including exacerbations, mOCS use, asthma control and health-related quality of life — were observed 2 years post-benralizumab treatment in patients switching from mepolizumab, suggesting more robust targeting of the IL-5 axis may be effective. Results were consistent with international reports, despite higher baseline severity.

P21 THE IMPACT OF SOCIOECONOMIC STATUS ON BIOLOGIC UPTAKE AT 2 TERTIARY SEVERE ASTHMA SERVICES

[1]R Burton, [2]L Shilito, [2]A Shams, [2]K Prior, [1]H Burhan. *[1]Liverpool University Hospital Foundation Trust, Liverpool, UK; [2]Lancashire Teaching Hospitals NHS Trust, Preston, UK*

10.1136/thorax-2024-BTSabstracts.182

Introduction Regional inequalities in respiratory outcomes and geographical variation in asthma biologic uptake have been described in England (Asthma and Lung UK, Saving Your Breath 2023). Socioeconomic deprivation is closely linked with poorer health outcomes. The Northwest of England is disproportionately affected by socioeconomic deprivation and health inequalities (Office for Health Improvement & Disparities NW Profile 2021).

We aim to describe asthma biologic commencement between patients of different socioeconomic status (SES) newly referred to one of two large, tertiary severe asthma services in the Northwest of England.

Method We reviewed the first 100 asthma referrals in 2023. UK 2019 Indices of Multiple Deprivation deciles, based on patient location, were used to calculate SES. A lower decile indicates a greater level of deprivation.

The impact of SES on biologic commencement was described by referral site (site 1, covers a rural population and has a hub-and-spoke model; site 2, is a single site located in a metropolitan area). A combination of parametric and non-parametric tests were used to describe the differences between sites.

Results In total, 43% (85/200) of new referrals were commenced on a biologic for severe asthma. There was no difference in sex (female: site 1 65% vs site 2 65%, p=0.92), mean age (site 1, 54 years vs. site 2, 52.5, p=0.50) and satisfactory inhaler adherence (site 1, 83% vs site 2, 68%, p=0.07) between sites. Patients referred to site 2 were more likely to be living in a deprived postcode (site 1, median SES decile 4 vs. site 2, SES decile 2, p<0.001) and were less likely to start on a biologic (site 1, 53% vs site 2, 32% p=0.003).

Despite the high prevalence of deprivation at site 2, only 28% (17/61) of patients living in the 20% most deprived postcodes in England were commenced on a biologic compared to 21/26 (81%) at site 1 (p<0.001).

Conclusion There is significant geographical variation in the effect of SES on asthma biologic uptake which may be explained by service design. Further research is required to understand the magnitude of local SES inequalities and how to address them.

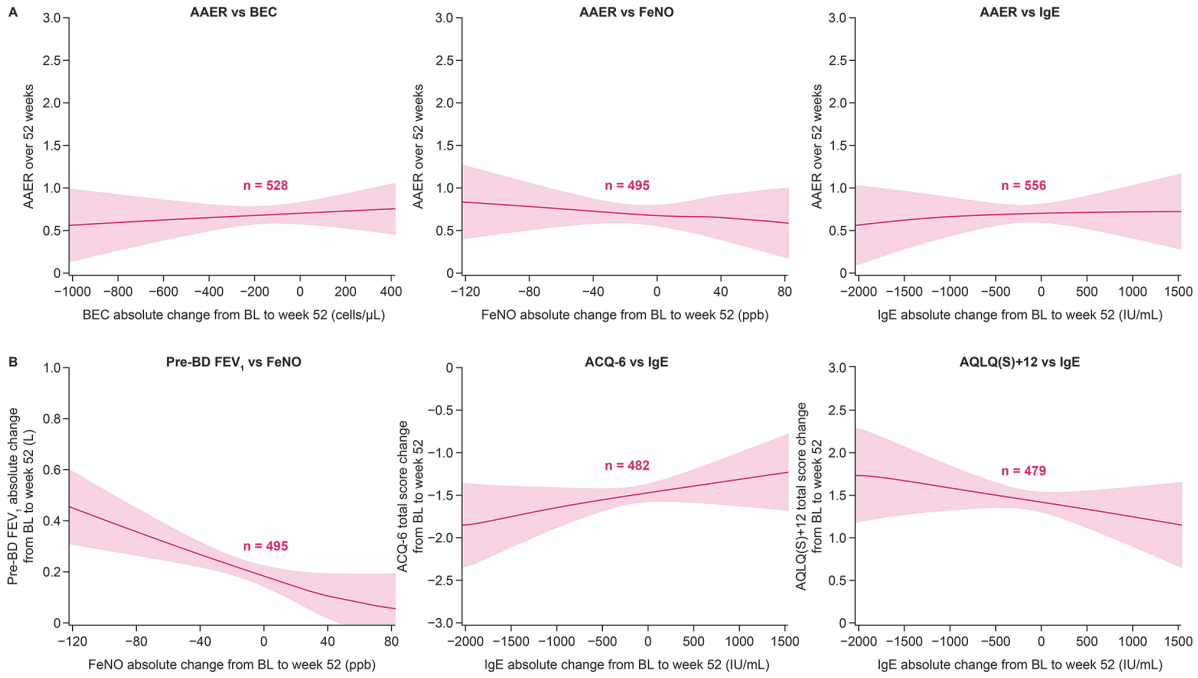
P22 BIOMARKERS AND PHENOTYPING: A HOLISTIC APPROACH TO ASTHMA TREATMENT WITH TEZEPELUMAB

[1,2]DJ Jackson, [3]G Brusselle, [4]ME Wechsler, [5]S Couillard, [6]JC Virchow, [7]J-P Llanos, [8]G Hunter, [9]SL Roseti, [10,11]N Martin, [12]ID Pavord. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Foundation Trust, London, UK; [2]School of Immunology and Microbial Sciences, King's College London, London, UK; [3]Department of Respiratory Medicine, Ghent University Hospital, Ghent, Belgium; [4]National Jewish Health, Denver, CO, USA; [5]Faculty of Medicine and Health Sciences, University of Sherbrooke, Sherbrooke, QC, Canada; [6]Department of Pneumology and Department of Intensive Care Medicine, University of Rostock, Rostock, Germany; [7]Global Medical Affairs, Amgen, Thousand Oaks, CA, USA; [8]Biometrics, Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [9]Late-stage Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gaithersburg, MD, USA; [10]Respiratory and Immunology, BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [11]Institute for Lung Health, National Institute for Health and Care Research, Leicester Biomedical Research Centre, University of Leicester, Leicester, UK; [12]Respiratory Medicine, National Institute for Health and Care Research Oxford Biomedical Research Centre, Nuffield Department of Medicine, University of Oxford, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.183

Introduction and Objectives Tezepelumab reduced the annualized asthma exacerbation rate (AAER) and improved lung function, symptom control and quality of life (QoL) across biomarker levels in patients with severe, uncontrolled asthma in the PATHWAY (NCT02054130) and NAVIGATOR (NCT03347279) studies. This post hoc analysis assessed the relationship between absolute change in biomarker levels from baseline to week 52 and asthma outcomes in PATHWAY and NAVIGATOR patients.

Methods The relationships between absolute changes in biomarkers (blood eosinophil counts, fractional exhaled nitric oxide [FeNO] levels and serum immunoglobulin E [IgE] levels) from baseline to week 52 and AAER, pre-bronchodilator (BD) forced expiratory volume in 1 second (FEV_1), Asthma Control



LOESS regression is fitted for the data presented and the shaded areas represent 95% confidence intervals. AAER, annualized asthma exacerbation rate; ACQ-6, Asthma Control Questionnaire-6; AQLQ(S)+12, Asthma Quality of Life Questionnaire (standardized) for patients 12 years and older; BD, bronchodilator; BEC, blood eosinophil count; BL, baseline; FeNO, fractional exhaled nitric oxide; FEV_1, forced expiratory volume in 1 second; IgE, immunoglobulin E; LOESS, locally estimated scatterplot smoothing; Q4W, every 4 weeks.

Abstract P22 Figure 1 The relationships between absolute changes in biomarker levels from baseline to week 52 and A) AAER over 52 weeks, and B) secondary asthma outcomes over 52 weeks, in patients receiving tezepelumab 210 mg Q4W

Questionnaire-6 score and Asthma Quality of Life Questionnaire score were assessed over 52 weeks using locally estimated scatterplot smoothing regression.

Results In tezepelumab recipients, changes in biomarker levels over 52 weeks were not associated with the AAER, whereas changes in FeNO levels and IgE levels correlated with improved pre-BD FEV_1, and improvements in asthma symptoms and QoL, respectively (figure 1).

Conclusion Changes in biomarker levels over 52 weeks were not associated with on-treatment AAER with tezepelumab treatment; however, changes in some biomarkers correlated with improvements in lung function, asthma symptoms and QoL.

P23 ASTHMA EXACERBATION RATES AS A FUNCTION OF BIOMARKER LEVELS 4 WEEKS AFTER INITIATION OF TEZEPELUMAB TREATMENT: AN ANALYSIS OF THE NAVIGATOR STUDY

[1]E Israel, [2]GL Chupp, [3]NL Lugogo, [4]J-P Llanos, [5,6]NL Martin, [7,8]N Martin, [9]CS Ambrose, [10,11]DJ Jackson. *[1]Pulmonary and Critical Care Medicine, Allergy and Immunology, Brigham and Womens Hospital, Harvard Medical School, Boston, MA, USA; [2]Yale School of Medicine, Yale University, New Haven, CT, USA; [3]Department of Medicine, Division of Pulmonary and Critical Care Medicine, University of Michigan, Ann Arbor, MI, USA; [4]Global Medical Affairs, Amgen, Thousand Oaks, CA, USA; [5]Biometrics, Late-stage Development, Respiratory and Immunology, BioPharmaceuticals R&D, AstraZeneca, USA; [6]Cytel Inc., Waltham, MA, USA; [7]Respiratory and Immunology, BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [8]University of Leicester, Leicester, Leicester, UK; [9]Respiratory and Immunology, BioPharmaceuticals Medical, AstraZeneca, Gaithersburg, MD, USA; [10]Guys and St Thomas NHS Foundation Trust, London, UK; [11]School of Immunology and Microbial Sciences, Kings College London, London, UK*

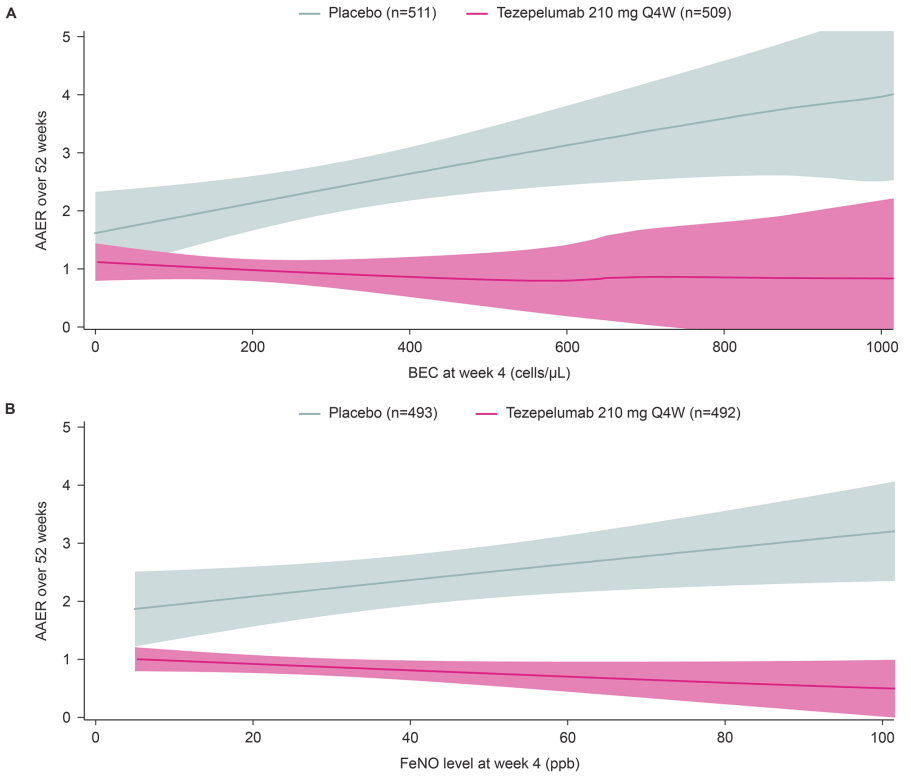
10.1136/thorax-2024-BTSabstracts.184

Introduction and Objectives Tezepelumab is a human monoclonal antibody that blocks thymic stromal lymphopoietin (TSLP), an epithelial cytokine involved in asthma pathogenesis. In the phase 3 NAVIGATOR study (NCT03347279), tezepelumab reduced the annualized asthma exacerbation rate (AAER) in patients with severe, uncontrolled asthma versus placebo, across baseline inflammatory biomarker levels. This *post hoc* analysis of the NAVIGATOR study evaluated the AAER in patients receiving tezepelumab or placebo by blood eosinophil counts (BECs) and fractional exhaled nitric oxide (FeNO) levels at week 4 of treatment.

Methods NAVIGATOR was a multicenter, randomized, double-blind, placebo-controlled study. Patients (12–80 years old) with severe, uncontrolled asthma were randomized to tezepelumab 210 mg or placebo subcutaneously every 4 weeks for up to 52 weeks. The relationships between BECs and FeNO levels at week 4 and the unadjusted AAER over 52 weeks were visualized using locally weighted regression and smoothing scatterplots by treatment group (DIRECT method with smoothing parameter equal to 1).

Results Of the 1059 patients (tezepelumab, n=528; placebo, n=531) in the overall full analysis set, 1020 patients (tezepelumab, n=509; placebo, n=511) and 985 patients (tezepelumab, n=492; placebo, n=493) were included in the BEC and FeNO level analyses, respectively. In the placebo group, there were trends of higher AAERs over 52 weeks with increasing BECs and FeNO levels at week 4 (**figure 1**). In the tezepelumab group, the AAER over 52 weeks was lower than with placebo and was consistent across the continuum of BECs and FeNO levels at week 4 (**figure 1**).

Conclusions In tezepelumab recipients, post-treatment inflammatory biomarker levels had no prognostic value for week 52 asthma exacerbation rates, in contrast to the expected



Locally estimated regression and smoothing scatterplots (LOESS) showing the AAER over 52 weeks by biomarker level at week 4. LOESS regression is fitted for each treatment arm separately. n is the number of patients included in the analysis. Shaded areas represent 95% CI. The analyses included all data; the x-axes have been truncated to capture the clinically relevant values for each biomarker.
AAER, annualized asthma exacerbation rate; BEC, blood eosinophil count; CI, confidence interval; FeNO, fractional exhaled nitric oxide; Q4W, every 4 weeks.

Abstract P23 Figure 1 AAER over 52 weeks by BECs (A) and FeNO levels (B) at week 4 of treatment

prognostic value observed among placebo recipients. These data suggest that elevated biomarker levels 4 weeks after initiation of tezepelumab treatment cannot be used as clinical predictors of non-response.

P24 REDUCTION IN BACKGROUND ASTHMA MEDICATION FOLLOWING INITIATION OF BIOLOGIC THERAPY

[1]J Phillips, [1]S Pantaleon, [1]W Soe, [1]C Eames, [1]S Kerley, [1]C Whitfield, [1]J McCreery, [1]P Cook, [2]A Freeman, [2]HM Haitchi, [2]R Kurukulaaratchy, [1]P Dennison, [1]H Rupani. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]University of Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.185

Introduction For patients with severe asthma established on biologic therapy, the Global Initiative for Asthma 2024 report recommends reducing inhaled asthma therapies, whilst maintaining some level of regular inhaled corticosteroid (ICS) therapy.

Methods Retrospective data of 101 patients on biologics was reviewed at 6-, 12-, and 24-months following initiation of biologic treatment. Results are shown as median (interquartile range) unless otherwise specified.

ICS dosing was ranked low (200–500mcg beclomethasone dipropionate (BDP) equivalent/day), medium (600–800mcg BDP/day), high (1000–2000mcg BDP/day) and very-high (>2000mcg BDP/day), in accordance with NICE guidelines.

Results Of 101 patients, 19 were excluded due to biologic switch/cessation. Of the 82 patients included, 39 were on mepolizumab and 43 on benralizumab.

The number of patients receiving very-high, high, medium or low dose ICS at baseline, 6-months, 1-year and 2-years, is displayed in table 1. Of the 38 patients receiving very-high dose ICS at baseline, reduction to high dose ICS and medium dose ICS at 2-years was achieved in 19/38 (50%) and 6/38 (16%), respectively. Of the 37 patients on high dose ICS at baseline, reduction to medium dose ICS at 2-years was achieved in 9/37 (24%).

In total, 35/82 (43%) reduced their ICS dose between baseline and 2 years. There was a small difference in baseline FeNO between patients who reduced ICS (43 ppb [IQR30–75]) versus those who didn't (26ppb [IQR15–49]) and no significant change in FeNO with ICS reduction (baseline FeNO 43ppb [IQR30–75], 2-year FeNO 38ppb [IQR25–55]).

Over 2 years, long-acting muscarinic antagonists were stopped in 14/64 (22%) and montelukast in 7/51 (14%).

Abstract P24 Table 1 Number and percentage of patients on very-high, high, medium and low dose ICS at baseline, 6 months, 1 year and 2 years in both the mepolizumab and benralizumab groups

Combined mepolizumab and benralizumab data n= 82				
ICS dose	**Baseline**	**6 months**	**1 year**	**2 years**
Very-high dose	38 (46%)	32 (39%)	16 (19.5%)	13 (16%)
High dose	37 (45%)	43 (52%)	50 (61%)	50 (61%)
Medium dose	7 (9%)	7 (9%)	16 (19.5%)	18 (22%)
Low dose	0 (0%)	0 (0%)	0 (0%)	1 (1%)

Compared to baseline, at 2 years, maintenance OCS users reduced from 30 (37%, median dose 10mg) to 6 (14%, median dose 5mg), ACQ reduced from 3.1 to 1.5, and annualized exacerbations reduced from 5 to 1.

Conclusion Successful reduction in background asthma therapy was achieved in 41/82 (50%) of patients with severe asthma established on mepolizumab and benralizumab. However, many patients remained on high-dose ICS despite stability on biologics. In some cases, this may be due to patient choice. Focused, pro-active ICS dose reduction in stable biologics patients is needed to reduce risks of ICS side-effects.

P25 ASSESSMENT OF AN ORAL CORTICOSTEROID WITHDRAWAL PATHWAY FOR SEVERE ASTHMA PATIENTS RECEIVING BIOLOGIC THERAPIES

[1]H Aung, [1]R Russell, [1]C Boddy, [1]K Balasundaram, [1]E Hampson, [1]M Mark, [1]L Parnell, [1]MA Bonnington, [1]S Mohammad, [2]M Levy, [3]K Meeran, [4]S Siddiqui, [1]S Naveed, [1]P Bradding. *[1]Institute for Lung Health, NIHR Respiratory Biomedical Research Centre, University Hospitals of Leicester, Leicester, UK; [2]Department of Endocrinology, University Hospitals of Leicester, Leicester, UK; [3]Faculty of Medicine, Imperial College London, London, UK; [4]National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.186

Background Biologic therapies for severe asthma enable the cessation of maintenance oral corticosteroids (mOCS) for many patients. However, there is little consensus on how to wean OCS whilst avoiding adrenal insufficiency (AI). Several studies assessed the hypothalamic-pituitary-adrenal (HPA) axis once the patient reaches 5 mg daily of prednisolone, but this dose is supraphysiological for many patients, and inhaled corticosteroids further contribute to the exogenous steroid load. Thus there is inevitably HPA axis suppression in many which will not recover unless the OCS dose is reduced further.

Aim We evaluated the feasibility of a protocol-driven nurse-led mOCS withdrawal pathway for severe asthma patients receiving biologics in our severe asthma service.

Methods Patients with severe asthma receiving biologics and mOCS, who had good asthma control having reduced mOCS to 5mg prednisolone daily, entered the mOCS withdrawal pathway. Prednisolone dose was reduced by 1mg every 6 weeks to 3mg daily then serum cortisol was checked. Patients with cortisol <25 nmol/L were paused and referred to endocrinology. Those with serum cortisol ≥25 nmol/L followed a 20-week mOCS weaning plan. If mOCS were stopped, serum cortisol levels were re-checked 12 weeks later. All patients were given sick day rules.

Results Ninety-six patients entered the pathway (age 64 ±13.6yr, mean FEV1=2.21±0.8L). Of these, 90 had cortisol levels >25 nmol/L on 3mg prednisolone and underwent further OCS weaning. 82% (n=74) of patients successfully stopped mOCS use with a median cortisol level of 194 (IQR 122–301) nmol/L on 3mg prednisolone, increasing to 321 (247–449) nmol/L 12 weeks after stopping prednisolone (p<0.0001). 18% (n=16) were unable to withdraw prednisolone either due to AI symptoms (56%), patient anxiety (25%), or clinician's decision (19%). The median baseline cortisol in this group was 51.5 (25.7–136 nmol/L), and their current mOCS dose is 3 (3–4) mg prednisolone. Duration of prior OCS use at baseline was significantly lower in the successfully weaned group compared to those who failed (p=0.003). No serious adverse events such as adrenal crisis were reported.

Conclusion 82% of clinically stable asthma patients receiving biologics successfully stopped their mOCS without need for dynamic testing of adrenal function.

P26 THE INFLUENCE OF ADHERENCE TO INHALED CORTICOSTEROIDS (ICS) ON TREATMENT RESPONSE TO MEPOLIZUMAB TREATMENT IN SEVERE EOSINOPHILIC ASTHMA

[1]M Almutairi, [1]Z Jalal, [1]J Marriott, [2]L Wood, [2]B Almoosawi, [2]S Caddick, [2]B Rajkumari, [2]S Renwick, [2]S Wilkinson, [2]C Gallagher, [2]T Duffin, [1]A Mansur. *[1]University of Birmingham, Birmingham, UK; [2]Heartlands Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.187

Background Poor adherence to ICS in severe eosinophilic asthma patients is associated with poor control regardless of severity (Blake, 2017; Caminati et al., 2020).

Primary Objective To evaluate the influence of poor ICS adherence on response to mepolizumab treatment in patients with severe eosinophilic asthma.

Methods This was a retrospective study that included severe eosinophilic asthma patients aged ³18 years initiated on mepolizumab from June 2017 to June 2023. The ICS adherence was assessed using a prescription possession ratio (PPR) £75%, and positive response to mepolizumab was defined as ³50% reduction in severe asthma exacerbations and/or maintenance oral corticosteroids (OCS). The clinical data was retrieved from the local dendrite system within Birmingham Regional Severe Asthma Service (BRSAS) per BRSAS regional Proforma.

Results Of 190 participants included in the analysis, 153 (80%) had a positive response to mepolizumab [mean age at enrolment of 52±13 years, (59) 31% males]. Patients with positive mepolizumab response had a lower median number of asthma exacerbations than negative responders during the mepolizumab treatment with 1 (2, 0) to 4 (7, 2) asthma exacerbations, respectively (p=0.002). Poor ICS adherence was significantly more common in the negative response group 12/23 (52%) than in the positive response group 29/130 (22%), p=0.002. Patients with poor ICS adherence during mepolizumab treatment had significantly higher most recent and highest FeNO levels compared to adherent patients during the mepolizumab treatment with median FeNO level of 57 ppb (81, 35) vs 34 ppb (61, 21) (p=0.009) and median FeNO levels of 77 ppb (118, 51) vs 53 ppb (88, 26), (p=0.004) respectively.

Conclusions Poor ICS adherence during mepolizumab therapy was associated with a negative response to mepolizumab treatment and raised FeNO levels compared to good ICS adherence. Optimum adherence to ICS therapy during mepolizumab treatment is therefore required to improve treatment response and patient outcomes.

P27 REAL WORLD IMMUNOGENICITY OF BENRALIZUMAB IN ASTHMA USING A SPECIFIC GLOBODY IMMUNOASSAY

[1]OAM Neunie, [1]W Rabbania, [1]I El Abidi, [1]HK Patel, [1]ES Chambers, [1]D Bakers, [2]PE Pfeffer, [1]AS Kang. *[1]Queen Mary University of London, London, UK; [2]Department of Respiratory Medicine, Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.188

Background Despite biomarker-guided initiation, non- or loss of response to biologic therapy occurs in a minority

of patients with severe asthma. In cases of treatment failure, it is important to understand why treatment has failed as this can guide future biologic choices. The formation of anti-drug antibodies (ADA) can occur with all biologics and is a potential cause of treatment failure, however, immunoassays created by drug-manufacturers during the development program are seldom made available for routine clinical testing.

Methods We developed the GloBody platform to rapidly generate, manufacturer-independent immunoassays. The sequences of a single chain variable fragment encoding the monoclonal antibody variable region, dual nanolucifearase reporters and a histidine tag are synthesized, expressed in bacteria and purified. The GloBodies are bound by benralizumab-specific ADA in plasma/serum and complexes are captured by immobilized protein G and quantitated using luminometry, following the addition of nanoluciferase substrate.

Peripheral blood samples were collected from 74 patients with severe asthma and 15 healthy controls. The severe asthma patients were purposively sampled to include those with a range of clinical responses to Benralizumab. The severe asthma patients were categorized as Benralizumab naïve (n=27) or Benralizumab exposed (n=47) with the latter further categorized as having had a good response (n=17), borderline response (n=8), poor response (n=16) or poor response with development of blood eosinophils $>0.1x10^9$/L whilst on Benralizumab (n=6).

Results Preliminary blinded analysis identified three individuals positive for ADAs. All three patients were in the subgroup of those who had had a poor response with development of blood eosinophils $>0.1x10^9$/L whilst on Benralizumab.

Conclusion This platform further demonstrated its versatility and can be used to monitor ADA to any antibody-based therapeutic, where the protein sequence is known.

Discussion ADAs to Benralizumab can be detected in patients with non-/loss of response to the biologic and are useful to identify this as the cause of treatment failure, as opposed to other causes such as non-adherence to homecare self-administration, thereby guiding future biologics choices. Clinically validated tests for ADAs would be beneficial in clinic.

'Sleeping Beauty' – Monitoring and managing sleep disordered breathing

P28 UNVEILING DISPARITIES IN DIAGNOSIS AND MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA IN ENGLAND: A COMPREHENSIVE ANALYSIS OF PATIENT CHARACTERISTICS AND TREATMENT PATHWAYS

[1]A Ali, [2]M Deger, [3]A Ghildiyal, [4]N Alpert, [5]F Saberi Hosnijeh, [6]S Boult. *[1]University Hospital Coventry and Warwickshire NHS Trust, Coventry, UK; [2]ResMed Science Center, Martinsried, Germany; [3]ResMed Science Center, Oxfordshire, UK; [4]ResMed Science Center, San Diego, USA; [5]OPEN Health, Rotterdam, The Netherlands; [6]OPEN Health, London, UK*

10.1136/thorax-2024-BTSabstracts.189

Background Obstructive Sleep Apnea (OSA) is a significant public health issue impacting millions globally, characterized by variable diagnosis and treatment patterns across different countries. This study examined the characteristics, and management pathways of OSA patients in England. By analyzing demographic data, comorbidity profiles, and treatment timelines, we aimed to evaluate the current OSA treatment pathway in England, to improve care delivery strategies.

Methods We conducted a retrospective cohort analysis of 71,513 adults with at least one OSA code in their records, using the Clinical Practice Research Database linked to Hospital Episode Statistics (CPRD-HES) between 2010–2019. After exclusions, 69,155 patients were divided into three groups based on PAP treatment status: 13,058 received PAP (G1), 16,068 did not receive PAP (G2), both with more than one OSA diagnosis, and 40,029 had a single OSA record without PAP (G3).We assessed socio-demographic characteristics, comorbid conditions, and the time to diagnosis and treatment initiation.

Results The incidence rate of OSA increased significantly from 0.04% to 0.09% over the observation period. The mean follow-up duration was 4.1 years (SD 2.8). The cohort was predominantly male (69.8%) with a mean age of 53 years. High rates of obesity (83.0%), metabolic disorders (23.9%), and cardiovascular disorders (38.3%) were observed. Patients receiving PAP treatment had higher comorbidity burden. The mean waiting time for an appointment was 44 days, and from the initial sleep clinic visit to diagnosis was 243 days. The time from OSA diagnosis to continuous PAP (CPAP) treatment initiation averaged 425 days, resulting in a total waiting time of 610 days, indicating significant healthcare system inefficiencies. Additionally, 42.4% of CPAP users had no follow-up visits after treatment initiation.

Conclusion Significant delays in diagnosing and initiating PAP treatment for OSA patients were found. The findings underscore the need for improved diagnostic and treatment frameworks to expedite care, ensuring timely and effective management of OSA for better long-term health outcomes. The presence of patients with a single OSA record (~58%) might suggest underdiagnosis or loss to follow-up, emphasizing the need for improved diagnostic and care continuity. Urgent systemic improvements are needed to overcome barriers in OSA management and to optimize clinical pathways.

P29 CONSIDERING THE ENVIRONMENTAL IMPACT OF CURRENT HOME SLEEP STUDY PATHWAYS AND NOVEL HOME TESTING DEVICES

S Askar, SD West. *Respiratory Unit, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK*

10.1136/thorax-2024-BTSabstracts.190

Introduction With growing sustainability awareness, travel carbon footprint is under scrutiny. Currently, many centres require patients to travel two return journeys to collect and return home sleep study equipment for investigation of obstructive sleep apnoea (OSA). With a focus on potential greener changes to this model, we investigated novel OSA home testing devices with options of disposability, reusability or ability to be posted.

Methods A sample cohort of patients had their postcodes reviewed; journey mileage was calculated. Carbon emissions were derived from the Travel Greenhouse Gas Emissions (GHG) Calculator.[1] We reviewed websites of the novel home testing devices under evaluation by NICE to seek environmental data, including carbon footprint.

Results 260 consecutive patients had home diagnostic sleep study in March 2024; the first 52 patients mileage was calculated: they travelled in total 1936 miles to pick up and return the equipment to the sleep centre. The average GHG emissions for two return journeys were 12.4 kg CO2e and the sum was 643.4 kg CO2e. Extrapolating this data to the 260 patients, suggested total was 8520 miles and 2833 kg CO2e.

We were unable to find out from novel device websites details of their carbon footprint to allow exact calculations; therefore we used published templates and national resources. The calculated carbon emission for disposable WatchPAT ONE, according to its weight and online pricing, would be 100.36 kg CO2e; and calculated emissions for collective transport was 0.6 kg CO2e per device for diesel fuel, derived from the published per tonne figure 1.[2]

Conclusion It is difficult to evaluate exact environmental impact of patients' travel versus novel home testing devices with the available information.

Disposable devices might have a higher carbon footprint if they are not recyclable; more expensive products have the highest carbon footprint. Devices that can be mass transported and posted incur less travel, with reduced environmental impact. Further evaluation would be required for these pathways.

REFERENCES

1. Travel Greenhouse Gas Emissions Calculator | Sustainable Healthcare Networks Hub. (n.d.). https://networks.sustainablehealthcare.org.uk/resources/travel-greenhouse-gas-emissions-calculator
2. Department for Energy Security and Net Zero. (2023, June 28). Greenhouse gas reporting: conversion factors 2023. GOV.UK. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

P30 THE EFFECT OF CONTINUOUS POSITIVE AIRWAY PRESSURE ON THE URINE METABOLOMIC PROFILE IN THOSE WITH OBSTRUCTIVE SLEEP APNOEA HYPOPNOEA SYNDROME

[1]S O'Rourke, [1]C Lewis, [2]L Mur, [3]KE Lewis. *[1]Hywel Dda University Health Board, Wales, UK; [2]Aberystwyth University, Aberystwyth, UK; [3]Swansea University, Swansea, UK*

10.1136/thorax-2024-BTSabstracts.191

Obstructive sleep apnoea hypopnoea syndrome (OSAHS) is a chronic condition characterised by recurrent upper airway collapse, with research to date suggesting that intermittent hypoxia and sleep fragmentation are the key determinants in its cardiometabolic complications.

Metabolomics is the study of multiple chemical processes simultaneously of the small molecule substrates, intermediates, and products of cell metabolism. It provides a chemical fingerprint of an organism at a precise timepoint.

Continuous positive airway pressure (CPAP) is the gold-standard treatment for OSAHS and leads to the elimination of apnoeas and hypopnoeas, thereby reducing daytime sleepiness and improving quality of life. However, the effect of CPAP on the circulating metabolomic profile and its role in reducing the cardiometabolic sequalae is unclear.

Methods 35 OSAHS patients with AHI $\geq$ 15 events per hour (age 51.9 [10.9], male 68.6%, BMI 39.3 [8.4] kg/m^2, Epworth 14.9 [5.1], AHI 53.4 [25.0]) diagnosed by limited channel polygraphy (Apnoea Link^{TM}) were commenced on standard auto-adjustment CPAP devices (Phillips DreamStation) set at 4 to 20 cm H_2O. Urine was collected in multi-specimen

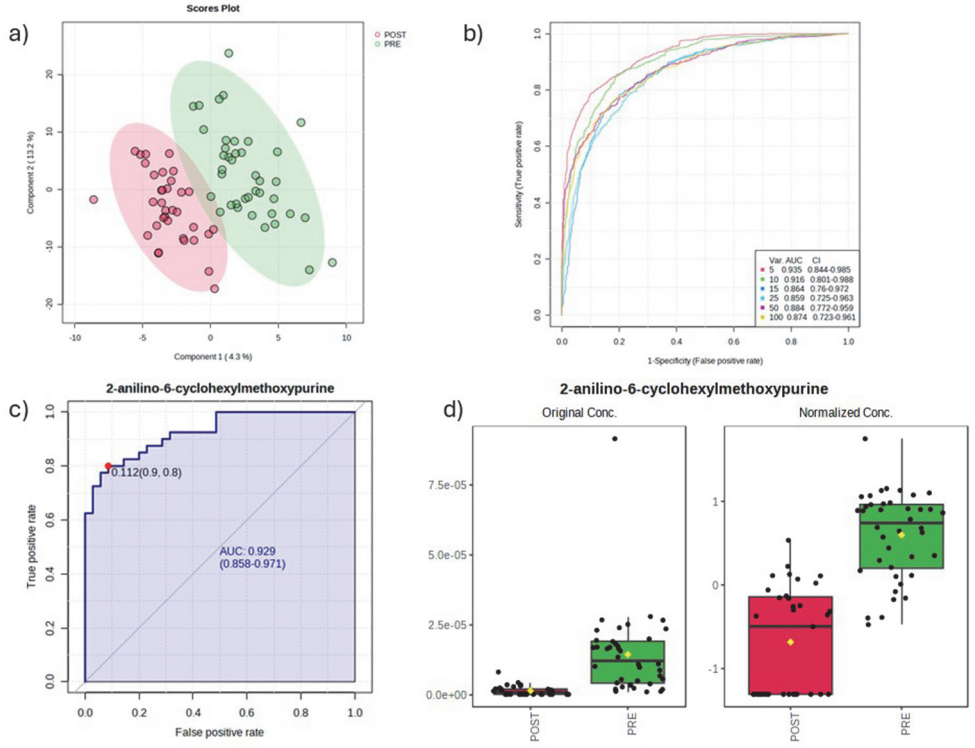


Figure 1:
a) Partial least squares discriminant analysis of urine metabolomic profile pre- and post-CPAP. Each data point is one sample, ellipses = 95% CI
b) ROC curve of top 5 metabolites
c) ROC curve of 2-a-6-c
d) Box-plot showing down-regulation of 2-a-6-c

Abstract P30 Figure 1

containers (early afternoon), before and after 42–70 days treatment with CPAP, with mean usage of 366.3 [103.1] minutes a night.

Flow Infusion Electrospray high-resolution mass spectroscopy with a QExactive hybrid quadrupole-Orbitrap was used to detect metabolomic signatures. Metabolomes were tested by multivariate statistics and the major sources of variation assessed using receiver operating characteristic curves.

Results 5 (biologically plausible) metabolites were significantly down-regulated following treatment with CPAP ($p<0.05$), with 2-anilino-6-cyclohexylmethoxypurineâ€ <â€ < differentiating between pre- and post-CPAP groups with an AUC of 0.93 [0.858–0.971] (figure 1).

2-anilino-6-cyclohexylmethoxypurine (2-a-6-c) is a hypoxanthine and is formed during anaerobic cellular metabolic conditions from the degradation of adenosine. The other 4 metabolites are fatty acids and acylcarnitines involved in fatty acid oxidation.

Discussion Urinary metabolomics offers a non-invasive way to evaluate the impact of CPAP on the global metabolomic profile in those with OSAHS and is able to identify pathways activated by chronic intermittent hypoxia, oxidative stress, and inflammation. Correlation of these key metabolites with the known cardiometabolic consequences of OSAHS could potentially highlight areas for future targeted treatments that CPAP is unable to impact currently.

P31 EXPLORATION OF HEALTH INEQUALITIES IN PATIENTS WITH CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) THERAPY FOR OBSTRUCTIVE SLEEP APNOEA (OSA) – A RETROSPECTIVE, SINGLE CENTRE STUDY

[1]T Gill, [2]E James-Morley, [1]W Rajaratnam, [2]AS Patel, [2]KK Lee. *[1]King's College London, London, UK; [2]King's College Hospital NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.192

Introduction and Objectives Health inequalities are 'unfair and avoidable differences in health across populations and between different employment groups within society'. Contributing factors include ethnicity, gender, age, disability, location, employment, and housing. Health inequalities in OSA have been reported; however, there is a lack of data in UK cohorts. We evaluated our OSA cohort to evaluate for differences and healthcare inequalities between patient groups.

Methods A retrospective review was conducted of consecutive OSA patients who started CPAP treatment within a 9-month period. Criteria included: Age>18, AHI/ODI>5, CPAP naïve. Data was collected from hospital records and CPAP device interrogation. Demographics included: age, sex, ethnicity, BMI, smoking status, alcohol consumption, employment status and Index of Multiple Deprivation decile. Outcomes included: hours/night CPAP use,% nights >4 hours CPAP use, AHI, Epworth Sleepiness Score and healthcare contact time.

Results 270 patients were included. See table 1 for characteristics.

There was a trend to significance for variance in CPAP use across all ethnicity groups ($p=0.054$). Higher CPAP use in vigilance-dependent workers vs unemployed, 6.9(6.7–7.2) vs 2.3(0.3–6.9) hours, $p=0.040$. No relationship between CPAP use and age, sex, BMI, smoking status, alcohol status or IMD rank ($p=0.236$–0.981). No relationship noted between baseline ESS, change in ESS or 12-month AHI and any patient characteristic assessed.

Abstract P31 Table 1 Patient characteristics. Data presented as mean ±SD, median (IQR) or n (%)

Age, years	50.6 ± 12.7
Sex (Male)	189 (70%)
BMI, kg/m^2	38.0 ± 9.1
Current Smoker	47 (17.4%)
Alcohol consumption >14 units/week	31 (11.5%)
Employed (any)	106 (70.2%)
Unemployed	36 (23.8%)
Vigilance Dependent Job	9 (6.0%)
IMD Rank	14 888 ± 8414
IMD Decile	5.0 ± 2.6
Ethnicity	
White	90 (53.9%)
Black	52 (31.1%)
Asian	11 (6.6%)
Mixed	6 (3.6%)
Other	8 (4.8%)
OSA severity	
Mild OSA n (%)	47 (17.5%)
Moderate OSA n (%)	97 (36.1%)
Severe OSA n (%)	125 (46.5%)
Baseline ESS	12 (8–16)
CPAP use	
Hours/night	3.6 (1.2–6.6)
Percentage nights >4 hours	46.4 (15.1–90.8)
AHI at 12 months	3.1 (2.1–6.5)
ESS at 12 months	3.0 (2.5–6.5)
Change in ESS	-9.0 (-13.5–0.0)

Comparing Black vs White ethnic groups, CPAP use was lower: 2.5(0.9–3.5) vs 5.0(2.0–7.1) hours, $p=0.006$. Similar differences found for% nights >4 hours CPAP use. Black ethnic group had higher BMI, higher baseline 4%ODI, lower rates of excess alcohol consumption, and lower IMD decile: 40.7(35.3–45.8) vs 36.4(30.5–44.8), $p=0.038$; 32.6(20.0–54.3) vs 21.7(15.8–37.2), $p=0.003$; 3% vs 25%, $p=0.028$ and 3(2–4) vs 5(3–7), $p<0.001$ respectively. No difference in age, sex, baseline ESS or 12-month ESS, ($p=0.076$–0.702). Black ethnic group had more healthcare contact time, 155+/-37 vs 140+/-44 minutes, $p=0.010$.

Conclusions CPAP use was lower in Black ethnic group and higher in vigilance-dependent workers. Black ethnic group had more severe OSA, lived in more deprived areas but had more contact time with sleep services, suggesting that disparity was not due to inadequate care access. Further research should investigate such perspectives and their impact.

P32 A COMPARISON OF LONG-TERM OUTCOMES AND COSTS BETWEEN PATIENTS WITH GOOD AND POOR INITIAL CPAP ADHERENCE

A Beverly, LH Buckley. *Bristol Royal Infirmary, Bristol, UK*

10.1136/thorax-2024-BTSabstracts.193

Introduction Continuous positive airway pressure (CPAP) is the standard therapy for obstructive sleep apnoea (OSA) syndrome, however a considerable proportion of users have poor

adherence. It is recognised that poor initial CPAP usage strongly correlates with poor long-term adherence.

We performed a retrospective analysis on a cohort of patients commenced on CPAP to compare the long-term adherence, outcomes, and financial cost between those with good (defined as use on ≥70% of nights) and suboptimal (<70% of nights) initial CPAP use.

Methods Consecutive patients started on CPAP in the Bristol Royal Infirmary Sleep Unit between 03/10/2022 and 07/11/2022 were identified using the Sefam-Connect telemonitoring database. CPAP usage data during the initial 6 weeks and at 9 months was collected. Electronic medical records were accessed for each patient and data on follow up outcomes and comfort interventions (such as pressure changes, alternative masks or humidification) was collected.

Results 120 patients were identified. 56 patients (47%) had suboptimal CPAP use during their first 6 weeks. Of these, 32% did not attend their initial follow up appointment. If seen, 31% chose to stop CPAP and returned their devices, and 45% had a comfort intervention attempted and retried CPAP. Despite this, only 5% had good CPAP use at 9 months and 75% had ceased using CPAP entirely.

Of the 64 patients (53%) with good initial CPAP use, only 6% did not attend their follow up appointment, 7% chose to stop CPAP and returned their machine, and 48% had a comfort intervention. 66% of these patients had good usage at 9 months and 16% had ceased CPAP entirely.

There was an estimated total unused resource and equipment cost of £4406 in the good initial user group compared to £18738 in the suboptimal group.

Conclusion Consistent with previous studies, sub-optimal CPAP adherence during the initiation phase strongly correlated with poor long-term CPAP compliance. There was a strong preference to attempt a comfort intervention at follow-up rather than ceasing CPAP, but long-term CPAP usage did not improve as a result, suggesting that this is not a cost-effective approach.

P33 UTILITY OF A MULTIDISCIPLINARY APPROACH UTILISING TELEMONITORING IN IMPROVING ADHERENCE TO CONTINUOUS POSITIVE AIRWAYS PRESSURE (CPAP) IN OBSTRUCTIVE SLEEP APNOEA (OSA)

[1]D Mukherjee, [2]E Green, [2]S Wallbanks, [2]A Oakes, [2]R Mukherjee. *[1]Health Education West Midlands, Birmingham, UK; [2]Birmingham Heartlands Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.194

Introduction The benefits of CPAP demonstrated in clinical trials are difficult to deliver in real life due to the lack of adherence. We had previously reported that Telemonitoring-feedback improves adherence.[1] We set up a Service Improvement Project to see whether embedding telemonitoring feedback within a multidisciplinary (MDT) clinic consisting of a respiratory physiologist, a ventilation physiotherapist and a respiratory physician added value in comparison with standard care consisting of a respiratory physiologist-led CPAP issue and follow up service.

Methods All patients set up on CPAP from Aug-Nov 2023 were included and CPAP usage was assessed across a 90-day period in both cohorts, starting from the day of CPAP initiation. At 90 days, average CPAP usage (hours per night) and the number of usage days were analysed. Comparisons between MDT and non-MDT approaches were made using parametric (independent t-test) and non-parametric tests (Mann-Whitney-U-Test) of difference, with statistical significance accepted at $p<0.05$.

Results A total of 74 patients were set up via the MDT clinic and 99 via the standard clinic – there was no significant difference in age, severity of OSA and Body Mass Index between the two groups, Patients prescribed CPAP via the MDT approach had significantly higher numbers of days used over the follow-up period (54.0 [19.8–85.3] versus 42.4 [1–84] days, p = 0.03*) and also had significantly higher average CPAP usage per night (4.2 [2.1–6.2] versus 3.5 [0.2–6.3] hours, p =0.05*).

Discussion Telemonitoring-feedback and active MDT management appears to be effective at improving adherence with CPAP. Further studies are needed to assess its applications in retrieving unused CPAP machines, to reduce the carbon footprint of OSA management, particularly as we have already demonstrated that an MDT approach utilising telemonitoring led to a significant retrieval, reuse and recycling of home ventilators.[2]

REFERENCES

1. Gassama A, *et al*. The effect of telemonitoring on improving adherence with CPAP in OSA: a service improvement project. *Healthcare*. 2022;**10**(3):465. [PMID: 35326943].
2. Oakes A, *et al*. The benefits of a home non-invasive ventilation retrieval service: improved effectiveness and environmental sustainability in challenging times. *Chronic Respiratory Disease*. 2022;**19**:14799731221081857. [PMID: 35393888].

P34 POSITIONAL OBSTRUCTIVE SLEEP APNOEA (POSA)- IS THIS THE ELEPHANT IN THE ROOM WITH AUTOMATED SYSTEMS FOR OSA TREATMENT -A REAL WORLD STUDY

S Wickramasinghe, S Hettiarachchi, J Crossland, H Singh. *Royal Preston Hospital, Preston, UK*

10.1136/thorax-2024-BTSabstracts.195

Introduction and Objectives Positional obstructive sleep apnoea (POSA) comprises 53% of sleep apnoea patients. However, these patients may have distinguishable phenotypical features and overall poor compliance. Continuous positive airway pressure(CPAP) can be a disruptive treatment which can be an issue when no follow up is occurring in a pathway. Main objective of this study is to assess the adherence to CPAP treatment in POSA and raise questions about phenotyping and strict follow up strategies.

Methods Single centre pragmatic retrospective study was conducted recruiting all the patients with POSA in one year. POSA was defined as a supine AHI that is greater than twice the non-supine AHI. Data was obtained from electronic records. Noncompliance was defined as withdrawal from CPAP within the 18 months.

Results Mean age of the group was 57 years (Range 28–86) and 68% of them were males. Mean BMI was 34.9kg/m^2. 68% had a BMI <35kg/m^2. Average Apnoea hypopnoea index (AHI) was 28.4 and severe AHI was seen in 36% of the study population. It was noted that the mean AHI in supine position is 46.6 and it was 16.8 in non-supine position. 91% had POSA which is similar to previous studies 38 patients had an ESS of 12 or more and 28 had less than 9. Sixty patients were offered autoset CPAP treatment and 12 received

positional treatment. Seven patients were not offered any treatment and were kept under observation. It was noted that 50% of the patients did not tolerate CPAP treatment and hence an alternative may be more appropriate. There was no significant difference in average AHI between compliant and non-compliant groups. As the non-supine position group was small, head-to-head comparison could not be made between these groups.

Conclusions Overall compliance for CPAP is poor among patients with POSA. Given the fact that POSA represents a different phenotype, this group need to be classified and followed to avoid offering ineffective treatment and hence alternatives to CPAP may be appropriate. Larger interventional studies are needed to understand the definition and symptom complex of these patients who may not be appropriate for CPAP treatment.

P35 COMPARING CONTINUOUS POSITIVE AIRWAY PRESSURE ADHERENCE IN BARIATRIC SURGERY AND NON-SURGERY PATIENTS WITH OBSTRUCTIVE SLEEP APNOEA

[1]S Gill, [1]U Nanda, [2]D Wiseman, [2]S Singh. *[1]Imperial College London, London, UK; [2]Imperial College London, Chelsea and Westminster Hospital NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.196

Background Obstructive sleep apnoea (OSA) is highly prevalent within the bariatric referral pathway. Pre-operative screening and treatment with continuous positive airway pressure (CPAP) reduces perioperative complications and future cardiovascular risk. We evaluated the effects of bariatric surgery on CPAP adherence frequency and trajectories, comparing with non-surgical patients from the same sleep clinic.

Methods A retrospective observational cohort study. OSA patients that initiated CPAP at Chelsea and Westminster Hospital sleep clinic in 2014 were identified from electronic health records. They were then stratified by subsequent bariatric surgery or not. Baseline demographics were obtained. Adherence was determined as a time-to-event analysis. Log rank and Pearson correlation tests were used. Ethical approval was obtained.

Results 60 consecutive patients were evaluated. Average AHI (Apnoea-Hyponoea Index), ESS (Epworth Sleepiness Scale) and STOP-bang were 35, 11/24 and 5/8, respectively. There was no significant difference in these variables between cohorts. Kaplan-Meier analysis showed significant decline in CPAP use for both groups (figure 1). 100% of bariatric patients used CPAP for the first 3 months compared to 60% of non-surgery patients. The rate of adherence declined faster in the bariatric cohort. Among those that continued CPAP therapy, non-surgery patients maintained adherence over time ($r=0.97$, 0.0001), while bariatric patients showed an opposing trend ($r=-0.68$, $p=0.0205$). Bariatric surgery was associated with a significant and sustained drop in BMI (Body Mass Index) and with a rapid decline in adherence ($r=-0.98$, $p=0.0056$).

Conclusion Both population samples had notable reduction in CPAP use - only 1 patient on CPAP 9 years later. Pre-

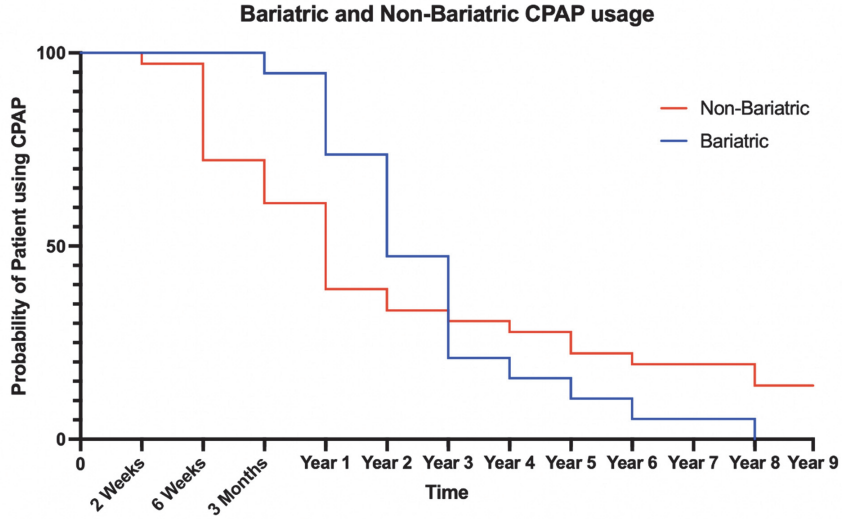


Figure1 - Kaplan Meier curve showing CPAP use in Bariatric (Surgical) and Non-Bariatric (Non-surgical) OSA patients that initiated CPAP therapy at Chelsea & Westminster Hospital in 2014
Bariatric Surgery N=20, Non-Bariatric Surgery N=34
The figure is a time to event curve looking at CPAP use from initiation to termination (event). Individuals that terminated CPAP due to death were excluded from analysis (6 Non-surgery patients were excluded).

Statistical Analysis using GraphPad Prism:
Log-Rank (Mantel-Cox) Test: p= 0.4582 (ns)
Hazard ratio cannot be calculated due to inconsistent hazard rates over time

CPAP = continuous positive airway pressure

Abstract P35 Figure 1

operative CPAP is a prerequisite for bariatric surgery accounting for the initial 100% adherence in the surgical cohort. Adherence declined significantly more in bariatric surgery patients. The reduced adherence is associated with factors such as weight-loss, improved symptoms, intolerance, resolution of OSA and loss to follow-up. Further research from this cohort will determine independent predictors and strengths of association, what the rate of change in adherence is based on weight loss post-surgery, and how many post-operative weight-loss patients off CPAP continue to have moderate-severe OSA. We recommend continued follow-up and timely repeat sleep studies to ensure adequate management of OSA.

P36 SLEEP-DISORDERED BREATHING IN PATIENTS WITH INTERSTITIAL LUNG DISEASE: LONG-TERM PROGNOSTIC IMPLICATIONS

AS Haque, S Banerjee, K Brignall, L Vincent-Smith. *Medway Maritime Hospital, Gillingham, UK*

10.1136/thorax-2024-BTSabstracts.197

Sleep disordered breathing (SDB) is frequently diagnosed in patients with interstitial lung disease (ILD). However limited data exists in the long-term outcomes of patients (pts) with ILD and SDB.

Methods All pts diagnosed at ILD multidisciplinary meetings between June, 2013 to June, 2023, who underwent an overnight oximetry with a minimum 12-month follow-up (FU) had their electronic records retrospectively reviewed. Sustained nocturnal hypoxemia (SNH) was defined as $\geq$10% of sleep O2 sats <90%.

Results 57 pts were recruited. 32 (56.1%) were men. Mean ± SD age was 68 yrs ± 12.0 yrs. 34 (59.6%) were smoker/ex-smoker with a mean PYES 23.4. 14 (24.6%) had idiopathic pulmonary fibrosis, 14 (24.6%) non-specific interstitial pneumonia and 9 (15.8%) connective tissue related ILD. Baseline mean FVC%predicted ± SD was 85.1% ± 24.7%, mean FEV_1%predicted ± SD was 84.1% ± 23.3% and mean TLCO %predicted ± SD was 53.3% ± 16.1%.

21 (36.8%) pts had mild, 10 (17.5%) moderate and 17 (29.8%) severe obstructive sleep apnoea (OSA). 27 (47.4%) patients had SNH. 17 (29.8%) were compliant with the prescribed continuous positive airway pressure therapy.

Body mass index at diagnosis was the only significant predictor of SNH (OR 1.11, 95% CI: 1.02 - 1.20, $p < 0.05$) in the logistic regression analysis.

In the multivariable cox analysis, SNH at diagnosis was a significant predictor of death (hazard ratio 2.33, 95% CI: 1.004 - 5.428, $p < 0.05$). However, pulmonary function at diagnosis, gender, body mass index, OSA severity and smoking history were not statistically significant in predicting survival in those with SNH.

23 (40.4%) patients died during the study period. Median FU was 6.2 yrs. The overall 5-yrs survival was 63.4% (95% CI: 46.3% - 76.1%). Patients with SNH (43.4%, 95% CI: 21.4% - 65.3%) had significantly worse 5-yrs survival ($p < 0.05$) than those without SNH (74.4%, 95 CI: 51.2% - 88.2%).

Conclusion In our cohort of ILD patients detection of nocturnal hypoxemia at diagnosis irrespective of associated sleep apnoea predicted worse outcomes. Future prospective studies with correction of nocturnal hypoxemia are warranted in an effort to establish prognostic benefit.

P37 THE IMPACT OF COMORBID ASTHMA ON OBSTRUCTIVE SLEEP APNOEA OUTCOMES

A Bulbul, N Ramchander, P Senior, A Bikov. *Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.198

Background Asthma and obstructive sleep apnoea (OSA) are common disorders which can complicate each other. However, whilst OSA can worsen asthma control and exacerbation rate, the evidence is less strong how asthma and their medications affect insomnia, daytime sleepiness and common comorbidities associated with OSA.

Aim The aim of this service evaluation project was to understand the impact of asthma on OSA outcomes.

Methods We analysed the results of 261 patients with OSA who attended our service. One hundred and eight of these patients had asthma, their medications included inhaled corticosteroids (ICS) in 99, long-acting beta agonist (LABA) in 82, long-acting muscarinic antagonists (LAMA) in 41, short-acting beta agonist (SAB) in 100, and montelukast in 26 cases. Symptoms and comorbidities were compared with logistic regression adjusted for age, sex, body mass index and apnoea-hypopnoea index between the groups.

Results Patients with OSA and asthma had similar prevalence of comorbidities as patients with OSA but without asthma. Their Epworth Sleepiness Scale (ESS) and insomnia symptoms did not differ either (all $p>0.05$). Patients taking montelukast commonly complained about parasomnia (62 vs. 31%, $p=0.03$) and insomnia (70 vs. 39%, $p=0.03$) symptoms. Patients taking LABA had higher ESS (12.3±5.3 vs. 10.8±6.4, $p=0.02$) and patients taking LAMA had higher rates of anxiety (33 vs. 20%, $p=0.03$). Taking ICS or SABA did not affect the outcomes.

Conclusions Adjusted for relevant covariates, asthma in general does not affect outcomes of OSA. However, the relationship between some asthma medications and symptoms as well as comorbidities warrants further analysis.

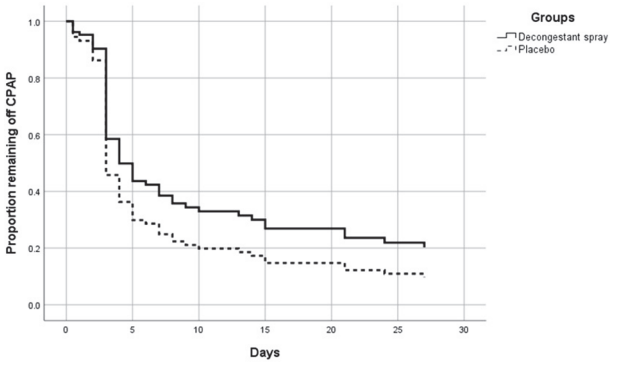
P38 DECONGESTANTS IN OBSTRUCTIVE SLEEP APNOEA (DOSA): RANDOMISED CONTROLLED TRIAL OF NASAL DECONGESTANTS VERSUS PLACEBO TO PROLONG TREATMENT-FREE PERIODS FROM CONTINUOUS POSITIVE AIRWAY PRESSURE THERAPY IN MILD TO MODERATE OBSTRUCTIVE SLEEP APNOEA

[1]JWS Davidson, [2]CD Turnbull, [3]EL Hedley, [2]JR Stradling, [2]NM Rahman, [1]JCT Pepperell. *[1]Somerset Lung Centre, Musgrove Park Hospital, Taunton, UK; [2]Oxford Centre for Respiratory Medicine, Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [3]Oxford Respiratory Trials Unit, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.199

Introduction Obstructive sleep apnoea (OSA) is a highly prevalent condition characterised by repetitive episodes of complete or partial upper airway obstruction during sleep. Continuous positive airway pressure (CPAP) is an effective treatment for OSA. However, many CPAP users wish to take breaks from treatment. On CPAP withdrawal, 10% of patients remain OSA-free for two weeks without treatment.[1] The DOSA study investigated whether decongestant sprays could prolong the OSA-free period, facilitating a pause in CPAP treatment.

Methods A double-blinded randomised controlled trial was conducted at two UK sleep clinics, recruiting participants with



Abstract P38 Figure 1 Time until return to CPAP event comparing nightly use of a decongestant nasal and throat spray versus placebo in patients with mild-moderate OSA withdrawing from established CPAP therapy

mild to moderate OSA (4% oxygen desaturation index, 4% ODI 15–40 events per hour) who were established CPAP users. Eligible participants were randomised to either a decongestant spray (Xylometazoline 0.1%) or a placebo. Participants discontinued CPAP therapy and were monitored with nightly oximetry recordings. Participants returned to CPAP if they recognised significant symptoms, had three consecutive nights of oximetry data identifying moderate OSA, or completed 28 nights off CPAP therapy. The primary outcome was the number of nights before returning to CPAP therapy.

Results 87 participants completed the study. Their mean age was 61 years, 78% were male and the mean 4%ODI was 21.5 (SD 4.3). The time until the CPAP return event was longer in participants using the decongestant spray than in the placebo group, although this did not meet statistical significance (Hazard ratio 0.69 (95%C.I 0.47–1.13, P=0.14). The decongestant spray group managed a mean of 11.2 nights (8.0–14.6) before returning to CPAP versus 7.8 nights (5.2 - 10.2) in the placebo group. 24% of the decongestant group completed 28 nights off CPAP without return of OSA compared to 12% in the placebo group.

Conclusion Decongestant sprays may have a role in delaying the return of OSA symptoms when CPAP therapy is withdrawn for short periods. The potential benefits of decongestant sprays in managing OSA during breaks from CPAP therapy warrant further investigation to confirm their efficacy and explore their use in clinical practice.

REFERENCE

1. Rossi VA, *et al. Is continuous positive airway pressure necessarily an everyday therapy in patients with obstructive sleep apnoea? European Respiratory Journal*, 2014;**43**(5):1387–1393.

P39 THE PLACEBO EFFECT OF MANDIBULAR ADVANCEMENT DEVICES

[1]MA Pittman, [2]DA Amran. *[1]Kings College Hospital, London, UK*; *[2]Southend Hospital, Southend on Sea, UK*

10.1136/thorax-2024-BTSabstracts.200

Background One of the principal aims of treating obstructive sleep apnoea (OSA) is to improve symptoms, particularly excessive daytime sleepiness. Both in the research setting, and in clinical practice, the Epworth sleepiness score (ESS) is used to assess response to interventions, but as a subjective measure it is susceptible to the placebo effect. This study seeks to estimate the placebo effect of mandibular advancement devices (MAD) in the management of OSA.

Methods Studies were identified that included a sham or non-protruding device for OSA, and reported pre and post device ESS. Weighted mean change in ESS was determined for active and sham MAD.

Results Seven studies were identified, with 185 participants and an average weighted improvement in ESS of 1.8 for sham devices.

Discussion At a population level, for any new mandibular advancement device for obstructive sleep apnoea, an effect size resulting in an improvement in Epworth sleepiness score of at least 1.8 points should be regarded as the minimum, for such a device to be considered to have performed better than placebo.

Abstract P39 Table 1 Change in ESS with active and sham MAD

Study	Active Device		Sham Device	
	N =	ESS change	N =	ESS change
Hans 1997	12	-3.8	12	-0.5
Johnston 2002	10	-2.29	10	-1.34
Gotsopoulos 2002	73	-4	73	-2
Blanco 2005	12	-14.7	12	-5.1
Petri 2008	27	-3.3	25	-1.2
Aarab 2010	17	-0.7	17	+0.1
Andren 2013	36	-4.3	36	-2.1
Weighted totals	187	-4.2	185	-1.8

REFERENCES

1. Hans M, *et al.* Comparison of two dental devices for treatment of obstructive sleep apnea. *Am J Orthod Dentofacial Orthop* 1997;**111**(5):562–70.
2. Johnston C, *et al.* Mandibular advancement appliances and obstructive sleep apnoea. *Eur J Orthod* 2002;**24**(3):251–62.
3. Gotsopoulos H, *et al.* Oral appliance therapy improves symptoms in obstructive sleep apnea. *Am J Respir Crit Care Med* 2002;**166**(5):743–8.
4. Blanco J, *et al.* Prospective evaluation of an oral appliance in the treatment of obstructive sleep apnea syndrome. *Sleep Breath* 2005;**9**(1):20–5.
5. Petri N, *et al*. Mandibular advancement appliance for obstructive sleep apnoea. *J Sleep Res* 2008;**17**(2):221–9.
6. Aarab G, *et al.* Effects of an oral appliance with different mandibular protrusion positions at a constant vertical dimension on obstructive sleep apnea. *Clin Oral Investig* 2010;**14**(3):339–45.
7. Andrén A, *et al.* Effects of treatment with oral appliance on 24-h blood pressure in patients with obstructive sleep apnea and hypertension. *Sleep Breath* 2013;**17**(2):705–12.

P40 ACCESS TO NHS FUNDED MANDIBULAR ADVANCEMENT SPLINTS FOR OSA

[1]SD West, [2]T Quinnell, [3]B Cooper, [4]G Gibbons. *[1]Newcastle upon Tyne NHS Foundation Trust, Newcastle, UK*; *[2]Royal Papworth University Hospital, Cambridge, UK*; *[3]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK*; *[4]OSA Alliance, UK*

10.1136/thorax-2024-BTSabstracts.201

NICE Guideline NG202 approved Mandibular Advancement Splints (MAS) for the treatment of Mild OSAHS with symptoms that affect usual daytime activities and moderate/severe OSAHS in people unable to tolerate or declining CPAP. It is challenging to access NHS-funded MAS in the UK.

Methods We wanted to establish whether UK sleep services can access MAS as an NHS-funded treatment option for OSA or not. We sent a short questionnaire to the sleep centre lead from a list held by the Sleep Apnoea Trust in June 2024.
Results We had replies from 18 Sleep Centres in England and Scotland: 89% said it would be important for their sleep service to be able to refer patients to a Dental or Maxillo-Facial colleague for NHS-funded MAS. However 11/18 centres are currently unable to refer patients for this, and 7/18 reported they could do this. Of the centres who could refer, this was for both Mild OSA and for Moderate or Severe OSA: one centre specified only if failed CPAP. Of the 7 centres who could refer, 5 said this was for a titratable MAS.

Of all the centres, 10 recommend patients to buy 'off the shelf'/commercial MAS, for reasons including: OSA (6), simple snoring (2), to try prior to dental referral (1), whilst waiting for dental MAS (1); one centre sends these to patients.

The estimates of how many MAS referrals are made or MAS purchases are recommended each year by centres are shown in the table, this is a proportion of 4–8% of all sleep studies.
Conclusions Whilst the majority of Sleep centres say it is important to be able to refer patients with OSA for NHS-funded MAS, 61% of respondents said they did not have a pathway that allowed this. The proportion of patients who might need this therapy is low, estimated at 4–8% of all OSA sleep studies.

P41 PHENOTYPES AND CLINICAL OUTCOMES OF PATIENTS WITH CENTRAL SLEEP APNOEA. A SINGLE CENTRE SERVICE EVALUATION PROJECT

[1]J Croydon, [2]H Bandara, [2]M Mascareno Ponte, [2]A Bentley, [2]A Bikov. *[1]Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK; [2]University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.202

Background Central sleep apnoea (CSA) syndromes comprise 8 groups of diseases that have different physiological features and clinical outcomes. Yet, guidelines on CSA management are extrapolated from evidence on CSA associated with heart disease. The aim of the service evaluation project was to understand the demographics and clinical characteristics of patients with CSA treated at the sleep and long-term ventilation services at Wythenshawe Hospital, Manchester University NHS Foundation Trust.
Methods We assessed 49 patients who were diagnosed with CSA between May 2018 and February 2024. Data were obtained from the in-hospital electronic patient records and the Greater Manchester Care Records.
Results Fourteen patients had CSA due to heart disease (group 1), 7 due to a central nervous system disease (group 2), 14 due to medications (group 3), 10 patients had primary CSA (group 4) and four patients had treatment-emergent CSA (group 5). Patients in group 1 tended to be older (67±18, 61 ±6, 51±14, 54±16 and 59±16 years, p=0.056, groups 1–5, respectively) and had significant male predominance (86%, 23%, 50%, 90% and 75%, p=0.023). Patients in groups 2 and 3 had the highest apnoea-hypopnea index (45±20, 64 ±51, 65±32, 35±18, 17±7, p=0.018). There was no difference in the Epworth Sleepiness Scale or the prevalence of respiratory, metabolic or psychiatric comorbidities between the groups (p>0.05). Mortality was the highest in group 2 (21%, 43%, 0%, 0% and 25%, p=0.047). However, using stepwise logistic regression analysis, mortality related to the presence of ischaemic heart disease (p=0.016) and age (p=0.072) rather than the type of CSA.
Discussion Non-cardiac CSA comprise a large proportion of central sleep apnoea syndromes and they show different clinical characteristics. Due to their relatively low prevalence, large-multicentre observational studies are warranted to understand their clinical impact. This would form the basis for randomised controlled trials, thereby enabling evidence to be built to further inform treatment strategies.

'Alice's Adventures in Inhalerland' – Considering the device and the environment in asthma

P42 SUSTAINABLE CARE: WHICH PEOPLE WITH ASTHMA ARE OFFERED A LOWER CARBON INHALER DEVICE BY CLINICIANS AND WHAT STOPS THEM WANTING TO SWITCH?

[1]G d'Ancona, [2]L Piggott, [3]A Francis, [3]A Cumella, [3]S Walker, [2]BD Kent. *[1]Guy's and St Thomas' NHS Foundation Trust, London, UK; [2]Trinity College Dublin, Dublin, Ireland; [3]Asthma and Lung UK, London, UK*

10.1136/thorax-2024-BTSabstracts.203

Appreciation of the need to use the lowest global warming potential (GWP) therapies in healthcare is increasing. In the UK, most inhalers used are metered dose inhalers (MDIs), however dry powder inhalers (DPIs) have a markedly lower GWP. Hence, NHS clinicians have been encouraged to offer patients device switches where clinically feasible, but we know very little about which patients are being offered a device switch or why they may decline a switch.

The 2023 annual online Asthma + Lung UK survey invited people with lung diseases to report upon many aspects of their respiratory care, including disease control and interaction with healthcare providers. We compared the demographic, economic and clinical factors of respondents with asthma who had and who had not been offered a switch from MDI to DPI.

9960 people with asthma responded. 7059 (70.9%) were currently on or had recently received MDI therapy, of whom

Abstract P42 Figure 1 An illustration of patient reasons for declining MDI to DPI switch

3753 (53.2%) had been offered a switch to DPI. There were no differences in gender, age, race, or income between those who had and had not been offered a switch. Those offered a DPI were more likely to have been aware of the carbon impact of inhalers (72% vs 53.2%*), to report uncontrolled asthma (61% vs 54.1%*), have had unscheduled healthcare (27.4% vs 21.2%*) or required >2 courses oral corticosteroids (27.6% vs 21.6%*) in the previous year (all *p<0.001). Only 432 (11.5%) opted not to change inhaler: 41% were happy with current inhalers, 30% questioned DPI efficacy, 24% feared disrupting their self-management routine, 6% doubted the environmental impact of MDIs, 5% didn't think DPIs were safe. 120 free text responses were reviewed using thematic analysis methodology and are represented in figure 1.

UK asthma patients offered a switch to a lower GWP inhaler are more likely to already be aware of inhaler-related carbon emissions, and have worse asthma control with greater healthcare utilisation. Those who choose not to switch did so because they liked their MDI, were unconvinced of DPI efficacy and safety: strategies to address the carbon footprint of inhalers must consider and address patient beliefs and preferences.

P43 GREENHOUSE GAS EMISSIONS ASSOCIATED WITH SEVERE ASTHMA ALONG THE CARE PATHWAY IN THE UNITED KINGDOM

[1]TN Tran, [2]A Wilkinson, [3]M Khezrian, [3]E Rapsomaniki, [3]S Patel, [3]K Rhodes, [3]A Menzies-Gow, [4]H Rupani, [5]JK Quint. [1]*BioPharmaceuticals Medical, AstraZeneca, Gaithersburg, USA*; [2]*Department of Respiratory Medicine, East and North Hertfordshire NHS Trust, Stevenage, UK*; [3]*BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK*; [4]*Department of Respiratory Medicine, University Hospital Southampton NHS Foundation Trust, Southampton, UK*; [5]*Faculty of Medicine, National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.204

Objectives Describe the greenhouse gas (GHG) emissions associated with severe asthma (SA) care in the United Kingdom (UK).

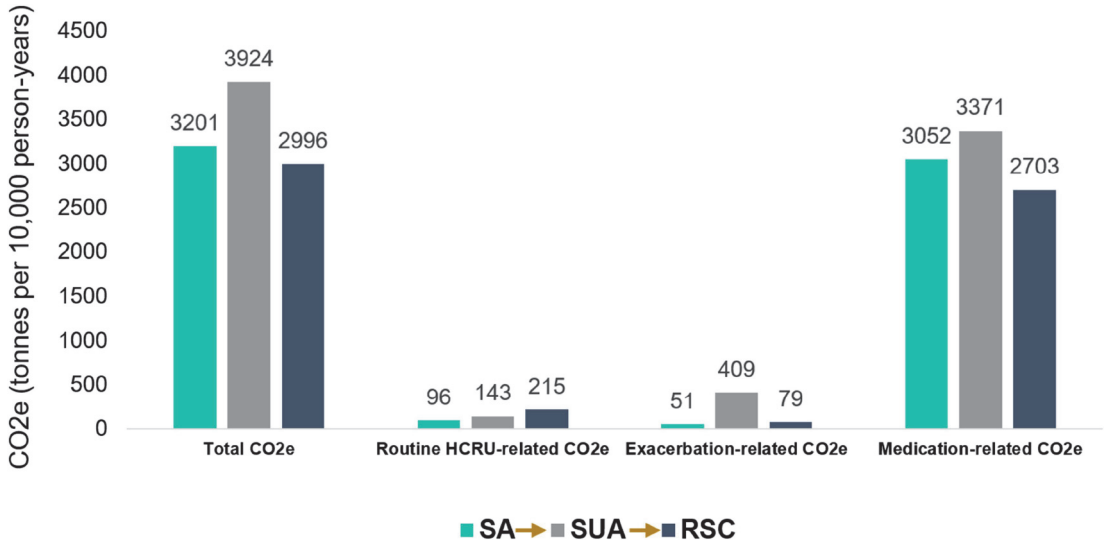
Methods A retrospective observational study using routinely collected medical records extracted from Clinical Practice Research Datalink Aurum, Hospital Episode Statistics and CO_2 Equivalent Emissions data.[1] We included patients ≥12 years-old with a validated asthma diagnosis code from 01/01/2007-31/03/2022. People with SA were defined according to their asthma medications and index date was the date of the first high-dose inhaled corticosteroids prescription with another controller medication. Patients were reclassified with severe uncontrolled asthma (SUA) after >=2 exacerbations (per ERS/ATS definition) and with having regular specialist care (RSC) if they had >=2 respiratory specialists visits per year. GHG emissions were quantified as carbon dioxide equivalents (CO_2e) tonnes per 10,000 person-years, (i) overall, related to (ii) asthma-related healthcare resource utilisation (HCRU), (iii) exacerbations and (iv) asthma medications calculated based on inhaler device and other asthma treatments.

Results 7,163 SA patients who transitioned to SUA and then to RSC were included (mean [standard deviation] age 50.5 [16.8], 69% female). The median [interquartile range] time for transition from SA to receiving RSC was 2 [1,4] years. Total GHG emissions for SUA increased and was approximately 20% higher than SA. Following transition to RSC, total CO_2e dropped around 24% with exacerbation-related and medication-related GHG emissions 5.2-fold and 1.2-fold lower respectively under RSC than SUA. The greatest relative reduction was seen in exacerbation-related GHG emissions following transition to RSC (figure 1).

Conclusions RSC for patients with severe asthma is known to improve patient outcomes.[2] Our findings suggest it could also reduce asthma care-related GHG emissions.

REFERENCES

1. Fulford B, *et al. Sustainability* 2022;**14**:7106. https://doi.org/10.3390/su14127106.
2. Redmond C, *et al. Eur Respir J*. 2022;**15**;60(6):2200660. https://erj.ersjournals.com/content/60/6/2200660.long



Abstract P43 Figure 1 Greenhouse gas emissions for Severe Asthma (SA) patients who transitioned to Severe Uncontrolled Asthma (SUA) then received Regular Specialist Care (RSC) in the UK (N=7,163). Total CO_2 emissions, Routine HCRU–related CO_2 emissions; Exacerbation-related CO_2 emissions and Medication-related CO_2 emissions in tonnes per 10,000 person-years

P44 SUSTAINABLE CARE: WHAT ARE THE CHARACTERISTICS OF PEOPLE WITH ASTHMA WHO SUCCESSFULLY SWITCH TO LOW CARBON INHALER DEVICES?

[1]G d'Ancona, [2]L Piggott, [3]A Francis, [3]A Cumella, [3]S Walker, [2]BD Kent. *[1]Guy's and St Thomas' NHS Foundation Trust, London, UK*; *[2]Trinity College Dublin, Dublin, Ireland*; *[3]Asthma and Lung UK, London, UK*

10.1136/thorax-2024-BTSabstracts.205

Inhalers are responsible for much of the carbon footprint of respiratory therapies. Metered Dose Inhalers (MDIs) lead to greater carbon emissions than Dry Powder Inhalers (DPIs) - switching from MDIs to DPIs where feasible is a stated priority of the NHS. However, little is known about what patient factors are associated with a successful or unsuccessful inhaler switch.

Asthma + Lung UK asked people with a respiratory disease to complete a wide-ranging online survey in spring 2023. Participants were asked if they had been offered the opportunity to switch to a DPI, and if so if it had been successful. We compared demographic, economic and clinical factors between people with asthma who successfully switched versus those who experienced an unsuccessful switch (i.e. changed back to an MDI).

9,960 people with asthma replied (77.9% female; age 59.9 ±13.0). 3,753 were offered a switch from MDI to DPI, of whom 3,321 (88.5%) accepted. The change to DPI was successful in 2,126 (64% of switchers). Demographic and economic factors were not associated with a successful switch, however, unsuccessful switchers were more likely to have uncontrolled asthma, with increased exacerbation frequency and healthcare utilisation (see table 1). Awareness of the carbon impact of MDIs was not different between the two groups (70% vs 71.6%).

In this large UK survey of people with asthma, a switch from MDI to equivalent DPI therapy was accepted by a third of those offered it, and was successful in the majority of those who attempted it. Unsuccessful switches were associated with subjective and objective markers of poor disease control, but not socio-demographic factors.

P45 MOVING TOWARDS 'GREENER' INHALERS: ARE PATIENTS WILLING TO CHANGE?

R Wollerton, A Abdelaziz, A Crapnell, DJ Waine, S Cleary, D Derry. *University Hospitals Plymouth NHS Trust, Plymouth, UK*

10.1136/thorax-2024-BTSabstracts.206

Background NHS England aims to achieve net zero emissions for the emissions it controls by 2040. Encouraging the use of lower carbon, 'greener', inhalers has been identified as a priority for this, as inhalers contribute 3% of the NHS carbon footprint. Patients with asthma have been shown to prefer inhalers that are convenient to use, and recent studies have shown they may favour inhalers with more environmentally-friendly credentials. We sought to measure how willing patients with asthma and chronic obstructive pulmonary disease (COPD) are to change, and to record the relative importance of different factors that may affect inhaler choice.

Method We conducted survey of inpatients with asthma and COPD at University Hospitals Plymouth (UHP) NHS Trust. The survey consisted of 16 multiple choice questions, which asked patients about their willingness to change inhalers in different scenarios, and a 'free text' question to enable participants to comment on inhaler choice.

Results 104 inpatients at UHP responded to the survey; 72 with COPD and 32 with asthma. 61 out of 104 patients (59%) were not aware that some inhalers are better for the environment than others, but the majority, 91% (95/104 patients), reported being willing to change to a 'greener' inhaler. Symptom control was the top priority for patients. Environmental impact was ranked second place, with 28/104 patients (27%) willing to risk worsening symptoms in order to try a 'greener' inhaler. Ease of use and cost to NHS were ranked 3rd and 4th respectively. A minority (3/104) of patients would not be willing to change inhalers under any circumstances.

Conclusions Our patients showed willingness to change to 'greener' inhalers. Patients with asthma appeared to be the most willing to change inhalers, particularly if it positively impacted the environment and the NHS. In the 'free text'

Abstract P44 Table 1 Characteristics of participants who switched from MDI to DPI

	Successful switch N = 2,126	Unsuccessful switch N = 1,195	P value
Female	1,625 (76.4%)	956 (80%)	
Caucasian	2,028 (95.4%)	1,142 (95.6%)	
Age	61.1±12.3	59.1±12.9	
Aware of inhaler carbon	1,522 (71.6%)	836 (70%)	
Low income (<20k)	639 (30.1%)	341 (28.5%)	
Pollution makes worse	1,278 (60.1%)	809 (67.7%)*	<0.001
Unplanned care last year	538 (25.3%)	380 (31.8%)*	<0.001
[3]2 courses OCS last year	529 (24.9%)	388 (32.5%)*	<0.001
ED attendance last year	198 (9.3%)	162 (13.6%)*	<0.001
Subjectively worse last year	1,246 (58.6%)	782 (65.4%)*	<0.001
RCP questionnaire uncontrolled	1,223 (57.5%)	791 (66.2%)*	<0.001

Results presented as number of patients (%) or mean ± SD

question many patients with COPD reported apathy towards the environment, citing the probability that changes in the environment won't affect them. Discussions about the environmental impact of inhalers should be part of the shared decision making for inhaler choice, and our survey suggests our patients are ready to have these conversations.

P46 IN VITRO PERFORMANCE OF A COMBINATION BECLOMETHASONE DIPROPIONATE/SALBUTAMOL SULPHATE PRESSURISED METERED DOSE INHALER FORMULATED WITH A LOW GLOBAL WARMING POTENTIAL PROPELLANT

S Dissanayake, R Muller-Walz, A Brindley. *Senari Pharma, London, UK*

10.1136/thorax-2024-BTSabstracts.207

Background Inhaled short-acting β2-agonists (SABAs) have long been the standard of care relievers in asthma. However, most patients rely excessively on relievers and underuse maintenance inhaled corticosteroids (ICS) – predisposing to undertreatment or SABA-induced worsening of airway inflammation, poor asthma control and exacerbation risk. Relievers containing anti-inflammatory ICS mitigate such risks and are advocated in asthma management guidelines.

Aims and Objectives To develop a combination beclomethasone dipropionate (BDP)/salbutamol (S) reliever in a pressurised metered dose inhaler (pMDI) incorporating a low global warming potential propellant (LGWP), fine BDP and coarser S particles, and delivering high fine particle doses (FPDs). Targets for delivered dose (DD), FPD (i.e., the dose fraction comprised of particles <5 μm in diameter) and particle size (expressed as Mass Median Aerodynamic Diameter [MMAD]) were based on assessments of marketed monoproducts (Qvar® RediHaler® and Proventil® HFA – both formulated with HFA134a propellant). However, due to the different dosage forms (press and breathe pMDI versus breath-actuated inhaler), a 5–10% increase in BDP FPD was targeted for the test formulations versus Qvar RediHaler, whilst an increase in BDP MMAD was accepted in view of the lower vapour pressure, hence atomisation force, of the LGWP versus HFA134a.

Methods Test formulations were based on initial experiments which examined the impact of formulation composition on pharmaceutical performance. A next generation impactor (NGI) was used to determine FPD and MMAD whilst DD was ascertained with a dosage unit sampling apparatus (DUSA), respectively.

Results

Conclusions The FPD, DD, and MMAD results of the test combination formulations were on/near-target based on monoproduct assessments of Qvar RediHaler and Proventil HFA, despite the change of propellant and combination of two drugs into one formulation.

P47 INHALER DEVICE USE AND CARBON FOOTPRINT DISPARITIES IN NORDIC COUNTRIES AND THE UK

[1,2]V Vartiainen, [3]C Janson, [4,5]H Hisinger-Mölkänen, [6]S Lähelmä, [7,8]L Lehtimäki, [9]A Wilkinson. *[1]Heart and Lung Center, Helsinki University Hospital, Helsinki, Finland; [2]Faculty of Medicine, University of Helsinki, Helsinki, Finland; [3]Respiratory, Allergy and Sleep Research, Department of Medical Sciences, Uppsala University, Uppsala, Sweden; [4]University of Helsinki, Helsinki, Finland; [5]Helsinki University Hospital, Helsinki, Finland; [6]Orion Corporation, Espoo, Finland; [7]Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland; [8]Allergy Centre, Tampere University Hospital, Tampere, Finland; [9]Department of Respiratory Medicine, East and North Hertfordshire NHS Trust, Stevenage, UK*

10.1136/thorax-2024-BTSabstracts.208

Background In asthma and COPD, inhalers are a significant contributor to treatment-related carbon footprint. Over the past decade, relative use of Dry Powder Inhalers (DPIs) has declined while the use of pressurised metered dose inhalers (pMDIs) has increased in Europe. This study explores inhaler device utilization and carbon footprint in the Nordics and the UK.

Methods The sold inhaler doses were calculated based on DPIs and pMDI volume sales data for Q42020 – Q32023 extracted in 2024 from the IQVIA MIDAS® Quarterly information service (Obtained under license from IQVIA. Copyright IQVIA. All Rights Reserved.) for Norway, Denmark, Finland, Sweden and the UK. From sales data we calculated carbon footprint and device use patterns for each country.

Results 13% of inhaler doses in UK were sold in DPIs while the proportion was 37% in Norway, 55% in Denmark, 53% in Finland, and 69% in Sweden. In Nordics 44–50 % of the doses sold in pMDI devices is salbutamol while in UK it amounts to 63%. Finland exhibits the highest salbutamol use in DPIs suggesting that Finnish physicians have a high confidence in DPI devices.

The UKs carbon footprint per capita for inhaler usage was 18,6 kg CO_2e while in the Nordics it was roughly one third of that falling between 4,8 CO_2e in Denmark and 6,2 CO_2e in Norway. The main driver for carbon footprint was the DPI/pMDI ratio, but in addition to high DPI/pMDI ratio

Abstract P46 Table 1 FPD, DD and MMAD for test combination and reference monoproduct formulations

	Fine particle dose (FPD)		Delivered dose (DD)		Mass median aerodynamic diameter (MMAD)	
	BDP	S	BDP	S	BDP	S
Proventil HFA	-	43.8** (39.8 – 47.5)	-	90*	-	2.40** (2.30 – 2.50)
Qvar RediHaler	19.2** (17.6 – 20.0)	-	40*	-	0.85** (0.81 – 0.88)	-
Test formulation 1	22.1	44.2	39.0	89.2	1.26	2.36
Test formulation 2	22.1	45.9	39.4	93.6	1.39	2.54

* Label claim
** Mean (range)

Denmark had the lowest inhaler total use resulting in the lowest carbon footprint.

Conclusions The use patterns in UK indicate preference for pMDIs and general over reliance in SABA for treatment of asthma despite the local and international guidelines. The shifting trends necessitate ongoing efforts to align inhaler choices with both clinical and environmental goals in partnership with the patients.

P48 PAY TO PUFF GREEN: CAN NHS INCENTIVES CHANGE THE PRESCRIBING PRACTICES?

[1]A Howell, [2]A McGrogan, [2]M Jones. [1]*University of Oxford, Oxford, UK*; [2]*University of Bath, Bath, UK*

10.1136/thorax-2024-BTSabstracts.209

Introduction and Objectives Metered Dose Inhalers (MDIs) account for 3% of NHS carbon emissions. In April 2022, NHS England introduced two indicators focussed on reducing avoidable carbon emissions from inhalers. This 12-month payment-by-results scheme rewarded Primary Care Networks (PCNs) for reduction in:

- MDI preventers (C3)
- Salbutamol mean carbon emissions (by increase in the use of SABA DPI (C1) and lower carbon SABA MDI (C2))

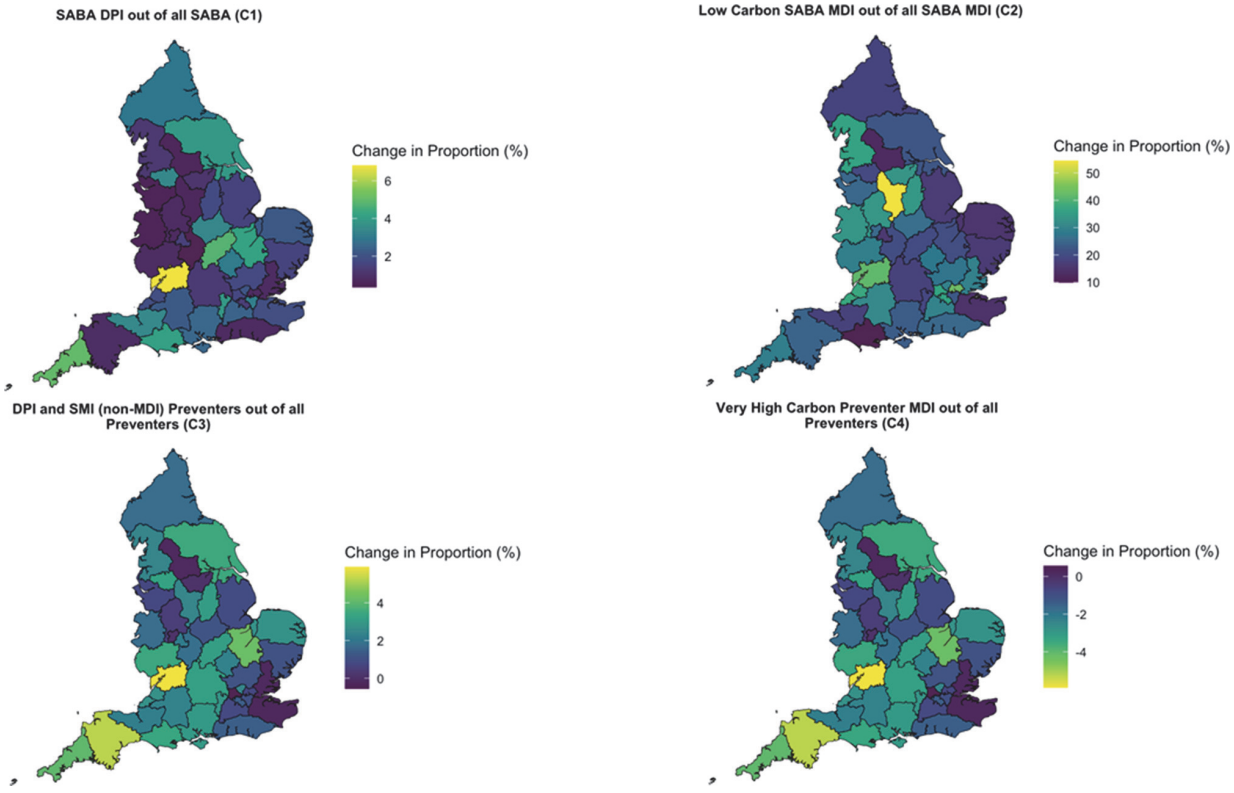
Indicators C1, C2 and C3 were added to the newly created national dashboards along with C4, which focuses on reducing high-carbon preventer MDIs.

Methods This project analysed routinely collected national prescribing data to assess the impact of the financial incentive and the introduction of dashboards on environmental inhaler prescribing. Changes in prescriptions issued between January-March 2022 versus January-March 2023 were calculated for all four comparators. Linear regression models were performed with potential predictors, such as asthma and COPD prevalence, GP electronic system, list size, ICS (Integrated Care System), PCN, appointment mode and population deprivation index.

Results Comparators C1 and C3 showed minimal positive changes in prescribing, with mean increases of 0.64 and 1.73 DPI inhalers per 1,000 patients, respectively. Comparator C2, involving salbutamol MDI swaps (mainly Ventolin to Salamol), showed significant improvement, with 8.11 new inhalers prescribed per 1,000 patients. The reduction in C4, which was not supported by the payments scheme, was unsuccessful, showing a slight increase of 0.19 inhalers per 1,000 patients, opposite to the expected direction. Absolute proportion change results did not differ significantly from the standardised inhaler numbers: 1.94% (C1), 25.68% (C2), 1.73% (C3) and -1.73% (C4).

Among the predictors analysed in linear regressions, only the PCN and ICS demonstrated high performance and significance across C1-C4 (R-squared= 0.61, $p<0.001$ for C2). The two predictors had perfect multicollinearity.

Conclusions The financial incentive had negligible effect on environmental prescribing changes for comparators requiring face-to-face patient education on new inhaler techniques (C1, C3,C4). When the inhaler swap did not necessitate introducing a new device and patient education (C2), the incentive was more effective. Despite the equal availability of the incentive, its uptake varied across England, potentially due to differences in guidelines and formularies (figure 1).



Abstract P48 Figure 1 Change in the average proportion of inhalers prescribed in January-March 2022 vs January-March 2023 per Integrated Care System in England

P49 DIGITAL MONITORING OF INHALER USE IS ASSOCIATED WITH REDUCED SHORT-ACTING BETA-AGONIST USE IN AIRWAYS DISEASE

[1]S Ananth, [2]S Alpi, [2]T Antalffy. [1]*London North West University Healthcare NHS Trust, London, UK*; [2]*Smart Respiratory, London, UK*

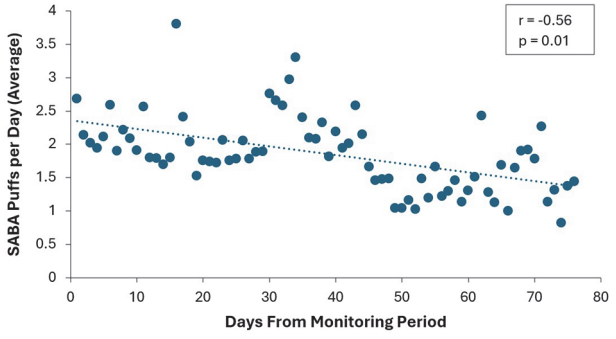
10.1136/thorax-2024-BTSabstracts.210

Introduction and Objectives Digital health technology is increasingly used by patients and clinicians to monitor disease activity and medication adherence. Digital inhaler dose counters can be used by patients and clinicians to monitor inhaler use in airways disease. It is unclear whether the use of this technology leads to changes in inhaler usage. We aimed to assess whether the use of a digital dose counter leads to a reduction of short-acting beta-agonist (SABA) use in asthma and COPD.

Methods The digital dose counter is connected to the patient's metered dose inhaler. Recordings of inhaler actuation are automatically uploaded to a smartphone application which can be reviewed by the user and their clinicians. A survey was sent to all users of the digital dose counter to evaluate demographics and disease severity. SABA use was analysed for patients with asthma or COPD, and with at least 14 days of active use of the digital dose counter. Inhaled corticosteroid (ICS) use was also monitored in patients using ICS as maintenance treatment only (not maintenance and reliever treatment).

Results 130 survey responses were received- the average age was 54.6 ± 15.6 years and respondents reported 2.9 ± 4.0 exacerbations of their airways disease in the last year. In a 90-day monitoring period, the average number of SABA puffs per day fell from 2.7 to 1.4 (r = -0.56; P = 0.01) (figure 1). The average number of active users of the SABA dose counter fell from 169 to 45. ICS use was highly variable, with users inhaling more than 4 puffs of ICS per day on 18.6% of the monitoring period.

Conclusions Use of a digital inhaler dose counter was associated with a reduction of SABA use in a 90-day monitoring period, albeit with a reduction in the number of active users of the inhaler counter. ICS is variable, even if prescribed as a maintenance inhaler, and overuse is an important issue in airways disease. Research is needed into why use of digital inhaler dose counters falls over an extended monitoring period.



Abstract P49 Figure 1 Average SABA puffs per day in the monitoring period (first 14 days of the monitoring period not included)

P50 DEVELOPING A VALIDATED E-INHALER TECHNIQUE COMPETENCY TEST FOR HEALTHCARE PROFESSIONALS

[1]A Hakim, [2]C Chen, [1]P Elston, [2]P Pfeffer. [1]*QMUL, London, UK*; [2]*Barts NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.211

Introduction Inhaler technique proficiency is crucial for the effective management of asthma and COPD. Despite the widespread use of inhalers, incorrect usage remains prevalent among healthcare professionals (HCPs), contributing to poor patient education and consequently poor disease control.[1] E-digital platforms offer an innovative approach to competency assessment, providing scalable, accessible, and standardised training. This feasibility study aims to evaluate the development of an e-inhaler technique competency test for HCPs using a standardised checklist.[2]

Methods A prospective pilot study to assess the feasibility of designing and moderating an e-inhaler competency test for HCPs using a standardised checklist (UK Inhaler Group[2]). An expert panel of respiratory physicians, respiratory pharmacists, nurses, medical educators and e-learning specialists was convened to moderate the e-inhaler technique competency test. The moderation process assessed standard of content and alignment of marking scheme with checklist.

Results A total of 23 inhaler technique videos, each illustrating a specific device, were developed and evaluated against a predefined set of inhaler errors. Nine individuals, encompassing a diverse range of professions—chest physicians, respiratory pharmacists, nurses, and medical educators—participated in internal or external moderation. Separately, five external experts independently validated the marking scheme for each video against the checklist. Of these 23 videos, ten met the appropriate standard based on the moderation process and against assessment data from external experts. Common reasons for video exclusion included poor recording quality, inability to competently identify device preparation or requirement for multiple doses, and ambiguity in marking scheme against checklist. Importantly, these ten videos represented commonly used metered dose inhalers (MDIs), dry powder inhalers (DPIs) and soft mist inhalers (SMIs).

Discussion This study demonstrated the feasibility of developing an e-inhaler technique competency test for HCPs. Future plans include standard setting using the modified Angoff process. Further work is recommended to refine the platform, address technical challenges, and explore long-term impacts on clinical practice.

REFERENCES

1. Plaza V, *et al*. Errors in the use of inhalers by health care professionals: a systematic review. *J Allergy Clin Immunol Pract* 2018;**6**(3):987–995.
2. UK Inhaler Group (2019). Inhaler Standards and Competency Document. Available at:https://www.ukinhalergroup.co.uk/uploads/s4vjR3GZ/InhalerStandardsMASTER.docx2019V10final.pdf (Accessed 28th June 2024).

P51 PEAK INSPIRATORY FLOW VIA EASYHALER DRY POWDER INHALER IN ADULTS BEFORE METHACHOLINE CHALLENGE TEST AND DURING BRONCHOCONSTRICTION

[1,2]V Vartiainen, [3,4]A Tikkakoski, [4,5]J Karjalainen, [6,7]LP Malmberg, [3,4]L Vuotari, [8]S Lähelmä, [8]U Sairanen, [8]M Vahteristo, [4,5]L Lehtimäki. [1]*Heart and Lung Center, Helsinki University Hospital, Helsinki, Finland*; [2]*Faculty of Medicine, University of Helsinki, Helsinki, Finland*; [3]*Clinical physiology and nuclear medicine, Tampere University Hospital, Tampere, Finland*; [4]*Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland*; [5]*Allergy Centre, Tampere University Hospital, Tampere, Finland*; [6]*Skin and Allergy Hospital, University of Helsinki, Helsinki, Finland*; [7]*Helsinki University Hospital, Helsinki, Finland*; [8]*Orion Corporation, Espoo, Finland*

10.1136/thorax-2024-BTSabstracts.212

Sufficient peak inspiratory flow (PIF) is needed for efficient drug delivery from dry powder inhalers. 99% of patients with asthma and COPD have been reported to achieve required 30 L/min with Easyhaler (EH), but there is limited data available during acute bronchoconstriction. Our aim was to study if patients achieve sufficient PIF via EH during bronchoconstriction.

Data was collected as part of a randomised clinical trial (NCT05084222). Participants who had ≥20% drop in FEV_1 in methacholine challenge (MC) test were included. Inspiratory flow profiles via EH (Salbutamol EH or Budesonide-formoterol EH) were recorded before the test and during reliever dosing with EH connected to a spirometer.

68% of the participants (N=120) were females, mean age 45 y (range 18–80) and FEV_1% pred. 88.7% (62–142). All participants achieved PIF of ≥30 L/min before MC test. During bronchoconstriction the proportion was 97% in Salbutamol EH group and 100% in Budesonide-formoterol EH group. There was only a small difference in mean (SD) PIF via Salbutamol EH (mono inhaler) before the test and during bronchoconstriction (53 L/min [9.4] and 51 L/min [10.5]). PIF via Budesonide-formoterol EH (combi inhaler) was 66 L/min (12.0) and 60 L/min (13.5), respectively. Inspiratory volumes were 2.04 L (0.85) before test and 2.00 L (0.73) during bronchoconstriction for Salbutamol EH, and 2.34 L (0.78) and 2.21 L (0.77), for Budesonide-formoterol EH.

The study showed that almost all patients can achieve PIF ≥30 L/min via EH during bronchoconstriction. Ability to generate a sufficient inspiratory flow is not limiting the use of EH DPI during acute obstructive event.

P52 PEAK INSPIRATORY FLOW RATEMEASUREMENT PRE AND POST INHALER TECHNIQUE OPTIMISATION ACROSS INHALER DEVICES

[1]RE De Vos, [1]J Longstaff, [2]M Sanders, [1]LG D'Cruz, [3]M Lomax, [1]T Brown, [1]AJ Chauhan. [1]*Research and Innovation Department, Portsmouth Hospitals University NHS Trust, Portsmouth, UK*; [2]*University of Hertfordshire, Hatfield, UK*; [3]*University of Portsmouth, Portsmouth, UK*

10.1136/thorax-2024-BTSabstracts.213

Background A key physiological parameter to consider when issuing an inhaler device and optimising technique is peak inspiratory flow rate (PIFR), which provides valuable insight into the inhaler users ability to generate the correct inspiratory flow rate to effectively deliver medication from the device.

Objectives

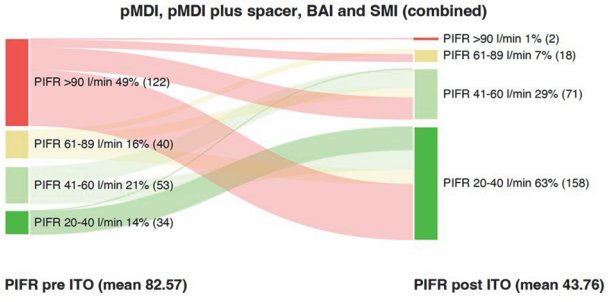
- To determine the proportion of patients achieving PIFR according to the 'suboptimal', 'optimal' and 'supraoptimal' display ranges on the In-Check G-16 DIAL™ before and after inhaler technique optimisation across inhaler device types.
- To correlate self-reported exacerbation frequency in the previous 12 months within each PIFR range across devices.

Methodology Across primary and secondary care, the inhaler technique of 587 adult inhaler users (females 58.4%) was observed (pMDI n=50, pMDI plus spacer n=57, Autohaler n=50, Easi-Breathe n=43, Respimat n=50, Breezhaler n=45, Accuhaler n=46, Ellipta n=41, Turbohaler n=33, Genuair n=42, Easyhaler n=46, NEXThaler n=39, Handihaler n=45). PIFR was measured using the In-Check device before and after inhaler technique optimisation by a respiratory specialist, with the dial set to the required resistance. Self-reported exacerbation frequency was recorded for each participant.

Results

- In pressurised metered dose, breath actuated and soft mist devices, only 34.1% achieved the optimal PIFR of 20–60 l/min (13.3% in the 20–40 l/min range and 20.7% in the 41–60 l/min range), which increased to 89.8% following inhaler technique optimisation (61.9% in the 20–40 l/min range and 27.8% in the 41–60 l/min range).
- In DPI devices, 43% achieved a PIFR of >60 l/min (adjusted to >30 l/min in high resistance devices), which increased to 96.1% post inhaler technique optimisation (18.3% in the 30–59 range and 77.7% in the 60–89 range).
- Distribution of exacerbations was not significant between the 'optimal' PIFR ranges compared to the 'suboptimal' or 'supraoptimal' PIFR ranges across all device types (p>0.5).

Conclusion This study demonstrates that all inhaler devices require assessment of PIFR as part of the inhaler technique optimisation process, as inhaler users consistently do not achieve optimal flow rate. Following inhaler technique



Abstract P52 Figure 1

optimisation, most inhaler users can achieve optimal PIFR, with focus during inhaler technique optimisation in metered dose inhalers on decreasing PIFR, and in dry powder devices on increasing PIFR.

P53 AN ACOUSTIC FLOW-RATE GUIDANCE SIGNAL COUPLED WITH A REAL-TIME FEEDBACK SMARTPHONE APPLICATION (CLIP-TONE SYSTEM) IMPROVES INHALER TECHNIQUE IN PMDI USERS

[1,2]CS Murray, [1]N Brooke, [3]M Sanders. *[1]The University of Manchester, Manchester, UK; [2]Manchester University Hospital NHS Foundation Trust, Manchester, UK; [3]University of Hertfordshire, Hatfield, UK*

10.1136/thorax-2024-BTSabstracts.214

Introduction Inhaler therapy is the main form of treatment for airway disease but inhaler technique is critical for drug delivery and efficacy. It is estimated that around 90% of pressurised metered dose inhaler (pMDI) users have poor inhaler technique and users require repeated training to optimise technique, which is time-consuming and costly. Inhaler flow rate and duration of inhalation are common mistakes. We hypothesised that the Clip-Tone system (CTS; Clement Clarke, UK; Clin-e-Cal, UK), a combined acoustic flow rate guidance signal and smartphone Application, giving real-time inhaler technique feedback, would lead to better and maintained pMDI technique compared with usual care (UC).

Methods Asthmatic patients (≥16yrs), on daily pMDI preventer treatment, were recruited from primary care. Inhaler technique was scored using a validated UK inhaler technique checklist (0–10) and then randomised to CTS or UC for the next 6 months. Repeated inhaler technique assessment was carried out at 1-, 3- and 6-months post randomisation. Inhaler technique was videoed at baseline and 6 months to allow duration of inhalation to be measured and for additional scoring by a blinded assessor. Reliever usage and ACQ6 were also collected at each visit.

Results 126 participants (mean age 44.2yrs, min 17yrs, max 79yrs; 29 male; Mean ACQ6 0.83) consented to the study and were randomised (65 CTS, 61 UC). 117 completed the study (59 CTS; 58 UC). Mean[95%CI] baseline inhaler score was similar in both groups (CTS: 5.06[4.60,5.52]; UC: 5.10 [4.64,5.56]; p=0.82). Inhaler scores improved significantly from 1 month, and were maintained to month 6, in CTS group (7.68 [7.33, 8.02]) compared with UC group (5.59 [5.17, 6.00]; p<0.001). Duration of inhalation increased significantly in the CTS group by a median of 1.84s, compared with 0.0s in the UC group (p<0.001). However, there was no significant difference between ACQ6 score or reliever use between the groups.

Conclusion The use of CTS may be a useful approach not only for initial training of pMDI users but for ongoing daily medication use, to maintain improved inhaler technique. In this small, short study, despite improving inhaler technique, no obvious improvements in asthma control were noted.

P54 EXACERBATION REDUCTION AND IMPROVED QUALITY OF LIFE IN ASTHMA WITH EXTRAFINE FORMULATION SINGLE-INHALER TRIPLE THERAPY (EFSITT): SIX-MONTH RESULTS OF THE TRIMAXIMIZE STUDY

[1]F Trinkmann, [2]V Bogoevska, [2]D Nachtigall, [3]R Russell, [4]C Suppli Ulrik, [5]W Pohl, [6]V Plaza, [7]A Bourdin, [2]C Fritz, [8]C Gessner. *[1]Department of Pneumology and Critical Care, Translational Lung Research Center, Heidelberg, Germany; [2]Chiesi GmbH, Hamburg, Germany; [3]King's College London, London, UK; [4]Department of Respiratory Medicine, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark; [5]Karl Landsteiner Institute for Clinical and Experimental Pneumology, Clinic Hietzing, Vienna, Austria; [6]Hospital de la Santa Creu i Sant Pau, Barcelona, Spain; [7]Hôpital Arnaud de Villeneuve, University of Montpellier, Montpellier, France; [8]Specialized Practice for Pulmonary Medicine, Leipzig, Germany*

10.1136/thorax-2024-BTSabstracts.215

Background The efficacy of efSITT consisting of beclometasone dipropionate/formoterol fumarate/glycopyrronium bromide has been confirmed in clinical trials. Study populations included uncontrolled asthma patients on medium- or high-dose inhaled corticosteroid and long-acting beta2-agonist (ICS/LABA) experiencing at least one exacerbation in the previous year. However, the impact of efSITT on exacerbations and health-related quality of life (HRQoL) in asthma patients remains to be assessed in a real-world setting.

Methods This non-interventional study observes asthma patients from Austria, Denmark, France, Germany, Spain and the United Kingdom for one to three years after being prescribed efSITT. Descriptive analyses of HRQoL evaluated by Mini Asthma Quality of Life Questionnaire (Mini AQLQ) and exacerbation rates were performed.

Results This interim analysis includes 1090 (63.3% female) patients, the majority (75.3%) having previously been treated with ICS/LABA (open or fixed). All included patients had at least one exacerbation in the last year (60% one, 38% two or more, 2% missing entries). Only moderate exacerbations were observed in 72.9%, only severe in 14.4%, both moderate and severe in 10.6% and mild or unknown in 2.0% with a mean exacerbation rate of 1.8/year. Mean Mini AQLQ score at baseline was 4.2 points. After 6 months of treatment exacerbation rate decreased by 1.7 (p<0.0001). The mean change in Mini AQLQ score from baseline was 0.8 points (p<0.0001), exceeding the minimal clinically important difference of 0.5 points.

Conclusions Exacerbation reductions and improvement in HRQoL were observed six months after switching to efSITT from dual and free triple combinations.

P55 WHY DO PEOPLE WITH LUNG CONDITIONS BUY INHALERS ONLINE? FINDINGS FROM A LARGE UK SURVEY

A Cumella, A Francis, M Zawieja, S Walker. *Asthma + Lung UK, London, UK*

10.1136/thorax-2024-BTSabstracts.216

Purchasing inhalers online is a relatively new option for people with respiratory conditions. Doing so breaks the

Abstract P55 Table 1 Demographic and healthcare usage information of those with lung conditions who purchase inhalers online and those who haven't

	Have purchased an inhaler online	Have not purchased an inhaler online
All respondents	523 (4.2%)	12001 (95.8%)
Respondents with asthma	333 (3.8%)**	8328 (96.2%)**
Respondents with COPD	264 (6.3%)***	3930 (93.7%)***
Average age	63.0	62.7
Male%	170 (32.6%)***	2808 (23.6%)***
Current smoker	65 (12.5%)***	683 (5.7%)***
Self-describe their general health as 'bad' or 'very bad'	147 (28.2%)**	2728 (22.8%)**
Respondents with asthma with uncontrolled asthma	259 (77.8%)***	5353 (64.3%)***
Had an annual review of their lung condition	399 (77.2%)**	9449 (81.7%)**
Used emergency care for their lung condition in past 12 months	198 (37.9%)***	3409 (28.4%)***

*p<0.05; **p<0.01; ***p<0.001

conventional route of prescribed inhalers via primary care and pharmacies. This also reduces monitoring of potential salbutamol inhaler overuse, which has patient safety implications. Research on the prevalence of purchasing inhalers online, and the motivations behind this behaviour is limited.

Between January-March 2024, Asthma + Lung UK ran an online survey of people with lung conditions in the UK, which received 12, 700 responses. 523 respondents (4.2% of 12,524 question responses) told us they had purchased an inhaler online. Further questions about frequency of purchase and motivations behind the purchase were asked to those who had purchased inhalers online. Chi square test were used for the variables listed in table 1 (with Wilcoxon test used for age).

A higher proportion of males, those with lower household incomes and current smokers bought inhalers online. Those who purchase inhalers online generally do so infrequently, with 47% (201/426) purchasing less often than once a year. Wanting to have a spare inhaler in case of an emergency was the most frequently cited reason for doing so (44%; 147/333), followed by not being able to get a GP appointment quick enough (27%; 89/333) and online purchasing being more convenient than going through their GP (25%; 83/333). Those who bought inhalers online had a higher rate of uncontrolled asthma,[1] a lower rate of receiving an annual review and a higher rate of using emergency care. This suggests a link between purchasing inhalers online and poorer outcomes.

These findings suggest a minority of people with lung conditions purchase inhalers online, and problems accessing care is a key driver of this behaviour. Improving asthma control levels through better adherence to inhaled corticosteroid inhalers may help reduce online inhaler purchases, which would assist GP monitoring of inhaler usage and prevent the undetected deterioration of symptoms.

REFERENCE

1. Global Initiative for Asthma (GINA). *2023 GINA Report: Global Strategy for Asthma Management and Prevention,* 2023. Accessed: https://ginasthma.org/2023-gina-main-report/.

'Into the Void' – ILD and sarcoid

P56 UK TERTIARY ILD CENTRE EXPERIENCE OF ANTIFIBROTIC RELATED ABNORMAL LIVER FUNCTION AND IMPACT ON PATIENT CARE

J Bradley, A Boland, TJT Sutherland, P Beirne. *Leeds Teaching Hospitals Trust, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.217

Introduction Leeds Teaching Hospitals Trust is a tertiary ILD service serving the areas of West Yorkshire, York and Harrogate. We prescribe antifibrotic medication for patients with IPF and PF-ILD, with liver function tests (LFT) monthly for 3 months for Nintedanib, 6 months for Pirfenidone, then ongoing 3-monthly monitoring. We aimed to evaluate the incidence, severity and impact on patient outcome of abnormal LFT, defined as ALT rise above the upper limit of normal (ULN).

Methods We performed a retrospective review of patients initiating antifibrotic medication between January and December 2022 using our electronic patient record. We reviewed ALT results for 1 year following drug initiation, documenting time on treatment, timing and extent of ALT rise, and impact on patient care. Rate of abnormal LFT was calculated by dividing the number of patients with abnormal LFT by the total days on treatment for all patients.

Results 225 patients started medication during the study period (134 IPF, 91 PF-ILD).

49 patients had abnormal LFT. No patients had a significant Bilirubin rise. Demographics are in table 1.

After drug initiation, the rate of abnormal LFT was 5 times higher within the first 3 months compared to 3–12 months (0.00218/day vs 0.000401/day). 93% of abnormal tests after 3 months were <3x ULN.

51% of patients with abnormal LFTs continued medication without treatment breaks. 47% had breaks then resumed medication (19/23 reduced dose), with the decision to break based on extent of ALT rise and side effects. One patient with significant ALT rise did not restart medication.

Discussion Approximately 1/5 patients had abnormal LFT, the majority of which were mild and within 3 months of drug initiation. 11% of patients required treatment breaks, with 1 patient (0.4%) unable to continue medication.

Abstract P56 Table 1

	Normal LFT	<3x ULN	3–5x ULN	>5x ULN
n(%)	176(82%)	40(18%)	4(2%)	5(2%)
Age [b]	75(74–77)	73(71–77)	75(67–83)	74(64–84)
BMI [b]	28(27–28)	29(28–31)	27(20–33)	29(23–35)
Nintedanib [a]	144(77%)	36(19%)	3(2%)	5(3%)
Pirfenidone [a]	32(86%)	4(11%)	1(3%)	0
Immunosuppression [a]	43(81%)	8(15%)	0	2(4%)
No immunosuppression [a]	133(77%)	32(18%)	4(2%)	3(2%)

[a] n(%), [b] mean(95%CI)

P57 PERSPECTIVES ON SCREENING AND EARLY TREATMENT FOR PULMONARY FIBROSIS

[1]L Fabbri, [2]L Doran, [3]M Bains, [1]RG Jenkins. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Public contributor, Liverpool, UK; [3]School of Medicine, University of Nottingham, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.218

Rationale Pulmonary fibrosis (PF) is a progressive condition characterised by debilitating symptoms and reduced life expectancy. Interstitial lung abnormalities (ILAs) are radiological findings in asymptomatic individuals. Data suggest that a proportion of ILAs will evolve into PF. We aimed to explore stakeholders' views on screening programmes and early treatment for ILAs.

Methods We conducted semi-structured, one-on-one interviews with healthcare professionals (HCPs) experienced in PF management, patients, and first-degree relatives worldwide. We discussed general knowledge of PF and ILAs, screening programs, and early treatment. The interviews were recorded and transcribed verbatim and then analysed using thematic analysis.

Results Among HCPs, 25 were respiratory physicians, 8 radiologists, 3 nurses, 2 pharmacists, and 1 GP, with a median of 17 years of experience working with PF. ILAs are acknowledged as incidental findings in asymptomatic patients, with varying approaches to clinical management. A screening program with CT scans is considered feasible, especially for high-risk populations like first-degree relatives, individuals with connective tissue diseases, occupational exposure, and ex-smokers. Active recruitment in primary care and national campaigns is recommended. Disagreements persist regarding clinical trials for ILAs due to insufficient data regarding pathogenesis or progression. Concerns about drug side effects were noted. 25 patients, 5 with familial PF, 5 first-degree relatives, and 4 lung screening program participants reported receiving information mainly from specialists and cited a lack of knowledge in primary care. There is no knowledge about ILAs. A screening program is considered acceptable and encouraged, contingent on a national educational campaign about PF. The lack of awareness is perceived as the primary obstacle. Opinions vary on genetic and biomarker screening, with minor concerns about imaging tests (CXR, CT, MRI). The concept of early treatment receives support, with a focus on initiating an educational campaign as a starting point, along with a low threshold for side effects that do not significantly impact quality of life.

Conclusions Initiating an educational campaign to raise awareness about PF is crucial. A CT scan screening program for ILAs could be feasible. The emphasis should be on promoting quality of life and minimising side effects.

P58 PREVENTION OF PROGRESSION IN EARLY FIBROSING INTERSTITIAL LUNG DISEASE PATIENTS: USING ECONOMIC MODELLING TO INFORM EVIDENCE GENERATION

[1]M Baldwin, [2]ES White, [3]L Hubbert, [3]A Wright, [3]S Langham, [4]P Rivera-Ortega. *[1]Value and Patient Access, Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany; [2]Global Medicine, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, USA; [3]Market Access, Maverex Limited, Newcastle, UK; [4]Wythenshawe Hospital, Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.219

Abstract P58 Table 1 Impact of early intervention on patient survival, HRQoL and need for lung transplantation in a health economic model in high-risk F-ILD

	Increase in life years (%)	Increase in HRQoL (%)	Reduction in lung transplants (%)
Group 1	11	13	6
Group 2	45	49	37

Introduction Patients with fibrosing interstitial lung diseases (F-ILDs) are at risk of developing progressive pulmonary fibrosis, associated with significant morbidity and mortality. Early intervention in high-risk F-ILD patients could prevent or delay the onset of complications.

Objective To estimate the costs (United Kingdom) and benefits of a hypothetical intervention in patients with early F-ILD at high risk of progression.

Methods A health economic model was developed to determine rates of progression and associated costs and outcomes. Two early F-ILD patient risk groups were selected: group 1, incidental diagnosis and group 2, familial history of ILD and an additional ILD risk factor (e.g. connective tissue disease). It was assumed that a hypothetical intervention would prevent or delay progression in high-risk patients relative to standard of care (20% and 60% of patients in groups 1 and 2, respectively).

Results Early effective intervention could lead to an improvement in survival and health-related quality of life (HRQoL), and a reduction in lung transplants (table 1). This would lead to a reduction in costs, with fewer patients progressing to more costly health states. The risk and rate of progression and the efficacy of an early intervention have the greatest impact on the results.

Conclusions Identifying and treating patients with early F-ILDs at high risk of progression may provide clinical, patient-related and economic benefits. Future evidence generation is needed to understand the risk and speed of progression.

P59 REMOTE SPECIALIST ADVICE FREQUENTLY CHANGES THE DIAGNOSIS AND MANAGEMENT OF PATIENTS WITH ACUTE PRESENTATIONS OF INTERSTITIAL LUNG DISEASE (ILD)

[1,2]P Dobson, [1]N Badat, [1]S Bax, [1,3]F Chua, [3,4]S Desai, [3,4]A Devaraj, [1,3]G Jenkins, [1,3]M Kokosi, [1,3]V Kouranos, [1,5]P Molyneaux, [1,3]E Renzoni, [1,3]A Wells, [1,3]P George, [1,2,3]R Hewitt. *[1]Interstitial Lung Disease Unit, Royal Brompton and Harefield Hospitals, Guys and St Thomas NHS Foundation Trust, London, UK; [2]Kings Centre for Lung Health, School of Immunology and Microbial Sciences, Faculty of Life Sciences and Medicine, Kings College London, London, UK; [3]The Margaret Turner Warwick Centre for Fibrosing Lung Diseases, NHLI, Imperial College London, London, UK; [4]Department of Radiology, Royal Brompton and Harefield Hospitals, Guys and St Thomas NHS Foundation Trust, London, UK; [5]National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.220

Introduction and Objectives Expedient diagnosis and treatment of rapidly progressive ILD is critical to improve the prognosis of patients with these potentially life-threatening diseases. We provide a regional remote specialist advice service to support district general hospitals with patients presenting acutely due to suspected or pre-existing ILD. In this study, we sought to determine if rapid multidisciplinary involvement within an

advisory service, incorporating specialist radiological review and treatment planning, influenced decision-making sufficiently to change the management of such patients.

Methods In this prospective study, we collected clinical data on all cases referred to our ILD remote advice service between April and September 2023. We compared the referring team's diagnosis and treatment plan at the point of referral, with the multidisciplinary diagnosis and management recommendations provided by our service.

Results 69 patients were referred to our ILD remote specialist advice service between April and September 2023. 18/69 (26%) patients required HDU or ICU level care. 40/69 (58%) were referred with a suspected new ILD diagnosis while 29/69 (42%) constituted individuals with an acute exacerbation of pre-existing ILD. Specialist input resulted in a diagnosis that had not been concluded locally in 34/69 (49.3%) cases. This included making a high-confidence diagnosis of specific ILD subtype in 23/69 (33.3%) cases and recommendations for an alternative non-ILD diagnosis in 11/69 (15.9%). Specialist ILD advice led to a change in clinical management in 48/69 (69.6%) cases, including escalation of immunosuppression (28/48, 58.4%), reduction or avoidance of immunosuppression (4/48, 8.4%) and advice on the management of non-ILD diagnoses (6/48, 12.5%). 44/69 (64%) survived to discharge and 14/69 (20%) died. Outcome data was unavailable for 11/69 (16%).

Conclusion This study demonstrates that provision of a specialist ILD remote advice service can decrease diagnostic uncertainty in patients presenting with life-threatening ILD, enabling early implementation of multidisciplinary- led management plans in hospitals without a dedicated ILD service. This model could be expanded and refined with agreed remote advice pathways across other regions, although resource implications require in-depth consideration. In this pilot study it was not possible to conclude if the remote advisory service directly improved patient outcomes.

P60 APPLICATION OF CLINICAL PRIORITISATION IN A PHARMACY TECHNICIAN-LED INTERSTITIAL LUNG DISEASE OUTPATIENT CLINIC

N Leung, T Wilson, H Hawkes, H Adamali, SL Barratt, J Hardy, G Dixon, S Mulholland. *North Bristol NHS Trust, Bristol, UK*

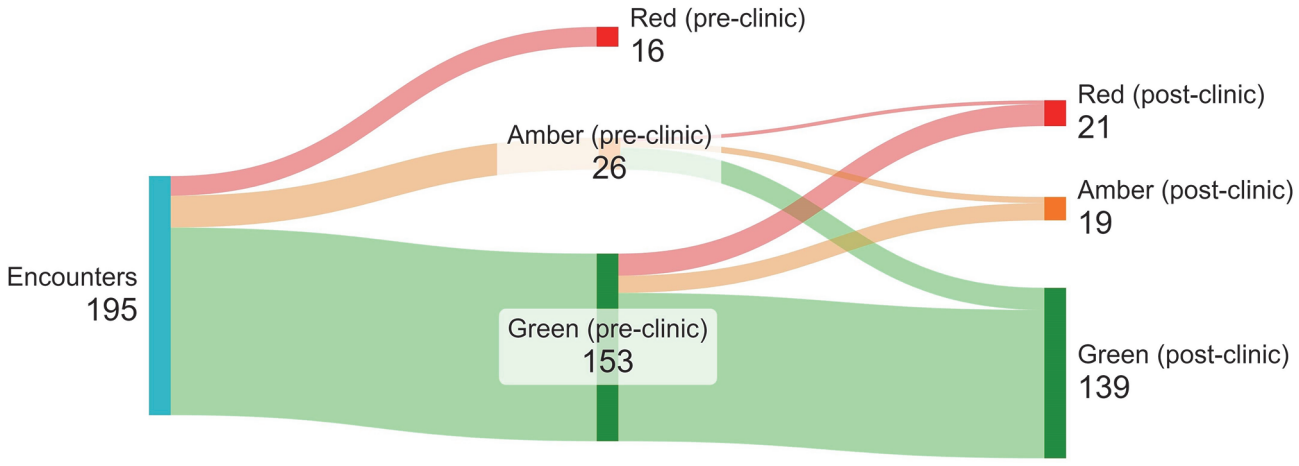
10.1136/thorax-2024-BTSabstracts.221

Background Nintedanib and pirfenidone are antifibrotics approved for use in interstitial lung disease (ILD). Given their significant side effect (SE) burden, regular monitoring of patient adherence, tolerability and liver function tests (LFTs) throughout treatment is essential. Our implementation of the Pharmacy Workforce Development South (PWDS) Clinical Prioritisation accreditation[1] represents an innovative expansion of responsibilities for pharmacy technicians managing ongoing monitoring of ILD patients prescribed antifibrotics in an outpatient clinic.

Method From 04/12/2023-08/02/2024, 195 patients on antifibrotics were reviewed. Patients were risk stratified by pharmacy technicians pre- and post-clinic using a red, amber, green (RAG)-rating system. Red-rated patients necessitate prescriber interventions. Amber-rated patients require consultation before management by pharmacy technicians, typically for deranged LFTs, uncommon SE or drug interactions. Green-rated patients are independently managed by pharmacy technicians.

Results 121 green-rated patients were managed autonomously by pharmacy technicians. 55 (45%) patients reported SE. 55 (100%) of these patients received comprehensive self-management advice, including guidance on medication adherence, recommendations for over-the-counter treatments and suggestions for general practitioner consultations regarding antiemetics or mucolytics.

41 patients (34%) raised additional non-pharmacological concerns, which were effectively addressed by signposting to



Abstract P60 Figure 1 Sankey diagram depicting the flow/number of patients through the pharmacy technician-led clinic. Patients were RAG-rated pre- and post-clinic, and the RAG-rating could change based on details of the clinical consultation

appropriate services or providing information leaflets. These issues encompassed various themes, including unrelated clinical symptoms (or providing peri-operative advice for antifibrotics) (n=22), provision of literature for self-management of ongoing weight loss (n=10), medication queries e.g. regarding rescue antibiotics and interactions with new medications or supplements (n=6), mental health support referrals (n=5), advice on benefits or allowances (n=2) and clinical trials (n=1).

Conclusion These outcomes highlight the capability of pharmacy technicians to safely manage a significant portion of patients in this setting. The Clinical Prioritisation accreditation equips pharmacy technicians with skills and knowledge to seamlessly integrate into the multidisciplinary team. It is important to underscore the breadth of expertise and guidance that experienced pharmacy technicians can offer in addressing the diverse array of concurrent issues associated with ILD management and thus releasing prescribing clinicians to facilitate additional initiation appointments.

REFERENCE

1. Pharmacy Workforce Development South (2024). Pharmacy Medicines Optimisation Training Programme (PMOTP) - Unit 3 - Clinical Prioritisation (online). Available: https://pwds.nhs.uk/programme/pmotp-unit-3/ [Accessed: 02/04/2024].

P61 TIME TO DIAGNOSIS AND IMPACT OF EARLY DIAGNOSIS ON INITIATION OF ANTIFIBROTIC TREATMENT IN PATIENTS WITH IDIOPATHIC FIBROSIS IN THE US: A RETROSPECTIVE COHORT STUDY

[1]P Pimple, [1]AA Londhe, [1]MC Penaloza Ramos, [2]S Langham, [1]M Lavallee, [1]Y Fan, [1]T Cork, [3]J Quint, [4]AH Limper. *[1]Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany; [2]Maverex Limited, Newcastle-upon-Tyne, UK; [3]School of Public Health, Imperial College London, London, UK; [4]Department of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, USA*

10.1136/thorax-2024-BTSabstracts.222

Introduction Without antifibrotic therapy, idiopathic pulmonary fibrosis (IPF) is associated with a life expectancy of 3–4 years. Antifibrotic therapy slows progression; therefore, early and accurate diagnosis is critical for improving patient outcomes. Data on time to diagnosis in IPF in the US are limited.

Objective Assess time from first symptom to IPF diagnosis and impact of early diagnosis on initiation of antifibrotic therapy.

Methods This is a retrospective cohort study of adult patients diagnosed with incident IPF using a US Electronic Health Records database with linked insurance claims. Patients were required to have ≥2 IPF diagnoses between 1/10/2014 and 31/12/2021 and continuous enrolment for 3 years prior to (baseline) and 1 year after first IPF diagnosis date (index date). First respiratory symptom was defined as first occurrence of cough or dyspnoea in the baseline period. Early diagnosis was defined as ≤6 months between first symptom and IPF diagnosis. Demographic and clinical characteristics were assessed in pre-index period. Multivariable Cox proportional hazards models evaluated association between early diagnosis and initiation of antifibrotic therapy.

Results 19,946 patients with IPF were included. Median age at index was 74.0 (IQR, 66.0–81.0) years; 8,128 (40.7%) were female and 14,591 (73.2%) were White. Median duration of follow-up was 23.0 (IQR 11.0–44.0) months. Median time from symptom onset to IPF index was 18.4 (IQR 9.2–27.7) months. 3,200 (19.8%) patients had early diagnosis. Delayed diagnosis was more frequent in women (41% versus 37%). Compared with early diagnosis, patients with delayed diagnosis more frequently had hypertension (74.0% versus 68.0%), chronic obstructive pulmonary disease (COPD; 51.4% versus 41.6%), gastroesophageal reflux disease (GERD; 44.1% versus 33.9%) and chronic kidney disease (CKD; 25.2% versus 20.1%). 18.2% of patients with early diagnosis initiated antifibrotic therapy versus 16.2% with delayed diagnosis. After adjustment by baseline demographic and clinical characteristics, there was no association between delayed diagnosis and initiation of antifibrotic therapy (hazard ratio 0.94; 95% CI 0.85, 1.03).

Conclusions Most (80%) patients with IPF experienced delayed diagnosis and were more likely to have hypertension, COPD, GERD and CKD. There was no association between delayed diagnosis and initiation of antifibrotic therapy.

P62 GORD AND PPI THERAPY IN PULMONARY FIBROSIS

KM Heenan, P Gorman, L Graham, E Murtagh, P Minnis. *Antrim Area Hospital, Northern HSC Trust, UK*

10.1136/thorax-2024-BTSabstracts.223

Introduction and Aims The role of Gastro-Oesophageal Reflux Disease (GORD) in pulmonary fibrosis is uncertain. There are theoretical concerns regarding the role of micro-aspiration and disease exacerbation, as well as observational studies documenting survival benefit. We aim to assess the impact of PPI therapy in patients with pulmonary fibrosis.

Methods 223 patients attending the ILD clinic were followed for 3 years. They were stratified by radiological diagnosis; Unclassifiable pulmonary fibrosis (n 66), Probable UIP (n 51), and UIP (n 106). Demographics, pulmonary function tests, dedicated swallow assessments –where available, treatment and use of PPI were recorded. Outcome measures included rate of decline in FVC and death. A subgroup analysis (n 147) assessed the impact of PPI on progression defined by the INBUILD criteria.

Results The average age of the cohort was 76.4 (8.8 SD), 63% male (n 141), 21% required O2, mortality during follow up was 36% (n 81). Demographic, baseline data, treatment and outcome for each radiological diagnosis are presented in table 1. 70% of patients received PPI treatment. Of those who underwent dedicated swallow assessment 51% had evidence of dysmotility, reflux or laryngeal penetration. There was similar rates of GORD in those with asymmetric versus

Abstract P62 Table 1

Clinical Data	uPF	pUIP	UIP	ALL
n	66	51	106	223
Age	75.0 +/- 8.3	77.8 +/- 7.24	76.6 +/- 8.8	76.4 +/- 8.8
%Male	53% (35)	58% (32)	70% (74)	63% (141)
O2	15% (10)	14% (7)	27% (29)	21% (46)
PPI	67% (44)	75% (38)	67% (75)	70% (157)
AntiF	3% (2)	18% (9)	25% (27)	17% (38)
FVC	2.38	2.27	2.38	2.37
Delta FVC	0.087	0.066	0.153	0.114
Delta FVC on PPI (L)	0.079	0.110	0.137	0.114
Delta FVC No PPI (L)	0.101	-0.061	0.185	0.113
Absolute Diff (L)	0.022	-0.171	0.048	-0.001

uPF: Unclassified Pulmonary Fibrosis pUIP: Probable UIP, UIP: Usual Interstitial Pneumonia

uniform pulmonary fibrosis (47% v 55%). There was no significant differences in rate of FVC decline within the cohort as a result of treatment. There appeared to be attenuation of FVC decline by 48ml with treatment in patients with a UIP radiological classification, however this was not replicated in the pUIP group. The relative risk of death was reduced in those on treatment (RR 0.715, p 0.058), estimated benefit calculation suggested NNT 7.71. Review of INBUILD criteria outcomes revealed a 10% increase in progressive symptoms and FVC decline >10% in those on treatment however radiological progression was similar.

Conclusions GORD is prevalent in pulmonary fibrosis. Treatment with PPI appeared to attenuate the rate of decline of FVC in some patients however did not alter progression defined by the INBUILD criteria. There was a suggestion of reduced mortality, further study is required to clarify the impact of PPI treatment.

P63 ASSESSMENT OF THE IDIOPATHIC PULMONARY FIBROSIS PATIENT REPORTED OUTCOME MEASURE (IPF-PROM) SCALE IN IDIOPATHIC PULMONARY FIBROSIS PATIENTS IN RELATION TO DEPRESSION SYMPTOMS AND QUALITY OF LIFE

[1]M Tziraki, [2]KM Antoniou, [1]M Linardakis, [2,3]A Zouraraki, [2,3]AM Matthaiou, [2,3]N Bizymi, [4]D Papagiannis, [4]F Malli, [5]Z Daniil, [6]AM Russell, [1]EK Symvoulakis. *[1]Department of Social Medicine, School of Medicine, University of Crete, Heraklion, Greece; [2]Laboratory of Molecular and Cellular Pneumonology, School of Medicine, University of Crete, Heraklion, Greece; [3]Department of Respiratory Medicine, University Hospital of Heraklion, Heraklion, Greece; [4]Faculty of Nursing, University of Thessaly, Larissa, Greece; [5]Department of Respiratory Medicine, Faculty of Medicine, University of Thessaly, Larissa, Greece; [6]Institute of Clinical Sciences, University of Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.224

Introduction and Objectives Idiopathic pulmonary fibrosis (IPF) is a progressive debilitating lung disease, which affects physical and emotional wellbeing, while the use of specific clinical tools may aid its management. This study aimed to assess the Idiopathic Pulmonary Fibrosis Patient Reported Outcome Measure (IPF-PROM) scale as a clinical tool to interrelate depression symptoms with quality of life (QoL) in IPF patients.

Methods IPF patients completed close-ended questionnaires [*IPF-PROM*, *Patient Health Questionnaire (PHQ-9)* as an index of depression symptoms, and *Health Survey Short Form (SF-12)* as an index of QoL] on a regular visit, at the IPF Outpatient Clinic of the University Hospital of Heraklion, from November 2023 to January 2024.

Results A total of 107 patients (87.9% males, mean age 74.3 ±8.1 years) were enrolled. In IPF-PROM, mean levels were assessed (51.9±28.9 in a range of 0–100, with higher scores indicating worse status), with higher levels in the *Psychological Wellbeing* in relation to the *Breathlessness/Fatigue* component (57.5 vs. 49.1, respectively, p=0.026). Increased symptoms of depression were found in 20.5% of patients, while low levels of QoL were detected in both the *Physical* and *Mental* components of SF-12 (36.6 vs. 36.1, respectively, p=0.249). Patients with worse (68–100; n=31) compared to those with better (0–33; n=32) IPF-PROM scores were found with higher levels of depression symptoms in PHQ-9 (17.9 vs. 2.5, respectively, p=0.003) or with lower levels of the *Mental* component of their QoL (23.6 vs. 52.3, respectively, p<0.001).

Conclusions Depression symptoms appear to be more prevalent among patients with advanced IPF. IPF-PROM is a valid clinical tool that may predict the *Mental* component of their QoL. This study also reveals the need for multidisciplinary patient care in the management of IPF.

P64 GLUCOCORTICOID THERAPY IN SARCOIDOSIS WARRANTS ROUTINE BLOOD GLUCOSE MONITORING IN HIGH RISK PATIENTS

R Harkness, J Cross, C Mumby, E Bradley, SO Brij. *Manchester Royal Infirmary, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.225

Background Whilst glucocorticoids (GC) are first-line therapy for sarcoidosis, our current practice is to introduce a disease-modifying therapy (DMT) as soon as possible to reduce GC dosage burden. However, the provision for monitoring hyperglycaemia is not available in out-patient secondary care.

Aim To predict numbers of patients requiring *de novo* blood glucose monitoring and whether possible to predict at risk populations including those co-morbid with type 2 diabetes (T2DM) for significant glucocorticoid-induced hyperglycaemia (GCHG) using HbA1c and/or Diabetes UK risk calculator (RC).

Method A retrospective review of sarcoid patient weight, BMI, HbA1c and treatments since 2010 was undertaken.

Results 170 persons electronic record were included: median age at diagnosis 47 years (IQR 36–55); male 103 (61%); white UK born 65 (38%), white non-UK born 5 (3%), BAME UK born 28 (17%); BAME non-UK born 72 (42%). The commonest organs affected were thoracic lymph nodes 117 (69%), lung nodules or infiltrates 78 (46%) and uveitis 42 (25%). T2DM in 30 (18%). Median BMI at diagnosis 28 (IQR 25–33) (table 1a and b).

Sarcoid therapy offered to 105 (62%). More severe disease was treated with GC unless patient declined. 83 (93%) received GC in whom 47 (49%) remain on GC (median dosage 5 mg (IQR 5–7) (table 1c).

Predictably, GC were associated with worsening or new diabetes (RR 3.0; 95% CI 1.0–8.8; p<0.05) (table 1d).14 GCHG significant events were noted of which 9 necessitated treatment intervention. HbA1c >42 mmol/mol and RC identified 9/14 and 10/14 GCHC events respectively; 2 persons would not have been identified using both, one of whom developed ketoacidosis.

If GC commenced, using HbA1c >42 mmol/mol, 16 persons would have required monitoring; 38 using RC. All 16 with re-existing diabetes should also be monitored.

Conclusion GCHG significant events may not be preventable but both HbA1c (blood test) and Diabetes UK risk calculator (on-line score) identify high risk patients (approximately 50%) who should be offered blood monitoring at the start of GC

Abstract 64 Table 1 Patient demographics, treatments administered and univariate analysis of endpoints

a) Characteristics of patients at baseline	GC group (N=89) mean ± SD, median (IQR), n (%)	No GC group (N=81) mean ± SD, median (IQR), n (%)		p-value
Age (yrs)	46 (36-56)	47 (36-56)		NS
Gender (male)	56 (63)	47 (58)		NS
White	33 (37)	37 (46)		NS
UK born	47 (53)	46 (57)		NS
Type 2 diabetes (T2DM)	16 (18)	14 (17)		NS
HbA1c at diagnosis mmol/mol)	40 (37-48)	38 (36-42.5)		NS
Body mass index (BMI)	30 (25-34)	29 (26-32)		NS
Baseline percent total lung capacity (TLC)	82.5 ± 14.7	88.9 ±16.2		NS
b) Organ involvement	**GC group n (%)**	**No GC group n (%)**		
Thoracic lymphadenopathy	70 (79)	47 (58)		
Pulmonary	45 (51)	33 (41)		
Ocular	22 (25)	20 (25)		
Cutaneous	16 (18)	4 (5)		
Cardiac	6 (7)	0		
Multi-organ involvement	34 (38)	9 (11)		
c) Sarcoid therapies undertaken	**GC group n (%)**	**No GC group n (%)**		
GC only completed	24 (27)	-		
GC and DMT completed	4 (4)	-		
GC completed, DMT continues	14 (16)	-		
GC only long-term (median dose Prednisolone 5 mg)	16 (18)	-		
GC long-term with DMT (median dose Prednisolone 5 mg; median dose Methotrexate 15 mg)	31 (35)	-		
DMT only	-	6 (7)		
No sarcoid therapies given	-	75 (93)		
c) End-points	**GC group n (%)**	**No GC group n (%)**	**Relative Risk, CI**	**p-value**
Type 2 diabetes (T2DM)	16 (19)	14 (17)		
GCHG event	14 (17)	3 (4)	3.0 (1.0-8.8)	<0.05
3 point increase BMI	28 (31)	11 (14)	2.2 (1.2-4.1)	<0.05

Abbreviations: **GC** glucocorticoid; **DMT** disease modifying therapy; **GCHG** glucocorticoid hyperglycaemia

therapy. Easier access to out-patient BM monitoring needs collaboration with Endocrine Teams.

P65 VITAMIN D STATUS AND SUPPLEMENTATION IN SARCOIDOSIS: A RETROSPECTIVE OBSERVATIONAL STUDY IN A TERTIARY CENTRE

A Leadley, S Patel, D Woods, RK Coker. *Department of Respiratory Medicine, Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.226

Introduction Vitamin D status in sarcoidosis patients is more accurately assessed by measuring the active metabolite 1,25 (OH)2 vitamin D. Prescribing vitamin D supplementation based on the inactive, 25(OH) vitamin D, form may be inappropriate and lead to increased risk of complications.

Objectives 1. Describe the prevalence of vitamin D monitoring in sarcoidosis patients in a tertiary centre.

2. Determine the incidence of adverse effects in patients with and without vitamin D supplementation.

Methods 320 patients with a known diagnosis of sarcoidosis were screened between 2019–2023. 276 patients were included in the final analysis. Baseline demographics, Scadding chest radiograph staging and serum levels of angiotensin converting enzyme (ACE), 25(OH) vitamin D and 1,25(OH)2 vitamin D were recorded. Subsequent vitamin D supplementation, serum corrected calcium, 24-hour urinary calcium, serum creatinine and episodes of nephrolithiasis were recorded to determine the frequency of hypercalcaemia, acute kidney injury and nephrolithiasis.

Results 276 patients were included in the final analysis (141 male (51%), age 60 years (IQR 51–68), Scadding stage 0, 1, 2, 3 and 4; 75 (27%), 35 (13%), 46 (17%), 23 (8%), 97 (35%) respectively). 25(OH)-VitD was measured in 144 (52%) and $1,25(OH)_2$-VitD in 39 (13%) patients respectively. 25 (OH)-VitD was low in 26.8% (74/276). Of these, 32 (43.2%) had concurrent 25(OH)-VitD and $1,25(OH)_2$-VitD levels and none required supplementation, however 18 (56.3%) received it. Patients in whom only 25(OH)-VitD was checked (110 (40%)), 67 (61%) received vitamin D supplementation. In our cohort, hypercalcaemia and acute kidney injury were significantly associated with supplementation use ($p<0.01$). Nephrolithiasis was not associated with supplementation use. ACE levels were not significantly different in patients receiving and not receiving vitamin D supplementation.

Abstract P65 Table 1

Age - years	60 (51-68)*
Male	141 (51)
Ethnicity	
Caucasian	115 (42)
Asian	64 (23)
Black	69 (25)
Other	16 (6)
Unknown	12 (4)
Scadding chest radiograph stage	
0	75 (27)
I	35 (13)
II	46 (17)
III	23 (8)
IV	97 (35)
ACE – unit/L	48 (32-68)*
High	61 (24)
Normal	174 (67)
Low	24 (9)
25(OH)-VitD	144 (52)
25(OH)-VitD – nmol/L	48 (25-69)*
High	0 (0)
Normal	70 (49)
Low	74 (51)
1,25(OH)2-VitD	39 (14)
1,25(OH)2-VitD - pmol/L	119 (91-158)*
High	15 (39)
Normal	23 (59)
Low	1 (2)
Complications**	
Hypercalcaemia	25 (20)
AKI***	16 (13)
Nephrolithiasis	3 (2)

Data presented as number of patients (%) unless otherwise stated.
* Median (IQR)
** Incidence of complications in patients taking vitamin D supplementation
*** AKI definition as per NICE (National Institute for Health and Care Excellence, UK) guidelines

Conclusion 1,25(OH)2 vitamin D was not routinely measured among our patients, thus resulting in inadequate monitoring of vitamin D status. Incorrect supplementation of vitamin D based on 25(OH)-VitD levels was associated with hypercalcaemia and acute kidney injury. Vitamin D supplementation should not be recommended routinely in patients with sarcoidosis. Further education is required to ensure greater understanding of the risks of vitamin D supplementation in this group.

P66 RELATIONSHIP OF DISEASE SEVERITY AND ACTIVITY TO QOL IN SARCOIDOSIS

A Mahmood, M Bailey, P Minnis. *Antrim Area Hospital, Northern HSC Trust, UK*

10.1136/thorax-2024-BTSabstracts.227

Introduction and Aims Due to the heterogeneity of presentation, organ involvement, and variable response to treatment assessment can be difficult but should include methods to measure disease activity, burden of disease, and impact using patient reported outcome measures. We aim to correlate Quality of Life measurements to markers of disease activity and severity.

Methods 83 consecutive patients with sarcoidosis underwent clinical assessment, selected blood tests, pulmonary function testing, plain CXR evaluation andQoL measurement including Kings Sarcoidosis Questionnaire (KSQ) and EQ-5D-5L. Additional data including length of disease, need for treatment, and Drug Burden were integrated. Markers of disease severity, treatment and baseline demographics were correlated against QoL measurements.

Results The mean age of the cohort was 58.2 (SD 11.3), 65% were male, with an average disease duration of 7.3 years (SD 6.0), and 52% were on treatment defined as oral prednisolone > 3/12. There were no significant gender differences in terms of EQ-5D-5L or KSQ. There was a trend towards higher QoL with longer disease duration (r 0.173) and lower QoL

Abstract P66 Table 1 Demographics and clinical features by lymphocyte trend and CXR stage

	Lymphocyte Trend				CXR Stage				ALL
	N	P	I	R	0	1	2/3	4	
N	34	28	17	4	12	18	11	32	83
%Male (n)	56 (19)	71 (20)	76 (13)	100 (4)	75 (7)	61 (11)	64 (7)	59 (19)	65
Age	57.2 (2.2)	57.9 (2.4)	65.3 (2.9)	59.6 (5.3)	59.4 (3.2)	56.5 (2.9)	54.8 (3.5)	62.8 (2.1)	58.2
Duration [B]	6.9 (1.2)	8.3 (1.2)	6.6 (1.4)	8.2 (1.6)	7.0 (1.5)	4.8 (0.8)	5.4 (1.6)	10.6 (1.3)	7.3
Presentation	50.3 (2.2)	49.6 (2.3)	58.7 (3.3)	51.4 (6.9)	52.4 (3.2)	51.7 (2.9)	49.4 (2.7)	52.2 (2.6)	50.8
BMI	31.5 (0.8)	28.2 (1.2)	28.0 (1.4)	27.6 (1.4)	32.2 (1.7)	29.9 (0.8)	27.5 (1.1)	29.4 (1.1)	29.7
FEV1 [B]	88 (4)	86 (5)	94 (6)	83 (38)	100 (4)	98 (5)	88 (8)	76 (3)	87
FVC [B]	93 (4)	95 (3)	98 (7)	96 (21)	99 (3)	103 (4)	97 (8)	84 (3)	93
DLCO [B]	84 (4)	84 (3)	80 (4)	81 (12)	95 (5)	90 (4)	86 (7)	72 (3)	83
Ratio <0.7 (%)	15	20	50	x	9	15	36	31	18
Meds (mean)	7.8	5.6	7.0	3.3	8.2	4.7	5.3	7.0	6.7
Treatment% (n)	53 (18)	50 (14)	53 (9)	50 (2)	75 (9)	33 (6)	64 (7)	53 (17)	52
EQ VA Health	59 (4)	71 (4)	70 (5)	75 (25)	60 (8)	68 (4)	58 (9)	70 (4)	65
Kings General [A]	44 (3)	35(3)	33 (5)	27 (7)	43 (4)	41 (4)	44 (5)	33 (3)	39
Kings Lung	23 (2)	20 (2)	20 (3)	15 (9)	22 (3)	22 (2)	23 (3)	21 (2)	22

Key N: Normal, P: Persistent, I: Intermittent, R: Resolved. (Standard Error – unless stated otherwise)
A: Significant differences Lymphocyte Trend. B: Significant differences CXR Stage

with raised BMI (r 0.255). Stratifying the cohort by lymphocyte trend and CXR stage are presented in table 1. CXR stage revealed significant differences in FEV1 (p 0.002), FVC (p 0.014) and DLCO (p <0.001). No significant findings for CXR stratification on EQ Visual Assessment of Health [EQ VAS] (p 0.747), Kings Lung (p 0.655), and Kings General (p 0.054) were found. These may have been confounded by cardiac involvement or airway limitation. Treatment with steroids correlated with globally reduced QoL measurements: EQ VAS 60 v 75 (p 0.06), Kings Lung 25 v 19 (p 0.016), and Kings General 43 v 33 (p 0.016). The direction of the relationship is unclear. The strongest correlation was found between number of medications and higher symptom burden defined by the Kings General (r 0.542).

Conclusion QoL measures provide additional insights and may help to identify confounders. Corticosteroids have a broad side effect profile. Our data suggests lower QoL in treated groups. A major gap in the management of sarcoidosis is the lack of accessible and objective methods to measure response to intervention.

P67 PHENOTYPING PULMONARY SARCOIDOSIS WITH CT DESCRIPTORS USING BTS ILD REGISTRY DATA

[1]R Crooks, [1]M McCall, [2]P Minnis, [2]A Achaiah, [2]L Casimo, [2]R Hewitt, [2]C Hodkinson, [2]F Khan, [2]H Morris, [2]E Palmer, [2]I Stewart, [2]G Thomas, [2]M Loughenbury, [2]M Souto, [2]SV Fletcher, [2]N Chaudhuri. *[1]Antrim Area Hospital, Northern HSC Trust, UK*; *[2]BTS ILD Registry, Steering Committee, UK*

10.1136/thorax-2024-BTSabstracts.228

Introduction and Aims Pulmonary sarcoidosis has a variable clinical course, with up to one third experiencing a chronic progression. Current phenotyping, often based on age, symptoms, and imaging, aims to predict outcomes but lacks accuracy. The Scadding staging system, reliant on chest X-rays, no longer meets modern standards. Computed tomography (CT) scans can reveal more nuanced findings. A consensus has emerged on distinct CT phenotypes, suggesting a promising avenue for improved classification. Our study aims to validate phenotypes using real-world data to enhance treatment decisions and prognostic accuracy in sarcoidosis.

Abstract P67 Table 1 BTS Sarcoidosis Registry Data Stratified by CXR Stage and CT Descriptors

	CXR Stage					CT Descriptors						All
	0	1	2	3	4	Normal	Adenopathy	Nodules	Adenopathy and Nodules	Consolidation and GGO	Distortion/ HCC Traction BXT	
Demographics												
% Total (N)	17 (108)	23 (149)	21 (135)	6 (41)	10 (64)	5 (38)	11 (87)	24 (189)	13 (101)	8 (65)	10 (78)	772
% Male (n)	53 (57)	62 (93)	57 (77)	56 (23)	70[a] (45)	47 (18)	56 (49)	59 (112)	56 (57)	69 (45)	56 (44)	60 (460)
Age (SD)	55.2 (13.1)	46.9[a] (13.0)	50.48 (13.1)	53.5 (13.0)	57.6[a] (12.9)	57.4[a] (12.9)	53.1 (13.1)	51.3 (13.1)	53.5 (13.1)	51.9 (11.1)	52.7 (11.0)	51.6 (13.1)
% Δ <12 months (n)	34[b] (35)	77[d] (114)	73[d] (98)	56 (23)	19[d] (12)	29[b] (11)	47 (40)	51 (96)	50 (51)	40 (26)	33[b] (26)	48 (372)
MRC dyspnoea Grade												
[Total]	[103]	[140]	[129]	[39]	[63]	[26]	[63]	[139]	[68]	[46]	[76]	[564]
1% (n)	64 (66)	61 (86)	58 (75)	38[a] (15)	43 (27)	69 (18)	56 (35)	53 (73)	54 (37)	50 (23)	47 (36)	56 (314)
2% (n)	28 (29)	31 (43)	36 (46)	33 (13)	30 (19)	27 (7)	33 (21)	35 (48)	34 (23)	24 (11)	39[a] (30)	31 (177)
3% (n)	6 (6)	6 (8)	5 (7)	26[c] (10)	11 (7)	4 (1)	8 (5)	7 (10)	7 (5)	22 (10)	5 (4)	9 (49)
4% (n)	2 (2)	2 (3)	1 (1)	3 (1)	14[d] (9)	0	3 (2)	5 (7)	4 (3)	4 (2)	7 (5)	4 (22)
5% (n)	0	0	0	0	2 (1)	0	0	1 (1)	0	0	1 (1)	0 (2)
Pulmonary Function												
% FVC Predicted	101 (21)	100 (18)	98 (21)	99 (15)	88 (23)	96 (21)	94 (21)	97 (20)	98 (21)	94 (21)	98 (18)	97 (20)
% <80	15 (9/61)	12 (15/ 123)	20 (23/ 115)	10 (3/ 31)	24 (9/37)	18 (4/22)	20 (12/60)	17 (26/ 153)	19 (15/77)	23 (10/44)	15 (7/47)	17 (99/ 566)
FEV1/FVC Ratio	0.76 (0.09)	0.77 (0.08)	0.76 (0.12)	0.75 (0.09)	0.71 (0.12)	0.75 (0.07)	0.76 (0.09)	0.76 (0.09)	0.75 (0.09)	0.78 (0.16)	0.76 (0.16)	0.76 (0.09)
% <0.7	21 (13/ 62)	16 (20/ 123)	20 (23/ 116)	18 (5/ 28)	46[a] (17/ 37)	9 (5/22)	28 (17/61)	20 (31/ 154)	21 (16/78)	20 (9/44)	30 (14/46)	21 (95/ 444)
KCO (mmol/min/kPa/l)	1.38 (0.25)	1.53 (0.24)	1.57 (0.67)	1.54 (0.37)	1.41 (0.48)	1.42 (0.24)	1.56 (0.44)	1.51 (0.31)	1.47 (0.29)	1.52 (0.75)	1.44 (0.25)	1.52 (0.47)
Treatment												
Systemic Within 3/12	43 (46/ 108)	27[b] (48/ 149)	44 (57/ 131)	46 (19/ 41)	57 (37/64)	45 (17/38)	54 (42/78)	51 (85/ 168)	43 (40/92)	50 (31/62)	43 (34/79)	46 (323/ 697)

Key: [a] p <0.05, [b] p <0.005, [c] p <0.001, [d] p<0.0001

Methods We performed a retrospective cohort study using the BTS Sarcoidosis registry data stratifying patients by CXR stage and by CT descriptors. Baseline demographics were recorded and outcome measures included MRC Dyspnoea scale, lung function testing, and treatment with systemic oral therapy within 3 months.

Results 772 individual records were available from the registry. The mean age was 51.6 (13.1), 60% were male, 48% were diagnosed within the last 12 months and 46% received systemic treatment (namely prednisolone or DMARDs) within 3 months. 497 patients had CXR stage recorded (64%), with 581 having CT descriptors (75%). Significant findings are presented in table 1. Stratifying by CXR stage revealed significant differences in terms of age, diagnosis within 12 months, MRC dyspnoea scale (CXR stage 3+4), airflow limitation (CXR stage 4), and treatment. CXR stage 1 was most common (23%). Stratifying by CT descriptors resulted in greater homogeneity of demographics and outcome measures. Pulmonary nodularity was the most common CT finding (24%). Transforming CT descriptors into discrete sarcoidosis phenotypes, especially ones with clinical implications for disease status and prognostication, has proved challenging. Limitations to using CT imaging in this way include inter observer variability, the timing of CT imaging and the inherent information reduction associated with qualitative data.

Conclusions Nearly all sarcoidosis patients have had at least one CT study prior to diagnosis. Typically they reveal abnormalities not evident on CXR, the implications of such findings in the context of Scadding stage are largely unknown, but it is likely that CT features can enrich our capacity to phenotype.

P68 CHARACTERISING AIRFLOW OBSTRUCTION IN SARCOIDOSIS

S Agrawal, J Kavanagh, AS Patel, S Birring, K Myall. *King's College Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.229

Introduction and Objectives Sarcoidosis is a multisystemic granulomatous condition, with common pulmonary involvement. It has variable disease course and can cause a spectrum of restrictive and obstructive lung dysfunction. Here, we seek to characterise airflow obstruction in sarcoidosis, as this is poorly described and often ill-distinguished from asthma.

Methods Data was collected retrospectively from electronic medical records of 90 patients under sarcoidosis follow-up. Obstructive lung function was defined as FEV1/FVC<0.7. Bronchodilator reversibility was defined as increase in FEV1≥12% and ≥200ml, following bronchodilator therapy.[1] Eosinophilia was defined as peak eosinophils ≥0.3x10^9/L. Data was analysed with descriptive statistics and chi squared analysis.

Results Mean age was 59 years (SD=11.8) and 56/90 (62%) were female. 54% were Black/Afro-Caribbean, 24% Caucasian, 6% other/mixed and 16% had undeclared ethnicity. 87/90 (97%) were non-smokers and 2/90 (2%) were smokers. 87/90 (97%) had pulmonary sarcoidosis involvement. 16/90 (18%) were coded as having other airways disease; 13 (14%) with asthma and 4 (4%) with COPD.

On most recent lung function tests (LFTs), 28/90 (31%) had obstructive results. Bronchodilator reversibility (BDR) was tested in 28/90 (31%) patients, with proven BDR in only 2/28 (7%); 2/90 (2%) of the overall cohort. However, within the last year, 24/90 (27%) were prescribed inhaled corticosteroids and 18/90 (20%) were prescribed short acting bronchodilators; 2/18 (8%) had proven BDR. Interestingly, 0/13 patients with coded asthma had BDR. Fractional exhaled nitric oxide was done infrequently, in 2/90 (2%) since January 2023, yielding normal results.

40/89 (45%) patients with available blood results had eosinophilia, with no statistically significant relationship between eosinophilia and obstructive LFTs, $X^2(1, N=89)=0.036$, p=0.85. Median peak eosinophil count since January 2023 was 0.17x10^9/L (IQR=0.16).

Conclusions Our data suggests that within this sarcoidosis cohort, airflow obstruction does not meet GINA criteria for asthma.[1] Asthma treatment is still often initiated, which may be ineffective/unnecessary. Additional data on symptomatology and co-existing immunosuppressive therapy would be helpful. Careful clinical assessment of patients with airflow obstruction in sarcoidosis should be performed, to better characterise their phenotype and refine treatment strategies.

REFERENCE

1. Global Initiative for Asthma. Global Strategy for Asthma Management& Prevention, 2023. Updated July 2023. Available from:www.ginathma.org.

'Diary of a Wheezy Kid' – Paediatric asthma diagnostics

P69 POINT-OF-CARE BLOOD EOSINOPHILS TO PREDICT PRESCHOOL WHEEZE ATTACKS

[1,2]K Hillson, [1]S Fontanella, [1]H Almeida, [1]B Pavlou, [3]K Lajunen, [2]S Irving, [1,2]I Testa, [1]Y Bingham, [1]K Mayoral Oritz, [1]S Lacbay, [1]S Hay, [1]M Gore, [1]E Scotney, [4]E Paraskakis, [2]S Sonnappa, [1,2]L Fleming, [1,2,5]A Bush, [1,2,5]S Saglani. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Royal Brompton Hospital Paediatric Respiratory Medicine Department, London, UK; [3]Department of Paediatrics and Adolescent Medicine, Turku University Hospital and University of Turku, Lighthouse Hospital, Turku, Finland; [4]Department of Paediatrics, Heraklion University Hospital, University of Crete Medical School, Heraklion, Crete, Greece; [5]Centre for Paediatrics and Child Health, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.230

Background *Post hoc* analysis of clinical trials has shown that blood eosinophils may predict future preschool wheeze attacks, however, the optimal cut-off and utility in a clinical setting is uncertain.

Abstract P69 Table 1 Decision tree model rules for the most important predictor for future wheeze attack. Point-of-care blood eosinophils to predict preschool wheeze attacks

Rules	Sample size at decision nodes - n (%)	Prediction of attack by model	Probability of future attack
3.%blood eosinophils < 4	22 (35.5)	NO	0.18
4.%blood eosinophils ≥ 4 and TRACK≥73	10 (16.1)	NO	0.30
5.%blood eosinophils ≥ 4 and TRACK<73	30 (48.4)	YES	0.63

Hypothesis Point-of-care (POC) blood eosinophil measurements in preschool wheezers relate to symptoms and lung function and predict future attacks.

Methods Children aged 1–5 years with recurrent wheeze underwent finger-prick sampling for POC blood eosinophils. Forced oscillation technique (FOT) using 8Hz protocol and/or spirometry, and symptom score using TRACK questionnaire, were assessed. Utility of blood eosinophils, with or without other tests, in predicting wheeze attacks in the following 3 months was analysed using 1) cut-point of $\geq 0.3 \times 10^9$/L, 2) predictive decision tree (DT) model to identify the most important objective predictors.

Results 73 children (median age 4.27 years) were recruited from a tertiary paediatric respiratory centre. Blood eosinophils were not influenced by age or sex but absolute counts were higher in atopic children (median 0.5×10^9/L vs 0.3×10^9/L non-atopic, $p<0.01$). 26/73 (35.6%) children successfully performed spirometry, and 34/73 children (46.6%) FOT. Blood eosinophil count correlated with clinically significant Xtot bronchodilator reversibility [z score changes of -1.83 (Calogero *et al* 2013)], ($r=0.495$, $p=0.005$), but no other FOT or spirometry indices.

68/73 (93%) children were followed-up at 3 months. 29/68 (43%) children had ≥1 wheeze attack requiring unscheduled healthcare attendance. Absolute eosinophils and%eosinophils at the baseline visit were higher in those who had an attack (median 0.5×10^9/L vs 0.3×10^9/L, $p=0.03$ and median 6% vs 4%, $p<0.01$ respectively).

62/73 (84.9%) children with complete data were included in the predictive model which incorporated absolute and% eosinophils, absolute and%neutrophils, and TRACK score. Atopic status was included to account for potential confounding effects. The DT model identified%eosinophils and TRACK score as most relevant predictors, with three final rules (table 1). Children with eosinophils ≥4% and TRACK score <73 were most likely to have a future attack (probability 0.63).

Conclusion POC blood eosinophils with TRACK score predicted a wheeze attack within 3 months. The relatively small sample size means this model requires validation with a larger sample size, outside a tertiary care setting to assess generalisability.

P70 UTILITY OF FORCED OSCILLATION TECHNIQUE IN THE MANAGEMENT OF PRESCHOOL WHEEZE

S Kadam, S Irving, N Orr, L Fleming, S Saglani, S Sonnappa. *Royal Brompton Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.231

Background Forced oscillation technique (FOT) is increasingly used in preschool children to monitor and assess wheeze/asthma.[1–4] However, there is limited data on its clinical utility. Our study aimed to determine if FOT is useful to monitor response to treatment in preschool children with recurrent wheeze and whether it correlates with clinical improvement.

Methods We retrospectively studied preschool children with recurrent wheeze who had FOT measurements with bronchodilator reversibility (BDR) at initial (V1) and follow-up visits (V2) at the Royal Brompton Hospital. Children were included if at V1 they were either started on inhaled corticosteroids (ICS), had their ICS dose optimised or were switched to combination ICS with long-acting β-agonist. Demographic data and FOT indices including BDR data were collected. FOT measurements were undertaken according to international recommendations using Resmon Pro, at resistance 8 Hz.[3] Wilcoxon signed rank and paired T- tests were used as appropriate to analyse data. BDR was considered significant if change in Z-score was >1.95 for Xexp and >1.85 for Rexp.[4]

Abstract P70 Table 1 Demographic and FOT data in preschool children with wheeze

Full cohort (24 patients)			
	Baseline	**Follow Up**	**Statistical sig (Wilcoxon signed rank)**
Age (years, mean, *SD*)	4.3 (0.8)	4.52 (0.76)	-
Gender (M:F)	17:7	-	-
Xexp-BDR Change in z score (median, *IQR*)	-3.04 (-3.76 - -1.3)	-1.66 (-2.33- -1.05)	p=0.04
Rexp-BDR Change in z score (median, *IQR*)	-2.26 (-3.10- -1.00)	-1.33 (-1.49- -0.66)	ns
BDR positive cohort (16 patients)			
Age (years, mean, *SD*)	4.3 (0.9)	4.52 (0.72)	-
Gender (M:F)	10:6	-	-
Xexp-BDR Change in z score (median, *IQR*)	–3.50 (-4.34 - -3.08)	-1.51 (-2.09–0.32)	p=0.004
Rexp-BDR Change in z score (median, *IQR*)	–1.38 (-2.50- -1.29)	-0.94 (-1.50- -0.53)	p=0.02

Results 24 patients mean age 4.3 years were included (table 1). All children had doctor-confirmed recurrent wheeze. 15 were atopic (10 aeroallergen sensitisation, 4 eczema and 1 egg allergy). Other comorbidities included oropharyngeal dysphagia (n=3) and gastro-oesophageal reflux (n=2). Median interval between V1 and V2 was 3 months (range 1–14 months). 16/24 (67%) children had significant BDR at V1. Further analysis showed these 16 children with BDR at V1, demonstrated significant improvement in magnitude of BDR between V1 and V2 for Xexp and Rexp measurements (table 1). This correlated with clinical improvement from baseline to V2 in the 16 patients with significant BDR in terms of reduced ED visits [mean 2.31 (SD 1.35) vs mean 0.06 (SD 0.24), $p<0.0001$] and hospital admissions [mean 2 (SD 1.27) vs mean 0.13 (SD 0.48), $p<0.0001$].

Conclusions We show that in preschool children with recurrent wheeze, FOT is a useful adjunct objective measure of clinical improvement to monitor response to treatment.

REFERENCES

1. Thamrin C, *et al.* 2006.
2. Udomittipong K, *et al.* 2008.
3. King GG, *et al.* 2020.
4. Calogero C, *et al.* 2013.

P71 TESTING THE PROPOSED NICE/BTS/SIGN DIAGNOSTIC ALGORITHM IN CHILDREN AND YOUNG PEOPLE UNDER INVESTIGATION FOR ASTHMA IN THE LEICESTER PAEDIATRIC ASTHMA DIAGNOSTIC PATHWAY STUDY

[1]EA Gaillard, [1]DKH Lo, [2]V Rai, [3]L Ryan, [3]I Ahmed, [2]N Blyth, [2]P Patel, [2]J Madge. *[1]University of Leicester, Leicester, UK; [2]University Hospitals of Leicester NHS Trust, Leicester, UK; [3]Integrated Care Board, Leicester, Leicestershire, UK*

10.1136/thorax-2024-BTSabstracts.232

Background Recent NICE/BTS/SIGN draft guidelines (NG10186) recommend FeNO as first line diagnostic test for asthma in children 5 to 16 years. Children with FeNO <35ppb require further testing with spirometry and BDR. We investigated the potential impact of this change on the outcome of diagnostic testing.
Methods Data from the ICB funded prospective Leicester Paediatric Asthma Diagnostic Pathway (LPADP) study obtained between September 2023 and April 2024 was analysed. CYP from age 5 years with direct GP electronic referral are invited to perform FeNO, spirometry and BDR testing with an experienced respiratory physiologist. CYP with inconclusive results are offered indirect (exercise) and, if negative, direct (methacholine) bronchial challenge testing. Final outcome is determined by MDT.
Results Analysable data to date is available for 562 CYP who attended the LPADP (Mean ± SD age 9.5 ± 3.3 years; 45% male). FeNO was obtained from 371 (66%). 101 CYP had FeNO ≥35ppb (27% of all FeNO; 18% of all CYP referred). Mean age of successful and unsuccessful FeNO groups were 10.8 (SD 3.0) and 6.9 years (SD 2.2) respectively. Only 158 of 246 of 5- to 8-year-olds managed a FeNO result (35.8%).

510 CYP managed spirometry and BDR (91%). 29 of 101 (29%) with FeNO ≥35ppb also had BDR ≥12%. 60 (16%) of FeNO successful children with FeNO <35ppb had BDR ≥12%.
Challenge testing Of 72 CYP with FeNO ≥35ppb and BDR <12%, 23 (32%) were challenge test positive (exercise n=15, methacholine n=8). Only 2 CYP were challenge negative with FeNO values of 89 and 98ppb respectively. The remainder had too variable spirometry (n=3) or lung volumes below that recommended for methacholine challenge testing (n=1) or are awaiting test appointment (n=43). 47 (25%) of 191 CYP with unsuccessful FeNO were diagnosed with asthma on BDR or challenge testing. In 42 (10%) of 461 with FeNO <35ppb or unsuccessful, asthma was ruled unlikely after methacholine challenge testing.
Conclusions FeNO using current routine technology is unlikely to allow early diagnosis in children under 9 years of age. FeNO only confirms the diagnosis in <30% of 9- to 18-year-olds. All others will require additional testing.

P72 REAL-WORLD EFFECTIVENESS OF ANNUAL ASTHMA REVIEWS, ASTHMA MANAGEMENT PLANS AND INHALER TECHNIQUE CHECKS IN UK CHILDREN WITH ASTHMA

Z Khalaf, S Sejal, CI Bloom. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.233

Introduction Guidelines advise that minimising asthma exacerbation risk is achieved partially through good clinical practice activities, including annual asthma reviews, inhaler technique checks and provision of asthma management plans. We assessed how effective these activities are in real-life clinical practice for children with asthma, using data from GP practices across the UK.
Methods UK primary care medical records from the Clinical Practice Research Datalink, 2004–2021, linked to hospital admissions and A&E visits from the Hospital Episodes Statistics. Children were eligible from their asthma diagnosis until aged 18 years. We used self-controlled case series (SCCS) methodology. This unique design removes confounding that may occur during the observation period of the study as each child was their own control, removing for example confounding from genetics, socioeconomic deprivation, BMI, atopy and healthcare behaviour. Our observation period was 12 months before the activity and 12 months post-activity, the period after was segmented into two 6-month blocks to look for longitudinal effects. We used three models to assess each individual activity, and a final model to assess the effectiveness of receiving all three activities in the same consultation.
Results 126,483 children were eligible, median age 9.1 years (IQR 6.6–12.0), 46% girls, 16% obese/overweight. Management plans and asthma reviews, as standalone activities were associated with an exacerbation reduction of approximately 15% over 12-months and 8% over 6-months, respectively (management plan, N=4,624 children; 0–6 months: IRR=0.87, 95% CI 0.79–0.96; 6–12 months: IRR=0.83, 95% CI 0.73–0.95; asthma review, N=6,948 children; 0–6 months: IRR=0.92, 95% CI 0.85–0.99; 6–12 months: RR=0.93, 95% CI 0.83–1.03). Standalone inhaler technique checks were not significantly associated with exacerbations. Provision of the three activities together was associated with approximately 30% exacerbation reduction over 12-months (0–6 months: IRR=0.76, 95% CI 0.68–0.85; 6–12 months: IRR=0.69, 95% CI 0.60–0.81).
Conclusions This is the first UK study of children with asthma to assess the effectiveness of these guideline-recommended activities in real-life clinical practice. Our findings suggest although individually, the guidelines-recommended activities for childhood asthma assessments were beneficial, maximal improvement is achieved when combined within a comprehensive asthma review. These findings parallel results from randomised controlled trials.

P73 VIDEO DIRECTLY OBSERVED THERAPY (V-DOT) FOR ACHIEVING AND SUSTAINING MASTERY OF INHALER AND NASAL SPRAY TECHNIQUE IN CHILDREN AND YOUNG PEOPLE: A RANDOMISED PILOT STUDY

[1]K Ferris, [2]P McCrossan, [1]M Shields, [3]J Paton, [1]D O'Donoghue. *[1]Queen's University Belfast, Belfast, UK; [2]Royal Belfast Hospital for Sick Children, Belfast, UK; [3]University of Glasgow, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.234

Background Worryingly a large proportion of children and young people are not receiving the basics of asthma care. Education including empowering patients and their families to actively self-manage is fundamental.
Methods A randomised pilot study to compare a novel augmented teaching method (Video directly observed therapy (v-DOT)) with standard training in achieving and sustaining mastery of inhaler +/- nasal spray technique.

Participants randomised 1:1 to v-DOT (intervention) or usual care (control). The intervention group immediately commenced on v-DOT and uploaded twice-daily videos. v-DOT continued until the patient had uploaded 3 consecutive days of correct technique. Usual care is up to 3 face to face appointments using teach back methodology in iterative cycles over approximately 8 weeks.
Results 45 patient recruited- 24 v-DOT and 21 control. Age range 1–14 years of age (mean = 6 years). Recruitment rate 47%. The most common barrier to recruitment was lack of time.

19 patients on the v-DOT arm reached mastery of technique in 21 days or less. Mastery of technique defined as absence of healthcare professional detected errors.

71% of the children achieved moderate adherence to video uploads. 2 patients failed to achieve mastery of technique on v-DOT both had poor adherence to video uploads.

Conclusion Using v-DOT to remotely observe at home technique and to provide next day daily feedback has facilitated children and young people achieving correct technique quicker.

P74 EVALUATION OF THE LEICESTER CHILDREN'S DIFFICULT ASTHMA ADHERENCE MONITORING PATHWAY

[1]A Claydon, [1]L Pawlick, [1]E Trim, [2]D Lo, [2]M Ramphul, [2]E Gaillard. *[1]University Hospitals of Leicester, Leicester, UK; [2]University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.235

Background Poor adherence to asthma preventer medication contributes to worse outcomes in children & young people (CYP) with severe asthma.

Aim Evaluate the Leicester Children's Difficult Asthma Adherence Monitoring Pathway with Digital Smart Inhalers (DSI) in CYP.

Methods CYP with uncontrolled severe asthma and new referrals from local DGHs were recruited and set-up on DSI (Propeller Health) monitoring. Adherence was considered good if preventer inhaler was used ≥75% as prescribed, or poor if <75%. Online data was checked monthly and a pathway model was followed (figure 1). Text messages included prompts either to sync devices, or to inform of low adherence or good adherence. Telephone clinics included adherence and/troubleshooting advice. Face-to-face clinics addressed poor adherence. Patients were also contacted if high rescue inhaler use even with good preventer adherence.

Results 65 CYP were enrolled onto DSI's and data available at 6 months for 32 patients (median age 12 years, range 5–18; 19 male). 14 patients discontinued monitoring (5 devices lost or damaged), 3 switched to non-compatible ICS, 2 where asthma was not the diagnosis, 2 with large gaps in data and 2 discharged from the service, 19 with < 6 months data.

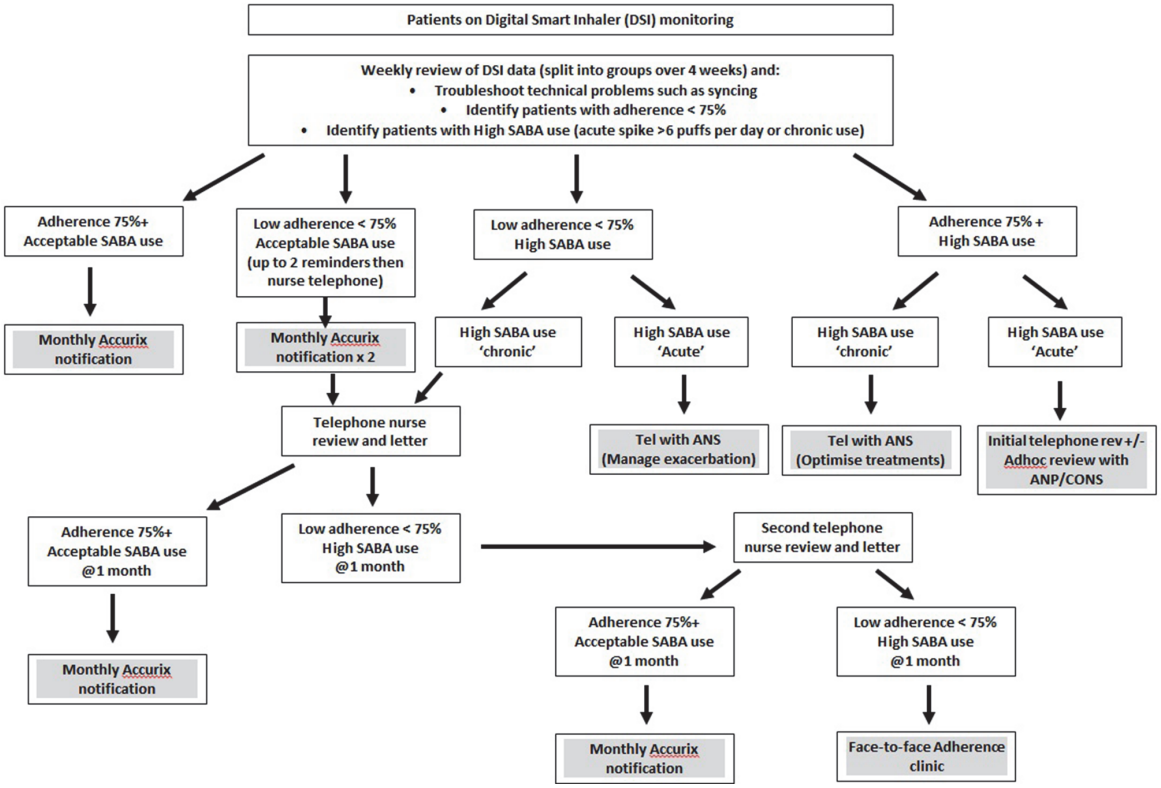
At baseline 15 CYP (47%) were adherent and 17 (53%) non-adherent. At 6 months, 17 CYP (53%), were adherent (12 remained and 5 became adherent), 15 (47%) non-adherent (12 remained and 3 became non-adherent)

TEXT messages: 6 CYP received an automated message; 3 remained adherent, 2 became adherent, 1 remained non-adherent.

Asthma nurse telephone appointment: 7 CYP were contacted. 1 remained adherent, 1 became adherent, 5 remained non-adherent.

Face-face adherence appointment: 19 CYP attended; 8 remained and 2 became adherent, 3 became and 6 remained non-adherent

Conclusion Poor adherence is an important problem in the paediatric severe asthma clinic and achieving behaviour change is a complex intervention. DSI monitoring alongside a structured pathway appears to maintain levels of adherence. Non-adherent CYP often require further individualised complex health/social needs in the patient/family to be taken into consideration. Further review of the costly face-face adherence clinics is needed to evaluate its usefulness for CYP & families.



Abstract P74 Figure 1

P75 HOW COMMON IS NON-ATOPIC SEVERE ASTHMA IN CHILDREN? – ANALYSIS FROM A REGIONAL SEVERE ASTHMA CENTRE

M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar. *Birmingham Children's Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.236

Introduction and Objective Severe asthma in children is a heterogenous disease resulting in significant morbidity and health care utilisation. The disease is driven by type 2/allergic inflammation. Most of the asthma biologics target type 2 and/or eosinophil pathways. The characteristics of children with non-atopic severe asthma is not well described. This study describes the clinical characteristics of non-atopic severe asthma in children and identify any distinct phenotypes within this subgroup.

Methods A retrospective analysis of children aged 6 yr- 16 yr attending a regional paediatric severe asthma centre between 2018 and 2024. Data were collected from patient electronic records (PEPR), including sensitization status based on serum-specific IgE (sIgE) levels (≥0.35 kU/L) to aeroallergens, total IgE and serum eosinophil counts, lung function, FeNO. Statistical analysis was performed using Mann-Whitney U test and Chi-square test to determine

Results Among the 126 patients, 17 (13.5%) were diagnosed with non-atopic asthma. 13/17 (76%) of children with non-atopic asthma were Caucasian and 11/17 (64.7%) were male. In the non-atopic cohort, the median predicted percentage of FEV1 was significantly lower in the non-Caucasian group 64% compared to the Caucasian group 94%), p=0.03.

A subgroup of 8/17 (47%) of children with non-atopic asthma had high blood eosinophil count. They had higher median eosinophil counts (0.6 x109/L) and an eosinophil/white cell count ratio of 9.4%. This subgroup showed a higher median FeNO levels of 83 ppb, compared to 7.5 ppb in the non-eosinophilic group, p= 0.082.

The non-eosinophilic group was younger, with a median age of 7.4 years compared to 12.1 years in the eosinophilic group (p<0.001). Additionally, the eosinophilic group had a slightly higher median of 5 asthma attacks in the prior 12 months, compared to 3 in the non-eosinophilic group.

Discussion Non atopic severe asthma in children is uncommon accounting for 13.5% of our cohort. We have identified a distinct phenotype of 'eosinophilic non-atopic' asthma. The distinct phenotype is characterised by older age, high FeNO and increased exacerbation and may respond to anti IL-5 biologic therapies.

Abstract P75 Table 1

Median (total range)	Eosinophilic (n= 8)	Non-eosinophilic (n= 9)	P value
Age (years)	12.4 (5.1 - 15.4)	7.4 (5.1 - 11.5)	<0.001
Male (%)	62.5% (5/8)	55.6% (5/9)	0.62
Weight (kg)	52.75 (21.2 - 90)	30.75 (20.2 - 71, n= 8)	0.195
Height (cm)	149.3 (116.6 - 174.9)	133.4 (109.4 - 176.6, n=8)	0.235
Demographic (Caucasian %)	50% (4/8)	88.9% (8/9)	0.37
FEV1 (L)	2.06 (1.02 - 3.8)	1.81(0.74 - 3.69)	0.541
FEV1 (%)	80% (56% - 112%)	88% (59% - 122%)	0.888
FVC (L)	2.88 (1.02 - 4.77)	2.1 (1.12 - 2.33)	0.481
FVC (%)	86% (72% - 112%)	96% (84% - 125%)	0.541
FeNO (ppb)	83 (33 – 159, n= 5)	7.5 (5 – 108)	0.082
ACT	10 (10 – 17, n= 5)	14 (7 – 23, n= 3)	0.786
PAQLQ	3.4 (2.6 - 5.65, n= 5)	4.9 (4.54 - 5.23, n= 2)	0.381
ICS (mg/d)	1000 (1000 – 1000)	1000 (400 – 1000)	0.277
Patients on OCS (%)	50% (4/8)	55.6% (5/9)	0.949
Patients on OCS (mg/day)	1.25 (0 – 5)	2.5 (0 – 5, n= 5)	0.963
Number of asthma attacks in the last 12 months	5 (4 – 8, n= 3)	3 (3- 3, n=2)	0.2
Eosinophils count (x10⁹)	0.6 (0.5 - 3.6)	0.3 (0.1 - 0.4)	<0.001
Eosinophils/ WCC ratio (%)	9.40% (4.90 - 25.70%)	4.5% (1.4% - 7.1%)	<0.001
Total IgE (kU/l)	95 (18 – 1328, n= 7)	37 (18 – 1131)	0.351

P76 REVEALING THE HIDDEN: FOOD ALLERGEN SENSITIZATION IN CHILDREN WITH SEVERE ASTHMA

M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar. *Birmingham Children's Hospital, Birmingham, UK*

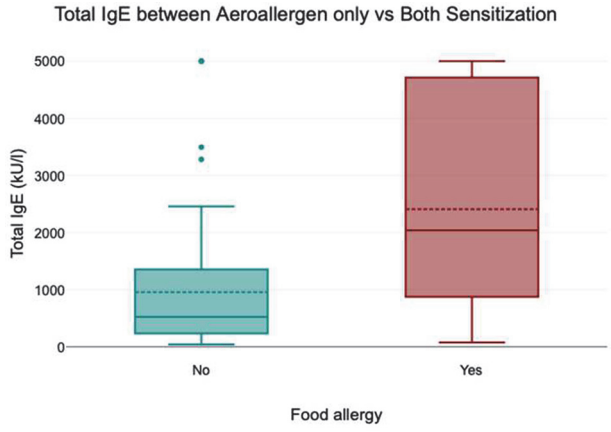
10.1136/thorax-2024-BTSabstracts.237

Introduction and Objectives Children from ethnic minority groups experience a higher prevalence of food allergies (PMID: 35306712). However, the impact of coexistent severe asthma on outcomes is not well described. We hypothesized that in children from ethnic groups with severe asthma, coexistent food allergy is a significant comorbidity resulting in adverse outcomes.

Methods Retrospective analysis of data from children with severe asthma aged 6- 16 yr referred to a regional severe asthma centre in the UK. Allergen sensitization was confirmed with specific IgE levels ≥ 0.35 kU/L. Patients were stratified by atopic status and ethnicity. The demography, FEV1, FeNO, blood eosinophil count were analysed. Statistical analyses were performed with the Mann-Whitney U test and Chi-square test.

Results Out of 126 patients, 109 (86.5%) were atopic. Thirty-eight (34.9%) had at least one food allergen sensitization. Of these 38 patients, 31(81.6%) were non-Caucasian. Sensitization to one food allergen was seen in 5/38 (13.2%) and to two or more food allergens in 33/38 (86.8%).

The most prevalent food allergens were egg white 27/38 (71%), peanut 25/38 (65.8%), wheat 21/38 (55.3%), soya 21/38 (55.3%), milk 19/38 (50%), and cod fish 11/38 (28.9%). Non-Caucasian patients had a higher median specific IgE to cod fish (16.25 kU/L) compared to Caucasian patients (0.8 kU/L, p=0.051). The median total IgE level was higher in



Abstract P76 Figure 1

non-Caucasians (2493.5 kU/L) than in Caucasians (1270 kU/L).

Patients with both sensitizations had a higher median total IgE (2038 kU/L vs. 522 kU/L in the aeroallergen-only group, $p<0.001$). Adrenalin auto injector was prescribed in 16/38 (42%) of children.

Discussion Food allergies significantly increase the disease burden in non-Caucasian children with severe asthma, primarily due to high IgE levels associated with food allergies, which often preclude the use of asthma biologics such as Omalizumab. Personalized education and tailored support for managing food allergies, alongside strategies aimed at improving asthma control via a multidisciplinary team approach, is likely to improve patient outcomes. Future studies are essential to explore biologic therapies that concurrently target both asthma and food allergies to reduce the risk of anaphylaxis and asthma attacks.

P77 SHORT-TERM IMPACTS OF AIRBORNE PARTICULATE METALS ON COGNITIVE AND SENSORIMOTOR FUNCTION IN PRIMARY SCHOOL-AGED CHILDREN

[1,2]RE Dove, [1,2]H Hajmohammadi, [1]L Sartori, [1]A Hall, [1,2]HE Wood, [3]M Wood, [4]M Mon-Williams, [1,2]CJ Griffiths, [5]IS Mudway. *[1]Queen Mary University of London, London, UK; [2]Asthma UK Centre for Applied Research, Edinburgh, UK; [3]University of Leeds, Leeds, UK; [4]Bradford Institute of Health Research, Bradford, UK; [5]Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.238

Background Air pollution is a complex mixture of gases and particulate matter, including metals. Increasingly, evidence suggests a neurological impact of long-term air pollution exposure, however short-term effects on brain function are less well understood. Neurotoxic metals associated with airborne particulate matter may be of particular concern.

Aim Using data from the CHILL: Cognition study (a sub-study of CHILL – Children's Health in London and Luton) we investigated the impact of day-to-day variations in airborne particulate metals on cognitive and sensorimotor function in primary school-aged children.

Methods 887 children (aged 8.7 ± 0.84 years) were recruited from London primary schools. Cognitive (working memory, processing speed) and sensorimotor function were assessed annually between 2019 and 2022. Daily concentrations of particulate neurotoxic metals – aluminium, arsenic, copper, iron, lead, and manganese – were obtained from a background London monitoring station and exposure estimates were calculated for same day, one day prior, and one week prior to cognitive testing. Associations between metal exposures and test performances were assessed using a mixed-effects regression model adjusted for age, sex, BMI, ethnicity, and deprivation.

Findings Aluminium (Al), copper (Cu), iron (Fe), lead (Pb) and manganese (Mn) exposures in the week prior to assessments, were all found to have a detrimental impact on performance in working memory assessments (Coefficients: Al = -0.038 ($p = 0.004$); Cu = -0.012 ($p = 0.042$); Fe = -0.017 ($p = 0.021$); Pb = -0.008 ($p = 0.046$); Mn = -0.019 ($p = 0.023$)). These associations were not observed with exposures on the day prior to assessment. Motor function and processing speed performance were not found to be significantly affected by these metals across any time window examined.

Conclusions This analysis indicates a detrimental acute effect of airborne particulate-associated metals on working memory performance in school-aged children.

P78 A NOVEL APPROACH TO THE INTRODUCTION OF POST ASTHMA/WHEEZE ATTACK 'AS REQUIRED' SALBUTAMOL ADVICE IN AN ETHNICALLY DIVERSE PAEDIATRIC POPULATION USING VIRTUAL WARDS

[1]R Lees, [1]S Harris, [2]J Colley, [2]P Watson, [3]S Frost, [1]M Atkinson, [3]P Nagakumar. *[1]Sandwell and West Birmingham Hospitals NHS Trust, Birmingham, UK; [2]Worcestershire Acute Hospitals NHS Trust, Worcester, UK; [3]Birmingham Women's and Children's NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.239

Introduction In the United Kingdom, the practice of discharging paediatric patients' post-asthma or wheeze attacks with a three-day fixed-dose salbutamol weaning plan is non-evidence based.[1] Nationally there is significant variation of number and frequency of puffs. There is a move nationally of recommending salbutamol on an 'as required' basis.[2] However, the safety and efficacy of implementing the practice in an ethnically diverse population is not known. We report the outcome of a quality improvement project with the evaluation of this model carried out utilising a virtual ward pathway.

Methods We conducted a survey of health professionals to assess the awareness and appetite for a potential change to salbutamol weaning plans. Then developed multilingual videos, and information for the new 'as required' salbutamol advice. The pathway was then evaluated using a paediatric virtual ward. The change in the puffs of salbutamol, re-attender rate and parental feedback were analysed.

Results Sixty percent (78/130) of survey respondents were keen on supporting the change to 'as required' salbutamol and thirty-five percent (46/130) were open to change.

A hundred and seventeen children were recruited and data from 106 (90.5%) was analysed. Eighty-eight (75%) were non-Caucasian. The mean salbutamol usage decreased from 36, 24, and 12 puffs in the first, second, and third 24 hours post-discharge, to 4.6, 3.6, and 1.9 puffs, respectively with the new pathway ($p<0.001$). Ninety-one (52/57) percent of patients previously discharged with a fixed dose regime preferred 'as required' salbutamol.

Conclusions We report a novel method of evaluating the introduction of a new pathway. The significant decrease in salbutamol consumption post-discharge, alongside stable readmission rates, supports the viability of the 'as required' model in diverse pediatric populations, potentially informing future clinical practices.

REFERENCES

1. Currie V, Duthie L, Nagakumar P. G392(P) Management of acute wheeze- what do paediatric trainees do? *Archives of Disease in Childhood* 2020.
2. Connett G, Harper S, Raut B, *et al.* Hospital discharge using salbutamol as required after acute attacks of wheeze in children: a service evaluation. *Archives of Disease in Childhood* 2024;**109**:2.

P79 RISK FACTORS FOR SLEEP DISORDERED BREATHING IN CHILDREN WITH PRADER-WILLI SYNDROME

[1,2]M Sahibqran, [1]A Lucas-Herald, [2]R Lennon, [2]E Buchan, [2]P Burns, [2]P Davies, [2]R Langley. [1]*Developmental Endocrinology Research Group, Royal Hospital for Children, Glasgow, UK*; [2]*Department of Respiratory Medicine, Royal Hospital for Children, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.240

Introduction and Objectives Growth Hormone (GH) therapy is routinely used in the management of children with Prader-Willi Syndrome (PWS) to improve growth and body composition, however, sleep disordered breathing (SDB) may be a consequence of GH use. IGF-1 levels can be used to assess GH therapy but may also serve as a biomarker for the development of SDB. The aim of this study was to identify predictive biomarkers and risk factors for the development of SDB in children with PWS.

Methods A retrospective study was undertaken of 53 children (49% male) with PWS aged 0–18 years (median age = 3.9 years) who had sleep studies between September 2011 – May 2024. Data was collated on patient demographics, IGF-1 levels, GH doses, Non-Invasive Ventilation (NIV), and previous tonsillectomy and adenectomy (T&A) surgery.

Results 166 sleep studies (full polysomnography/overnight oxygen saturations/transcutaneous CO2 monitoring) were reviewed. Overall, 48 (91%) of patients were on GH at the time of study and 8 (15%) had previous/current NIV therapy. 16 patients (30%) had high and 10 (18%) had low IGF-1 levels. Univariate analysis showed a significant association between absolute IGF-1 and central AHI (R^2=0.05, p=0.01). BMI SDS was found to be significantly associated with all sleep study parameters with the exception of mean SpO2 (mixed + obstructive + hypopnoea (M/O/H) Apnoea Hypopnea Index (AHI)/hr R^2=0.1, p=0.0002; central AHI/hr R^2=0.03, p=0.03; total AHI/hr R^2=0.04, p=0.02, mean CO2kpa R^2=0.1, p=0.0001). Multivariate regression analysis showed an association between total AHI/hr with central AHI/hr and M/O/H AHI/hr (p<0.0001), and GH use with IGF-1 (p=0.0025). Patient sex correlated with mean CO2kpa (p<0.0001).

Conclusions SDB may be exacerbated by GH therapy in children with PWS. BMI SDS and IGF-1 levels are significantly associated with central AHI and other sleep parameters, making them appropriate predictive biomarkers for the development of SDB in PWS. Current guidance suggests screening for SDB pre- and post-GH therapy, we recommend a review of sleep study guidance and monitoring in those with PWS on GH therapy.

REFERENCE

1. Jennifer Miller, MD. Prader-Willi syndrome. *British Medical Journal*. 2023. https://bestpractice-bmj-com.knowledge.idm.oclc.org/topics/en-gb/3000311

P80 SLEEP DISORDERED BREATHING AND ITS MANAGEMENT IN SCOTTISH CHILDREN WITH ACHONDROPLASIA

L Doran, E Buchan, P Burns, R Langley, N Gibson, P Davies. *NHS Greater Glasgow and Clyde, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.241

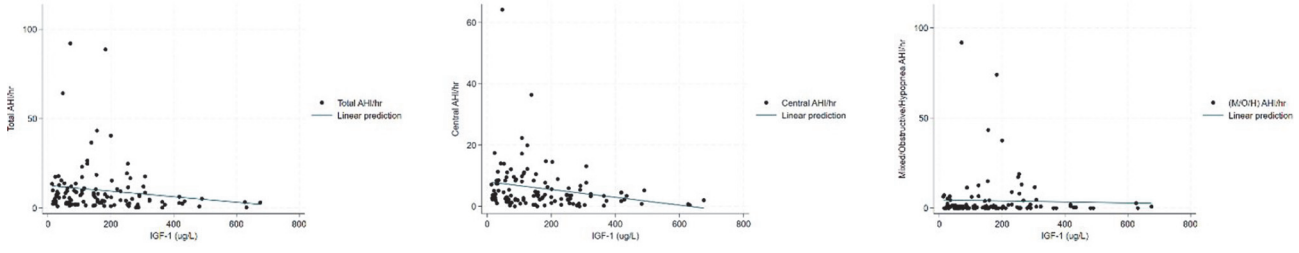
Background Achondroplasia is the most common skeletal dysplasia. Clinical features including short stature, proximal limb shortening, macrocephaly, frontal bossing and scoliosis. Children have multiple risk factors for sleep disordered breathing (SDB) including mid face hypoplasia, depressed nasal bridge, retruded chin position, increased mandibular angle, narrowing of the foramen magnum, hypoglossal canal and jugular foramina. The aim of this study was to assess the prevalence and nature of SDB and which treatments were required in our cohort of children with achondroplasia.

Method A multidisciplinary clinic for children with achondroplasia from throughout Scotland has recently been established. We examined the results of the sleep breathing investigations that had taken place throughout Scotland for all children with achondroplasia, identifying the most significant sleep study for each child and what interventions were needed.

Results A total of 33 children with achondroplasia were identified, median current age 6 years 0 months (range 12 months–14 years 11 months). All 33 of these children had sleep studies (20 cardiorespiratory sleep studies, 13 oximetry/oxycapnography).

11(33%) of children had completely normal studies. 17 (52%) had obstructive sleep apnoea, in 12(36%) children this was severe (>10 obstructive events/hr). 18(58%) had central sleep apnoea, in 3(10%) children this was severe. Of those who had cardiorespiratory studies the median AHI was 15.7/hr (range 0–52.4/hr), median obstructive events was 11.4/hr (range 0–50.3/hr) and central events 3.2/hr (range 0.3–13.3/hr). 12(39%) required no intervention. 11(33%) children required adenotonsillectomy, 10(30%) of children required non-invasive ventilation, 7 (21%) children required supplemental oxygen. 7 children (21%) required a single intervention, 13(39%) required more than one intervention.

Conclusion Sleep disordered breathing is common in children with achondroplasia. However therapeutic interventions are



Abstract P79 Figure 1 Linear regression between IGF-1 and sleep study parameters

not always successful and follow up cardiorespiratory sleep studies are required.

An international consensus statement on the diagnosis, multidisciplinary management and lifelong care of individuals with achondroplasia (2022) advised children with achondroplasia should have an overnight sleep study performed in the first year of life or at the first signs of sleep disordered breathing, whichever comes earliest, these studies should be performed no later than 2 years of age and our data would support this approach.

'Subtle Knife' – Lung cancer management

P81 PERFORMANCE STATUS EVALUATION AND TREATMENT OUTCOMES BY MULTIDISCIPLINARY SPECIALTIES ALONG THE LUNG CANCER PATHWAY

P Thet, W Soe, N Khine, P Arkar, T San, AK Banerjee. *University Hospital Southampton, Southampton, UK*

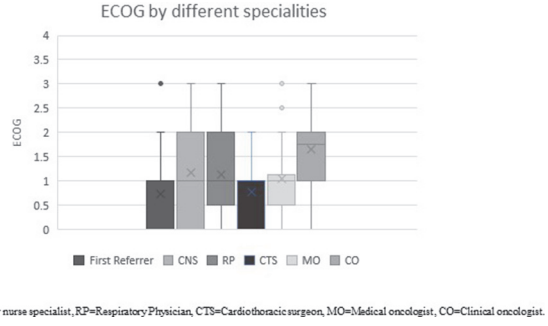
10.1136/thorax-2024-BTSabstracts.242

Background Delays in the pathway from initial presentation to diagnosis to treatment of lung cancer may mean the patient deteriorates and is no longer fit for treatment. Fitness (Performance Status, PS) is assessed by different professionals during the pathway using nationally agreed criteria.

Objective Determine whether the assessment of PS is consistent between Healthcare Professionals. Determine whether pathway delays result in critical deterioration of PS below the threshold for treatment.

Method Retrospective analysis of patients investigated for lung cancer in tertiary hospital between February 2023 to January 2024. PS was evaluated using the WHO scale.

Results 99 patients were analysed, mean age 74 years (SD 10.1); 62% male. 74% had a histological diagnosis. Stage I 47%, Stage II 8%, Stage III 21%, Stage IV 21%. Average time to receive first oncological treatment was 3.4 months (SD 2.1). 83% received oncological treatment. 59% met a surgeon or oncologist within 2 months of referral to cancer services, 32% between 2–6 months, 9% over 6 months. 58% showed variability in PS assessment between health professionals; of these, 40% had a 1 point, 10% 2 points and 1% 3 points difference in PS score. Clinical Oncologists judged the PS higher, on average, than other health professionals. The PS fell over the 3.45 months after first referral in 52%, whereas 6% increased PS. The PS of 10% whose pathway was longer than 4 months fell below the threshold for treatment.



Abstract P81 Figure 1 Variation in ECOG assessment by different specialities for all patients (n=99).

Conclusions There is significant variability in performance status (PS) assessment by different health professionals as shown in figure 1. This may be due to subjective interpretation of patient reported symptoms, differences in clinician experience, disease progression or the impact of short-term acute illnesses. To ensure patients receive appropriate oncological treatment, we recommend training multidisciplinary teams (MDTs) to standardize PS assessment. PS in lung cancer patients declines over time, meaning delays in the treatment pathway may render patients unfit for treatment. MDTs should be aware of the impact of delays and complexity in the patient's pathway on the patient's fitness to withstand oncological treatment.

P82 POST OPERATIVE OUTCOMES FOR LUNG CANCER PATIENTS WITH LUNG FIBROSIS

S Holland, SF Enam, D Seeboruth, D Fernando, G Aresu, D Meek, L Succony. *Royal Papworth Hospital, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.243

Introduction Patients with pulmonary fibrosis carry increased risk of developing lung cancer. Concurrent pulmonary fibrosis and lung cancer have been linked to poorer outcome and impact management decisions within the Lung Cancer MDT. We review the incidence of pulmonary fibrosis within the population of patients referred to a tertiary thoracic oncology centre for surgical resection of their lung lesion and determine their postoperative outcome.

Methods A retrospective analysis of patients diagnosed with a lung cancer at a tertiary centre between June 2022 and June 2023 was performed. In those who underwent surgical resection the presence of fibrosis within the referral, on imaging or within the postoperative histology was determined. Postoperative outcomes were compared between the fibrosis and non-fibrosis groups.

Results Two hundred and thirty one patients were identified who had undergone surgical resection for a lung cancer. Of these, 17 patients (7.3%) were found to have fibrosis. Nine of which were identified preoperatively with a known fibrosis diagnosis at referral or identified on preoperative imaging, whilst 8 subclinical diagnoses were made on postoperative histology. Within the fibrotic cohort the mean FVC was 3.03L (91% predicted), compared to 3.31L (104% predicted).

The mean length of stay for the fibrosis group was 7.4 days compared to 6.6 days within the non-fibrosis group ($P=0.71$). The fibrosis group required a chest drain for a mean of 5.9 days postoperatively compared with 6.6 days in the non-fibrosis group. There were no deaths within 90 days of surgery in the fibrosis group compared to 4 deaths within 90 days in the non-fibrosis group. The opinion of the ILD service was sought in the preoperative management of four cases and one patient exacerbated in the postoperative period requiring steroids.

Conclusion There was a low burden of lung fibrosis within this cohort that underwent surgical resection. This is reflective of the patient group referred to this tertiary centre for invasive work up and radical management. There was no statistically significant difference in postoperative outcomes between the fibrosis and non-fibrosis groups highlighting surgical resection remains a valuable treatment modality in patients with fibrotic lung disease.

P83 SUBLOBAR RESECTION OR LOBECTOMY FOR STAGE 1A NON-SMALL CELL LUNG CANCER: A META-ANALYSIS

[1,2]LK Dixon, [1]E Barber, [1]A Cook, [1]J Boudour, [3]J Conibear, [4]D West, [5,6]N Navani, [1,2]D Cromwell. *[1]Clinical Effectiveness Unit, Royal College of Surgeons of England, London, UK; [2]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, UK; [3]Barts Cancer Centre, St. Bartholomew's Hospital, London, UK; [4]Department of Thoracic Surgery, University Hospitals Bristol and Weston, Bristol, UK; [5]Lungs for Living Research Centre, UCL Respiratory, University College London, London, UK; [6]Department of Thoracic Medicine, University College London Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.244

Background For patients with stage 1a non-small cell lung cancer (NSCLC), an increasing number of studies have evaluated how the outcomes of sublobar resections (segmentectomy and wedge resections) compare with lobectomy, the traditional surgical approach. This systematic review and meta-analysis combines estimates from both randomised and observational cohort studies to determine whether lobectomy or sublobar resection results in improved outcomes for patients with stage 1a NSCLC.

Methods A systematic review and meta-analysis were performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A systematic search using PubMed, Cochrane library and Web of Science was performed. Studies comparing lobectomy against sublobar resection for clinically diagnosed NSCLC stage 1a, with tumour diameter <2cm, were included. Quality of included studies was assessed by the ROB2 or ROBINS1 tools. PROSPERO registration number: CRD42023443965.

Results After reviewing results against the eligibility criteria, 19 studies were included for analysis, including four RCTs. Overall survival at 5 years following lobectomy and sub-lobar resection for stage 1a NSCLC are equivocal (HR=0.99, 95% CI=[0.87, 1.12], p=0.85). Disease-free survival at five years is also similar between the two surgical approaches (HR=1.06, 95% CI=[0.91, 1.23], p=0.48). However sublobar resection is associated with higher rates of local disease recurrence (OR=1.86, 95% CI=[1.07, 3.25], p=0.03). No difference was found for 10-year survival (OR=0.99, 95% CI=[0.27, 3.59], p=0.99) or post-operative reduction in forced expiratory volume in one second (Mean Difference = -4.70, 95% CI=[-11.15, 1.76], p=0.15).

Conclusion This study has shown that survival at five and 10 years following lobectomy and sub-lobar resection for stage 1a NSCLC are equivocal. Disease-free survival at five years is also similar between the two surgical approaches, however sublobar resection is associated with higher rates of local disease recurrence. Longer follow-up and patient reported outcomes should the priorities for future research.

P84 SURGICAL RESECTIONS OF NON-MALIGNANT NODULES: ARE OUR MDT PROCESSES ROBUST?

M Nugent, S Childs, H Watchorn, S Saha, J Edwards, J Rao, S Tenconi, S Iyer. *Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.245

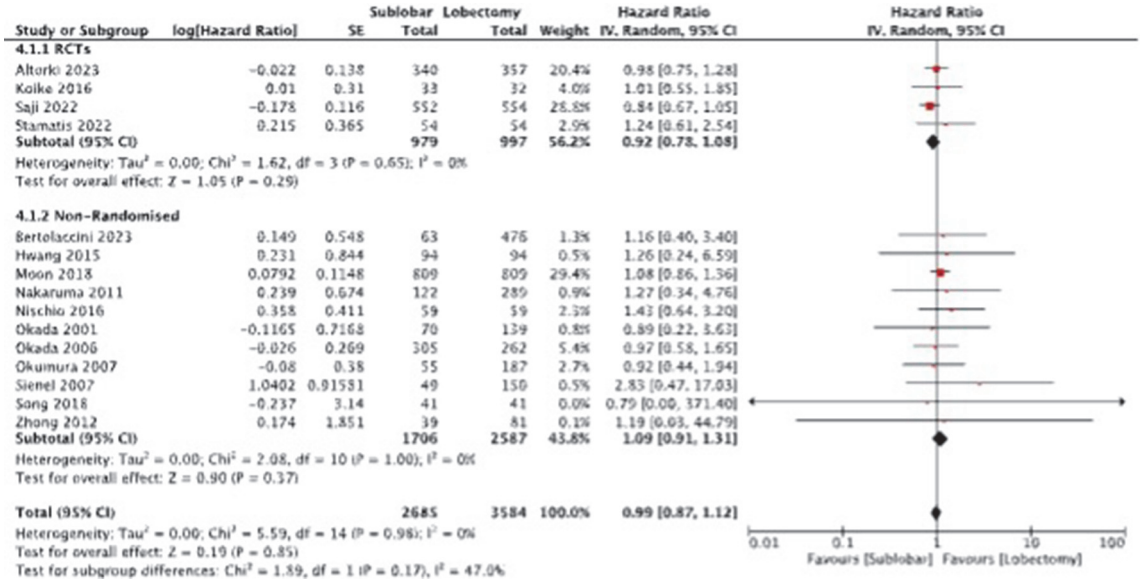
Objectives To retrospectively analyse patients who have undergone surgical resection for lung lesions with a non-malignant diagnosis

To quality assure the decision-making process of local lung Multi-Disciplinary Teams (MDT)

Background Resection rates of benign lesions have been falling since the 1970s, and eliminating these resections completely would be impossible. The 2015 BTS nodule guidelines aim to reduce this number further without compromising the management of early lung cancers. These guidelines to standardise lung MDT approach. Availability of pre-operative histology has a vital role in reducing resection rates for benign lesions.

Methods We retrospectively reviewed all patients in one of the largest surgical databases nationally, referred from nine local lung MDTs, who underwent resection for suspected or confirmed cancer between 2015 and 2021 (1,756 patients). We analysed the demographics, pre-surgery investigations, final diagnosis, and post-surgical outcomes for this cohort.

Results The resection rate for benign lesions in our institution is 14.5% (256/1756), which is in keeping with the accepted rate. Our patient demographics, predominant operative type and histology by Herder scores are visible in table 1.



Abstract P83 Figure 1

Abstract P84 Table 1

	Herder Score <10 N=19	Herder Score 10-70 N=213
Female	8 (24.1%)	105 (49.3%)
Mean Age	61.9	66.7
Smoking History	9 (47.4%)	133 (62.4%)
Previous Malignancy	1 (5.3%)	25 (11.7%)
2+ Comorbidities	3 (15.8%)	79 (37.1%)
Pre-op Histology	1 (5.3%)	31 (14.6%)
Most Common Histology	Benign Tumour N=11 (57.9%) Granulomatous Lesion N=2 (10.5%)	Granulomatous Lesion N=59 (27.7%) Chronic Inflammation N=24 (11.3%) Fibrotic Lesion N=21 (9.9%)
Most Common Procedure Performed	Wedge Resection N=8 (42.1%)	Wedge Resection N=58 (27.7%)

16.4% of our patient cohort had attempts for pre-operative histology from trans-thoracic lung biopsy (TTLB), endobronchial ultrasound biopsy (EBUS) or bronchoscopic biopsy.

Conclusion The management of pulmonary lesions will remain a balance between curative intent for early malignancy and the risks of morbidity from investigating and resecting benign lesions.

Current guidelines emphasise the use of Brock and Herder scores to support MDT decision making and patient counselling regarding risk of lung cancer.

Pre-operative biopsy was not attempted in the majority of our cohort. Some of this will reflect lesions that are inaccessible. Radiologist and bronchoscopist time is an increasingly scarce resource nationally, and the sensitivity of TTLB, EBUS and bronchoscopy does not exclude lung malignancy in high-risk cohort. In these cases, a diagnostic lung resection can be a valuable tool.

P85 OUTCOMES FOR PATIENTS WITH LUNG CANCER AND ILD: A RETROSPECTIVE REVIEW OF CASES DISCUSSED AT A REGIONAL ILD-MDT

C Rafique, D Mitchell, J Ewart, I Forrest, W Funston, E Palmer, W Sendama, AJ Simpson, S Wiscombe. *Newcastle upon Tyne Hospitals, Newcastle upon Tyne, UK*

10.1136/thorax-2024-BTSabstracts.246

Patients with lung cancer referred to the regional Interstitial Lung Disease Multi-Disciplinary Team (ILD-MDT) at Newcastle have doubled in the last two years (37 to 76 per annum). Most referrals request ratification of a suspected ILD diagnosis, as well as risk-stratification for anti-cancer treatment.

A retrospective review was undertaken of all patients (*n=125*) with suspected lung cancer referred to the ILD-MDT from January 2021 to July 2023. 28 were excluded.

97 referrals were fully analysed and 66 had an ILD diagnosis confirmed by the ILD-MDT. 52/66 patients had radiological appearances of UIP/probable UIP, with IPF the most common diagnosis (*n=28*). 31 patients were felt not to have ILD. Of these, 27/31 had emphysema, and 7 of that cohort also had smoking related interstitial fibrosis (SRIF).

Referrals skewed towards early-stage cancer with 65% (n=63) stage 1–2 at time of referral. 41% (n=40) were radiological diagnoses of malignancy. ILD-MDT advice was referenced in 92% of subsequent Oncology and/or Surgical letters, typically as part of shared-decision-making with patients regarding treatment.

Abstract P85 Table 1

	ILD *n=66*	Non-ILD *n=31*
Curative-Intent Treatment	**16** *(24%)*	**16** *(52%)*
Surgical Resection	11	4
SABR	1	6
Radical Radiotherapy	1	4
Surgery + Chemotherapy	3	1
Surgery + Chemotherapy + Radiotherapy	0	1
Treatment without curative intent.	**18** *(27%)*	**7** *(23%)*
Chemotherapy	16	0
Chemotherapy + Palliative Radiotherapy	1	3
Immunotherapy	0	2
Palliative Radiotherapy	1	2
No Active Treatment	**32** *(48%)*	**8** *(26%)*

Among patients with confirmed ILD (*n=66*), 51% received active anti-cancer treatment, with 24% receiving curative-intent treatment. This was significantly less than in the non-ILD group (*n=31*) where 74% received treatment, 52% with curative-intent *(figure 1)*.

Within those treated groups, overall complication rates were similar between the ILD and non-ILD cohorts (27% vs 26%), although a higher rate of surgical complications was observed in the ILD group (55% vs 25%).

12-month mortality was also comparable (ILD=32% vs non-ILD=26%), with the majority (71%) attributable to cancer progression. Only one case of mortality attributable to ILD was observed – a male with CPFE-mild UIP and T1c adenocarcinoma. He was quoted increased risks from surgery, and died of an ILD exacerbation post-operatively.

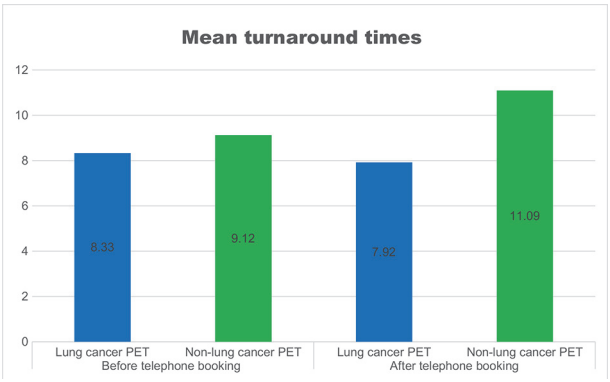
This project helps describe the value of ILD-MDT discussion as a guide for clinical decision making for patients with lung cancer and suspected ILD. Patients confirmed as having ILD received less active treatment due to potential increased risks. However, carefully selected patients were able to undergo anti-cancer treatment including radical treatment options and had comparable complication and 12-month mortality rates to patients without ILD.

P86 INTRODUCTION OF A DIRECT TELEPHONE BOOKING SERVICE FOR PET-CT SCAN FOR LUNG CANCER STAGING ACROSS GREATER MANCHESTER

[1]J Yung, [2]J Brown, [2]H Williams, [2]T Westwood, [2]T Thornber, [1]S Grundy, [3]L Brown, [4]J Lane, [4]S Hulme, [4]L Galligan-Dawson, [3,5]M Evison. *[1]Salford Royal Hospital, The Northern Care Alliance NHS Foundation Trust, Salford, UK; [2]The Christie NHS Foundation Trust, Manchester, UK; [3]Manchester University NHS Foundation Trust, Manchester, UK; [4]Greater Manchester Cancer Alliance, Manchester, UK; [5]Faculty of Biology, Medicine and Health, University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.247

Background The recently published GIRFT report addresses the need for rapid and accurate diagnostics to optimise the lung cancer pathway in those with curative intent. A key component of staging includes PET-CT with a proposed turnaround of 5 days. The report also recommends a regional approach to ensure equitable access.[1] In April 2021, a new direct booking telephone system was introduced, allowing



Abstract P86 Figure 1 Average turnaround times for PET-CT in lung cancer staging and non-lung cancer staging stratified into pre-implementation and post-implementation cohorts

scans to be requested in clinic. This study describes this impact on PET-CT turnaround times.

Methods Lung cancer PET-CT scan request and scan dates from 9 referring hospitals across the region were analysed between 01/12/2019 and 30/09/2023. The date of change was 01/04/2021. Data was filtered out for patients 'pausing the clock', which is when PET-CT bookings are deferred for personal reasons. Mann Whitney U test was used with $p<0.05$. PET-CT scans for non-lung cancer staging indications during this period were also examined to provide a comparison dataset where no direct telephone booking service was implemented.

Results A total of 5907 PET-CT scans requested for staging of radically treatable lung cancer were analysed alongside 5251 PET-CT scans requested for non-lung cancer indications. During this period, average scan requests for lung cancer staging per month rose from 74 to 135 after April 2021. Despite this, mean turnaround time was 8.33 days in the pre-implementation cohort and 7.92 days in the post-implementation cohort ($p=0.006$). The range dropped from 0–31 days to 1–28 days with an interquartile range of 5 days pre implementation and 6 days post implementation, showing less variability and outliers. In the non-lung cancer cohort, average scan requests per month rose from 79 to 134. The mean waiting increased from 9.12 days to 11.09 days ($p<0.001$).

Conclusion The regional PET-CT service has successfully implemented a new, direct telephone booking service for lung cancer staging that aligns with the lung cancer GIRFT recommendations to shorten turnaround times and manage access to specialist diagnostics with a coordinated regional approach.

REFERENCE

1. Beckett PDS, Toy E, Anderson A, *et al.* Lung cancer GIRFT programme national specialty report. NHS England and NHS Improvement.

P87 INTERVENTIONS TO IMPROVE ADHERENCE TO CLINICAL GUIDELINES FOR THE MANAGEMENT OF PULMONARY NODULES AND THEIR FOLLOW-UP: A SYSTEMATIC REVIEW

JA Aunger, KP Yip, K Dosanjh, M Newnham, AM Turner. *University of Birmingham, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.248

Introduction Guidelines for the follow-up of pulmonary nodules, such as those from the British Thoracic Society, often see compliance rates below 50% in the UK and abroad. However, it is important to follow up on these patients to diagnose lung cancer earlier and improve patient safety. Interventions ranging from process improvement approaches to technological patient tracking systems have been developed to tackle this issue. We sought to conduct a systematic review and meta-analysis to understand the range and effectiveness of such interventions for improving follow-up of patients with pulmonary nodules.

Methods We conducted a systematic review following the PRISMA 2020 statement. We searched EMBASE and Medline databases and the Cochrane Central Register of Controlled Trials. Inclusion criteria were peer-reviewed sources outlining an intervention to improve adherence to clinical guidelines for management of pulmonary nodules or improve their follow-up. Studies of any design were included. Studies reporting interventions to improve the diagnosis or detection of nodules and studies published earlier than 2000 were excluded. All screening, data extraction, and quality assessment processes were conducted by two independent reviewers.

This review was prospectively registered on PROSPERO with ID CRD42024534874.

Results We screened 3512 titles and abstracts, excluding 3399. We then screened 113 full texts, of which 55 were included. We identified eight different types of interventions, including tracking systems (n=20), process improvement approaches (n=11), automated natural language processing systems (n=8), point-of-care clinical decision support tools (n=6), radiologist reporting templates (n=4), radiological report tagging systems (n=3), patient involvement improvements (n=1), and national nodule registries (n=1). Of these 55 included studies, 33 reported outcome measures useful for meta-analysis.

Conclusion There are many different interventions to improve the follow-up of pulmonary nodules operating at different parts of the care pathway. These range from improving the content of radiology reports, to comprehensive information technology systems to automate the reading of radiology reports, track patients over time, and send reminders to responsible clinicians. We encourage adoption of such systems in the UK to improve adherence to the British Thoracic Society guidelines and minimise patient harm.

P88 SURVIVAL OUTCOMES OF VERY ELDERLY LUNG CANCER PATIENTS: A COMPARISON BETWEEN STANDARD TREATMENT AND HOSPICE CARE

[1]HR Kang, [2]YJ Lee. [1]*VHS Medical Centre, Seoul, Republic of Korea*; [2]*Seoul National University Bundang Hospital, Seong-Nam, Republic of Korea*

10.1136/thorax-2024-BTSabstracts.249

Background Lung cancer is a leading cause of cancer-related deaths globally, with diagnosis probability increasing with age. Standard treatment for elderly patients is often approached with hesitation due to concerns about side effects, frailty, and perceived limited life expectancy. This study aims to evaluate the administration of standard treatment in elderly lung cancer patients and compare survival rates between those who received standard treatment and those who received hospice care.

Methods This retrospective cohort study was performed at the Veterans Health Care Service Center in Korea, a teaching hospital. It included patients aged 85 to 95 diagnosed with lung cancer based on biopsy or definitive evidence when biopsy was inappropriate.

Results Among 69 lung cancer patients, 26 received standard treatment and 43 received hospice care. The mean age was 87.9 years. The ECOG performance status was significantly better in the treatment group (median: 1) compared to the hospice group (median: 3). Stage IV lung cancer was more prevalent in the hospice group (61.9%) than in the treatment group (42.3%). There were no significant differences in histologic types between the groups. The overall survival probability at 6 and 12 months was 42.0% and 21.7%, respectively, for the total population. The treatment group had significantly higher survival rates at 6 months (88.5%) and 12 months (46.2%) compared to the hospice group (14.0% and 4.6%, $p<0.001$). For patients with ECOG 0–1, the treatment group had higher survival probabilities at 6 months (90.5%) and 12 months (47.6%) compared to the hospice group (25.0% and 12.5%, $p=0.0027$). Stage I patients had a 6-month survival probability of 87.5% overall, with 100.0% in the treatment group and 97.7% in the hospice group ($p=0.039$). Stage IV patients had significantly lower survival probabilities, with 6-month and 12-month survival at 32.4% and 5.4% overall, 90.9% and 18.2% in the treatment group, and 3.9% and 0% in the hospice group ($p<0.001$).

Conclusion This study showed that 60% of the elderly population opted not to receive treatment. Patients who received standard treatment had better survival outcomes than those in hospice care, particularly when analyzed according to ECOG performance status and cancer stage.

P89 RADIOLOGICAL FOLLOW UP AFTER SURGICAL RESECTION OF NON-SMALL CELL LUNG CANCER: OUTCOMES FROM A NORTH WEST SERVICE

[1]R Naveed, [1]HP Bennett, [1]A Rego, [1]P Deus, [1]K Hughes, [1]R Manning, [2]TS FitzMaurice, [1]AG Wight. *[1]Wirral University Teaching Hospitals NHS Foundation Trust, Birkenhead, UK; [2]University of Liverpool, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.250

Introduction As surgical resection rates for non-small cell lung cancer (NSCLC) increase with the introduction of targeted screening programmes, more postoperative follow-up in a resource-limited healthcare setting is necessary. However, no consensus exists for how this should be conducted. Cheshire and Mersey (UK) introduced a standardised, 5-year CT follow-up protocol in 2019 (CT thorax at 6 months, 1 year and yearly for 5 years). Locally, we preceded the remote CT protocol with a half-day, nurse-led patient education workshop. We wished to assess outcomes from our service (~300 diagnoses per year), specifically the route and rate of recurrence, and treatment intent following recurrence detection.

Methods We conducted a retrospective analysis of 167 individuals undergoing surgical resection for NSCLC since the introduction of our service (48 months). All cases were discussed post-operatively at multidisciplinary team meeting and deemed eligible for remote surveillance based on post-operative staging (confirmed NSCLC, complete resection, and/or plans for adjuvant treatment). We recorded demographics, LNC-PATH score (post-operative survival prediction), route and time to recurrence, and treatment intent at recurrence.

Results Of 167 eligible individuals, we excluded 18 due to death from other causes (4) or referral for oncologist-led follow-up (14), leaving 149 (80 female, age 77[10] years). Of these, 9 were subsequently diagnosed with synchronous lung primaries (of whom 8 had pre-operative nodules), and 18 (12%) had recurrence. Amongst recurrences, 2 presented symptomatically outside surveillance (1 solitary brain metastasis at 584 days, 1 distal disease at 135 days), and 16 were detected asymptomatically by CT follow-up. Of recurrences, 7 (39%) received radical treatment, 6 (32%) palliative systemic anti-cancer therapy, 2 (12%) palliative radiotherapy, and 3 (17%) best supportive care. We found no significant relationship between LNC-PATH score and time to recurrence.

Conclusion Our interim data suggest that a remote standardised surveillance CT protocol with nurse-led patient education programme may be used to monitor NSCLC post-resection safely, with the majority of recurrences detected asymptomatically during follow-up. Our data are limited by the relatively short time period (44 months, of a planned follow-up of 60 months) and small number of patients.

P90 SURGICAL OUTCOMES AFTER NEOADJUVANT NIVOLUMAB AND PLATINUM-BASED CHEMOTHERAPY IN RESECTABLE NON-SMALL CELL LUNG CANCER

[1]M Nardini, [1]J Lodhia, [1]A Muthiverula, [1]S Dixon, [2]K Clarke, [2]P Bhatnagar, [2]K Franks, [3]N Brown, [4]A Conn, [5]G Jeyasangar, [1]N Chaudhuri, [1]R Milton, [1]K Papagiannopoulos, [1]P Tcherveniakov, [1]E Teh, [1]A Brunelli. *[1]Department of Thoracic Surgery, Leeds Teaching Hospitals, Leeds, UK; [2]Department of Clinical Oncology, Leeds Teaching Hospitals, Leeds, UK; [3]Department of Clinical Oncology Calderdale and Huddersfield NHS Foundation Trust, Huddersfield, UK; [4]Department of Clinical Oncology, Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK; [5]Department of Clinical Oncology, Airedale NHS Foundation Trust, Airedale, UK*

10.1136/thorax-2024-BTSabstracts.251

Objective To evaluate the surgical outcomes following neoadjuvant chemo-immunotherapy and surgery for locally advanced non-small cell lung cancer.

Abstract P90 Table 1 Shows the subgroup analysis of complete pathological response (cPR) and major pathological response (MPR) by PD-L1 expression, by histology, by clinical stage and by delayed surgery over 6 weeks

	cPR by PD-L1 expression	MPR by PD-L1 expression
PD-L1 <1%	3 of 11 (27%)	4 of 11 (36%)
PD-L1 1–50%	2 of 9 (22%)	3 of 9 (33%)
PD-L1 >50%	4 of 18 (22%) p=1	9 of 18 (50%) p=0.76
	cPR by Histology	
Adenocarcinoma	3 of 26 (12%)	
Non-adenocarcinoma	7 of 15 (47%) p= 0.022	
	cPR by clinical stage	
stage IIA	1 of 1 (100%)	
stage IIB	3 of 14 (21%)	
stage IIIA	4 of 22 (18%)	
stage IIIB	2 of 4 (50%) p=0.18	
	cPR by delayed surgery (>6 weeks after chemo-IO completion)	
>6 weeks	3 of 12 (25%)	
within 6 weeks	7 of 29 (24%) p=1	

Methods Prospective analysis on all consecutive patients who underwent neoadjuvant chemotherapy and nivolumab followed by surgery (March 2023-April 2024), in a single centre. Indication for neoadjuvant treatment was tumour size ≥4cm or biopsy proven nodal disease. Patients met with an oncologist and surgeon prior to initiation of pathway, to ensure resectability and operability.

Results Forty-seven patients entered the neoadjuvant pathway. PD-L1 expression was >1% in 66% of patients. Adenocarcinoma was the histological subtype in 64% of patients. Six (12.7%) patients did not proceed to surgery: 4 for disease progression, 2 for toxicity and poor fitness after chemo-immunotherapy.

38 patients (93%) completed all three planned neoadjuvant cycles.

12 patients (29%) were operated 6 weeks or more after completion of the neoadjuvant treatment.

Of the 41 patients that proceeded to surgery, 36 (88%) were accessed minimally invasively (conversion rate 22%). Lobectomy was the most common resection (35 [85%]) with a single pneumonectomy (2.4%). Median length of stay was 4.5 days (IQR 3 – 7.5 days).

Twenty-seven (66%) patients had a pathological downstaging. R0 resection was achieved in all but one patient (98%). Ten (24%) patients had a complete pathological response (cPR) with a further 17 (66%) having a major pathological response (MPR). In the subgroup analysis (table 1) cPR was significantly higher in the non-adenocarcinoma group while there were no differences in cPR by stage and by PD-L1 expression. Two patients died within 90 days from the operation (4.9%).

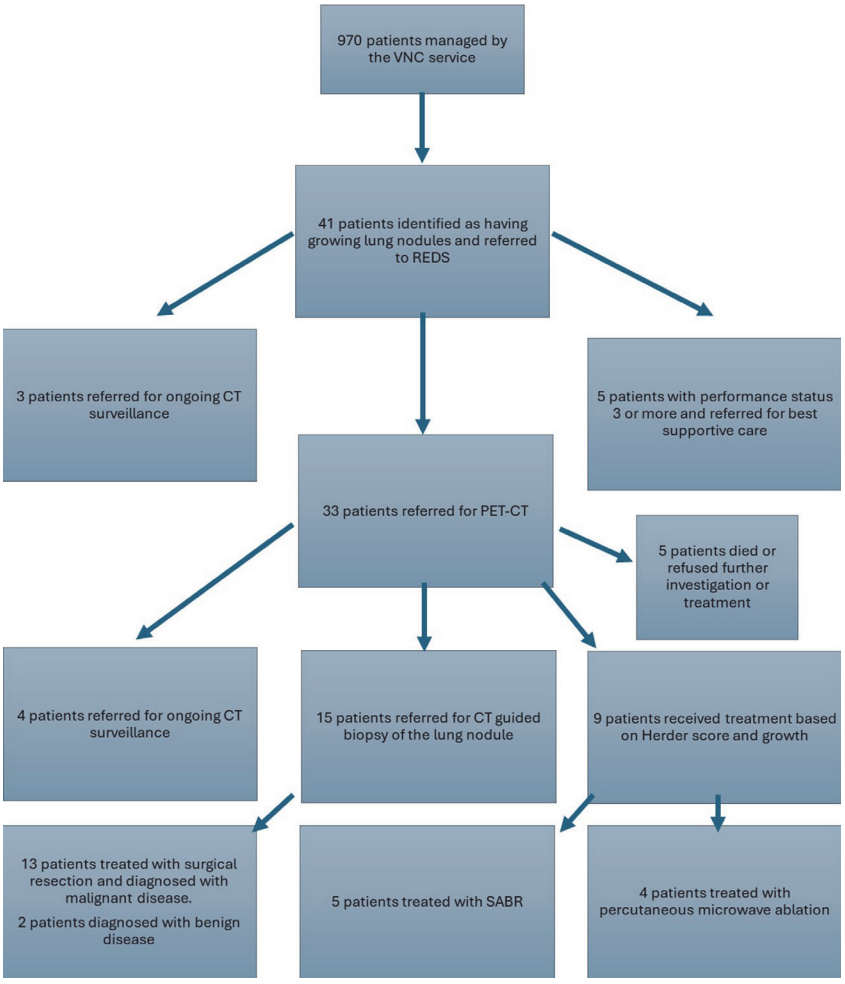
Conclusion Our surgical findings appear like those reported by the Checkmate 816 trial (histology, PDL-1 expression, surgical rate). Importantly, we found similar rates of MPR and cPR amongst our cohort and the Checkmate 816 findings.

P91 WHAT DO WE DO WHEN INCIDENTAL NODULES GROW? EXPERIENCES FROM A VIRTUAL NODULE CLINIC

[1]V Thakrar, [2]J Yates, [2]A Falolu, [2]Y Duong, [3]C Ridgeon, [1]J Park, [1]A Moore, [3]F McLeod, [3]FV Gleeson, [3]R Benamore, [1]A Talwar. *[1]Department of Respiratory Medicine, Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [2]Lung Nodule Navigator Team, Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [3]Department of Radiology, Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.252

Introduction In our Trust patients with incidental pulmonary nodules (IPNs) are followed up by a dedicated, nurse- led virtual nodule clinic (VNC). When the nodule grows and or changes in morphology, the patient is referred to the Respiratory Early Diagnostic Service (REDS).



Abstract P91 Figure 1 Management of patients referred from VNC to REDS pathway for a growing pulmonary nodule

The aim of this work was to gain a better understanding of the numbers of patients referred to REDS from the VNC and ascertain how many were diagnosed and then treated for early-stage lung cancer.

Methods A retrospective analysis of all patients who were referred to and or underwent follow-up under the VNC was carried out between February 2023 and February 2024. Patient records were reviewed to ascertain how many patients were referred to REDS and the subsequent investigations, diagnoses and treatments they had.

Results 970 new and follow-up patients were managed by the VNC over the time period. During this time, 41 patients were identified as having a growing IPN or an IPN that had significantly changed in morphology to raise concern about malignancy.

A summary of the subsequent management of these patients is shown in figure 1.

33 of the 41 patients were referred directly for PET-CT.

Of the patients who had a CT guided biopsy, 13 were diagnosed with malignancy (10 adenocarcinomas, 2 squamous cell carcinomas and 1 carcinoid tumour). All patients with a histological diagnosis of malignancy were referred for surgical resection. Those with a Herder score of ≥70% and who did not have a biopsy (n=9) were referred for stereotactic ablative body radiotherapy (SABR) or microwave ablation.

The prevalence of early- stage cancer in this cohort of patients with IPNs is 22/970 (2.3%).

Conclusion This is one of the largest cohort studies to demonstrate the prevalence of lung malignancy in an incidentally detected PN population in the UK. The study demonstrates the importance of establishing VNCs that can identify growing nodules in a timely manner[1] and robust pathways for transfer of care between VNC and two week wait pathways.

REFERENCE

1. *J Yates, et al. Developing a pulmonary nodule service. Lung Cancer*;**190**(1).

P92 CURATIVE TREATMENT FOR EARLY STAGE NON-SMALL CELL LUNG CANCER: WHY ARE WE NOT TREATING EVERYONE?

N Smith, V Masani. *Royal United Hospitals NHS Foundation Trust, Bath, UK*

10.1136/thorax-2024-BTSabstracts.253

Introduction National targets suggest ≥80% of patients with early-stage non-small cell lung cancer (NSCLC) and good performance status (PS) should receive curative treatment, but we are falling short nationally.[1] We set out to determine our local rates for offering curative treatment to these patients, and why eligible patients may be missing out.

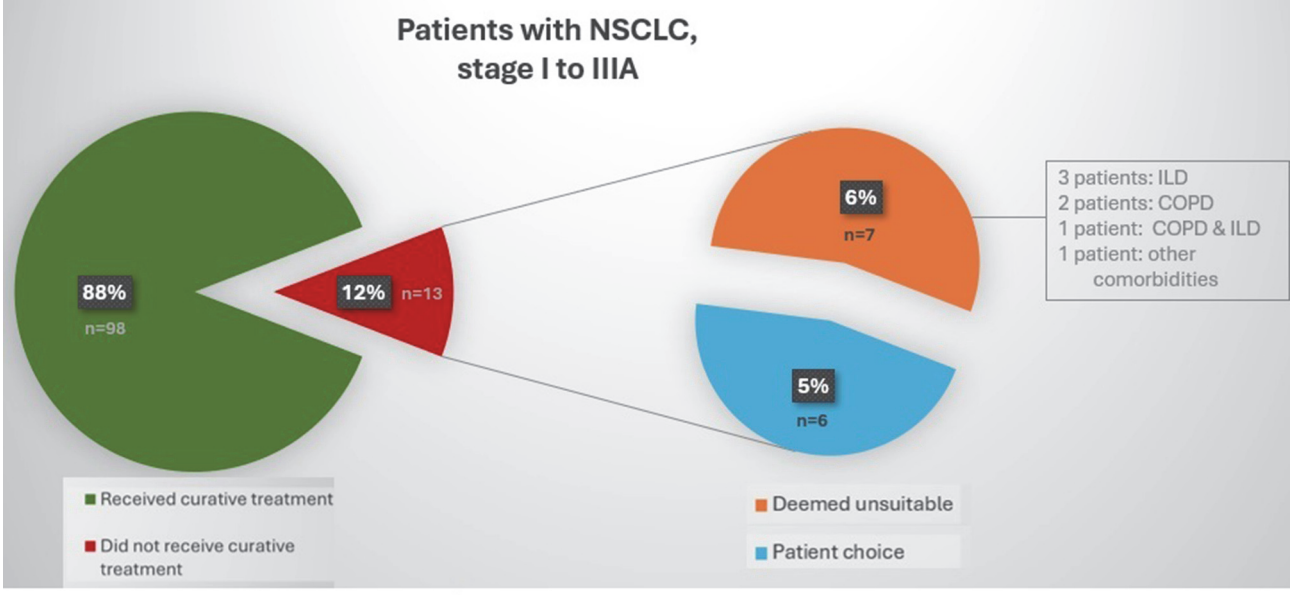
Methods In our DGH data was extracted from the regional Cancer Register for all patients discussed at lung cancer MDT in 2022. Patients were included if they were: Aged ≥18 years, diagnosed with NSCLC up to stage IIIA (tissue or radiological diagnosis), with PS 0–2. Data was gathered on the proportion of patients offered and receiving treatment with curative intent, and factors preventing their treatment.

Results 111 patients met the eligibility criteria. Mean age was 70.7 years, with median PS of 1.

98/111 (88%) received treatment with curative intent, with similar treatment rates in patients with Stage I to II (88%), and those staged IIIA (89%). 13 (12%) patients did not receive curative-intent treatment, of which 6 (5%) declined treatment, and 7 (6%) were deemed unsuitable.

Of those declining treatment, 2/6 cited difficulty attending appointments due to ill health, 3/6 prioritised quality of life in advancing age, and 1/6 had preconceived ideas about their health and treatment.

Of the 7 patients deemed unsuitable for curative treatment, 1 had multiple major comorbidities, and 6/7 had significant lung disease. 3/7 had ILD, with mean FVC of 61% predicted and mean TLCO of 31% predicted. 2/7 had COPD, with



Abstract P92 Figure 1 Curative treatment rates in patients with Stage I to IIIA NSCLC. NSCLC- Non-small cell lung cancer, ILD=Interstitial lung disease, COPD = Chronic obstructive pulmonary disease

mean FEV1 47% predicted and mean TLCO 37% predicted. One patient had combined COPD/ILD.

Conclusions This data from our lung cancer MDT in 2022 shows that 12% of patients with early-stage NSCLC and PS ≤2 didn't receive curative treatment, mostly due to comorbid lung disease or patient preference. With lung cancers being diagnosed at increasingly early stage,[1] and populations surviving longer with comorbidities, we must expand treatment options for these patients, and improve ease of access to hospital services.

REFERENCES

1. National Lung Cancer Audit State of the Nation 2024. London: Royal College of Surgeons of England, 2024.

P93 SURGERY IN LUNG CANCER PATHWAY PATIENTS: DIFFERENCES BETWEEN LUNG HEALTH SCREENING AND TRADITIONAL SOURCES OF REFERRAL

[1]V Surendrakumar, [1]R Bassi, [2]H Winterburn, [1]M Ahmed, [1]H Walji, [3]E Martin, [1]J Drought, [1]D Desai, [1]M Kolokotroni, [1]L Hernandez, [1]A Martin-Ucar. *[1]University Hospital Coventry, Coventry, UK; [2]Warwick Medical School, Warwick, UK; [3]University of Sheffield Medical School, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.254

Introduction and Objectives Referrals for potential lung cancer surgery have traditionally been directly from primary care ('two week wait' criteria) or from other hospital specialists (either due to incidental findings or via other multidisciplinary cancer services). The advent of Lung Health Screening Programmes have changed this pattern of referral.

We aim to compare and evaluate patients undergoing pulmonary surgery for potential or proven lung cancer referred during the first two years of the Targeted Lung Health Check (TLHC) screening programme (Group A) to an age-matched group (55 - 74 years old) referred via traditional sources (Group B) over the same time period.

Methods Data was obtained from a prospectively maintained thoracic database, operative logbooks, the Somerset National Cancer Register and individual patient records. Differences between the two groups were compared using the chi-square or Mann-Whitney U test as appropriate. Statistical significance was described as p values of less than 0.05.

Results From 1 July 2021 until 30 June 2023, 279 patients [124 male and 155 female, of median age 67 years (range 55 to 74)] referred to a single NHS health trust underwent lung resection in a Thoracic Surgical Unit. Of those, 141 (51%) were referred via the new TLHC screening programme (Group A) and 138 (49%) from other sources (Group B).

The extent of surgical resection performed in each group was similar. The percentage of malignant histology was equivalent in the groups, but in Group A there were more primary lung cancers and in Group B more metastatic nodules of other origin (table 1).

Abstract P93 Table 1

	Group A n = 141	Group B n = 138	p value
Minimally invasive approach (VATS/ RATS), n (%)	130 (92)	123 (89)	0.378
Anatomical resection, n (%)	96 (68)	80 (58)	0.080
Size in mm, median (range)	18 (1 - 78)	20 (7 - 110)	0.287
Histology			
Primary lung cancer, n (%)	115 (81)	91 (66)	0.003
Metastatic disease of non-lung origin, n (%)	1 (1)	15 (11)	< 0.001
Benign pathology, n (%)	25 (18)	32 (23)	0.258

Conclusion In the early experience of targeted lung cancer screening in our population the surgical management of lung nodules are similar regardless of the referral source. We found no significant differences in the size of tumours or their malignant origin, and utilised similar operative approaches. As expected, there was a greater incidence of metastatic nodules from other origins in the traditional referral pattern. When lung screening is fully established, differences may appear that reflect earlier diagnosis.

'The God of Small Things' – Hot topics in paediatrics

P94 EXPLORING PARENTS' VIEWS AND EXPERIENCES IN MANAGEMENT FOR PRE-SCHOOL WHEEZE (PSW): A QUALITATIVE STUDY

[1]LMA Wajid, [2]S Saglani, [1]P Nagakumar, [3]G Heath. *[1]Birmingham Children's Hospital, Birmingham, UK; [2]Imperial Centre for Paediatrics and Child Health, London, UK; [3]Aston University, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.255

Introduction and Objective Preschool Wheeze (PSW) results in significant morbidity, healthcare costs, and impaired quality of life for the child and parents (Davies: ADC:2008). Current treatment of PSW is based on expert consensus with little evidence and no diagnostic tests. Blood and allergy tests may support treatment (Fitzpatrick; JACI;2016) but the parents' views on the diagnosis, treatments and acceptance of investigations is not known.

The aim of this study was to explore parents' views and experiences of the management of their child's PSW, including views on the use of investigations to inform treatment pathways.

Design Purposive sampling was used to recruit 16 participants across England and Wales. Qualitative data were collected via semi-structured interviews, conducted on MS Teams, with parents of children aged 1 to 5 years with recurrent PSW. Data were transcribed and analysed using thematic analysis, facilitated by use of NVivo.

Results Analysis generated four themes (1) Pathway to diagnosis (2) Medication management (3) Living with PSW (4) Improving PSW healthcare. Findings suggested a negative impact of PSW on families' lives, including high levels of worry, limiting capacity for work and travel. Barriers to effective management of PSW included inconsistent terminologies and diagnostic uncertainty, limited parental education and management support, delayed investigations, concerns about medications and challenges with accessing specialists. Parents were in favour of performing investigations to guide treatment pathways.

Conclusion Parental views highlight the problem of diagnosing and treating PSW at multiple system levels. To improve management of PSW, there is a need for consistent terminologies, unified guidelines and a diagnostic pathway to guide management. To ensure services for children with PSW are effective and sustainable, there may be a need to upskill clinicians in primary care and enable access to investigations prior to initiating treatments.

P95 OXYGEN PULSE RESPONSE IN CHILDREN WITH CYSTIC FIBROSIS – IS THERE A CARDIAC PROBLEM?

SC Tart, CJ Carden, RJ Langley, PL Davies, PD Burns. *Royal Hospital for Children, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.256

Introduction Children with Cystic Fibrosis (CF) undergo annual cardiopulmonary exercise testing (CPET) as part of their routine assessment. We noted that several demonstrated an abnormal oxygen pulse (O_2pulse) response with flattening or fall at high intensity exercise. Our primary aim was to evaluate the incidence and repeatability of this response in baseline and follow-up CPETs. Our secondary aim was to look at a subset of patients who had CPETs pre and post initiation of Kaftrio and evaluate the O_2pulse response.

Methods CPET data was retrospectively analysed over a 3 year period. Spirometry and CPET were performed using an incremental maximal ramp protocol on a cycle ergometer. Consecutive tests were performed 1 year apart. A point-biserial correlation was used to assess any relationship between O_2pulse response and VO_2peak% predicted. A McNemar test was used to look for a significant difference in the O_2pulse response pre and post Kaftrio.

Results Results from 63 patients are presented in the table 1. 32% (n=20) had a flattening or fall in O_2pulse at high intensity exercise. 54% (n=34) had a reduced VO_2peak (< 85% predicted). There was no correlation between an abnormal O_2pulse response and a reduced VO_2peak (r=0.183).

32 patients had consecutive CPET measurements. Of the 21 that had an initial normal O_2pulse response, 4 were abnormal on the 2nd test. Of the 11 with an abnormal initial response, 9 normalised on the 2nd test.

10 patients had CPET pre and post Kaftrio. There was no significant difference in any of the CPET parameters. FEV_1 Z-score improved significantly (p=0.04). Kaftrio had no significant effect on the O_2pulse response.

Conclusions A high proportion of CF patients showed an abnormal O_2pulse response which can change on repeat testing and is therefore unlikely to be indicative of a significant cardiac problem. Triple modulator therapy had no impact on the O_2pulse response or any other CPET parameters. However, it does significantly improve FEV_1. Further work is required to determine the cause of an abnormal O_2pulse response and the variability observed in repeated measures in children with CF.

Abstract P95 Table 1

Parameter	Mean	Confidence Interval
FEV_1 Z-Score	-0.31	-0.01, -0.62
FEV_1/FVC Z-Score	0.04	0.33, -0.25
VO_2peak% Predicted	84	89, 80
O_2pulse% Predicted	89	100, 78
Ventilatory Threshold (% of predicted VO_2peak)	47	50, 44

P96 FEASIBILITY OF FENO, SPIROMETRY AND METHACHOLINE CHALLENGES IN CHILDREN UNDER THE AGE OF 6 YEARS

[1]A Davis, [2]A Simpson, [1]L Healy, [1]S Drake, [1,2]R Wang, [1]M Bennett, [1]L Lowe, [1]L Whipday, [1]L Wilmore, [2]S Fowler, [2]C Murray. *[1]Manchester University NHS Foundation Trust, Manchester, UK; [2]Division of Immunology, Immunity to infection and Respiratory Medicine, School of Biological Sciences, The University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.257

Introduction RADicA (Rapid Access Diagnostics for Asthma) is a study aiming to improve the asthma diagnostic pathway in the UK. Participants complete a range of lung function tests (LFTs) over 3–4 visits. We investigated what proportion of attempts to perform these tests were successful in children aged 3 to 5 years.

Methods Data from 42 children (20 female, median age 4.6 years, range 3.1–5.9 years) was analysed; Spirometry and FeNO were attempted on all visits. Methacholine challenges were carried out once and only in those with reproducible spirometry. Two definitions of acceptability criteria for spirometry were used:

Criteria 1: 2 good attempts, <10% variability in FEV1 and FVC (ATS and ERS Joint Statement[1])

Criteria 2: 3 good attempts, <5% variability (RADicA SOP, ARTP statement[2])

Results Few children met criteria 2 for spirometry. 72.1% of spirometry attempts by children aged 5 years met criteria 1, significantly more than those < 5 years (23.8%, p<0.001). Despite similar average age and age distribution, females performed better than males in all LFTs (p<0.02).

Of the 5-years-olds (n=19), 42.1% attempted methacholine challenge, and all completed it successfully. Only one child < 5years completed a challenge.

Conclusions Using less stringent criteria for spirometry reliability in younger children increases amount of acceptable spirometry data. There was minimal difference between 3 and 4 year olds in LFT performance but significant improvement in those aged 5. Females performed significantly better than males in all LFTs.

REFERENCES

1. Beydon N, Davis SD, Lombardi E, *et al.* An Official American Thoracic Society/European Respiratory Society statement: pulmonary function testing in preschool children. *Am J Respir Crit Care Med* 2007;**175**:1304–1345. DOI: 10.1164/rccm.200605-642ST.
2. Sylvester KP, Clayton N, Cliff I, *et al.* ARTP statement on pulmonary function testing 2020. *BMJ Open Resp Res* 2020;**7**:e000575. DOI:10.1136/bmjresp-2020-000575.

Abstract P96 Table 1

Attempts by group	Spirometry Criteria 1	Spirometry Criteria 2	FeNO
3 or 4 years n=63	23.8%	4.8%	47.7%
5 years n=61	72.1%	39.3%	70%
Male n=71	36.1%	13.9%	48.6%
Female n=53	62.3%	32.1%	71.7%
Total n=124	50.4%	23.1%	62.4%

P97 SETTING UP A NEW SERVICE: VIRTUAL WARD TECHNIQUES AND REMOTE CONCORDANCE DATA TO INITIATE NON-INVASIVE VENTILATION IN CHILDREN IN AN OUTPATIENT SETTING

CTC Edwards, S Georgiades, S Sloan, E Reid, E Savage. *Leeds Children's Hospital, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.258

The number of children identified as requiring ventilatory support is increasing nationally. Locally, this resulted in an increase in waiting list times, putting patients at risk of type 2 respiratory failure. The Leeds Children's Home Ventilation Team have extensive experience of managing and weaning ventilation at home with oxycapnographies, but had no outpatient initiation program for non-invasive ventilation (NIV). Funding became available for virtual wards, so a trial of using remote monitoring after the initiation of NIV in children in an outpatient setting was commenced.

Methods Initiation criteria were developed by the team. As well as clinical factors and physiological studies indicating that the child would benefit from NIV, they had to be medically stable and not requiring home oxygen.

The caregiver and child would come to the outpatient department where the child would have a mask fitting and spend 10–20 minutes in the clinic with the mask and ventilator on. If this was successful, they would trial the ventilator at home over an initial period of three months.

A Lumis 150 ventilator was used which can provide remote feedback for concordance data via a cloud based platform. This was monitored by nursing staffing, who would phone the families regularly as well, to aid concordance and offer advice.

Results Over 9 months, 11 patients were referred to the virtual ward clinic. Eight patients were successfully started, three failed (unable to spend a minimum amount of time on ventilator after 3 months). A further four patients were referred to the virtual ward who had previously failed to establish after trialling on the ward, and so re-admission was avoided. Patient feedback was overwhelmingly positive. There was a fall in waiting times for NIV initiation.

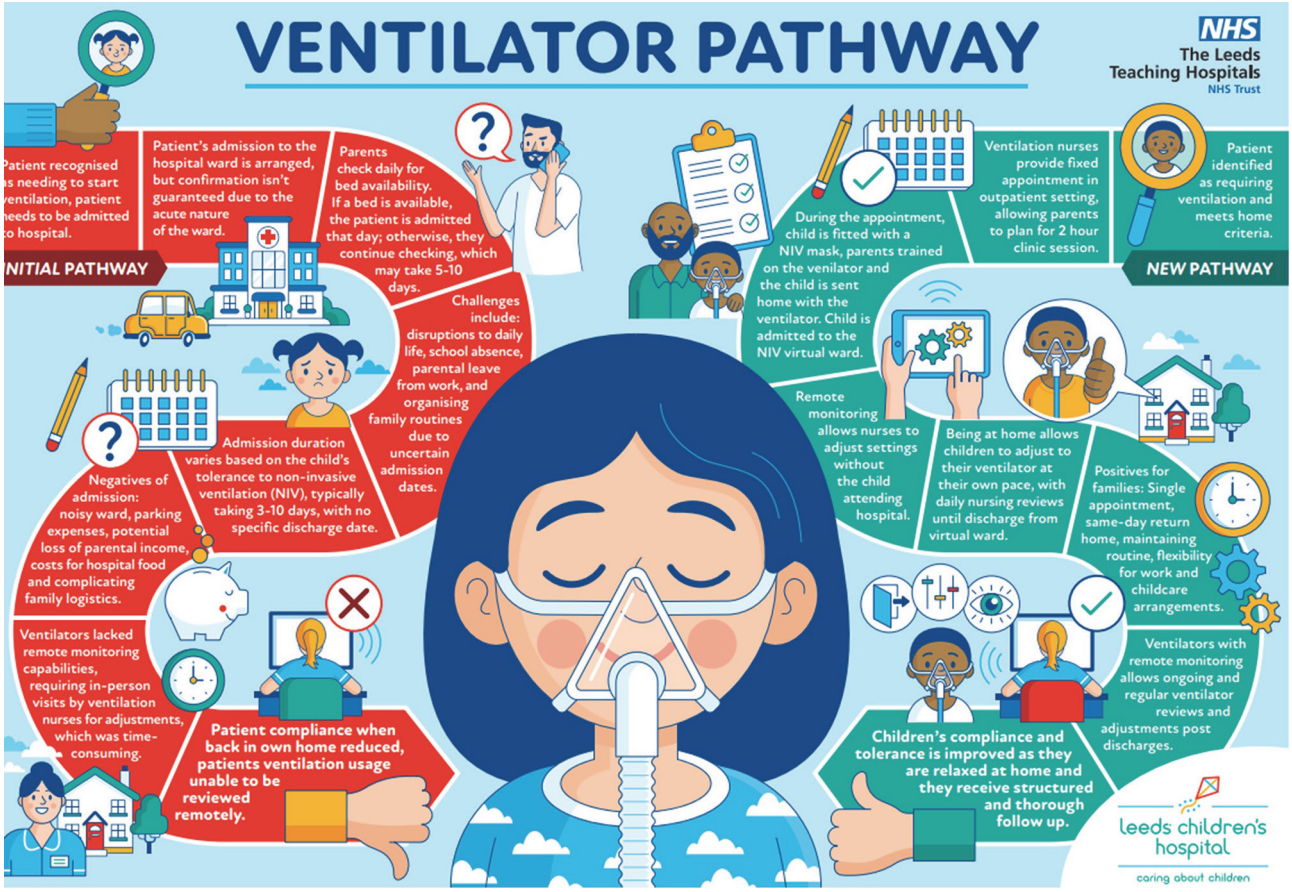
Conclusion This service review shows that it is possible to initiate non-invasive ventilation in children in an outpatient setting. Compared with adult practise, very little has been published regarding outpatient initiation of home ventilation in children. We have shown that remote monitoring of concordance via a cloud platform with telephone follow up can result in positive outcomes both from a patient perspective and in reducing hospital inpatient resources.

P98 RESPIRATORY OUTCOMES IN PREMATURE BABIES WITH CHRONIC LUNG DISEASE. A RETROSPECTIVE STUDY

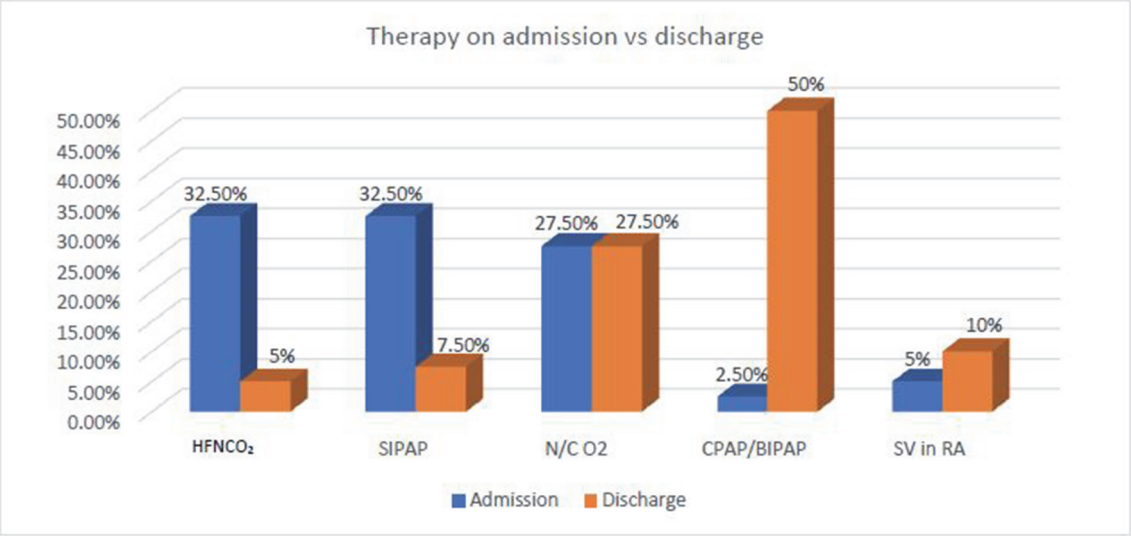
S Kenny, H Tan, R Pabary, SB Carr. *Royal Brompton Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.259

Introduction Chronic lung disease (CLD) typically occurs in premature infants who require mechanical ventilation and oxygen therapy following acute respiratory distress. Tertiary respiratory services are seeing an increased number of referrals



Abstract P97 Figure 1



Abstract P98 Figure 1 Overall changes to respiratory support: arrival vs discharge

from neonatal units (NICU) unable to discharge infants directly home. This study aims to describe this population, and explore their investigations, management, and outcomes.

Methods This retrospective study was conducted using electronic patient records of all ex premature infants presenting to a tertiary sleep and respiratory unit from 2018 to 2023. We investigated demographics, reason for admission, range of investigations, reviewed ventilation requirements upon arrival and discharge and demonstrated sleep outcomes for this cohort.

Results 40 premature infants, 21 (52%) male. Mean gestation 28 weeks (range 23–35), birth weight 0.985kg (range 0.39–1.86). Mean age on admission: 28 weeks from birth, mean length of stay 43 days (1–182). 60% were extreme prem (<28 weeks), commonest admission reason: difficulty weaning off respiratory support. Investigations: sleep studies (100%), echocardiogram (83%), CT imaging (73%), pH/impedance (58%), genetic testing (53%). All ILD genetics were negative. 35% had positive pH studies. 64% (n=21) had pulmonary hypertension, n=16 (76%) were extreme prem. Sleep outcomes: Admission vs Discharge ODI (4%) 17 vs 12, mean O2 96% vs 96%, mean nadir 76% vs 80%, mean TcPCO2 7.1kPa vs 6.8kPa. Overall changes in respiratory support are shown in figure 1. Most infants were weaned off high flow nasal cannula oxygen (HFNCO2) and SIPAP. 50% discharged on CPAP/BIPAP ventilation,

27.5% discharged on nasal cannula oxygen. Those arriving on nasal cannula oxygen had shortest hospital stays (31 days) compared to those on SIPAP (58 days) or HFNCO2 (46 days).

Conclusions Our data provide insight into common characteristics of premature neonates with CLD referred to a tertiary respiratory centre. Many patients arrived on HFNCO2 or SIPAP and hospital stay was prolonged. This study highlights the need for more optimized management and routine monitoring of this cohort. Our experience suggests that, if struggling to wean ventilation, these patients benefit from being switched from HFNCO2 back to a form of positive pressure support to re-recruit smaller airways, reduce work of breathing and encourage growth.

P99 THE CLINICAL ASSESSMENT OF CHILDREN WITH DYSPHAGIA: THE CASE FOR AN MDT APPROACH

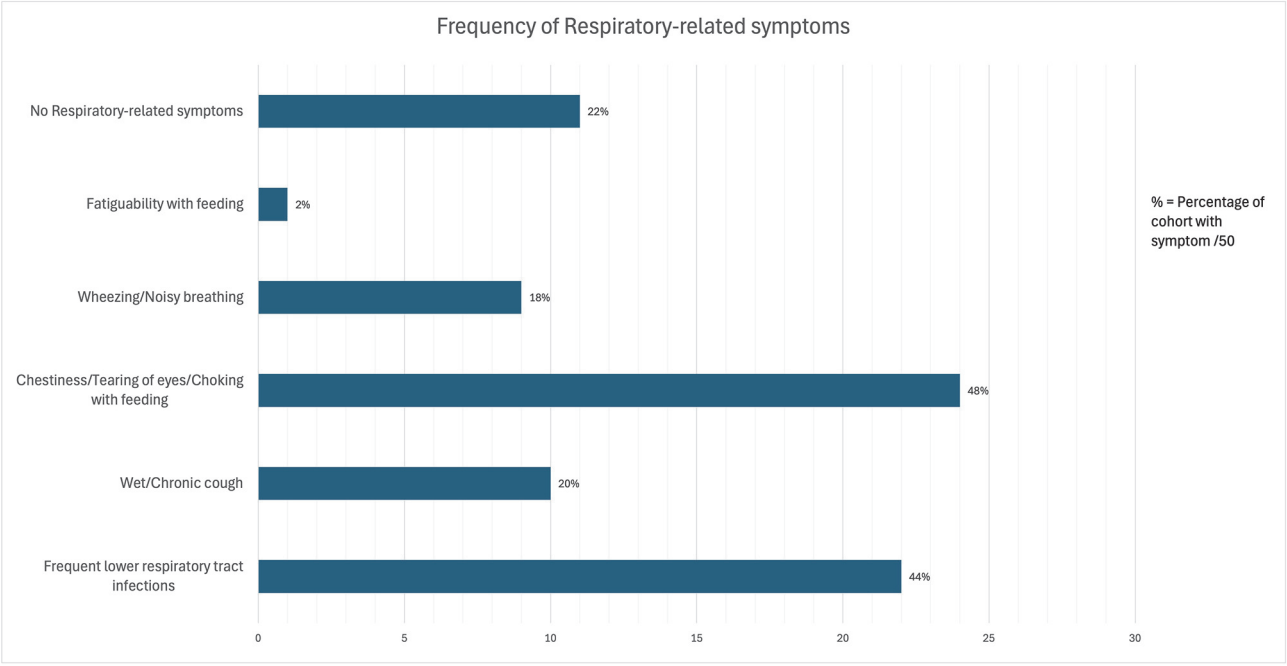
[1]M May, [1]N Allen-Hernandez, [2]S Kansra, [2]J Shaw, [2]S Sharma, [2]R Thevasagayam, [2]K Krawczyk. *[1]University of Sheffield, Sheffield, UK; [2]Sheffield Children's NHSFT, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.260

Introduction and Objective Dysphagia is defined as difficulty in swallowing solids or liquids which can lead to aspiration of foreign material into the lower respiratory tract. Video-fluoroscopy (VFSS) can help clarify the risk and extent of aspiration. Children with dysphagia need an MDT assessment to identify a possible structural cause, put in strategies to mitigate the risk and monitor the adverse health sequelae of aspiration on lungs and growth. The MDT should include a Speech and Language Therapist, ENT, Respiratory and Gastroenterology specialists. Currently, this assessment happens in a disjointed manner and children may miss out on one or more aspects of their assessment, require multiple appointments, and do not receive this support in the desired timeframe. With this study, we wanted to clarify how frequently children at risk of aspiration have a full MDT review including a tailored respiratory assessment.

Methods A retrospective case review of a cohort of 50 children who had evidence of aspiration on VFSS in 2023. Data was collected on all reported symptoms related to Gastroenterology and Respiratory, any identified ENT structural abnormalities and what follow-up patients have received, including surgical intervention.

Results Respiratory-related symptoms were the most reported symptomatology in this cohort with 39 patients reporting one or more related symptoms, compared to 25 patients with Gastrointestinal-related symptoms. Despite this, only 35 patients were seen by Respiratory. Of the 36 patients seen by ENT, 23 had an identified structural abnormality. Half of the cohort also required Gastroenterology intervention for feeding ranging from nasogastric feeding to gastrostomy insertion. Just 20 patients were assessed by the entire MDT; demonstrating a clear disparity in the quality of follow-up these children



Abstract P99 Figure 1

receive, with less than half of the at-risk population receiving a comprehensive assessment.

Conclusion With dysphagia often presenting with non-specific respiratory symptoms like chronic cough or noisy breathing or in some cases no symptoms at all. A comprehensive MDT follow-up to exclude a structural cause and to assess lung impacts of aspiration is essential. This can inform the robustness of mitigation strategies for this vulnerable cohort of patients who are at risk of preventable sequelae from aspiration.

P100 INVESTIGATING THE IMPACT OF LONDON'S ULTRA LOW EMISSION ZONE (ULEZ) ON CHILDREN'S HEALTH: THE CHILDREN'S HEALTH IN LONDON AND LUTON (CHILL) PROSPECTIVE PARALLEL COHORT STUDY

[1]HE Wood, [2]J Chavda, [1]G Colligan, [1]L Cross, [1]RE Dove, [1]H Kalsi, [1]J Scales, [2]I Tsocheva, [2]G Randhawa, [3]IS Mudway, [1]CJ Griffiths. *[1]Wolfson Institute of Population Health, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK; [2]Institute for Health Research, University of Bedfordshire, Luton, UK; [3]MRC Centre for Environment and Health, NIHR Health Protection Research Unit in Environmental Exposures and Health, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.261

Background Traffic-related air pollution (TRAP) is associated with adverse health outcomes across the life course. In children, long-term exposure to TRAP is associated with asthma, acute lower respiratory infections and reduced lung growth. Low emission zones have been implemented widely in European cities, aiming to reduce TRAP by restricting/penalising the most polluting vehicles, but their impacts on health are poorly understood. London's Ultra Low Emission Zone (ULEZ) was established in central London in April 2019.

Aim Using a natural experimental design, the CHILL Study aims to assess the impact of the ULEZ on lung growth of primary school-aged children.

Methods Children aged 6–9 years were recruited from schools in central London (intervention) and Luton/Dunstable (comparator site), with cohorts established and baseline health assessments completed before the ULEZ was implemented. Follow-up health assessments were repeated annually for four years. Lung function was measured by spirometry, before and after bronchodilation. Children completed a questionnaire about asthma, inhaler use and mode of travel to school. A questionnaire was sent home for parents/carers to complete, including questions about asthma/allergy symptoms, quality of life and non-NHS health costs. Written parental consent and verbal assent from participants was obtained before assessment. Substudies added to the CHILL programme since its inception include: assessments of physical activity, cognitive function and mental health, and measurements of exposure biomarkers. Applications are in progress for extraction of GP and hospital record data for health economic analysis.

Findings 3414 children (1664 in London, 1750 in Luton) were recruited from 84 primary schools, with 97% of participants completing the baseline health assessment and 77% successfully performing spirometry. 92% returned a parent/carer questionnaire. In the final year, 1591 participants were assessed (47% of recruited cohort), with annual loss to follow up being less than the 20% initially predicted. Cohorts were well matched for demographics and lung function at baseline across the two sites. The study was significantly disrupted during COVID, with data collection halted for more than 12 months.

Conclusion We have established a large cohort and successfully completed data collection over five years. Final data analysis is in progress, with results pending.

P101 PAEDIATRIC BRONCHIECTASIS – DISPARITY IN CARE? A RETROSPECTIVE COHORT STUDY OF CHILDREN AND YOUNG PEOPLE (CYP) WITH BRONCHIECTASIS IN A REGIONAL CENTRE

[1]T Telford, [2]H Smith, [2]J Prashant Andharia, [2]R Sharma, [2]P Nagakumar, [2]P Kenia, [2]C Hine. *[1]Department of Paediatrics, South Warwickshire University NHS Foundation Trust, Warwick, UK; [2]Department of Respiratory Medicine, Birmingham Women's and Children's Hospital NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.262

Background Non-cystic fibrosis (CF) bronchiectasis is an under-served, under-researched disease with significant morbidity and poor quality-of-life in affected children and young people (CYP), (Chang:ERJ:2021). Ethnicity and socio-economic disparities contribute to adverse health outcomes (Spencer:BMJ Open:2015).

Aims This study aims to describe the clinical characteristics of a cohort of CYP with varying ethnic and deprivation backgrounds managed at a regional multidisciplinary paediatric bronchiectasis service in the UK.

Methods CYP with computerised tomography (CT)-confirmed bronchiectasis were included in the analysis. Data collected from digital records included demographic details, anthropometry, spirometry, airway microbiology and treatment of exacerbations in the previous year. The index of multiple deprivation (IMD) score was calculated using patient's registered postcode. IMD scores of 1–5 were classed as 'more deprived' and 6–10 as 'less deprived'. Analysis was carried out using T-tests and chi-square tests.

Results We identified 102 CYP with CT-confirmed diagnosis of bronchiectasis. Median age of the cohort was 12.5 years (IQR 10–14 years); 59 (57.8%) were male.

Sixty-six (64.7%) patients self-identified as White, while 36 (35.3%) identified with Black, Asian and other Minority Ethnicities (BAME). CYP from BAME background had significantly higher deprivation ($p<0.001$).

The IMD scores were established for 98/102 (96%) with 66 (67.3%) classified as 'more deprived' backgrounds and 32 (32.7%) as 'less deprived'. Among the 'more deprived' patients, 33 (50%) were BAME compared to 2 (6.3%) in the 'less deprived' cohort.

Thirty-three (50%) of CYP from 'more deprived' backgrounds had at least one bacterial pathogen isolated with 39 (59.1%) needing a course of oral antibiotics in the past year and 20 (30.3%) requiring intravenous antibiotics at any time.

No significant difference was found based on ethnicity or deprivation in anthropometry, spirometry, airway microbiology or treatment of exacerbations (table 1).

Conclusion This cross-sectional analysis shows that the clinical characteristics in CYP with non-CF bronchiectasis are unaffected by ethnicity or deprivation. The specialist multidisciplinary care provided to these CYP may have reduced health inequalities in our cohort. Larger longitudinal studies are needed to study disease prevalence, outcomes and guide future practice.

REFERENCES

1. Chang, *et al.* DOI: 10.1183/13993003.02990-2020.
2. Spencer NJ, *et al.* DOI: 10.1136/bmjopen-2014-007062.

P102 DOES THE PRESENCE OF PAEDIATRIC RESPIRATORY VIRTUAL WARDS IMPACT THE RISK OF HOSPITAL READMISSION FOR ASTHMA IN CHILDREN AND YOUNG PEOPLE (CYP)?

[1]A Gawlik-Lipinski, [2]AJ Adamson, [2]JK Quint, [3]T Wilkinson, [4]I Sinha. *[1]University of Leicester, Leicester, UK; [2]Imperial College London, London, UK; [3]University of Southampton, Southampton, UK; [4]University of Liverpool, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.263

Background Virtual wards enable remote monitoring of patients with respiratory symptoms through digital technology. We assessed whether children and young people (CYP) admitted to hospitals with paediatric virtual wards had lower readmissions compared with CYP at hospitals without virtual wards.

Methods Data from the 2022–23 CYP asthma secondary care National Respiratory Audit Programme (NRAP) were used

Abstract P101 Table 1 Patient characteristics of those with an established index of multiple deprivation (IMD) score by level of deprivation

	Total cohort N=98	More deprived (IMD 1-5) N=66	Less deprived (IMD 6-10) N=32	P value and statistical test
Black, Asian and Minority Ethnicity (BAME)	35 (35.7%)	33 (50.0%)	2 (6.3%)	**<0.001 (χ^2)**
Height z-score	-0.07	-0.08	0.02	**0.17 (t-test)**
	(-0.92 – 0.65)	(-1.14 – 0.63)	(-0.77 – 0.89)	
Weight z-score	0.11	-0.06	0.42	**0.17 (t-test)**
	(-0.90 – 0.91)	(-1.15 – 0.81)	(-0.68 – 0.98)	
BMI z-score	0.05	0.05	0.16	**0.53 (t-test)**
	(-1.04 – 1.20)	(-1.15 – 1.11)	(-0.6 – 1.37)	
Respiratory bacterial pathogen cultured	46 (46.9%)	33 (50.0%)	13 (40.6%)	**0.38 (χ^2)**
>1 species of respiratory bacterial pathogen cultured	20 (20.4%)	12 (18.2%)	8 (25%)	**0.43 (χ^2)**
Treatment course of oral antibiotics in last 12 months	55 (56.1%)	39 (59.1%)	16 (50.0%)	**0.40 (χ^2)**
Treatment course of intravenous antibiotics at any time	28 (28.6%)	20 (30%)	8 (25%)	**0.59 (χ^2)**
Most recent FEV1 z-score	-2.07	-2.16	-1.63	**0.73 (t-test)**
	(-3.00 - -0.74)	(-2.97 - -0.58)	(-3.09 - -0.80)	
Most recent FVC z-score	-1.43	-1.59	-1.26	**0.63 (t-test)**
	(-2.47 - -0.38)	(-2.70 - -0.34)	(-2.15 - -0.53)	

Data are median (IQR) and n (%).

NRAP is a continuous national audit in respiratory care across England and Wales. Submitted hospital level data on emergency admissions are linked to Hospital Episode Statistics (HES), Patient Episode Dataset for Wales, and Office of National Statistics mortality data. Patients were included if they: were admitted with acute asthma to a paediatric ward in participating hospitals in England; could be linked with HES; and were alive at discharge. Mixed -effects logistic regression models accounting for clustering by hospital assessed the association between presence of a virtual ward and number of virtual ward beds and 30- and 90-day all-cause and asthma readmissions.

Abstract P102 Table 1 Characteristics of patients admitted to hospitals with and without a paediatric virtual ward. Table additionally includes virtual ward characteristics

Variable		Admitted to hospital with paediatric virtual ward (N=1415)	Admitted to hospital without paediatric virtual ward (N=5582)	Total (N=6997)	P*
Number of hospitals with a paediatric virtual ward		19 (16.4%)	97 (83.6%)	116	
Number of virtual ward beds	Median (IQR)	12 (7.5 to 12.5)	-		
Number of virtual ward beds per 100 CYP asthma patients	Median (IQR)	10.1 (4.2 to 12.4)	-		
Arrival by ambulance	No	960 (67.8)	3727 (66.8)	4687 (67.0)	0.001
	Not recorded	78 (5.5)	475 (8.5)	553 (7.9)	
	Yes - from the community	356 (25.2)	1329 (23.8)	1685 (24.1)	
	Yes - transferred from another hospital	21 (1.5)	51 (0.9)	72 (1.0)	
Index of multiple deprivation quintile	1 (most deprived)	585 (41.3)	1539 (27.6)	2124 (30.4)	<0.001
	2	314 (22.2)	1320 (23.6)	1634 (23.4)	
	3	210 (14.8)	1026 (18.4)	1236 (17.7)	
	4	159 (11.2)	944 (16.9)	1103 (15.8)	
	5 (least deprived)	137 (9.7)	724 (13.0)	861 (12.3)	
	Missing IMD quintile	10 (0.7)	29 (0.5)	39 (0.6)	
Age	Median (IQR)	5.0 (3.0 to 9.0)	6.0 (4.0 to 9.0)	6.0 (3.0 to 9.0)	<0.001
Gender	Male	881 (62.3)	3448 (61.8)	4329 (61.9)	0.757
	Female	534 (37.7)	2134 (38.2)	2668 (38.1)	
Any IV medication received in hospital	Yes	271 (19.2)	1134 (20.3)	1405 (20.1)	0.348
	No	1144 (80.8)	4448 (79.7)	5592 (79.9)	
Any critical care received in hospital	Yes	140 (9.9)	458 (8.2)	598 (8.5)	0.048
	No	1275 (90.1)	5124 (91.8)	6399 (91.5)	
Receipt of inhaled cortico-steroids at discharge	Yes	799 (56.5)	3973 (71.2)	4772 (68.2)	<0.001
	No - not medically indicated	354 (25.0)	924 (16.6)	1278 (18.3)	
	No - reason not given	257 (18.2)	678 (12.1)	935 (13.4)	
	Offered but patient/ parent/carer declined	5 (0.4)	7 (0.1)	12 (0.2)	
Patient prescribed more than 2 courses of oral steroids in the past 12 months	No	716 (50.6)	2837 (50.8)	3553 (50.8)	0.672
	Not recorded	538 (38.0)	2069 (37.1)	2607 (37.3)	
	Yes	161 (11.4)	676 (12.1)	837 (12.0)	
Patient received a respiratory specialist review	No	86 (6.1)	914 (16.4)	1000 (14.3)	<0.001
	Yes	1329 (93.9)	4668 (83.6)	5997 (85.7)	
Patient received a discharge bundle	No	792 (56.0)	2612 (46.8)	3404 (48.6)	<0.001
	Yes	623 (44.0)	2970 (53.2)	3593 (51.4)	
Asthma severity on admission	Moderate	401 (28.3)	1486 (26.6)	1887 (27.0)	0.005
	Severe and Life-threatening	890 (62.9)	3723 (66.7)	4613 (65.9)	
	Undefined - patient <2 years of age	124 (8.8)	373 (6.7)	497 (7.1)	
All-cause readmission within 30 days	No	1305 (92.2)	5136 (92.0)	6441 (92.1)	0.831
	Yes	110 (7.8)	446 (8.0)	556 (7.9)	
Asthma readmission within 30 days	No	1354 (95.7)	5332 (95.5)	6686 (95.6)	0.841
	Yes	61 (4.3)	250 (4.5)	311 (4.4)	
All-cause readmission within 90 days	No	1171 (82.8)	4728 (84.7)	5899 (84.3)	0.079
	Yes	244 (17.2)	854 (15.3)	1098 (15.7)	
Asthma readmission within 90 days	No	1285 (90.8)	5085 (91.1)	6370 (91.0)	0.778
	Yes	130 (9.2)	497 (8.9)	627 (9.0)	

*p values indicate statistical significance between groups using the Chi-square test for categorical variables and Kruskal-Wallis test for continuous variables.

Results 19/116 hospitals had a paediatric virtual ward. Characteristics of patients admitted to hospitals with and without a virtual ward are presented in the table 1. The adjusted odds ratio (OR) for 30-day and 90-day asthma readmissions in hospitals with virtual wards compared with those without were 1.00 (95% CI: 0.69–1.44, p=0.99) and 1.03 (95% CI: 0.77–1.38, p=0.84), respectively. For all-cause readmissions, the OR for 30-day and 90-day readmission was 0.97 (95% CI: 0.72–1.31, p=0.81) and 1.12 (95% CI: 0.90–1.40, p=0.32). 30-day and 90-day asthma readmission adjusted ORs for an increase of 1 virtual ward bed per CYP asthma admission were 0.50 (95% CI: 0.03 – 9.36, p=0.65) and 0.64 (95% CI: 0.07 – 5.87, p=0.69), respectively. All-cause 30-day and 90-day readmission ORs in hospitals with a greater number of virtual beds were 0.68 (95% CI: 0.07 – 6.95, p=0.75) and 2.46 (95% CI: 0.47 – 12.92, p=0.29), respectively.
Conclusion No reduction in readmission in hospitals with access to virtual wards was noted. This study was limited by low readmission rates and lack of detailed patient-level data on admission. Further studies are required.

P103 EXPLORING HEALTH PROFESSIONALS' VIEWS OF MANAGEMENT FOR PRE-SCHOOL WHEEZE (PSW): A QUALITATIVE STUDY

[1]LMA Wajid, [2]S Saglani, [1]P Nagakumar, [3]G Heath. *[1]Birmingham Children's Hospital, Birmingham, UK; [2]Imperial Centre for Paediatrics and Child Health, London, UK; [3]Aston University, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.264

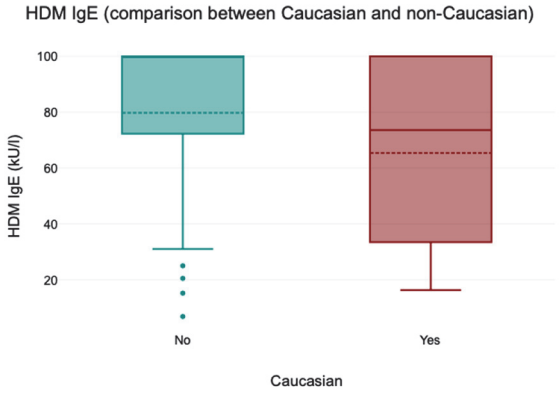
Introduction and Objective Approximately 30–40% of children experience recurrent wheeze attacks in first 6 years of life. 75% of children admitted to hospital with wheeze are aged between 1–5 years (Davies: ADC:2008) and UK has the second highest prevalence of wheeze in the second year of life. PSW (preschool wheeze) results in significant morbidity, healthcare costs, and impaired quality of life for both children and parents. The aim of this study was to explore the views of health professionals about current management approaches and acceptability of investigations in management of PSW.
Methods A purposive and snowball sampling approach was used to recruit health professionals (HCP) from primary and secondary care. Qualitative data was collected via semi-structured interviews, transcribed verbatim and analysed using thematic analysis, facilitated by use of NVivo.
Results Fourteen health professionals with experience in managing children with PSW participated. Analysis generated four themes: (1) Challenges in nomenclature and availability of diagnostic tests, (2) Diagnostic uncertainty, (3) Current approach to investigating children with preschool wheeze, (4) Treatment considerations. All participants agreed that PSW remains a burdensome disease without consistent diagnostic nomenclature, investigations for diagnosis or specific treatments. There were differences in views from primary and secondary care professionals. HCPs from primary care preferred simple terminology like Virus Induced Wheeze whereas HP in secondary care used various terminologies depending on clinical presentation i.e MTW (multi-trigger wheeze), EVW (episodic virus wheeze). Organisational challenges to perform investigations and absence of diagnostic pathways in primary care were the key challenges in confirming asthma in young children. Addressing adherence issues to prescribed medications was dealt better in secondary care compared to primary care.
Conclusion Our study highlights the need for uniform terminology to describe PSW across healthcare systems. Clinical pathways should be implemented to guide health professionals about optimal management. The study highlights an unmet need for developing infrastructure in primary care to perform simple blood tests in children. Access to point of care testing or setting up diagnostic hubs may help. There is a need for training and education of health professionals in management of preschool wheeze.

P104 CHARACTERISTICS OF AEROALLERGEN SENSITIZATION IN SEVERE PAEDIATRIC ASTHMATICS ACROSS ETHNIC GROUPS

M Lee Qiyu, B Davies, S Frost, S Rao, P Nagakumar. *Birmingham Children's Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.265

Introduction and Objectives Severe asthma in children is a heterogenous disease resulting in significant morbidity and health resource utilisation. The pathogenesis of severe asthma is characterised by type 2/allergic airway inflammation. Limited data exists on the prevalence of aeroallergens among ethnic group children with severe asthma in the UK. We hypothesised that the aeroallergen sensitisation is different in children from ethnic groups compared to Caucasian peers with severe asthma.
Methods A retrospective analysis children aged 6- 16 yr attending the regional severe asthma service in the UK between 2018- 2024. Allergen sensitization was defined as a specific IgE levels (≥0.35 kU/L). Data were analysed to compare aeroallergens between Caucasian and non-Caucasian children. Statistical analyses were performed using the Mann-Whitney U and Chi-square tests.
Results The study included 126 patients, with 86.5% identified as atopic, comprising 54 Caucasian and 55 non-Caucasian individuals Among atopic children, the prevalence of sensitization to house dust mite (HDM) was significantly higher in non-Caucasian children 48/55 (87.3%) vs 37/54 (68.5%), p=0.022 as well as mixed moulds 26/55 (47.3%) vs. 15/54 (27.8%), p= 0.048. Grass allergen 44/55 (80%) vs. 38/54 (70.4%) had a slightly higher sensitization rates in non-



Abstract P104 Figure 1 Comparison of HDM specific IgE level between Caucasian and non-Caucasian group. Higher level was noticed in non-Caucasian group with p <0.001

Caucasians. Conversely, horse dander sensitization (9/55, 17% vs. 20/54, 37%) was significantly higher in Caucasian group, p=0.018. Sensitization to cat 33/55 (60%) vs. 35/54 (64.8%) and dog 36/55 (66%) vs. 43/54 (79.6%) allergens were more common in Caucasians.

The median total IgE levels were significantly higher in non-Caucasian children compared to Caucasian children (1348 kU/L vs. 562.5 kU/L, p=0.002). Specific IgE (sIgE) levels for HDM were also significantly higher in non-Caucasians (100 kU/L) compared to Caucasians (21.6 kU/L, p<0.001).

Discussion Ethnic differences in allergen sensitization profiles underscore the need for personalized asthma management strategies. Non-Caucasian children with severe asthma exhibit higher HDM sensitization, necessitating tailored therapeutic approaches like HDM immunotherapy.

The distinct patterns of aeroallergen sensitization among ethnic groups suggest that cultural backgrounds influence allergen exposure during childhood. Addressing environmental and socioeconomic factors contributing to allergen exposure, especially in deprived communities, could be a preventative measure and a focus for future studies.

P105 THE FEASIBILITY AND ACCEPTABILITY OF VIDEO DIRECTLY OBSERVED THERAPY (V-DOT) FOR ACHIEVING MASTERY OF INHALER AND NASAL SPRAY TECHNIQUE: A QUALITATIVE EXPLORATION

[1]K Ferris, [2]P McCrossan, [1]M Shields, [3]J Paton, [4]L Storey, [1]D O'Donoghue. *[1]Queen's University Belfast, Belfast, UK; [2]Royal Belfast Hospital for Sick Children, Belfast, UK; [3]University of Glasgow, Glasgow, UK; [4]Anglia Ruskin University, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.266

Background and Aims A qualitative exploration of a randomised pilot study to compare a novel augmented teaching method (video directly observed therapy (v-DOT)) with standard training in achieving mastery of inhaler+/-nasal spray technique. Our aim was to evaluate the feasibility and acceptability of using v-DOT.

Methods Semi-structured interviews were conducted 3 months after mastery of device technique was achieved. Interviews conducted with parent(s) of study participants +/- study participants (age dependent).

Results 15 semi-structured interviews conducted. Interviews were analysed with reflexive thematic analysis.

A selection of illustrative quotes are shown.

Parents and participants found the experience rewarding. Part of this appeared to result from receiving itertive feedback:

'Getting feedback and having time to kind of work on the steps was helpful. It helped us ……and for him it was good. **It was the right thing for us to do**.'

Parents also felt that the intervention helped in assuming more responsibility and building confidence in asthma management:

'He definitely has become more **confident** in doing it himself. I think he also has a good **insight** now into how serious asthma is.'

'It was educational, and it held you **accountable** because that was a new habit we were starting.'

Parents were also encouraged that the intervention translated into clinical benefit:

'Well, I can kind of count on one hand the number of time he has used the blue inhaler from we have started this. So something is **working** by just giving him the brown everyday and having a **routine** now.'

Conclusion v-DOT was deemed acceptable and feasible by study participants. Parents and participants felt that it helped to build confidence in optimising technique and translated into clinical benefit.

P106 FEASIBILITY OF A NOVEL ACCELEROMETER-BASED RESPIRATORY SENSOR IN NEONATAL RESPIRATORY MONITORING

[1,2]H Vennard, [2]E Buchan, [2]N Gibson, [2]P Davies, [1]DJ Lowe, [3]N Patel, [4]B Henderson, [4]O Meredith, [4]J Miller, [4]C Cowan, [1,2]R Langley. *[1]College of Medicine Veterinary and Life Sciences, University of Glasgow, Glasgow, UK; [2]Department of Paediatric Respiratory and Sleep Medicine, Royal Hospital for Children, Glasgow, UK; [3]Neonatal Unit, Royal Hospital for Children, Glasgow, UK; [4]PneumoWave Ltd, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.267

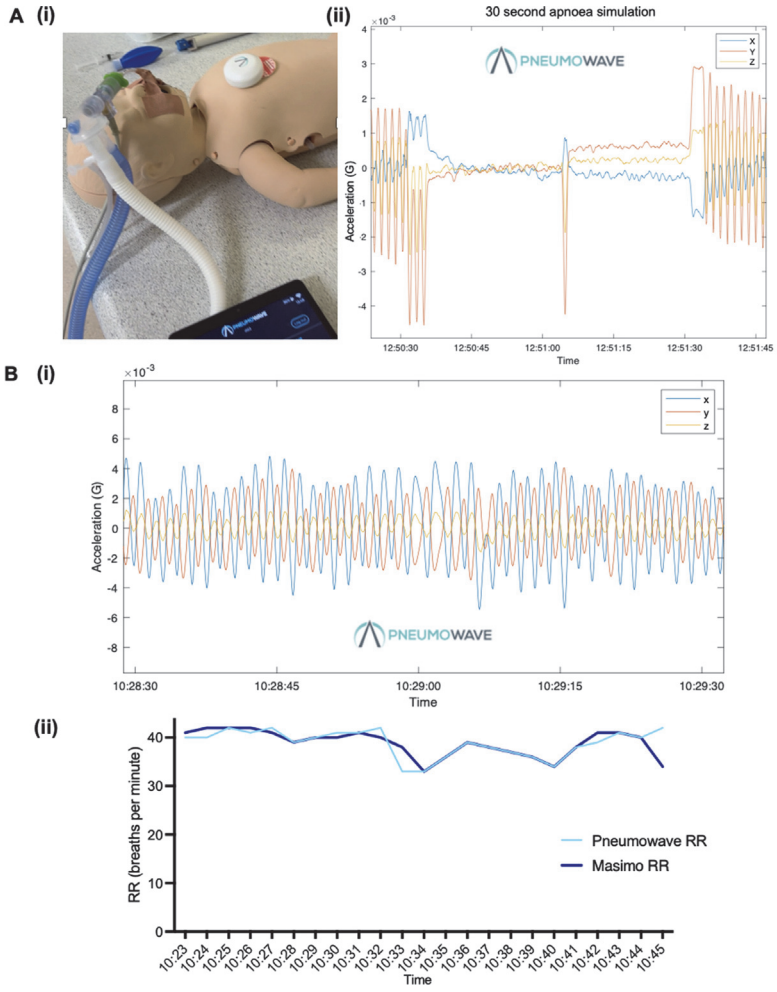
Introduction There is a need to improve respiratory monitoring for neonatal patients, enabling detection of apnoeas, clinical deterioration and sudden unexpected postnatal collapse. New wearable technology is being developed to enhance diagnostic accuracy of respiratory monitoring with potential utility in low-resource settings.

Objectives Pre-clinical evaluation of a novel, accelerometer-based respiratory sensor (Pneumowave, Pneumowave Ltd, UK) to capture clinically relevant extremes of respiratory parameters in neonatal patients. Determine the feasibility of collecting respiratory rate/effort data from neonatal patients in the Royal Hospital for Children, Glasgow.

Methods Pre-clinical work captured clinically relevant extremes of respiratory parameters using mannequins and mechanical ventilation, including breathing frequencies (RR), tidal volumes (TVs), inspiratory: expiratory ratios, biosensor positions and apnoea simulation (figure 1A). Biosensor data was compared to ventilator-measured parameters. During the clinical phase, neonatal patients receiving a range of respiratory support wore a single chest worn biosensor, in addition to standard clinical monitoring. Biosensor data was compared to standard clinical monitoring data. Accelerometer data is transferred via Bluetooth to a mobile device and algorithms are applied.

Results Pneumowave algorithm respiratory rate (RR) was compared to ventilator frequencies 3–75 breaths per minute (bpm), R^2 0.05549, P 0.3798, bias [limits of agreement, LOA] -15.13, [–68.9 to 36.68]. Removing outliers, ventilator frequencies 20–60bpm demonstrated a strong statistically significant correlation, R^2 0.9372, P <0.0001, bias [LOA] –1.66, [–8.56 to 5.45]. RR was accurately identified, +/-2bpm, for ventilator delivered tidal volumes of ³7.6ml, with accuracy dropping for tidal volume £6ml, bias [LOA] –9.11, [-43.45 to 25.22]. During the clinical phase 40 neonates have been recruited from 4 hours to 7 weeks of life with 100% tolerability and successful data collection. Pneumowave data is being compared to standard clinical monitoring data (figure 1B).

Conclusion Pneumowave biosensor can accurately measure RR and pattern across a range of neonatal applicable breathing frequencies and TVs. Feasibility of collecting Pneumowave respiratory data neonatal patients has been demonstrated. Monitoring of ventilated neonatal patients will further support validation of Pneumowave device. The Pneumowave device has potential as a saftey metric with application in Less Economically developed countries (LEDCs) for neonatal monitoring, reducing health inequlities.



Abstract P106 Figure 1 (A) Pre-clinical work with ventilator and neonatal mannequin, (i) mannequin and ventilator set up (ii) 30 second periods of apnoea shown on accelerometer data (x, y and z axis) (B) Pneumowave accelerometer data compared with standard clinical monitoring data. 3-week-old neonate, born 38+6/40, weighing 3850g on 0.2L/min supplemental O_2. (i) Pneumowave data (x, y and z axis) collected from chest worn biosensor (ii) Pneumowave Respiration rate (RR) compared with Masimo Rad 97 RRp, respiration rate based on plethysmographic waveform

'The Man in the Iron Mask' – Acute respiratory support

P107 VASCULAR ENDOTHELIAL GROWTH FACTOR AND ACUTE RESPIRATORY DISTRESS SYNDROME: A MENDELIAN RANDOMISATION STUDY

[1]E Suarez-Pajes, [2]N Shrine, [1]E Tosco-Herrera, [2,3]T Hernandez-Beeftink, [4]LA Rubio-Rodríguez, [5,6]MI García-Laorden, [1,6]A Corrales, [7]M Prieto González, [8,9]A Rodríguez-Pérez, [10]D Carriedo, [6,11]J Blanco, [12]A Ambrós, [13]E González Higueras, [14]E Espinosa, [11]A Muriel-Bombin, [14]D Domínguez, [15]A García de Lorenzo, [6,15]JM Añon, [16]M Soro, [5,6]J Villar, [2,3]MD Tobin, [2,3]L Wain, [1,4,6]C Flores, [2,3]OC Leavy, [2,3,6]B Guillen-Guio. *[1]Research Unit, Hospital Universitario Nuestra Señora de Candelaria, Instituto de Investigación Sanitaria de Canarias (IISC), Santa Cruz de Tenerife, Spain; [2]Department of Population Health Sciences, University of Leicester, Leicester, UK; [3]NIHR Leicester Biomedical Research Centre, University of Leicester, Leicester, UK; [4]Genomics Division, Instituto Tecnológico y de Energías Renovables (ITER), Santa Cruz de Tenerife, Spain; [5]Research Unit, Hospital Universitario Dr. Negrín, Las Palmas de Gran Canaria, Spain; [6]CIBER de Enfermedades Respiratorias (CIBERES), Instituto de Salud Carlos III, Madrid, Spain; [7]Intensive Care Unit, Complejo Asistencial Universitario de Palencia, Palencia, Spain; [8]Department of Anesthesiology, Hospital Universitario de Gran Canaria Dr. Negrín, Las Palmas de Gran Canaria, Spain; [9]Department of Medical and Surgical Sciences, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain; [10]Intensive Care Unit, Complejo Hospitalario Universitario de León, León, Spain; [11]Intensive Care Unit, Hospital Universitario Rio Hortega, Valladolid, Spain; [12]Intensive Care Unit, Hospital General de Ciudad Real, Ciudad Real, Spain; [13]Intensive Care Unit, Hospital Virgen de la Luz, Cuenca, Spain; [14]Department of Anesthesiology, Hospital Universitario N.S. de Candelaria, Santa Cruz de Tenerife, Spain; [15]Intensive Care Unit, Hospital Universitario La Paz, IdiPAZ, Madrid, Spain; [16]Anesthesiology and Critical Care Department, Hospital IMED Valencia, Valencia, Spain*

10.1136/thorax-2024-BTSabstracts.268

Introduction Acute respiratory distress syndrome (ARDS) is a severe inflammatory lung disorder mainly caused by sepsis resulting from both pulmonary and non-pulmonary infections. ARDS is characterised by rapid onset of acute respiratory failure and has a hospital mortality of about 40%. A previous genome-wide association study (GWAS) of sepsis-associated ARDS revealed an association between genes in the vascular endothelial growth factor signalling pathway (*VEGFA* and *VEGFR1*) and ARDS susceptibility.[1]

Objective Assess the causal relationship between VEGFA and VEGFR1 circulating levels and ARDS risk.

Methods We used two-sample bidirectional Mendelian randomisation (MR) to test the causal effect of VEGFA and VEGFR1 serum levels on ARDS, and of ARDS on VEGFA and

VEGFR1 serum levels. We used genetic variants from GWAS of both VEGFA and VEGFR1 serum levels (UK Biobank, N=46,836) and of sepsis-associated ARDS (N= 274 ARDS cases and 316 controls with sepsis) as instrumental variables. We used the inverse variance-weighted (IVW) method to test causality and performed sensitivity analyses with five additional methods. We evaluated presence of pleiotropy and outliers. MR-RAPS was used to test weak instrumental variables ($p<0.05$).

Results No significant causal effect on ARDS risk was observed for either VEGFA (pIVW=0.992) or VEGFR1 (pIVW=0.924) serum levels based on our findings. Similarly, we found no indication that ARDS has a causal effect on either VEGFA (pIVW=0.487) or VEGFR1 (pIVW=0.168) serum levels. Sensitivity analyses supported these results.

Conclusions Our results do not provide evidence for a causal link between serum levels of VEGFA or VEGFR1 and susceptibility to sepsis-associated ARDS. Further analyses are required to explore the impact of VEGF regulation during the acute phase on the development of ARDS.

REFERENCE

1. Guillen-Guio, *et al. Lancet Respir Med.* 2020;**8**:258–266. PMC7772505.

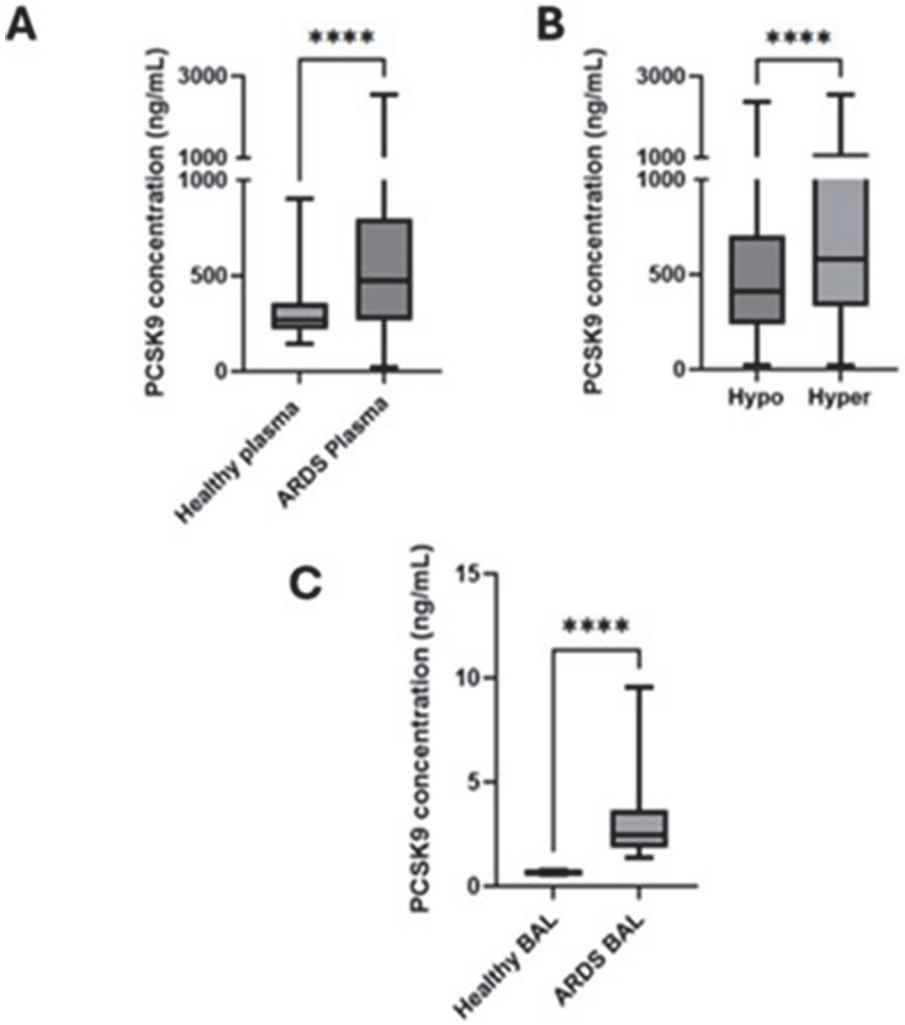
P108 THE ROLE OF PROPROTEIN CONVERTASE SUBTILISIN-KEXIN TYPE 9 IN THE ACUTE RESPIRATORY DISTRESS SYNDROME

[1]E Crossley, [2,3]PK Hamilton, [1,3]JA Silversides, [1,3]DF McAuley, [1,3]CM O'Kane. *[1]Wellcome-Wolfson Institute for Experimental Medicine, Queen's University Belfast, Belfast, UK; [2]Centre for Medical Education, Queen's University Belfast, Belfast, UK; [3]Belfast Health and Social Care Trust, Belfast, UK*

10.1136/thorax-2024-BTSabstracts.269

Background Proprotein Convertase Subtilisin-Kexin type 9 (PCSK9) is a key regulator of lipid metabolism. Recently, a pro-inflammatory role for PCSK9 has been hypothesised, through reduced bacterial phospholipid clearance. Elevated circulating PCSK9 levels in patients with acute respiratory distress syndrome (ARDS) has been reported in a single cohort, leading to the hypothesis that PCSK9 plays a role in ARDS pathogenesis.

This study aimed to replicate the finding that circulating PCSK9 levels are elevated in ARDS, investigate the association between PCSK9 and clinical outcomes, and explore whether PCSK9 levels are increased in the alveolar compartment (in bronchoalveolar lavage (BAL) fluid). A further aim was to compare circulating PCSK9 levels between patients with the



Abstract P108 Figure 1 PCSK9 concentration (ng/mL) determined by ELISA in A) Plasma from ARDS patients compared to healthy volunteers (p<0.0001). B) Plasma from ARDS patients in hyperinflammatory compared to hypoinflammatory subphenotypes/(p<0.0001). C) BAL fluid from ARDS patients compared to healthy volunteers (p<0.0001)

recently identified 'hypoinflammatory' and 'hyperinflammatory' subphenotypes of ARDS.

Methods Plasma was obtained at baseline from patients with ARDS previously enrolled in the HARP-2 clinical trial which compared statins with placebo (n=487) and healthy volunteers (n=32). BAL fluid was collected from ARDS patients (n=18) within 48 hours of onset, and from healthy volunteers (n=6). PCSK9 concentration was quantified via ELISA kits (R&D Systems, Europe). Statistical analysis was performed using Prism 10.10.1 software (GraphPad Software, Boston, USA). For nonparametric data, Mann-Whitney *U* tests were performed. Zero-inflated Poisson regression was performed for data containing an excess of zeros. Differences were considered at $p<0.05$.

Results Median PCSK9 concentrations were significantly elevated in plasma from ARDS patients compared with healthy volunteers (figure 1A). PCSK9 levels were significantly elevated in those with the 'hyperinflammatory' subphenotype compared with the 'hypoinflammatory' subphenotype (figure 1B). PCSK9 concentrations in BAL fluid were higher in ARDS than in healthy volunteers (figure 1C). Higher plasma PCSK9 concentration was associated with fewer ventilator free days on Poisson regression ($p<0.0001$) and was significantly higher in non-survivors than survivors (median 559.8 ng/mL [n=116], vs 464.3 ng/mL [n=371]; $p=0.0172$).

Conclusion PCSK9 is elevated in the plasma and alveolar space in patients with ARDS, is associated the hyperinflammatory ARDS subphenotype, and is associated with worse clinical outcomes, including longer duration of ventilation and higher mortality. Further work is required to determine the mechanistic role of PCSK9 in ARDS.

P109 ONE-LUNG VENTILATION DURING OESOPHAGECTOMY PROMOTES UPREGULATION OF PROINFLAMMATORY MEDIATORS CYCLOPHILIN A AND SOLUBLE CD147

A Zachariadis, RF Baldi, J Stephens, S Soni, M Takata, MR Wilson. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.270

Background and Aims CD147, or EMMPRIN, is best known as a major promoter of matrix metalloproteinase (MMP) activity, but also mediates various proinflammatory and profibrotic processes. As a cell surface receptor, CD147 is activated by multiple ligands including extracellular Cyclophilin A (eCypA) and the soluble form of the CD147 protein.

We recently identified eCypA/CD147 interactions as a novel mechanism promoting ventilator-induced lung injury in mouse models.[1] We also showed that eCypA is elevated in bronchoalveolar lavage fluid (BALF) of acute respiratory distress syndrome patients but it is unclear whether this was related to ventilation or the underlying disease.

To clarify links between ventilation and eCypA/CD147 within a clinical scenario, we determined levels of eCypA and soluble CD147 in oesophagectomy patients undergoing one-lung ventilation.

Methods BALF samples from both the left and right lungs of 12 oesophagectomy patients were collected at 3 timepoints – T1, start of operation, during which two-lung ventilation (TLV) is used; T2, start of one-lung ventilation (OLV); T3, end of OLV. In all cases the left lung was ventilated during the OLV period while the right lung remained deflated. eCypA and CD147 were determined by ELISA and total protein was measured as a marker of permeability.

Results Mean tidal volume during TLV was 490±50ml (mean ±standard deviation), reduced to 390±70ml during OLV. Length of OLV ranged from 102 to 186 minutes (mean 150 ±30min).

There was no significant difference in any of the markers in samples from either lung across the initial TLV period, from T1 to T2 (table 1). In contrast at T3 (post-OLV), BALF from the ventilated lung contained significantly more protein (indicating permeability), soluble CD147 and eCypA than the non-ventilated lung. Moreover, in the ventilated lung only, eCypA levels were significantly increased at T3 compared to T2.

Conclusion Our data demonstrate that a brief period of unphysiological lung stretch promoted a significant increase in BALF eCypA within patients undergoing one-lung ventilation. These findings support the hypothesis that inappropriate or unphysiological ventilation alone can promote intrapulmonary activation of the proinflammatory/profibrotic eCypA/CD147 signaling pathway.

REFERENCE

1. Koh, *et al. AJRCCM*. 2021:421–430.

Abstract P109 Table 1 Concentrations of markers in the BALF of 12 oesophagectomy patients at timepoints 1, 2 and 3

	Non-ventilated lung			*Ventilated lung*		
Time point	***T1***	***T2***	***T3***	***T1***	***T2***	***T3***
Cyclophilin A (ng/mL)	*1.48*	*1.50*	*2.82*	*1.85*	*1.88*	*8.05*
	(0.6-5.7)	*(0.9-2.4)*	*(0.7-8.3)*	*(0.7-3.3)*	*(1.2-3.9)*	*(3.4-26)*$*
Soluble CD147 (pg/mL)	*92.6*	*38.1*	*58.7*	*68.7*	*55.6*	*96.4*
	(22–126)	*(19–122)*	*(9.2-163)*	*(17–110)*	*(22–95)*	*(45–328)**
Protein (mg/mL)	*0.04*	*0.03*	*0.05*	*0.05*	*0.04*	*0.08*
	(0.01-0.1)	*(0.02-0.1)*	*(0.01-0.2)*	*(0.03-0.1)*	*(0.02-0.1)*	*(0.04-0.6)**

T1= start of operation (two-lung ventilation).
T2= start of one-lung ventilation.
T3= end of one-lung ventilation.
Data are expressed as median (interquartile range). Data were analysed by 2-way ANOVA following log transformation, with Tukey's multiple comparisons test. *p<0.05 vs non-ventilated lung at matched time point; $p<0.05 vs T2 in corresponding lung.

P110 A MODIFICATION OF A DOMICILIARY VENTILATOR WHICH REDUCES OXYGEN CONSUMPTION IN MECHANICALLY VENTILATED PATIENTS; IN VIVO ASSESSMENT

[1]TO Jenkins, [2]TM Sutton, [3]PG Griffen, [4]Y Mebrate, [5]MI Polkey. *[1]Harefield Respiratory Research Group, The Royal Brompton and Harefield Hospitals, Guy's and St Thomas' NHS Foundation Trust, London, UK; [2]Design Engineering Department, Limbs and Things, Bristol, UK; [3]Department of Design, Brunel University College of Engineering Design and Physical Sciences, Uxbridge, UK; [4]Department of Clinical Engineering, Royal Brompton and Harefield NHS Foundation Trust, London, UK; [5]Department of Respiratory Medicine, Royal Brompton and Harefield Clinical Group, London, UK*

10.1136/thorax-2024-BTSabstracts.271

Introduction During the COVID pandemic there were well documented instances of domiciliary ventilators being used in ICU to compensate for the shortage of ICU ventilators. In contrast to ICU ventilators, these ventilators do not capture oxygen entrained into the device during the expiratory phase, increasing their oxygen consumption at a time where there were reports of hospitals running out of oxygen. We previously showed, in vitro, that a simple modification retrofitted to a domiciliary ventilator could collect oxygen normally released into the atmosphere during the expiratory phase into a reservoir, subsequently increasing the FiO_2 delivered by the ventilator. We sought to determine if this modification could improve oxygenation in critically ill, mechanically ventilated patients, and in turn, reduce wall pipeline oxygen consumption whilst maintaining PaO_2.

Methods We tested a machined plastic adaptor designed for the Breas® Nippy 4+ ventilator (figure 1) on ten mechanically ventilated patients in a cardiothoracic intensive care unit. We measured PaO_2, $PaCO_2$ and FiO_2 with the modification on and off at the participants baseline FiO_2 and after increasing oxygen delivered to the ventilator by an additional 1, 2 and 3 litres/min. We then tested the ability of the modification to reduce wall pipeline oxygen consumption whilst maintaining PaO_2.

Results The modification fitted to the ventilator significantly increased participants PaO_2 at baseline FiO_2, baseline FiO_2 +1 litre, +2 litres and +3 litres/min by a median (IQR) of 1.63 (1.35 – 2.17) kPa, 1.60 (0.87 – 2.80) kPa, 2.15 (3.02 – 8.42) kPa and 3.65 (2.47 – 4.57) kPa respectively compared to no modification, without significantly affecting $PaCO_2$. When the modification was fitted to conserve oxygen it significantly reduced wall oxygen consumption by median (IQR) -1.0 (-1.25 to -1.00) litres/min.

Conclusion A simple modification can produce a flow dependent increase in FiO_2 and PaO_2 without requiring more oxygen from the wall supply. It can also reduce wall pipeline oxygen consumption whilst maintaining PaO_2. This may be a valuable modification in circumstances where there is an increased demand for oxygen or in circumstances where oxygen may be in short supply either through natural disasters such as earthquakes or wartime.

Abstract P110 Figure 1 Breas® Nippy 4+ ventilator with modification fitted. Legend: B = reservoir bag, F= bacterial filter, A= adaptor, T= T-piece connector

P111 AN EDUCATIONAL TOOL TO IMPROVE TIME TO INITIATING NON INVASIVE VENTILATION IN ACUTE HYPERCAPNIC RESPIRATORY FAILURE

[1]A Sheikhnoor, [1]A Yap, [1]R Gladwin, [2]S Srivastava. *[1]King's College London, London, UK; [2]Guy's and St Thomas' Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.272

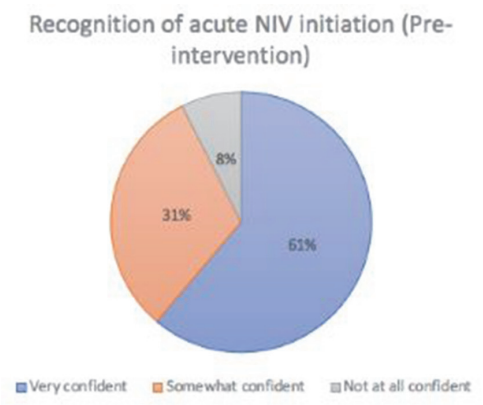
Introduction and Objectives The BTS guideline for the ventilatory management of acute hypercapnic respiratory failure (AHRF) in adults, suggests that non-invasive ventilation (NIV) should be initiated within two hours of diagnosis.

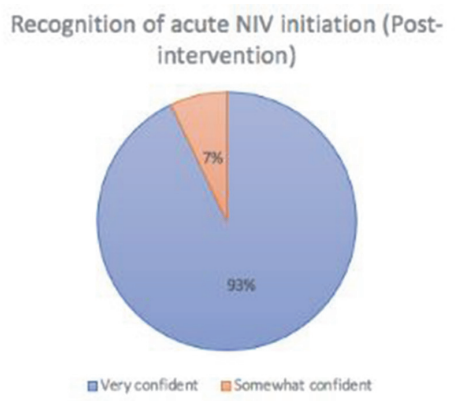
Challenges continue in recognising AHRF and implementing NIV within this target, as recognised in the NCEPOD on Acute NIV in 2017. Our observational study evaluates an intervention aimed at improving adherence to the recommended timeframe for NIV initiation, in a London teaching hospital, by increasing knowledge.

Methods Surveys were conducted among doctors in emergency and acute medical departments, to determine their knowledge of NIV protocols. An educational intervention was introduced by means of a printed poster (by blood gas machine) and eposter (emailed to all relevant groups), highlighting criteria for acute NIV. This included QR codes for educational resources (BTS and Trust guidelines, e-LFH). A post-intervention survey gauged changes in doctors' understanding. Data on NIV initiation timing were collected from the Trust electronic patient record, before and after the intervention.

Results Pre-intervention, 80 doctors were surveyed: 74% knew of the BTS guidelines, 55% wanted more NIV teaching, 36% wanted a poster near blood gas machines, 34% wanted Trust guideline pop-ups. There was an improvement in NIV knowledge after reviewing the poster (figure 1).

Pre-intervention analysis over 5 weeks, determined only 40% of patients with AHRF due to COPD received NIV within two hours. Post-intervention, this improved to 55%. However, 45% still missed this timeframe. Of these 45%,





Abstract P111 Figure 1

reasons documented: poor candidate, patient refusal, previous poor tolerance.

Conclusion Achieving NIV initiation within two hours remains a challenge. While our intervention demonstrated an improvement, this needs to be re-iterated regularly. The Trust also has a new smartpage for an NIV dedicated physiotherapist. Regular education is ongoing and we look forward to re-assessing and reviewing patient outcomes. Our aim is for the poster, with QR links, to be an electonic summary page, easily accessible to all.

P112 RISK STRATIFICATION AND PROGNOSTIC PATTERNS IN PATIENTS RECEIVING ACUTE NON-INVASIVE VENTILATION FOR TYPE TWO RESPIRATORY FAILURE

P Cawley, AH Tee, M Thiri, CPK Matharu, S Dias, S Lutchegadoo, D Sagar. *Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.273

Introduction Acute non-invasive ventilation (NIV) is a life-saving intervention in an appropriately selected group of patients with decompensated type two respiratory failure. The 2019 BTS Adult NIV audit showed inpatient mortality remains high at 26%.[1] We aim to evaluate relationships between patient dependent variables and Respiratory Support Unit (RSU) outcomes including mortality and readmission rates. We aim to optimise risk stratification and patient selection for RSU admission.

Methods 51 patients were admitted with decompensated type two respiratory failure to a local RSU for acute NIV between 01/01/2023 and 10/06/2023. The retrospective data collected focused on patient characteristics and outcomes. Statistical analysis was performed using Excel and GraphPad Prism.

Results The admitted patients had a mean age of 70 years old (see table 1 for patient characteristics). Nine patients (18%) died during admission. Of the patients that died, 9 (100%) had a World health organisation (WHO) performance status of 3–4, five (56%) had a body mass index (BMI) of >30, six (66.7%) had a C-reactive Protein (CRP) >45, and six (66.7%) had consolidation formally reported on chest X-ray. Five more patients died within three months, totalling 14 deaths (27%) and 19 (37%) were readmitted within three months.

22 (91.67%) patients admitted with a performance status of 3–4 died or were readmitted within three months. Eight patients (100%) admitted to RSU with a pH <7.20 on

Abstract P112 Table 1 Descriptive characteristics of included patients (n=51) percentage shown

Descriptive characteristics	n= number of patients (%)
Primary indication for admission:	
COPD	41 (80.4%)
Obesity Hypoventilation Syndrome	8 (15.7%)
Neuromuscular disease (motor neurone disease & muscular dystrophy)	2 (3.9%)
Age (years)	
<65	17 (33.3%)
65 – 80	27 (52.9%)
>80	7 (13.7%)
Sex	
Male	25 (49.0%)
Female	26 (51.0%)
Chest X-ray reported findings:	
Consolidation	26 (51.0%)
Pulmonary congestion	6 (11.8%)
Fibrosis	1 (2.0%)
Bronchial wall thickening	6 (11.8%)
Unilateral pleural effusion	1 (2.0%)
No acute pathology identified	11 (21.6%)
Body mass index	
<19	10 (19.6%)
19–24.9	7 (13.7%)
25–30	6 (11.8%)
>30	22 (43.0%)
Not documented	6 (11.8%)
World Health Organisation (WHO) Performance status	
1–2	24 (47.0%)
3–4	24 (47.0%)
Not documented	3 (5.9%)
Admission Arterial Blood Gas (ABG) pH	
<7.20	8 (15.7%)
7.20 – 7.29	28 (54.9%)
>7.30	15 (29.4%)
Admission Creatinine (umol/L)	
>100	17 (33.3%)
<100	34 (66.7%)
Admission C–reactive protein (CRP)	
<10	7 (13.7%)
10–50	15 (29.4%)
>50	29 (56.9%)

arterial blood gas (ABG) died or were readmitted within 3 months. 14 (82.35%) patients admitted to RSU with a creatinine >100umol/L, died or were readmitted within three months.

Conclusions We have observed a correlation between a performance status of 3–4, elevated BMI, high CRP, and consolidation on chest X-ray with high inpatient mortality.

Performance status 3–4, low ABG pH on admission and elevated creatinine are associated with poor outcomes at three months.

Our results are from a single centre and require further evaluation. These results will help clinicians in prognosticating outcomes for patients admitted to RSU, which will help to guide discussions with patients and their families.

REFERENCE

1. BTS. National Adult Non-Invasive Ventilation Audit 2019. July 2020.

P113 'INSPIRING CHANGE' IN ACUTE NIV CARE: A QUALITY IMPROVEMENT PROJECT

MLB Jacobs, S Tharayil, T Altarazi, N Sharma, A Aggarwal, M Sovani. *Nottingham University Hospitals NHS Trust, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.274

Introduction and Objectives Non-invasive ventilation (NIV) can be a lifesaving treatment for patients with acute hypercapnic respiratory failure. The 2017 'Inspiring Change' National Confidential Enquiry into Patient Outcome and Death (NCEPOD)[1] report highlighted variations in the delivery of NIV care and outcomes across the United Kingdom. Subsequent British Thoracic Society (BTS) Quality Standards published in 2018 detailed standards of care for the provision of acute NIV highlighting the 120 minute target time to NIV initiation.[2]

Following the opening of a newly dedicated NIV unit within our Trust in 2022, a retrospective audit of patients receiving acute NIV revealed that the mean time to NIV initiation after the initial blood gas was 9 hours 34 minutes. As a result, a quality improvement initiative was designed to improve initiation times on the new ward.

Methods A service improvement initiative was implemented consisting of specialist staff training, acquisition of new equipment, collaboration within the multidisciplinary team and streamlining of the current referral process. The ward was then re-audited to determine whether these changes had improved the NIV initiation times.

Results A total of 46 patients were included in the re-audit of the ward. The mean time to initiating NIV reduced from 9hrs 34mins to 3hrs 50mins. The main contributing factors to prolonged NIV initiation times were delay in initiation on base wards and delay in patient transfer to the designated unit for ongoing management. Implementation of specialist staff training, the development of a robust referral proforma and collaboration with the wider respiratory multi-disciplinary team to deliver integrated and timely care has been key in significantly reducing the NIV initiation time.

Conclusion The implementation of a quality improvement initiative has demonstrated a reduction in NIV initiation times.

REFERENCES

1. National Confidential Enquiry into Patient Outcome and Death (2017) *Acute Non-Invasive Ventilation: Inspiring Change.* Available Online: https://www.ncepod.org.uk/2017niv.html
2. Davies M, Allen M, Bentley A, *et al.* British Thoracic Society Quality Standards for acute non-invasive ventilation in adults. *BMJ Open Resp Res* 2018;**5**:e000283.

P114 THE IMPACT OF A NEWLY ESTABLISHED RESPIRATORY SUPPORT UNIT (RSU) ON ACUTE NON-INVASIVE VENTILATION (NIV) OUTCOMES OUTSIDE CRITICAL CARE

[1]A Brookmyre, [1,2]KP Yip, [1]E Pinto, [1]A Sivaramakrishnan, [1]K Filby, [1]N Folland, [1]S Madathil, [1]S Huq. *[1]University Hospitals Birmingham NHS FT, Birmingham, UK*; *[2]Institute of Inflammation and Ageing, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.275

Background Based on the joint 2021 British Thoracic Society (BTS) and Intensive Care Society (ICS) guidelines, a 12-bed RSU was established in September 2022 at Queen Elizabeth Hospital Birmingham. A hybrid multidisciplinary staffing model was created to provide enhanced care with a higher staffing ratio within designated level-2 areas in the respiratory wards, with continuous cardiorespiratory monitoring. Before

Abstract P114 Table 1 Comparison of patient demographics and outcomes between the pre-RSU cohort (January to June 2022) and post-RSU cohort (January to June 2023).

Patient characteristics	Pre-RSU (n=84)	Post-RSU (n=91)	P-value
Age (years)	72 (65-78)	71 (65-76)	0.44
Gender (n,% male)	31 (36.9%)	38 (41.8%)	0.62
Underlying diagnosis (n,%)			
COPD	55 (65.5%)	59 (64.8%)	0.84
Obesity-related respiratory failure	16 (19.0%)	20 (22.0%)	
Others/multifactorial	13 (15.5%)	12 (13.2%)	
Already on home NIV (n,%)	33 (39.3%)	31 (34.1%)	0.47
On LTOT (n,%)	34 (40.5%)	27 (29.7%)	0.13
For escalation to critical care (n,%)	9 (10.7%)	1 (1.1%)	**0.006**
NIVO score*	3 (2-4)	3 (2-4)	0.56
Pre-NIV ABG pH	7.28 (7.21-7.30)	7.28 (7.24-7.31)	0.07
Pre-NIV ABG pCO_2	10.1 (8.6-11.8)	9.5 (8.2-10.9)	**0.02**
Improvement in ABG pH after 1-2 hours post-NIV initiation#	0.07 (0.03-0.12)	0.06 (0.03-0.10)	0.50
Improvement in ABG pCO_2 after 1-2 hours post-NIV initiation (kPa)#	1.7 (0.4-3.1)	1.3 (0.7-2.3)	0.25
Acute NIV within 60 mins of ABG (n,%)	14 (17.1%)	20 (22.0%)	0.42
Time between NIV physio referral and NIV initiation (mins)	110 (75-155)	80 (50-120)	**>0.001**
Door to mask time (hours)^	4.8 (3.2-9.6)	5.5 (4.1-8.6)	0.2
Duration of acute NIV (days)	3 (2-7)	3 (2-6)	>0.99
NIV success (n,%)	71 (84.5%)	87 (95.6%)	**0.01**
Transfer to critical care (n,%)	1 (1.2%)	0 (0%)	0.48
Length of hospital stay (days)	11 (7-17.5)	14 (8-22)	0.08
Status at discharge			
Alive (n,%)	78 (92.9%)	82 (90.1%)	0.52
Dead (n,%)	6 (7.1%)	9 (9.9%)	
Death within 90 days post-discharge (n,%)	22 (26.2%)	13 (14.3%)	0.08

Continuous data expressed as median (IQR). **RSU:** respiratory support unit; **COPD:** chronic obstructive pulmonary disease; **NIV:** non-invasive ventilation; **LTOT:** long-term oxygen therapy; **NIVO:** NIV Outcomes; **ABG:** arterial blood gas
*Pre-RSU: n=65 and post-RSU: n=66
#Pre-RSU: n=81 and post-RSU: n=90
^Patients with a difference of >48 hours between admission time and pre-NIV ABG are excluded. Both pre-RSU and post-RSU: n=72

RSU, acute NIV was provided in standard level-1 respiratory ward beds, and patients who deteriorated could potentially be considered for escalation to critical care for NIV under enhanced monitoring, irrespective of their eligibility for intubation.

After RSU was established, all acute NIV for acute hypercapnic respiratory failure outside critical care was delivered within the unit, with daily morning ward rounds by an NIV physiotherapist and a respiratory physician. An 'access bed' is maintained 24/7 to admit patients rapidly from other areas. This study aimed to determine if the RSU impacted acute NIV outcomes.

Methods The pre-RSU cohort included all consecutive acute NIV cases in the respiratory wards from January to June 2022. The post-RSU cohort included all consecutive acute NIV cases in the RSU from January to June 2023. Data was collected retrospectively using electronic health records.

Results Fewer patients were deemed for consideration of critical care escalation in the post-RSU group (see **table 1**; 1.1% vs 10.7%, p=0.006). NIV was commenced quicker in the post-RSU group once NIV physiotherapists were informed (80 vs 110 minutes, p>0.001), and the NIV success rate was also higher (95.6% vs 84.5%, p=0.01). Inpatient mortality was lower (<10%) in both groups compared to national data (24.5% in the BTS 2023 RSU audit). Despite similar NIV outcomes (NIVO) scores, there was a trend towards improving 90-day mortality in the post-RSU group (14.3% vs 26.2%, p=0.08).

Conclusion Our findings demonstrate several positive outcomes in the post-RSU group, reflecting the benefits of intensive and multidisciplinary monitoring, maintenance of an access bed and less need to consider critical care escalation given the enhanced level-2 care provision within RSU. Further studies are required to identify its impact on other outcomes, particularly length of stay and health care utilisation.

P115 HIGH FLOW NASAL OXYGEN (HFNO) USE IN A POST-COVID PANDEMIC ERA: AN ACUTE RESPIRATORY CARE UNIT (ARCU) EXPERIENCE

J Weatherley, M Dawson, S Bhandari, M Wirima, R Badiger. *Colchester Hospital, Colchester, UK*

10.1136/thorax-2024-BTSabstracts.276

Background Although evidence supporting HFNO is emerging, its use as an option for non-invasive respiratory support has grown, following resolution of the COVID pandemic, extending outside of intensive care units. Data regarding use in non-COVID patients is limited.

Aim To identify factors that influenced treatment duration and survival in non-COVID patients treated with HFNO.

Methods A retrospective case-note review of patients admitted to ARCU for HFNO between November 2022 and December 2023.

Results 50 patients started HFNO. Indications included pneumonia (25), airway disorders (3), interstitial lung disease (3), pulmonary oedema (4), pulmonary embolus (1), pneumonitis (1), lung abscess (1), hepatic hydrothorax (1) and mixed aetiology (11). The mean Rockwood frailty score was 3.9 and median age 72 (range: 37 – 88) years. 44% of patients started on HFNO survived > 3 months post discharge. Median duration on HFNO in survivors was 64 (range: 12 – 257) hours. Median duration on HFNO in non-survivors was 59 (range: 7 – 378) hours. Factors influencing survival of > 3 months included indication, age (median 66) and clinical frailty (mean frailty score 3.3 in survivors). In total, 4/50 were admitted to intensive care, half of whom were later intubated. 80% were started on HFNO out of hours (between 17:00 and 09:00).

Conclusions HFNO can be safely and effectively administered in a non-intensive care setting for a range of non-COVID respiratory pathologies. Patient selection and identification of significant hypoxic respiratory failure remain key for HFNO in an ARCU setting. Patient selection itself may also be influenced by the skill mix of the physicians initiating HFNO given most patients were started out of hours.

P116 USE OF HIGH FLOW OXYGEN AT THE END OF LIFE IN A TERTIARY CARE CENTRE

S Nisar, G Mortimore, A Wilcock, L Havers, E Wardell, N Sumanam. *Nottingham University Hospitals, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.277

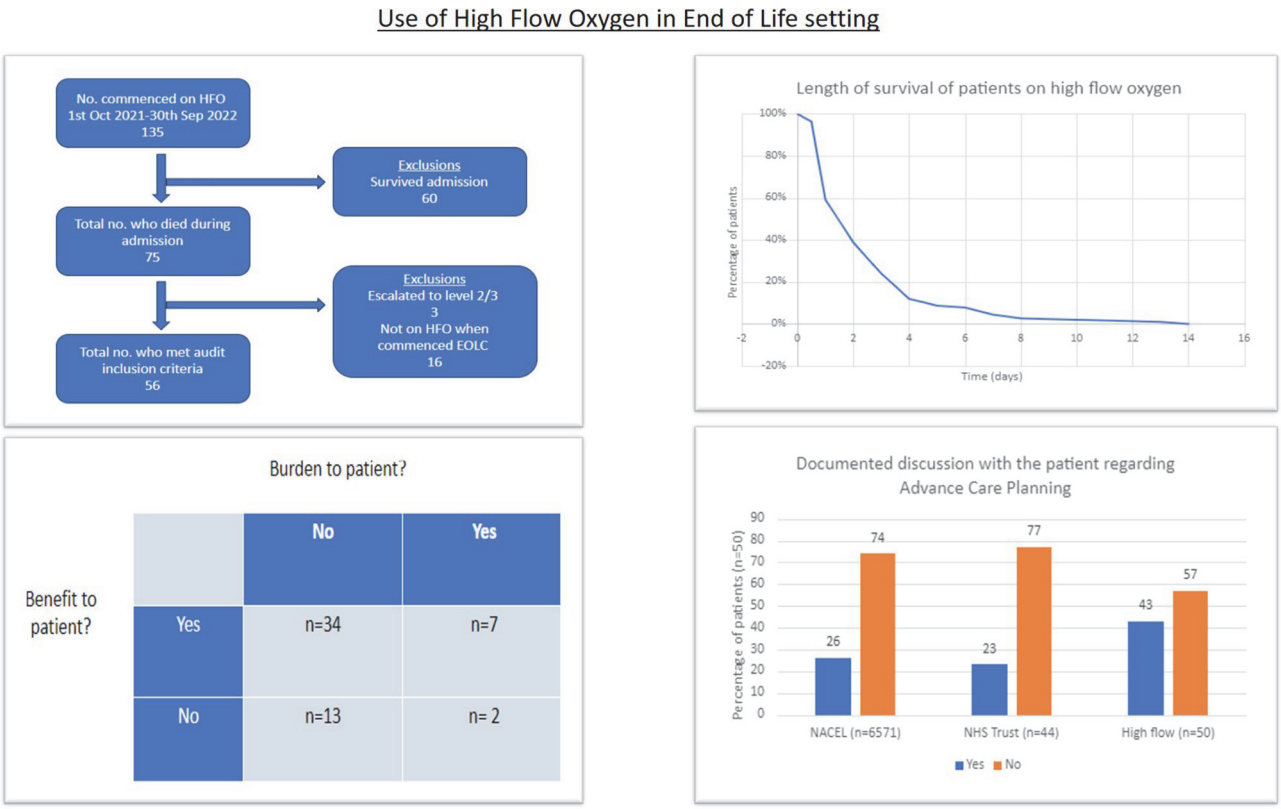
Background High flow oxygen (HFO) is an acute non-invasive intervention for the treatment of hypoxaemia. It is increasingly used in patients who are near End of life (EOL).

Aims and Objectives To understand benefits and burdens of HFO (provided via face mask or nasal cannula) for this patient group and adherence to national end-of-life-care benchmarking standards.

Methods A retrospective audit of the use of HFO in areas outside critical care settings at Nottingham University Hospitals (NUH) NHS Trust over one year from October 2021 to September 2022 focusing on patients who died on HFO or commenced EOLC whilst on it.

Results Of the 135 patients who were treated with HFO, 75 died and 56 fulfilled the audit criteria (table 1), 55% patients initiated on HFO did not survive. Of these 56 patients who did not survive, median age was 75 years. Respiratory Medicine and Oncology accounted for 50% patients. The HFO corrected the hypoxaemia in 73% of the patients, and 61% of patients found HFO to provide symptomatic benefit whilst 4% reported discomforts. Median survival from commencing HFO to death was 2 days. Most audited patients (88%) were formally recognised to be dying. Documented discussions regarding advance care planning were less frequent for the HFO patients than for those included in local and national surveys. The Hospital Palliative Care Team (HPCT) received referrals for 63% of the patients. For 25% of the patients, the management of the HFO at the end of life was not documented.

Conclusions HFO is used in patients with significant disease burden with high mortality (55%). Management of the HFO at the end of life varies considerably. Overall HFO was helpful with symptom management in 61% patients; the intervention was burdensome for 16%. Although recognition of approaching end of life was noted, documentation of discussion with patients and carers needs improvement.



Abstract P116 Figure 1

Further guidance is needed as to how and when to use HFO and how to manage end of life on HFO as this varies considerably. Guidance also needs to be developed as to how to audit and report HFO use in acute settings.

P117 REVISITING LONG TERM MORTALITY IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) PATIENTS AFTER THE FIRST NON-INVASIVE VENTILATION (NIV) EPISODE FOR ACUTE HYPERCAPNIC RESPIRATORY FAILURE (AHRF)

[1]SA Abid, [2]A Krishnan, [2]D Mukherjee, [1]P Kissoonsingh, [1]JW Goh, [1]PL Lee, [1]A Oakes, [1]R Mukherjee. *[1]Heartlands Hospital, Birmingham, UK; [2]HEE – West Midlands, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.278

Introduction Acute NIV for COPD-related AHRF is a standard of COPD care in the UK. There is a limited understanding of long-term mortality of such patients following the first application of acute NIV remain limited with variation in mortality figures and predictors of long-term mortality. We set out to examine the mortality as well as one of the previously-suggested independent predictors of the degree of pre-NIV hypercapnia based on a study of 93 patients.[1]

Methods Data was collected from the NIV quality database listing all patients receiving acute NIV at our acute teaching hospital between January 2017 and Dec 2019. Adults requiring NIV for the first time for COPD-related AHRF were included. One-year and two-year mortality was recorded from the local Clinical Portal (based on NHS Spine Portal: NHS England Digital). Univariable analysis (log-rank test) was carried out with patients grouped by their pre-NIV pCO2 level (Group 1 pCO2 <10, Group 2 pCO2 >/=10).

Results A total of 322 patients received the first application of acute NIV due to COPD-related AHRF: one-year mortality was 49%- and two-year mortality was 72%. Group 1 included 171 patients and Group 2 included 151 patients, with one year mortality at 50.3% and 47.7% for each group respectively. Two-year mortality for group 1 was 70.8% and for group 2 was 73.5%, there was no statistical difference in mortality in patients grouped by pre–NIV PCO2 levels.

Discussion Mortality at two years was comparatively higher than what has been reported in previous studies (around 50%). This is likely to be due to nearly half of the patients being significantly sicker than in clinical trials as ward-based NIV is frequently used as a ceiling of care (in keeping with BTS National NIV Audit data). Pre-NIV pCO2 levels were not a determinant of long-term mortality, again suggesting a significant difference in the real-life cohort. Further work needs to be done on prognostic factors with a view to improving admission-free survival following COPD-related AHRF.

REFERENCE

1. Echave-Sustaeta J, *et al.* Prognosis following acute exacerbation of COPD treated with non-invasive mechanical ventilation. *Archivos de Bronconeumología* 2010 Jan;**46**(8):405–10. doi:10.1016/s1579-2129(10)70098-7.

P118 NIVO SCORE PERFORMS BETTER THAN NEWS TO PREDICT OUTCOME FROM ACUTE NIV FOR COPD EXACERBATION

R Eric, S Tharayil, M Sovani. *Nottingham University Hospitals NHS Trust, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.279

Background NIVO score has been demonstrated to be a good predictor of NIV outcome for Acute Hypercapnic Respiratory Failure (AHRF) due to COPD.

Objectives To assess the impact of NIVO score and other factors on NIV outcomes.

Methods This was a retrospective audit with data gathered over 6 months from October 2023 to March 2024 at the acute NIV ward (Lister 2) at Nottingham University Hospitals. 43 total cases were reviewed. Comparison of factors like Age, NIVO score, NEWS score, pH and pCO2 at initiation of NIV was done.

Results Following the review of 43 patients, of which 36 patients were treated successfully and 7 died despite NIV intervention, 6 month mortality was 17.7%. Patient group was mostly known to the Respiratory team for repeat hospital admissions for COPD. Mean pCO2 at time of NIV initiation was noted to be quite close for successful and unsuccessful NIV cases at 9.66 and 9.29 respectively. Median NIVO scores were 2 and 5 for successful and unsuccessful NIV outcomes respectively. Kindly refer to *table-1* for the entire compiled and analyzed data. Review of patient data at time of NIV initiation noted that pH and median NEWS were not discriminatory. Age and NIVO score at time of NIV initiation had a more significant impact on NIV outcomes with $p<0.05$.

Conclusions The fact that our cohort consisted of frail COPD patients known to the respiratory department and did not include acute admissions to Emergency department with first presentation or severe acidosis (pH<7.15) may explain why age was more discriminatory and pH was not.

NIVO score continues to perform well in real life scenarios whilst assessing effective NIV delivery and predicting NIV outcomes. NIVO score should be considered in acute settings at time of NIV initiation to assess appropriate NIV use and to discuss escalation plans.

Abstract P118 Table 1

FACTORS (at time of NIV Initiation)	SUCCESSFUL NIV	UNSUCCESSFUL NIV	Significance
Number	36	7	
Mean Age (years)	71.5	84	t-test p= 0.0069
Mean pH	7.28	7.28	
Mean pCO2	9.66	9.29	
Median NEWS	5	5	
Median NIVO Score	2	5	Mann-Whitney U-test p= 0.00058

P119 OXYGEN APPLICATION IN PATIENTS AT INCREASED RISK OF TYPE 2 RESPIRATORY FAILURE, WITHIN A TERTIARY CENTRE

[1]N Yonan, [1,2]C Echevarria, [1]B Messer. *[1]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK; [2]Newcastle University, Newcastle Upon Tyne, UK*

10.1136/thorax-2024-BTSabstracts.280

Introduction and Objectives The harms of hyperoxia are well recognised in COPD, with recommended peripheral oxygen saturations (SpO2) of 88–92%. Despite this, there is ongoing harm from excessive oxygenation in these patients. The potential harm of over-oxygenation is under recognised in other groups at risk of hypoventilation, including obese patients. Hyperoxia is associated with morbidity in patients with morbid obesity and obesity hypoventilation syndrome, however fewer data are available for patients with milder obesity.

The primary aim of this study was to analyse implementation of target SpO2 ranges (88–92%) for those at risk of hypoventilation, as per local guidelines, alongside further analysis of the obese category. We additionally assessed delivery of oxygen in clinical practice.

Methods We undertook a retrospective analysis of acute admissions over a 1-week period to respiratory, neurology, and critical care units within a tertiary hospital. Inclusion criteria for those at risk of hypoventilation included a diagnosis of COPD, neuro-muscular disease, and obesity (BMI>30). We analysed their demographics, documentation of target saturations, blood gas results, and time spent at target SpO2 whilst receiving oxygen.

Results Of 184 patients, 91 were classified at risk of hypoventilation, predominantly COPD (39.5%) and a BMI>30 (43.9%). 47.3% (n=43) of those patients had appropriate SpO2 targets applied. 28/36 (77.8%) patients with COPD had appropriate target saturations documented compared to 5/40 (12.5%) with a BMI>30. On further analysis of the obese category, this increased to 4/9 (44.4%) when there was hypercapnia on blood gases, and 5/11 (45%) with a BMI>40. When oxygen was delivered, with target saturations of 88–92%, the recorded SpO2 was in range 68.4% of the time.

Conclusions A high percentage of patients did not have the appropriate target saturations applied. Whilst COPD patients were the most likely to, there remains scope for improvement. Furthermore, over 85% of those in the obese category, did not have the 88–92% SpO2 target applied, as recommended by local guidelines. This rate remained low in those with confirmed hypercapnia at 44.4%, showing significant room for improvement. Patients are spending over 30% of time out of their target SpO2 range, despite having appropriate target saturations implemented.

P120 OUTCOMES FROM MILD ACUTE HYPERCAPNIC RESPIRATORY FAILURE

A El-Nayal, G Raynes, C Aday, S Lutchegadoo, S Iyer. *Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.281

Introduction Acute hypercapnic respiratory failure (AHRF) is associated with significant morbidity, mortality and healthcare costs. Non-invasive ventilation (NIV) is recommended for AHRF which has not responded to medical management. A limited number of studies have evaluated the use of NIV in mild AHRF (defined as arterial pH $\geq$7.3) which makes this cohort challenging to manage. Following the BTS Respiratory Support Unit (RSU) audit in 2023, we decided to study outcomes in all patients with mild AHRF.

Objectives Compare outcomes of patients managed with and without NIV in mild AHRF

Methods We retrospectively identified 670 patients with specified blood gas parameters (pH<7.35, pCO2>6.5 and HCO3 $\geq$20) over a 2-month period between 1st February and 31st March 2023. We included diagnoses where acute NIV would be indicated: chronic obstructive pulmonary disease (COPD); obesity hypoventilation syndrome; obstructive sleep apnoea; chest wall deformity and, neuromuscular disease. We excluded samples taken from critical care or theatre, venous samples and those with a mixed acidosis.

We were left with 29 patients.

We collected baseline demographics, specifics of their medical management including controlled oxygen therapy, admission to RSU for NIV, length of hospital stay and survival to discharge.

Results and Conclusions Table 1 attached

Our no-NIV group had a higher average PaO2 and lower HCO3 at presentation suggesting that over-oxygenation may have played a role. A greater proportion (85%) from this group were frail with severe co-morbidities and 43% had evidence of pneumonia which might partially explain the high mortality (25%).

All 9 patients who received NIV (majority COPD) survived to discharge.

Existing medical literature suggests that 80% of patients with mild AHRF secondary to acute COPD exacerbation improve with medical management alone. Our study looked at mild AHRF in a wider range of conditions where NIV is recommended and found a similar rate of improvement (75%).

This small study shows that, with the use of clinical discretion, it is possible to identify a select group of patients whose clinical trajectory would warrant NIV as first-line treatment in order to prevent progression to more adverse physiology.

Abstract P120 Table 1 Mild acute hypercapnic respiratory failure results

	NIV Group (9)	No NIV Group (20)
Age* (years)	63	69
pH*	7.32	7.32
PaCO2* Kpa	9.22	8.12
PaO2* Kpa	8.83	11.47
HCO3-* mmol/L	29.18	26.94
COPD (%)	7 (78)	14 (67)
OHVS (%)	3 (33)	1 (5)
OSA (%)	2 (22)	3 (14)
NMD (%)	0	1 (5)
Pneumonia (%)	3 (33)	9 (43)
Medical Management (%)	9 (100)	18 (90)
Targeted O2 Therapy (SpO2 88-92%)	9 (100)	18 (90)
Severe co-morbidities or moribund patients (CFS score 7 or more) (%)	6 (67)	18 (85)
Length of hospital stay for survivors to discharge* (days)	14.6	8.2
In-hospital mortality (%)	0	5 (25)

*Mean values

'The Hitchhikers Guide to Coughing'

P121 SINGLE DAY COUGH RECORDING DOES NOT REFLECT TRUE COUGH FREQUENCE

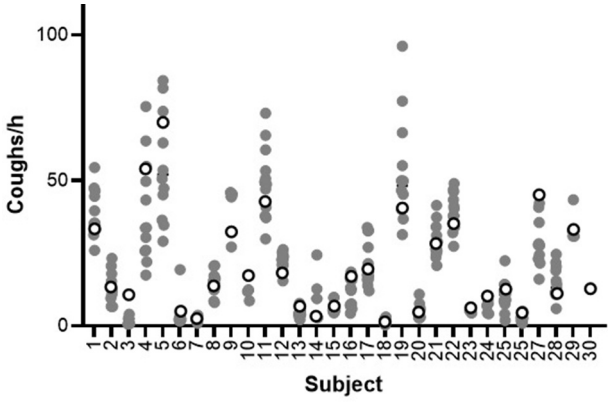
[1]AH Morice, [2]M Alge, [1]S Hart, [1]A Rigby, [3]D Elkayam. *[1]University of Hull, Hull, UK; [2]Siva health, Zürich, Switzerland; [3]Bellingham Asthma Clinic, Bellingham, USA*

10.1136/thorax-2024-BTSabstracts.282

The recent development of devices with automatic cough detection that continuously monitor cough frequency over prolonged periods has enabled an assessment of the day-to-day variability of cough.

Thirty patients with chronic cough, mean age 66, two-thirds female, took part in an observational validation study (NCT05689307) of the SIVA Cough Monitoring System. Patients wore a small device around their neck for 2 weeks. In this analysis, we counted coughs detected only while the patient was wearing the cough monitor as indicated by the motion sensor. A minimum of 8 hours of wearing time was required for a day to be included in the analysis.

The cough frequency represented as the mean number of coughs per hour over all days was 20.79 (SD18.6), median 15.83 coughs/h (min = 0.37, max = 96.15). The SD of cough frequency representing the variability in daily cough was 6.16 coughs/h (SD 5.06) median variability 5.12 (min 0.72, max 18.62)coughs/h. Calculated at the patient level, this represents an average daily change of 39% relative to the



Abstract P121 Figure 1 The open circle signifies the cough count on day one, and the closed circles represent daily cough counts on subsequent days

patient's mean daily cough frequency. This calls into doubt the utility of single-day recording as a reliable measure of cough frequency.

P122 EXPLORING THE BURDEN OF CHRONIC COUGH: INSIGHTS FROM A SINGLE RESPIRATORY CENTER IN SRI LANKA

[1,2]M Witharamalage. [1]*Central Chest Clinic, Colombo, Sri Lanka*; [2]*Royal Preston Hospital, Preston, UK*

10.1136/thorax-2024-BTSabstracts.283

Background and Aims Chronic cough presents a significant health challenge globally, yet remains comparatively understudied in Sri Lanka. This study aims to comprehensively investigate socio-demographic factors, clinical characteristics and potential etiological factors among patients from Central Chest Clinic, Colombo, Sri Lanka. To best of our knowledge this is a pioneering study on this topic coming from Sri Lanka.

Methods A descriptive study was conducted at the Central Chest Clinic, Sri Lanka focusing on patients presenting with cough lasting more than 8 weeks. Questionnaires and clinical records were used to collect data on demographic parameters, smoking habits, comorbid conditions, clinical characteristics and impact assessment.

Results Of the 135 participants, 43.7% were male, and 56.3% were female. Majority were aged 50 or older (70.37%). Hypertension (30.4%) and diabetes mellitus (20.7%) were common comorbidities. Active smoking prevalence was 16.35%. Most participants exhibited normal chest radiography findings (60.7%), while obstructive small airways diseases (22.3%) and gastroesophageal reflux disease (21.5%) were frequent diagnoses. Chronic refractory cough was identified as a likely diagnosis in 11.9% of subjects. Significant physical and psychological impacts were observed, including chest pain (47.4%), sleep disturbances (49.6%), and depressive symptoms (41.5%). Males reported higher cough severity (mean 6.31, p=0.046) on a scale of 1 to 10.

Conclusions This study highlights the significant burden of chronic cough in Sri Lankan community, emphasizing the need for enhanced diagnostic and management pathways. It underscores the complexity of etiology of chronic cough and its profound impact on quality of life. Further research is required to explore emerging clinical entities and validate effectiveness of interventions. Effective chronic cough management demands a holistic approach considering its complex nature and individual patient requirements.

Abstract P122 Table 1 Etiology of chronic cough

Pretreatment diagnosis	Females	Males	Total Frequency	Percentage out of total (%)
Post COVID	12	10	22	16.3
GERD	22	7	29	21.5
PNDS	6	6	12	8.9
ASTHMA/COPD	14	16	30	22.3
CHRONIC REFRACTORY COUGH	9	7	16	11.9
TB	0	4	4	3.0
MALIGNANCY	3	1	4	3.0
BRONCHIECTASIS	3	2	5	3.7
ILD	3	3	6	4.4
CARDIAC/ACEI	4	3	7	5.2

REFERENCE

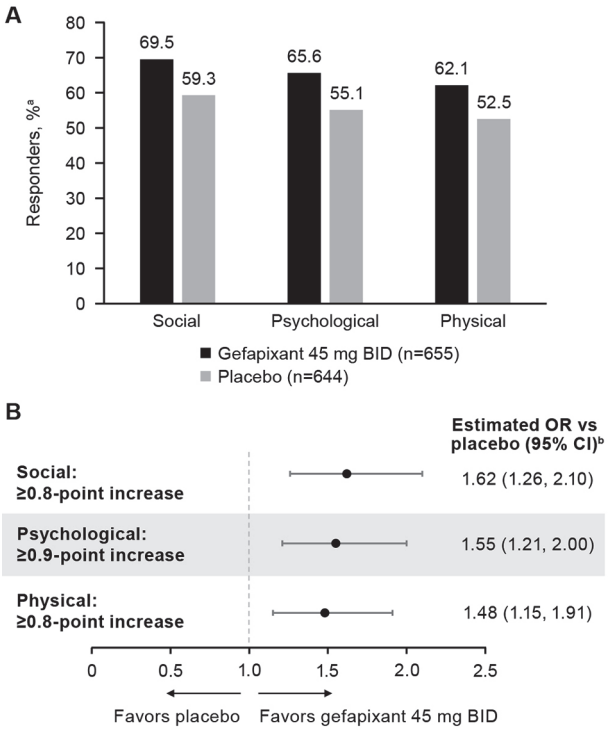
1. Bishwajith M, Kumari S, Abeysinghe K, Thilakaratne W. Prevalence and predictors of chronic cough among adults in Sri Lanka: a population-based cross-sectional study. *Int J Respir Pulm Med*. 2017;**4**(1):061.

P123 RESPONDER ANALYSIS OF LEICESTER COUGH QUESTIONNAIRE DOMAINS FROM PHASE 3 TRIALS OF GEFAPIXANT (COUGH-1/COUGH-2)

[1]SS Birring, [2]P Dicpinigaitis, [3]L McGarvey, [4]AH Morice, [5]JA Smith, [6]Q Li, [6]C La Rosa, [6]A Martin Nguyen. [1]*Centre for Human and Applied Physiological Sciences, School of Basic and Medical Biosciences, Faculty of Life Sciences and Medicine, King's College London, London, UK*; [2]*Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, USA*; [3]*Wellcome-Wolfson Institute for Experimental Medicine, School of Medicine, Dentistry and Biomedical Science, Queen's University Belfast, Belfast, UK*; [4]*Hull York Medical School, Cottingham, UK*; [5]*Division of Infection, Immunity and Respiratory Medicine, University of Manchester and Manchester University NHS Trust, Manchester, UK*; [6]*Merck and Co., Inc., Rahway, USA*

10.1136/thorax-2024-BTSabstracts.284

Introduction In phase 3 trials of refractory or unexplained chronic cough, participants receiving gefapixant 45 mg twice daily (BID) were more likely to be Leicester Cough



BID, twice daily; LCQ, Leicester Cough Questionnaire; OR, odds ratio. [a]Responders were defined with the following improvements in domain scores from baseline: social, ≥0.8-point increase; psychological, ≥0.9-point increase; physical, ≥0.8-point increase. [b]Odds ratio based on logistic regression with the following covariates: trial, treatment, visit, treatment-by-visit interaction, sex, region, baseline LCQ total score, and interaction of baseline LCQ total score by visit.

Abstract P123 Figure 1 Week 52 analysis of gefapixant 45 mg BID vs placebo for (A) proportion of LCQ domain responders and (B) odds of achieving a clinically meaningful improvement in LCQ domains.

Questionnaire (LCQ) total score responders (defined using a ≥1.3-point increase threshold) after 52 weeks compared with participants receiving placebo. Here, we evaluate clinically meaningful domain-level LCQ responses among those participants.

Methods Post hoc responder analyses across LCQ domains were calculated for participants who received gefapixant 45 mg BID or placebo through Week 52 using pooled data from COUGH-1 (NCT03449134) and COUGH-2 (NCT03449147). The following increases from baseline were used to define responders based on previously published data (Martin Nguyen et al. *Ther Adv Respir Dis.* 2022;16:1–13): social domain, ≥0.8 points; psychological domain, ≥0.9 points; physical domain, ≥0.8 points.

Results Of 1299 participants (gefapixant, n=655; placebo, n=644), a greater percentage receiving gefapixant vs placebo were LCQ responders through Week 52 in the social (69.5% vs 59.3%), psychological (65.6% vs 55.1%), and physical (62.1% vs 52.5%) domains (figure 1A). The gefapixant group also experienced greater odds of achieving clinically meaningful responses across domains (figure 1B).

Conclusions Participants who received gefapixant were more likely to report clinically meaningful improvements in LCQ social, psychological, and physical domains compared with participants who received placebo, supporting the overall benefit of gefapixant on cough-specific quality of life.

P124 COUGH IN OCCUPATIONAL LUNG DISEASE

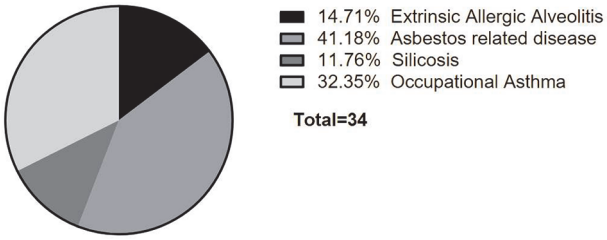
[1]L Paul, [1]R Gundass, [1]J Haque, [1]J Shaw, [2]R Haung, [1,3]R Wiggans, [1,3]JL Hoyle, [1,3]JA Smith, [3]R Dockry, [1,3]H Badri. *[1]Manchester University NHS Foundation Trust, Manchester, UK; [2]Morecambe Bay NHS Trust, Lancaster, UK; [3]University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.285

Background Chronic cough is a troublesome condition that is defined by the presence of cough for >8 weeks. A wide variety of occupational lung diseases (OLD) have recognised potential causes or exacerbating factors in persistent cough. Chronic cough guidelines recommend screening employed patients for potential occupational and environmental causes of cough. However, the prevalence and severity of persistent cough in the OLD population is unknown. We set out to investigate the prevalence and effect on quality of life, of chronic cough in patients attending specialist OLD services.

Methods We carried out a cross-sectional descriptive study of consecutive patients attending the OLD service. Patients with a diagnosis of OLD and a persistent cough of >8weeks duration were included. Patients taking angiotensin-converting enzyme inhibitors were excluded. Demographic data, duration of cough, work relatedness of cough, smoking status, past medical history and medication history was collected. Cough severity was measured using the Cough Visual Analogue Score (VAS) and the Leicester Cough (LCQ) Questionnaire. Generalized linear models (GLM) were used to investigate the effects of sex, BMI, age, diagnosis, smoking status and pack-year history on questionnaire scores and to calculate the estimated marginal mean scores for each disease group.

Results Forty out of seventy patients screened (57%) had a chronic cough. However, six of the chronic cough patients were excluded as they did not have a diagnosis of OLD. The proportion in each diagnostic group is shown in figure 1. The



Abstract P124 Figure 1 Proportion of patients included in each diagnostic category

patients were all Caucasian and the majority were male (82%). 27% were current smokers. Median age was 66 year (IQR 55–74). Mean cough duration was 7.53 years (SD 6.4). Daytime cough VAS was 49mm (IQR 30–69) and LCQ 12.98 (SD 3.8). The GLM results showed that LCQ scores were significantly affected by diagnosis (p=0.023), with occupational asthma patients (OA) having the lowest scores. Smoking history also affected the LCQ (p=0.025).

Conclusions This preliminary data suggests that chronic cough is prevalent in OLD and cough severity is comparable to those with refractory chronic cough. OA patients are particularly affected. This is an important finding as OA is a preventable cause of chronic cough.

P125 LOSS OF NERVES IN BOTH AIRWAY AND SKIN IN CANVAS-ASSOCIATED CHRONIC COUGH

[1,2]B Hirons, [1,2]K Rhatigan, [2]E Mackay, [2]H Kesavan, [2]W McNulty, [3,4]R Turner, [5]J Hull, [1,2]CJ Jolley, [6]RD Hadden, [6]J Serra, [7,8]A Cortese, [1,2]PSP Cho, [9]S Al-Sarraj, [9]P Bannister, [10]C Smith, [10]M Drake, [1,2]SS Birring. *[1]Centre for Human and Applied Physiological Sciences, Faculty of Life Sciences and Medicine, King's College London, London, UK; [2]Department of Respiratory Medicine, King's College Hospital, London, UK; [3]School of Medicine and Dentistry, Griffith University, Southport, Australia; [4]Department of Respiratory Medicine, Princess Alexandra Hospital, Brisbane, Australia; [5]Department of Respiratory Medicine, Royal Brompton Hospital, London, UK; [6]Department of Neurology, King's College Hospital, London, UK; [7]Department of Neuromuscular Disease, UCL Queen Square Institute of Neurology, London, UK; [8]Department of Brain and Behaviour Sciences, University of Pavia, Pavia, Italy; [9]Department of Neuropathology, King's College Hospital, London, UK; [10]Division of Pulmonary and Critical Care Medicine, Oregon Health and Science University, Portland, Oregon, USA*

10.1136/thorax-2024-BTSabstracts.286

Background Cerebellar ataxia with neuropathy and vestibular areflexia syndrome (CANVAS) is associated with chronic cough (CC) and cough hypersensitivity; however, the neuropathic mechanisms of cough are unknown.

Method Two related patients with genetically-confirmed CANVAS (homozygous RFC1 expansions) and CC were assessed for cough severity (VAS, range 0–100mm), cough-specific health status (Leicester Cough Questionnaire, range 3–21), triggers (Cough Hypersensitivity Questionnaire, range 0–22), 24-hr objective frequency with Leicester Cough Monitor, and cough reflex sensitivity with capsaicin. Bronchoscopic airway biopsies were immunolabelled with pan-neuronal PGP9.5 and neurofilament A-delta, followed by confocal microscopy to generate three-dimensional epithelial image z-stacks and quantification of total nerve length (compared with historic healthy controls). Neurological assessments included distal skin biopsies for intraepidermal nerve fibre density (IENFD), nerve conduction studies, and microneurography.

Figure 1a) Patient A

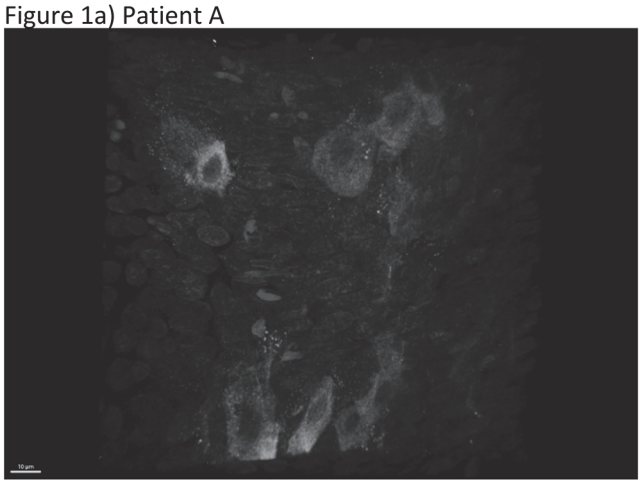


Figure 1b) PatientB

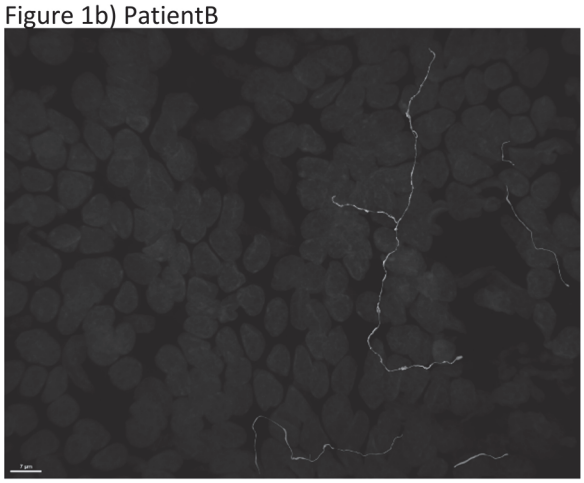


Figure 1c) Healthy Control

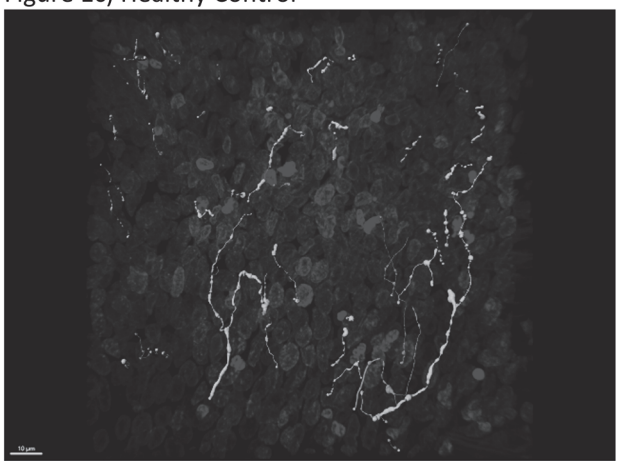
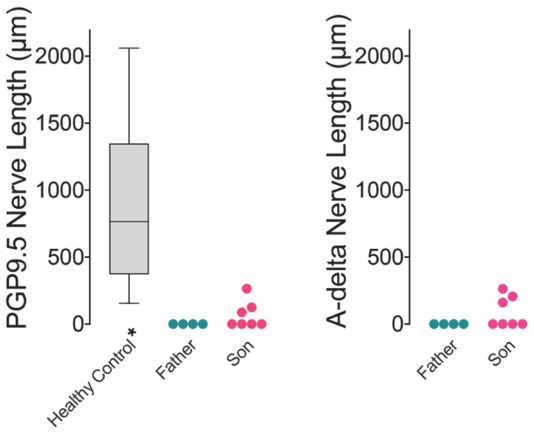


Figure 1d) Patient A, B and healthy



Abstract P125 Figure 1 Airway biopsy from Patient A, Patient B, and healthy control. Representative images show airway epithelium and modelled nerves (blue, nuclei stained with DAPI) from a bronchoscopic biopsy of a) Patient A (father), b) Patient B (son), and c) healthy control (HC). Patient A had complete loss of airway epithelial nerves. Pan-neuronal (incl. C-fibre) PGP9.5-positive neurons and neurofilament-positive A-delta sensory neurons were severely depleted in Patient B. HC had normal innervation. d) Airway epithelial nerve length for father and son. For comparison, nerve length for a healthy control cohort* (n=21, median age 57, 71% female) is included (median [IQR], min/max). Healthy control data have not previously been published for epithelial A-delta innervation. *Reproduced from Shapiro et al. ARJCCM. 2021;203(3):348–355

Results Patient A (father, age 62, advanced CANVAS with all features) and Patient B (son, age 37, early CANVAS with peripheral neuropathy) had chronic cough of long duration (37 and 8 years, respectively), refractory to guideline-driven management of treatable traits including neuromodulator pharmacotherapy. Patients A and B had cough of moderate severity (VAS 58 and 54mm), impaired health status (LCQ 15.9 and 13.0), heightened 24-hr objective cough frequency (6 and 16 coughs.hr^{-1}), and cough reflex hypersensitivity (C5 14.9 and 3.3 µmol.L^{-1}), respectively. Airway biopsies revealed a complete loss of nerves in Patient A and severe depletion in Patient B, compared to historic healthy controls (figure 1). Skin biopsies revealed loss of cutaneous nerves; IENFD 0.0 fibre/mm in both participants. Nerve conduction studies revealed severe axonal large fibre sensory polyneuropathy with normal motor studies, and microneurography showed a lack of sensory C-fibres without spontaneous activity, in both patients.

Conclusion In patients with CANVAS, there is a severe depletion of nerves in airways, as well as loss of small and large sensory nerve fibres in the leg. Further studies are needed to investigate how depletion of airway nerves is associated with cough hypersensitivity.

P126 PREVALENCE AND IMPACT OF CHRONIC COUGH IN PATIENTS WITH STRESS URINARY INCONTINENCE

[1,2]PSP Cho, [1]A Rantell, [1]R Mohammed-Ahmed, [1]C Davis, [3]H Langerman, [4]H Ding, [5]M Silvey, [5]C Atkinson, [5]T Dewar, [5]G Castellano, [4]B Boggs, [1,2]SS Birring. *[1]King's College Hospital, London, UK; [2]King's College London, London, UK; [3]Merck Sharp and Dohme, London, UK; [4]Merck and Co, Inc, Rahway, USA; [5]Adelphi Real World, Bollington, UK*

10.1136/thorax-2024-BTSabstracts.287

Introduction Chronic cough (CC; duration >8 weeks) is common, and stress urinary incontinence has been reported to affect >60% of females with CC. In contrast, little is known about the prevalence of CC in females with stress urinary incontinence. We investigated the prevalence and impact of CC in females with urodynamic study-confirmed stress urinary incontinence (USI).

Methods Consecutive female patients with USI were recruited from a UK specialist uro-gynaecology clinic. Participants were screened for self-reported chronic cough (defined as a cough for ≥4 days in a week for over >8 weeks), and completed questionnaires for self-reported UI severity and frequency, urinary incontinence-specific severity (ICIQ-UI SF; score 0–21, higher scores=worse severity), health status (ICIQ-LUTSQol;

Abstract P126 Table 1 Demographics, anthropometrics and clinical characteristics of stress urinary incontinence participants with and without chronic cough

	USI with chronic cough		USI without chronic cough		p-value
Age n, mean (SD) (years)	13	53.3 (9.02)	87	58.4 (14.50)	0.2263‡
BMI n, mean (SD) ($kg \cdot m^{-2}$)	13	32.6 (8.24)	87	27.8 (6.30)	**0.015**‡
Parity n, mean (SD)*	11	2.1 (0.94)	70	2.0 (0.89)	0.8695‡
Post menopause n, (%)	13	8 (62%)	87	45 (52%)	0.5642§
Cough assessments					
NRS† n, mean (SD)	12	8.0 (2.22)	N/A		N/A
LCQ† n, mean (SD)	12	12.2 (5.68)	N/A		N/A
SUI assessments					
Current severity of SUI, n	13		87		
Mild n, (%)	3	23%	27	31%	0.124¶
Moderate n, (%)	1	8%	25	29%	
Severe n, (%)	9	69%	35	40%	
Frequency of SUI†, n	13		77		
<1 $week^{-1}$ n, (%)	2	15%	11	14%	1§
1 $week^{-1}$ n, (%)	-	-	12	15%	-
>3 $week^{-1}$ n, (%)	3	23%	19	25%	1§
Daily n, (%)	8	62%	35	46%	0.372§
Prescribed incontinence treatment n (%)	7	54%	23	26%	0.0563§
ICIQ-UI-SF† n, mean (SD)	12	14.8 (6.15)	83	12.7 (4.62)	0.165‡
ICIQLUTSQoL† n, mean (SD)	12	51.8 (19.50)	68	47.0 (14.10)	0.3073‡
EQ-5D-5L† n, mean (SD)	12	0.522 (0.40)	83	0.731 (0.25)	**0.0145**‡

*n=19 declined to answer
†Bases lower due to incomplete survey completion
‡t-test
§Fisher's Exact,
¶Mann Whitney,
BMI = body mass index, LCQ = Leicester Cough Questionnaire total score, NRS = numerical rating scale, SUI = stress urinary incontinence

score 19–76, higher scores=worse health status), and generic health status (EQ-5D-5L). Participants with CC completed a cough severity numerical rating scale (NRS) and health status (Leicester Cough Questionnaire, LCQ).

Results A total of 100 participants were recruited; mean (SD) age 57.7 (14.0) years, parity 2.0 (0.9), 53% post-menopausal. 13% participants (mean [SD] age 53.3 [9.0] years, parity 2.1 [0.9], 62% post-menopausal) reported CC; mean (SD) severity NRS 8.0 (2.2) and LCQ 12.2 (5.7). Participants with CC had worse generic health status compared to those without; mean (SD) EQ-5D index scores 0.522 (0.40) vs. 0.731 (0.25), and had higher mean (SD) BMI 32.6 (8.2) vs 27.8 (6.3) $kg \cdot m^{-2}$, respectively (both p=0.015). Urinary incontinence-specific severity and health status scores were worse in participants with CC compared to those without, albeit not statistically significant; mean (SD) ICIQ-UI SF 14.8 (6.2) vs. 12.6 (4.6) and ICIQ-LUTSQoL 51.8 (19.5) vs. 47.0 (14.1) respectively (all p>0.164).

Conclusion This is the first study to report the prevalence and impact of chronic cough in female patients with USI (13%). CC in USI was associated with worse general health status. Future studies should investigate the impact of CC on healthcare utilisation in patients with USI.

P127 DEPRESSION AND ANXIETY SYMPTOMS IN CHRONIC RESPIRATORY DISEASE-ASSOCIATED COUGH

[1,2]B Hirons, [1,2]K Rhatigan, [1]E Mackay, [1]H Kesavan, [3,4]RD Turner, [5]JH Hull, [1,2]CJ Jolley, [6]S Butler, [1,7]KJ Myall, [1,2]SS Birring, [1,2]PSP Cho. *[1]Department of Respiratory Medicine, King's College Hospital, London, UK; [2]Centre for Human and Applied Physiological Sciences, King's College London, London, UK; [3]School of Medicine and Dentistry, Griffith University, Southport, Australia; [4]Department of Respiratory Medicine, Princess Alexandra Hospital, London, UK; [5]Department of Respiratory Medicine, Royal Brompton Hospital, London, UK; [6]South London and Maudsley NHS Foundation Trust, London, UK; [7]Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.288

Introduction Chronic cough (CC, lasting >8weeks) is associated with psychosocial comorbidities; however, the psychological impact of CC in chronic respiratory diseases (CRD) is unknown. We investigated and compared depression, anxiety, and suicidal ideation (SI) in CRD participants with or without CC and participants with refractory chronic cough (RCC).

Methods Participants with CRD and RCC were recruited from specialist clinics. Participants completed Cough Symptom Score (CSS), Patient Global Impression of Severity scale (PGI-S), cough severity visual analogue scale (VAS), cough-specific health status Leicester Cough Questionnaire (LCQ), generic health status EQ-5D-5L, and self-reported depression (PHQ-9, range 0–27) and anxiety (GAD-7, range 0–21). Participants underwent 24-hour objective cough frequency (CF) monitoring with LCMonitor. SI was defined as score $\geq$1 for item 9 of PHQ-9, and CC as CSS daytime score ^{3}2.

Results Consecutive participants with CRD (n=179; asthma [n=30], bronchiectasis [n=29], COPD [n=29], interstitial lung disease [ILD, n=53] and sarcoidosis [n=38]) and RCC (n=51) completed assessments (table 1). Depression and anxiety scores were worse in CRD participants with CC compared to those without; median(IQR) PHQ-9 6(3–13) vs. 3(0–10) and GAD-7 6(2–11) vs. 2(0–6), respectively(all p<0.05). Depression and anxiety scores in CRD participants with CC were comparable to RCC(both p>0.07). There was no significant difference in SI between CRD participants with or without CC or RCC; 21(19%) vs. 9(13%) and 6(12%) participants, respectively (p>0.26). CRD participants with CC had worse generic health status (EQ-5D-5L) than participants without CC and RCC (both p<0.05). In CRD participants with CC, PHQ-9 was associated with cough severity (PGI-S, r=0.23; VAS, r=0.27), health status (LCQ, r=-0.44; EQ-5D-5L, r=-0.62) and GAD-7 (r=0.73)(all p<0.05). Similarly, GAD-7 was associated with cough severity (VAS, r=0.30) and health status (LCQ, r=-0.36; EQ-5D-5L, r=-0.53)(all p<0.05) in CRD participants with CC. Neither PHQ-9 nor GAD-7 were associated with age, sex, cough duration or CF in CRD participants with CC (all p>0.25).

Conclusion Symptoms of anxiety and depression are worse in patients with chronic respiratory disease with chronic cough compared to those without, similar to RCC, and associated with cough severity and health status. Further studies should investigate the interactions between CC and psychological impact in CRD to guide holistic management.

Abstract P127 Table 1 Baseline characteristics and comparison of participants with chronic respiratory diseases and refractory chronic cough

	Chronic Respiratory Disease			Refractory Chronic Cough	
	Chronic cough	No chronic cough	p value*		p value^
	n=111	n=68		n=51	
Age (years)	63 (50–73)	66 (49–74)	0.84	63 (57–69)	0.82
Sex (female)	62 (56)	42 (62)	0.54	36 (71)	0.12
BMI ($kg.m^{-2}$)	28 (25–31)	26 (22–31)	0.19	27 (23–32)	0.88
Smoking status:			0.27		0.19
Current	11 (10)	3 (4)		1(2)	
Ex	33 (30)	26 (38)		16 (31)	
Never	67 (60)	39 (57)		34 (67)	
FEV1% predicted	79 (64–89)	82 (56–99)	0.39	99 (85–108)	**<0.01**
FVC% predicted	83 (71–97)	88 (75–103)	0.09	103 (93–112)	**<0.01**
24-hr CF ($cough.hr^{-1}$)	8.7 (3.3)	1.7 (3.0)	**<0.01**	18.0 (2.1)	**<0.01**
PGI-S (0–5)	3 (2–3)	1 (0–1)	**<0.01**	3 (3–4)	**<0.01**
VAS (0–100)	51 (28–72)	6 (1–10)	**<0.01**	71 (55–78)	**<0.01**
LCQ total (3–21)	14.2 (10.8–16.9)	19.9 (19.2–20.5)	**<0.01**	10.3 (8.5–13.6)	**<0.01**
GAD-7 (0–21)	6 (2–11)	2 (0–6)	**<0.01**	6 (2–10)	0.69
PHQ-9 (0–27)	6 (3–13)	3 (0–10)	**<0.01**	5 (2–9)	0.07
Suicidal ideation±	21 (19)	9 (13)	0.98	6 (12)	0.26
EQ-5D-5L index (0–1)	0.68 (0.41–0.80)	0.74 (0.55–0.87)	**0.04**	0.74 (0.63–0.88)	**0.02**

BMI, body mass index; *FEV1*, forced expiratory volume in 1 second, *FVC*, forced vital capacity; *CF*, objective cough frequency; *PGI-S*, patient global impression of severity of cough; *LCQ*, Leicester Cough Questionnaire for cough-specific health status; *GAD-7*, Generalised Anxiety Disorder assessment; *PHQ-9*, Patient Health Questionnaire for depression; *EQ-5D-5L*, generic health-related quality of life.
*Comparison of chronic respiratory disease (CRD) with chronic cough (CC) and without CC; ^comparison of CRD with CC and refractory chronic cough; ±defined as score $\geq$1 for item 9 of PHQ-9.

P128 SUICIDAL IDEATION, DEPRESSION AND ANXIETY FOLLOWING TREATMENT OF CHRONIC COUGH

[1,2]B Hirons, [1,2]K Rhatigan, [1]E Mackay, [1]H Kesavan, [3]G Lavelle, [4,5]RD Turner, [6]JH Hull, [1,2]CJ Jolley, [7]S Butler, [1,8]KJ Myall, [1,2]SS Birring, [1,2]PSP Cho. *[1]Department of Respiratory Medicine, King's College Hospital, London, UK; [2]Centre for Human and Applied Physiological Sciences, King's College London, London, UK; [3]Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK; [4]School of Medicine and Dentistry, Griffith University, Southport, Australia; [5]Department of Respiratory Medicine, Princess Alexandra Hospital, Brisbane, Australia; [6]Department of Respiratory Medicine, Royal Brompton Hospital, London, UK; [7]South London and Maudsley NHS Foundation Trust, London, UK; [8]Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.289

Introduction Chronic cough (CC; >8 weeks duration) is associated with psychosocial comorbidities; however, little is known about the psychological impact following treatment for CC. We investigated and compared suicidal ideation (SI), depression and anxiety in CC patients with and without response to treatment.

Abstract P128 Table 1 Baseline characteristics and comparison of groups with and without response to treatment of chronic cough

	Response to treatment (n=18)		No response to treatment (n=32)		p value*
	Visit 1	Visit 2	Visit 1	Visit 2	
Age (years)	52 (41-61)	-	52 (43-63)	-	0.47
Sex (%female)	14 (78)	-	21 (66)	-	0.52
BMI (kg.m^{-2})	27 (24-31)	-	27 (24-32)	-	0.97
Smoking		-		-	**0.03**
Current	1 (6)		6 (19)		
Ex	7 (39)		3 (9)		
Never	10 (56)		23 (72)		
Cough Duration (years)	6 (2-16)	-	3 (2-10)	-	0.47
Treatment received		-		-	0.41
oral/inhaled steroids	6 (33)		10 (31)		
neuromodulators	6 (33)		9 (28)		
proton pump inhibitor	4 (22)		8 (25)		
nasal spray	1 (6)		3 (9)		
montelukast	1 (6)		2 (6)		
other	3 (17)		4 (13)		
PGI-S (0-5)	**4 (3-4)**	**3 (1-3)^**	**3 (3-4)**	**4 (3-4)^**	0.73
VAS (0-100 mm)	**55 (30-73)**	**35 (10-50)^**	**61 (40-81)**	**70 (51-81)^**	0.41
LCQ (3-21)	**11.8 (8.2-14.5)**	**16.2 (14.5-19.3)^**	**9.9 (7.5-13.1)**	**8.4 (6.6-12.2)^**	0.40
					0.40
Physical	**4.6 (4.0-5.2)**	**5.6 (4.8-6.2)^**	**4.1 (3.3-5.3)**	**3.7 (2.6-4.3)^**	0.28
					0.66
Psychological	**3.1 (2.5-5.3)**	**5.6 (4.5-6.7)^**	2.9 (1.9-4.4)	2.7 (1.9-3.9) **2.5 (1.8-**	
Social	**3.3 (2.3-4.6)**	**5.3 (4.8-6.8)^**	**3.4 (1.8-4.4)**	**3.5)^**	
Suicidal ideation	3 (17)	2 (11)	5 (16)	6 (19)	1.0
PHQ-9 (0-27)	**6 (2-11)**	**4 (2-7)^**	5 (3-18)	8 (4-15)	0.52
GAD-7 (0-21)	4 (0-9)	5 (1-7)	5 (1-7)	5 (0-12)	0.72

Data displayed as median (IQR) or n (%). Response to cough treatment defined as a clinician's judgement and Leicester Cough Questionnaire (LCQ) improvement >1.3.
BMI, body mass index; *PGI-S*, patient global impression of severity of cough; *VAS*, cough severity visual analogue scale; *PHQ-9*, patient health questionnaire for depression; *GAD-7*, generalised anxiety disorder assessment.
*Visit 1 Responder vs. Visit 1 non-Responder; ^Visit 1 vs Visit 2 p≤0.02.

Methods Consecutive CC patients commencing treatment were recruited at a specialist clinic, and assessed at 2 visits. Participants completed Patient Global Impression of Severity (PGI-S) scale, cough severity visual analogue scale (VAS), cough-specific health status Leicester Cough Questionnaire (LCQ), and self-reported symptoms of depression and anxiety scores using the Patient Health Questionnaire (PHQ-9, range 0–27; higher scores indicate worse depression) and Generalised Anxiety Disorder (GAD-7, range 0–21; higher scores indicate worse anxiety) respectively, at both visits. SI was defined as a score of ≥1 for item 9 of PHQ-9. A response to treatment for CC was defined by a clinician's judgement and an improvement of >1.3 (minimal clinically important difference) in LCQ over the two visits. All other participants were defined as no response to treatment.

Results A total of 50 participants completed assessments; median (IQR) age 58(44–65) years, 51(73%) female, cough duration 4(2–10) years and duration between visits 105(75–189) days. Cough improved in 18(36%) participants (oral/inhaled corticosteroids n=16, neuromodulators n=15, proton pump inhibitor n=12, nasal spray n=4) (table 1). There was no significant difference in SI in participants with and without treatment response between visits 1 and 2; 3(17%) vs. 2(11%) and 5(16%) vs. 6(19%) participants, respectively. PHQ-9 scores improved in participants with treatment response but did not in those without treatment response between visits 1 and 2; median (IQR) 6(2–11) vs. 4(2–7) (p<0.01) and 5(3–18) vs. 8(4–15) (p=0.29), respectively. There was no significant difference in GAD-7 scores in participants with and without treatment response between visits 1 and 2; median (IQR) 4(0–9) vs 5(1–7) and 5(1–7) vs 5(0–12) (both p>0.6), respectively.

Conclusion Symptoms of depression scores improved in chronic cough patients with treatment response though suicidal ideation or anxiety scores did not. Further studies should investigate the interactions between physical and mental health in CC to guide holistic management.

P129 SURVEY OF SPEECH AND LANGUAGE THERAPY PROVISION FOR CHRONIC COUGH ACROSS THE UK

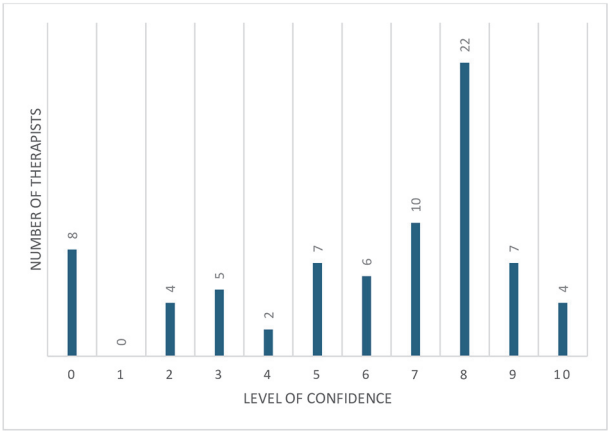
[1]S Ludlow, [1]P Marsden, [2]C Slinger, [3]S Parker. *[1]Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [2]Lancashire Teaching Hospitals NHS Foundation Trust, Preston, UK; [3]Northumbria Healthcare NHS Foundation Trust, Northumbria, UK*

10.1136/thorax-2024-BTSabstracts.290

Introduction Cough Hypersensitivity (CHS) is characterised by increased neural responsivity to a range of stimuli that affect the airways. Speech and language therapy (SLT) is an effective non-pharmacological treatment for managing CHS. This survey aimed to gain insight into SLT provision for CHS within the UK.

Method The 34-question online survey was completed by 75 speech and language therapists across the UK.

Results All participants who completed the survey worked in England or Scotland. The therapists worked over a range of settings including acute hospital settings, community clinics, privately and in mental health services. The average length of experience was 15 years. The average length of time managing CHS was 2 years (0–21 years). Most referrals were sent from Ear, Nose and Throat (ENT) 58 (79%), Respiratory 55 (69%), GPs (38%) or SLT colleagues (33%). The average time



Abstract P129 Figure 1 Confidence levels from SLTs in managing CHS (0=not confident, 10=very confident)

given to the CHS caseload was 10% with a high proportion having no dedicated time within their job plan (39%). Many therapists could offer an initial assessment 70 (94%), joint ENT/SLT assessment 22 (30%), joint respiratory/SLT assessment 22 (30%) or independent laryngoscopy 30 (40%). If therapy was provided it consisted of face-to-face therapy 61 (81%), virtual therapy 48 (64%), group face-to-face 7 (9%), group virtual 6 (8%) or training to other medical professionals 3 (4%). Some therapists reported they could only give the initial advice and then had to do an onward referral to a specialist service. The confidence levels in managing CHS varied (figure 1).

Most therapists had not received any undergraduate training on diagnosis and management of CHS 73 (97%), but several had completed training since working as an SLT, 48 (64%). The biggest barriers for SLT not seeing CHS patients was funding, professional support, time, experience, training, patient motivation and management support, with some therapists identifying all of these areas. Most therapists felt that a support network for SLTs working with CHS would be beneficial.

Conclusions SLT provision for CHS is often limited and insufficient to provide a consistent and responsive service. This survey identified barriers and facilitators which may assist service development initiatives and guide further research.

P130 THE DEVELOPMENT OF A JOINT MEDICAL AND SPEECH AND LANGUAGE THERAPIST (SLT) 'ONE STOP' COUGH CLINIC

C Hunter, J Butler, L Peace, L Green, J Sharp, S Parker. *Northumbria Healthcare NHS Foundation Trust, Northumbria, UK*

10.1136/thorax-2024-BTSabstracts.291

Background This study reports preliminary outcomes from a joint Respiratory Consultant and Speech and Language Therapist (SLT) 'one stop' cough clinic. Local and tertiary referrals were accepted. Patients underwent full medical and SLT assessment, including laryngoscopy with provocation. Relevant 'treatable traits' were addressed; SLT-led cough suppression therapy (CST) follow up was available for patients with cough hypersensitivity.

Methods Retrospective data was collected for all patients attending the clinic between July 2023 and June 2024. Data included demographics, observed 'treatable traits', management decisions, SLT intervention, and patient reported CST outcomes.

Results 30 patients were seen; 19/30(63%) were tertiary referrals. Most were female 22/30(73.3%); mean age 58yrs (range 61). The average cough duration was 11yrs (range 49.5). Mean baseline Leicester Cough Questionnaire (LCQ)9.7 (range 9.3).

The mean number of treatable traits was 4. Commonest traits; cough hypersensitivity 26/30(87%), reflux 19/30(63%), rhinosinusitis 17/30(57%), anxiety/low mood 15/30(50%). Cough hypersensitivity was the dominant trait in 25/30(83%).

Medication was changed/initiated for 8/30(27%); trial asthma treatment 4, PPI 3; Trial MST 1, withdrawal Gabapentin 1, withdrawal MST 1. Onward referral to other MDT members 5/30(17%) (physiotherapy/psychology/nurse). Further Investigations 5/30, i.e. HRCT (17%).

28/30 had laryngoscopy with provocation. The most common observation was laryngeal hypersensitivity 26/28(93%). Cough was provoked and suppressed in 18/28(64%), cough provoked and not suppressed 3/28(11%), cough not provoked 4/28(14%). Other observations included: Inducible laryngeal obstruction 5/28(18%), muscle tension dysphonia 10/28(36%), muscle tension dysphagia 11/28(39%), and breath holding 20/28(71%). Further ENT advice sought for laryngeal pathology 4/28(14%).

Most patients received SLT intervention 26/30(87%): 'advice only' was provided to 4/26(15%) within the clinic; follow up SLT intervention was provided to 22/26(85%). The mean number of follow up SLT appointments was 2.2 (range 3).

Of the 18 patients that completed CST; 13(72%) reported improved symptom control, 3(17%) reported no change and 2 (11%) were lost to follow up.

Conclusion A joint cough clinic offers quick and effective treatment. Patients are complex with multiple traits, emphasising the need for MDT working. Laryngoscopy with provocation is clinically useful. In this study, non-pharmacological treatment was the most common management approach, and most patients improved with CST.

'The Vapes of Wrath' – Tobacco dependency and smoking cessation

P131 PREVALENCE AND TYPES OF VAPING IN UK SCHOOLCHILDREN IN 2024

[1]S Cass, [2]GR Davies, [3,4]KE Lewis. *[1]ASH Wales, Cardiff, UK; [2]ICST, Cardiff, UK; [3]Swansea University, Swansea, UK; [4]Hywel Dda Health Board, Llanelli, UK*

10.1136/thorax-2024-BTSabstracts.292

Introduction There has been a marked increase in vaping in the UK since 2012 and in children between 2018–2021. Anecdotal reports from those working directly with children and young people indicate further increases across Wales since 2019.

Aim To update prevalence but also look at patterns, access to and types of vaping in 2024.

Methods Action on Smoking in Health (ASH) Wales worked with academic partners, Public Health Wales, schoolteachers, young people and trading standards officers to develop a

Abstract P131 Table 1

	Age 10–14 years	Age 15–18 years
Vape at least once per week	7%	13%
Smoke at least once per week	3%	5%
Dual users	3%	2%

'children and youth survey on smoking and vaping'. Using cloud-based survey software, SurveyMonkey, a version was tested on a cohort of young people, then links were sent to 195 state secondary schools and colleges and emailed to Healthy Schools Officers across Wales, on the ASH Wales database between Sept-Dec 2023.

Results 12,524 pupils responded from 34 out of the 195 institutions, covering all counties in Wales.

By age 17, 44% of all pupils had tried vaping at least once and more than half (57%) described vaping in their Year group as 'common' or 'very common'. At all ages more girls than boys vaped.

22% of 11-year-olds report vapes are 'very easy or easy' to get hold of, rising to 62% of 17-year-olds, with friends or family being the most common source.

Children who currently vape were twice as likely to live with a smoker or a vaper than children who had never vaped (66% vs 32%).

92% of current vapers said they used vapes containing nicotine, and 45% said they felt they could not go through the whole school day without vaping. 25% of vapers said they would like to stop.

Conclusions The rise of vaping in UK schoolchildren continues to rise alarmingly with new data suggesting risk factors for uptake. Clear descriptions of (vape) nicotine addiction are now appearing.

P132 AVAILABILITY AND AFFORDABILITY OF SMOKING CESSATION MEDICATIONS IN LOW- AND MIDDLE-INCOME COUNTRIES

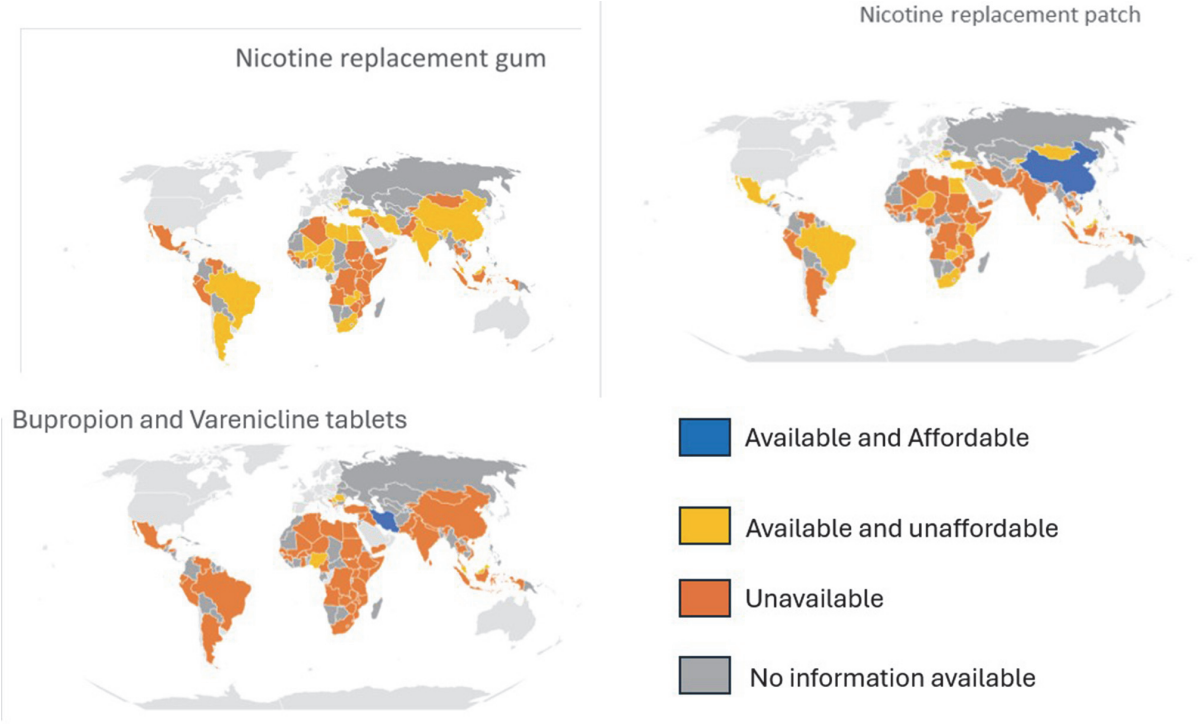
[1]C Plum, [2]M Stolbrink, [3]K Mortimer, [4]D Halpin. [1]*University Hospitals of Morecambe Bay NHS Foundation Trust, Lancaster, UK*; [2]*Liverpool School of Tropical Medicine, Liverpool, UK*; [3]*Respiratory Medicine, Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK*; [4]*University of Exeter Medical School, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.293

Introduction Low- and middle-income countries (LMICs) carry the highest burden of tobacco-related diseases. Smoking cessation is more successful when supported by pharmacotherapy, which should be accessible globally. This study provided data on the availability, cost and affordability of smoking cessation medications in LMICs.

Methods This was a cross-sectional survey of pharmacies, healthcare facilities (HCF) and central medicine stores (CMS) in LMICs of smoking cessation medications on the World Health Organization (WHO) Essential Medicines List (EML). Costs were summarised in US dollar equivalents. A medicine was considered affordable if one month's treatment cost <1 days wages of the lowest government paid worker.

Results Data were collected from 60 LMICs. Nicotine gums were available in 20/57 pharmacies, 5/56 HCFs and 4/46 CMS. The median, interquartile range (IQR) cost was $96 (65.13–123.98), $61.94 ($55.88- $89.05) and $65.72 ($11.44-$120.00) in pharmacies, HCFs and CMS, respectively, and where unaffordable in all facilities. Nicotine patches were available in 13/57 pharmacies, 6/56 HCFs and 5/46 CMSs. The median (IQR) cost was $62.09 (51.54–100.90), $68.61 ($43.80–307.31) and $43.72 ($12.00- $124.29) in pharmacies, HCFs and CMS, respectively. Patches were affordable in one pharmacy. Bupropion or Varenicline were available in 4/57 pharmacies, 2/56 HCFs and 3/46 CMSs and the median



Abstract P132 Figure 1 Availability and affordability of nicotine gum, nicotine patches and Bupropion and Varenicline by region

(IQR) cost of both tablets were $100.53 (32.86–151.15), $26.78 - $23.42, and $19.92 in respective facilities. Bupropion was affordable in one pharmacy.

Conclusion Medications for smoking cessation are largely unavailable and unaffordable in LMICs. Enabling access to these medications to those who want to quit is essential in reducing tobacco consumption and the global burden of associated disease.

P133 QUITTING SMOKING AND QUALITY OF LIFE IN LUNG CANCER SURVIVORS OVER TIME

KE Lewis, J Scoberg, C Newman, L Phillips. *Hywel Dda University Health Board, Llanelli, UK*

10.1136/thorax-2024-BTSabstracts.294

Introduction We have shown that smoking status at baseline is an independent predictor of survival for non-small cell lung cancer (NSCLC) after 2 years, and more importantly that quitting smoking is independently and significantly associated with improved survival (HR 0.75, 95% 0.58–0.98) regardless of age, treatments and stage.[1,2]

Aim To compare the quality of life of participants with newly diagnosed NSCLC, focusing on those who quit smoking versus those who continued smoking.

Methods Patients were enrolled in the UK multicentre observational study (LungCast, NCT01192256) between 2010 and 2021. Participants completed EQ-5D-3L (EQ-5D) questionnaires at 0-, 3-, 6- and 12-months post diagnosis. Cancer and smoking cessation treatments were offered according to local practice. Smoking status was self-reported and validated with eCO at every visit.

We compared the Visual Analogue Scale (VAS) of the EQ-5D between 'Continuers' and 'Quitters' (those who stopped within 3 months of diagnosis and remained quit for at least 12 months or until death).

Results Of the 2,202 participants with NSCLC and EQ-5D scores, 586 (27%) were smoking at the time of diagnosis. Among these 586 smokers, we had complete data on 454 'Continuers' and 132 'Quitters' at baseline. At 12 months, complete data was available for 106 'Continuers' and 53 'Quitters.

Figure 1 shows Mean (95% CI) EQ5D-VAS over time in 'Continuers' vs 'Quitters', with Quitters presenting a significantly higher score than Continuers at 12 months (p=0.026).

Conclusions Sustained quitting smoking after NSCLC diagnosis was associated with significantly greater quality of life at 12 months, as self-reported by VAS, than patients who continued smoking. This difference is unlikely to be clinically important. Further work would need to follow larger numbers of smokers (we had large losses to follow-up) and also apply a lung cancer-specific QoL tool such as the EORTC questionnaire.

REFERENCES

1. *Lung Cancer* 2023;**186**:107388.
2. *Lung Cancer* 2019;**129**:1–7.

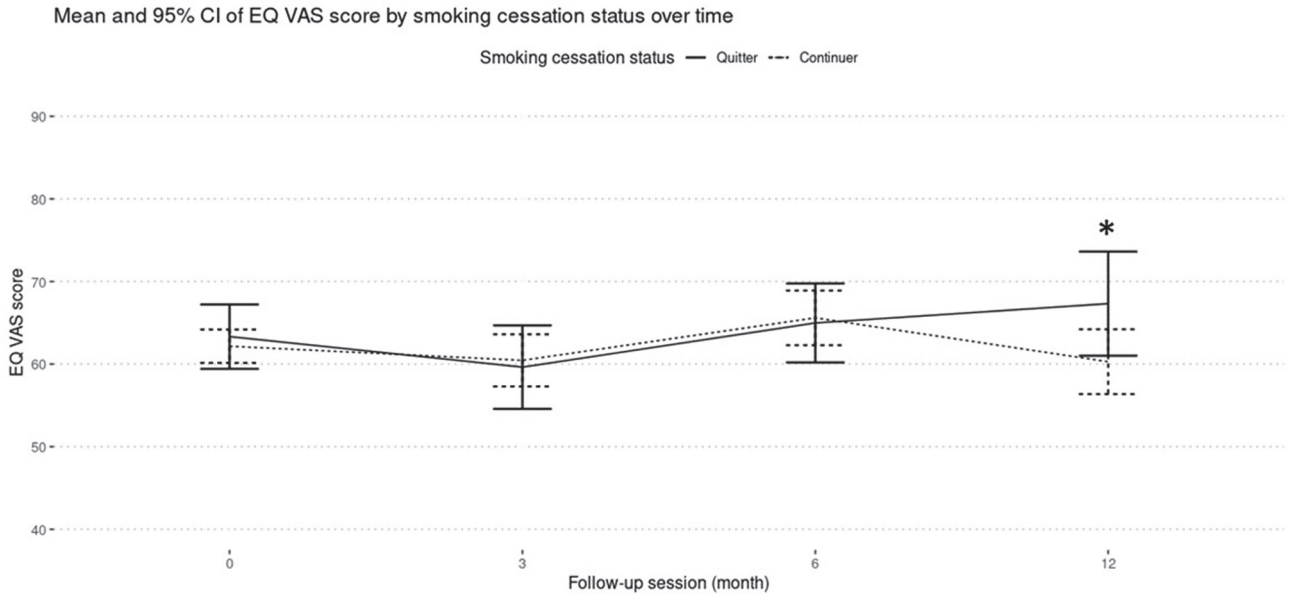
P134 THE IMPACT OF THE OUTPATIENT CURE SERVICE ON TREATING TOBACCO DEPENDENCY IN LUNG CANCER PATIENTS

[1]K Sivabalah, [2]M Taylor, [1,2]M Evison. *[1]Wythenshawe Hospital, Manchester University NHS Foundation Trust, Greater Manchester, UK; [2]The CURE Project, Make Smoking History programme, Population Health, Greater Manchester Integrated Care Partnership, Greater Manchester, UK*

10.1136/thorax-2024-BTSabstracts.295

Introduction In patients who have been diagnosed with lung cancer, continued smoking is associated with an increased risk of all-cause mortality and tumour recurrence. The CURE Service is a tobacco dependency treatment initiative, which offers active smokers access to multiple treatment modalities to help them achieve abstinence. Below we summarise the impact of CURE on the outpatient lung cancer service at Wythenshawe Hospital.

Methods Active smokers with suspected lung cancer who attend an outpatient lung cancer appointment are referred to the CURE service. The same-day and opt-out structure enables CURE to approach all patients. Other services refer patients on an ad-hoc basis. Patients are offered 12 weeks free access



Abstract P133 Figure 1

Abstract P134 Table 1 Choice of follow up modality and respective abstinence rates

Follow Up Mechanism	Uptake% (n)	Abstinence Rate% (n)
Community Stop Smoking Services Follow Up	31% (51)	33%(17)
CURE Navigator Team Follow Up	23% (38)	50%(19)
Smoke Free App	1% (2)	0% (0)
Community Pharmacy Follow Up	22% (35)	20% (7)
GP Follow Up	4% (6)	33% (2)
Declined Follow up	19% (31)	36% (11)

to Nicotine Replacement Therapy (NRT) and/or a Vaping Device and behavioural support. Patients are offered follow up with either the CURE Service, Community Stop Smoking Services, their Community Pharmacist or GP, or they could choose to use the 'Smoke Free App' (providing 24/7 online access to behavioural support from trained advisors). We retrospectively reviewed data from the CURE Service between June to August 2023. We analysed the mechanism for initial referral, the type of tobacco dependency treatment utilised, and whether the follow up modality had an impact upon abstinence rates.

Results 163 patients were referred to The CURE Service. 122 (75%) referrals were from Respiratory Physician Outpatient Services, 39 (24%) were from surgical services and 2 (1%) were from oncology services. Overall 152 (93%) referred patients engaged with tobacco dependency treatment. 132 (81%) used NRT and 70 (43%) utilised vaping devices. 132 (79%) accepted follow up. Overall 56 (34%) achieved long term abstinence (12 weeks or longer); abstinence rates for each Follow-Up modality are summarised in table 1. Data on the treatment modalities offered in each follow up cohort were not available. Broader literature quotes 12 week abstinence rates with standard treatment to be 14 -23%.

Conclusion Treating tobacco dependence is an essential part of cancer treatment. Our results suggest that CURE may be effective in helping lung cancer patients achieve abstinence. More patients could be captured by expanding the opt-out service to other specialties.

P135 A PILOT TO EMBED DEDICATED SMOKING CESSATION SUPPORT IN A PRE-OPERATIVE ASSESSMENT CLINIC

[1]PR Rodrigues, [1]M Rossiter, [2]S Glazebrook, [3]P Orme, [3]S Hargreaves, [1]GH Jones. *[1]CURE Liverpool, Liverpool University Hospital NHS Trust, Liverpool, UK; [2]Cheshire and Merseyside Cancer Alliance, Cheshire and Merseyside, UK; [3]Preoperative Services, Liverpool University Hospital NHS Trust, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.296

Introduction Smoking is a significant risk factor for poor surgical outcomes, increasing the likelihood of complications such as infection, delayed healing, and longer hospital stays. Despite this, pre-operative services often signpost active smokers to external cessation services rather than have dedicated resource to address tobacco dependence.

Aims To evaluate whether embedding a smoking cessation advisor in the pre-operative clinic led to engagement with smokers in the run up to their surgery.

Methods This on-going pilot study is being conducted at a large pre-operative clinic in the North West of England where all smokers are offered expert support to quit at the time of assessment (opt-in). The intervention includes providing Nicotine Replacement Therapy (NRT), weekly follow-up for 4 weeks, then onward referral to community services for continued support.

Results Over the initial 6 months of the pilot, we have screened a total of 6124 Preoperative Visits, identifying 928 (15.2%) active smokers [Ex-Smokers: 2081 (34.0%)], 21.9% accepted review [n=203] of which 60.6% [n=123] accepted immediate support from the embedded advisor. The majority of these were issued with NRT therapy [78.9% n=97]. This has resulted in 43.9% of smokers accepting support having either reduced daily cigarette consumption [n=24] or quitting entirely [n=30, self-reported + community validated].

Discussion The initial results of our pilot study have demonstrated a high acceptance rate for smoking cessation support when offered as part of the pre-operative clinic, suggesting that real time preoperative smoking cessation support is a feasible and effective intervention that is likely to improve surgical outcomes and reduce associated healthcare costs. The significant number of quits achieved indicates the program's success in helping patients quit smoking and moving to an opt-out model may further improve engagement. Further research and larger-scale implementation are recommended to validate these findings and optimise support strategies.

P136 'EXPLORING PATIENT PERSPECTIVES ON TOBACCO DEPENDENCY MANAGEMENT: A COMPARATIVE THEMATIC ANALYSIS OF PHYSICAL AND MENTAL HEALTH INPATIENTS'

M Yardley. *The Royal London Hospital, London, UK*

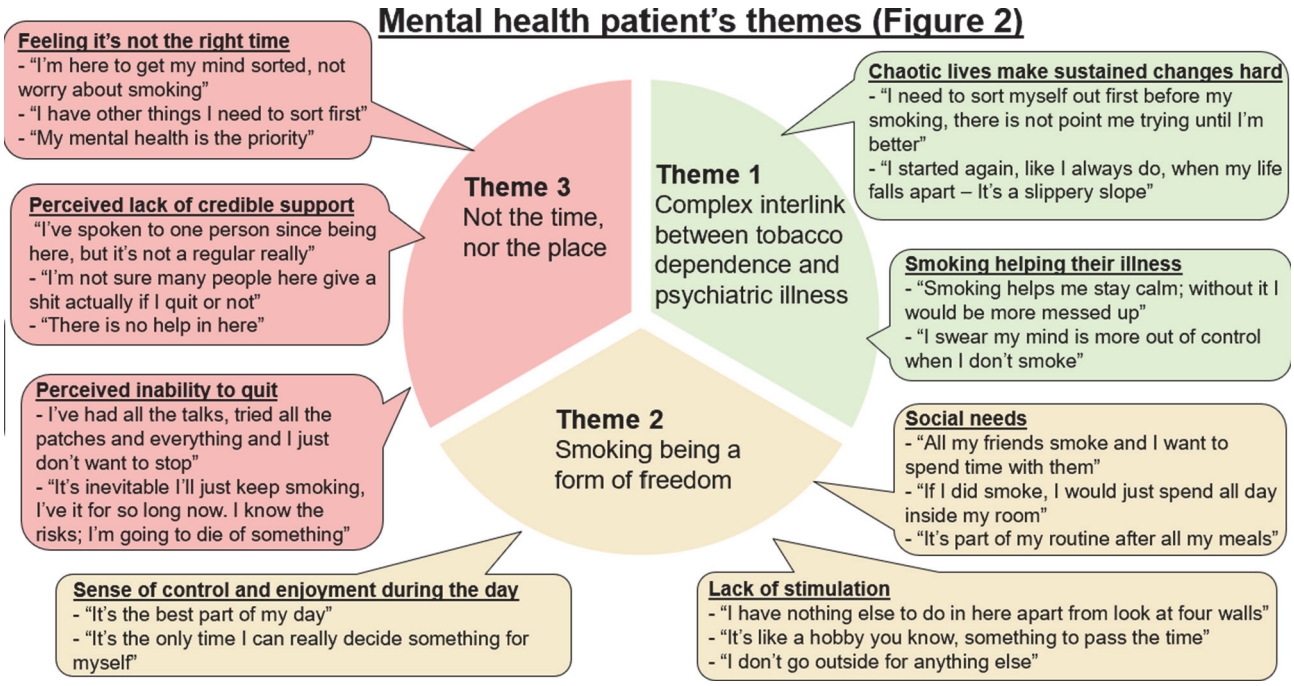
10.1136/thorax-2024-BTSabstracts.297

Those with mental health conditions are more likely to smoke compared to the general population, contributing to the ten-to-twenty-year gap in life expectancy between these groups. This disparity highlights a major ongoing health inequality in the UK today.

To help better understand this, so effective interventions can be developed to reduce this inequality, inpatients identified as active smokers from neighbouring physical health (Whittington Hospital), and mental health (Highgate Mental Health Centre) care settings took part in semi-structured interviews, exploring their past experiences with managing tobacco dependency (TD) and attitudes towards current smoking practice, including reasons for declining a referral to tobacco dependency specialist (TDS).

Handwritten notes were taken during interviews and data analyzed using thematic analysis as meaningful text was inductively coded by the author, creating 'lower order' themes, identifying significant broader patterns in the data. Constant iteration of the data set grouped these into final 'higher order' themes, summarizing the data from both physical and mental health patient interviews. Definitions were given to each named theme, telling the story of the data and allowing comparison between the two cohorts' responses (see figure 1 for the data generated from interviews with patients in mental health setting).

Results showed both groups cited the primary focus was their primary physical or mental health issue and so did not see smoking cessation as a priority to address. Both groups also used smoking as a perceived benefit, especially the



Abstract P136 Figure 1

physical health patients who cited smoking as a coping mechanism when dealing with the stress of being unwell. Re-framing the narrative for patients away from support to help them stop smoking, towards managing nicotine withdrawal whilst on smoke-free premises, may increase uptake in NRT or TDS support and aligns with the new BTS guidance on managing TD. Mental health patients have a much more complex relationship with tobacco dependence, meaning they are likely to require more intensive and prolonged support to increase the chances of sustained quit attempts. The funding of onsite TDS would be vital in supporting patients with this, inkeeping with the new BTS framework.

P137 EARLY REDUCTION IN RESPIRATORY READMISSIONS FOLLOWING IMPLEMENTATION OF A HOSPITAL-BASED STOP SMOKING SERVICE

JHP Ting, R Singh. *Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/thorax-2024-BTSabstracts.298

The NHS Long Term Plan aims to implement tobacco treatment services in all hospitals by 2024, based on the Ottawa Model for Smoking Cessation (OMSC) which has been shown to reduce readmissions and mortality.[1] Respiratory patients have a high risk of readmission, with some data showing that almost a quarter were admitted within 30 days of discharge.[2]

We began implementation of an inpatient Stop Smoking Service at Leeds Teaching Hospitals NHS Trust (LTHT) in November 2022. This was funded by Yorkshire Cancer Research. Current smokers were identified on admission by nursing staff on admission and approached by a Stop Smoking Advisor (SSA) on an opt-out basis.

We performed a retrospective audit on respiratory inpatients who were approached by a SSA during the initial 6 months of our programme and any readmissions over a 12-month period were identified via electronic patient records. 182 patients were offered treatment for tobacco dependence. 46% agreed to a supported quit attempt including behavioural intervention and either licensed medication, unlicensed nicotine-containing products or without pharmacotherapy. 54% did not agree to a supported quit attempt. They either declined support, opted for smoking reduction, had supported temporary abstinence, or were already attempting an unsupported quit attempt. 43% of those who accepted a fully supported quit attempt achieved a self-reported 4-week quit.

Among patients who accepted a supported quit attempt, 46% were readmitted compared to 51% patients who did not accept a supported quit attempt. This represents a 9% relative risk reduction, or number needed to treat of 21.8 to prevent a readmission (p=0.54).

The service has been scaled up across inpatient wards in LTHT. In the first year 1,591 patients have received support and there were 340 4-week quits, of which majority were self-reported.

Our data shows that treating tobacco dependence in respiratory inpatients prevents readmissions. This supports the continued implementation of tobacco treatment services in hospitals.

REFERENCES

1. Mullen KA, Manuel DG, Hawken SJ, *et al.* Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes. *Tob Control* 2017;**26**:293–9.
2. Stone R, *et al.* National COPD Audit Programme Outcomes 2014.

P138 EVALUATING THE ROLE OF LUNG FUNCTION PHYSIOLOGISTS IN DELIVERING SUPPORT TO TOBACCO DEPENDENT PATIENTS

C Curnick, J Burt, S Mandal, N Devani. *Royal Free London NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.299

Introduction and Objectives Supporting tobacco dependent (TD) patients to quit is the single most effective health intervention. Very brief advice (VBA) on smoking is a proven 30-second clinical intervention which can be delivered by any trained healthcare practitioner to support a quit attempt. Attendance at lung function (LF) often represents an early encounter in a patient's journey in secondary care, thus optimally placing LF physiologists (LFP) to deliver VBA. This project aimed to assess the feasibility and effectiveness of delivering VBA in LF, and staff confidence in doing so.

Methods LFPs completed online VBA certification in October 2023, and received local training on practical delivery of VBA and subsequent community referral during LF testing. Between November and December 2023, electronic patient case-note review was undertaken to determine proportion of smokers identified in LF, offered VBA and referred to community services. This was compared to a similar cohort prior to training, 6 months after training and with figures from consultant-led clinics at similar timeframes. LFPs completed a questionnaire assessing their knowledge, confidence, and perceptions of this approach using Likert scales (1–10 range, with 1 = lowest confidence/knowledge and 10 = highest).

Results Prior to training, no smokers attending LF were offered VBA or referred to community service. Immediately and 6 months post-training, 64% (16/25) and 40% (10/25) of smokers received VBA with 16% (4/25) and 20% (5/25) accepting an electronic community referral, respectively. This compares to 80% (20/25) receiving VBA and 40% (10/25) accepting a referral from consultant-led clinics over the same time-period. LPFs indicated greater confidence and knowledge scores (4.1 ± 2.73 vs 8.1 ± 0.69/10) in delivering VBA post-training and reported that delivering VBA and making subsequent referrals introduced minimal time or administration burden during the testing appointments.

Conclusion Delivering VBA during LF testing by LFPs represents a sustainable and valuable supplementary means of supporting TD patients attending secondary care and carries little additional time or administration burden. Data from this project suggests comparable community referral rates to consultant-led clinics and highlights the important role all healthcare professionals can play when reviewing TD patients.

P139 ASSESSING SMOKING STATUS DOCUMENTATION AND NICOTINE REPLACEMENT THERAPY PRESCRIBING ON THE ACUTE ADMISSIONS WARD

E Donnelly, D Hiestermann, N Thoppuram. *Guys and St Thomas NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.300

Background Tobacco smoking is a leading behavioural risk factor for death in the UK, contributing to deaths from cardiovascular disease, chronic respiratory diseases and common infectious diseases.[1] The 2019 NHS Long Term Plan's section on treating and preventing ill health aimed to ensure every person admitted to hospital who smokes to be offered NHS-funded tobacco dependence treatment by 2023/24.[2]

Aims

1. Improve documentation of smoking status on all patients admitted under the medical team
2. Identify if nicotine replacement therapy (NRT) is considered, prescribed and administered and improve referral to the tobacco dependence team (TDT)
3. Improve NRT prescription and TDT referrals amongst admitting physicians

Methods A retrospective analysis of the electronic patient record of all patients admitted under the medical team during one week in December 2023 looking at documentation of smoking status, discussions and prescriptions of NRT and referrals made to the TDT. This analysis was then repeated for one week in March 2024 following the interventions discussed below.

Results 198 patient notes were reviewed in the first cycle and 245 reviewed in the second cycle. These showed significant variability in documentation of smoking status and practice of NRT prescription and referral to TDT, as summarised in table 1.

Discussion Accurate documentation amongst admitting clinicians of smoking status and prescription of NRT for patients is insufficient. There was no significant change in results between the two cycles despite interventions. The interventions were 4 weeks of twice a week teaching delivered at the acute admissions ward's morning huddle and posters. These interventions were targeted at doctors but given the rotational nature of their work on the acute admission ward, it has

Abstract P139 Table 1 A summary of the documentation of smoking status, NRT consideration and prescription and referral to TDT by admitting clinicians in cycle 1 and 2 of data collection

	Cycle 1	Cycle 2
Smoking status recorded on admission:		
• Yes	143/198 (72%)	180/245 (73%)
• No	55/198 (28%)	65/245 (27%)
Smoking status, where recorded:		
• Current smoker	27/143 (19%)	55/180 (31%)
• Social history	40/143 (28%)	51/180 (28%)
• Wheel	76/143 (53)	74/180 (41%)
If current smoker, number of cigarettes smoked recorded:		
• Yes	7/27 (26%)	44/55 (80%)
• No	20/27 (74%)	11/55 (20%)
Was NRT considered on admission for current smokers:		
• Yes	6/27 (23%)	15/55 (27%)
• No	21/27 (77%)	40/55 (73%)
Was NRT prescribed at some point during their admission:		
• Yes	9/27 (33%)	15/55 (27%)
• No	18/27 (67%)	40/55 (73%)
If prescribed at admission, correct dose of NRT prescribed:		
• Yes	6/9 (67%)	7/13 (54%)
• No	3/9 (33%)	6/13 (46%)
Patient seen by TDT:		
• Yes	8/27 (30%)	14/55 (25%)
• No	19/27 (70%)	41/55 (75%)

proved difficult to get a sustained improvement in practice, if any. Proposed next steps include:

1) Moving towards allowing the TDT team to pend NRT prescriptions for doctors to sign and directly dispense NRT to patients on the acute admission ward

2) Involving the pharmacy team in facilitating the above process

3) Create a prescription bundle for NRT for easier, accurate prescriptions by prescribers

P140 IMPACT OF SMOKING ON HOSPITALIZATION DURATION IN PATIENTS WITH CARDIOVASCULAR DISEASES: A RETROSPECTIVE ANALYSIS AT A DISTRICT GENERAL HOSPITAL

C Hsu, M Thin. *West Hertfordshire Teaching Hospitals, Watford, UK*

10.1136/thorax-2024-BTSabstracts.301

Introduction and Objectives Smoking imposes an estimated annual cost of £2.6 billion on the NHS, covering treatment for lung cancer, COPD, and heart disease.[1] Research indicates that smoking significantly extends hospitalization for patients with respiratory and cardiovascular conditions.[2] This prolonged length of stay increases the financial burden on NHS trusts. This study investigates the impact of smoking on hospital stay length in cardiovascular patients and examines compliance with smoking status documentation and inpatient tobacco dependence treatment.

Method A retrospective data analysis was conducted on 198 patients admitted to the hospital between April 29, 2024, and May 8, 2024, through the Accident & Emergency (A&E) and Acute Admission Unit (AAU). The study focused exclusively on patients diagnosed with at least one cardiovascular disease. Data calculations and analyses were performed using Microsoft Excel.

Findings Out of the 198 patients analyzed, 107 (54%) had at least one cardiovascular disease. Among these patients, 13 (12%) were current smokers, 23 (21%) were ex-smokers, 26 (24%) were non-smokers, and 45 (42%) had an unknown smoking status. The average hospital stay was 8.3 ± 5.3 days for current smokers, 7.5 ± 7.3 days for ex-smokers, and 5.9 ± 4.3 days for non-smokers. Notably, only 55% (n=109) of the patients had their smoking status documented, and only 14% (n=3) of current smokers were prescribed nicotine replacement therapy (NRT).

Conclusion While we acknowledge the complexity of factors influencing hospital stay duration, our findings indicate that current and former smokers tend to have longer hospitalizations compared to non-smokers. This highlights the need for more extensive studies with larger samples to gain deeper insights. Additionally, our research suggests significant opportunities to enhance the documentation and management of inpatient tobacco dependency. Improving these practices could potentially reduce hospital stay lengths and improve patient outcomes.

REFERENCES

1. Public Health England. (2017). 'Cost of smoking to the NHS in England: 2015'. https://www.gov.uk/government/publications/cost-of-smoking-to-the-nhs-in-england-2015
2. Rezaei S, Akbari Sari A, Arab M, Majdzadeh R, Shaahmadi F, Mohammadpoorasl A. The association between smoking status and hospital length of stay: evidence from a hospital-based cohort. *Hospital Practice*, 2016;***44***(3):129–132. https://doi.org/10.1080/21548331.2016.1178579

P141 SMOKING CESSATION IN MEDICAL INPATIENTS – WE NEED TO GET IT RIGHT!

R Haider, C Beckett, A Dhawan, N Sayeed. *Walsall Manor Hospital, Walsall, UK*

10.1136/thorax-2024-BTSabstracts.302

Background Smoking tobacco remains the single biggest cause of preventable death and social inequality. It is the most cost-effective illness to treat in the NHS. Over half a million acute hospital admissions are directly linked to smoking. Retrospective study conducted at University Hospital North Midlands showed that the median length of hospital stay of current smokers was two-fold compared to ex-smokers.[1]

BTS recommends that all adult patients admitted to hospital should have their smoking status recorded. Tobacco-dependent inpatients should receive Very Brief Smoking Cessation advice, nicotine replacement therapy, and access to tobacco dependence team during their inpatient stay.

Objective To audit our smoking cessation practices in light of BTS Guidelines.

Methods

- Setting – Walsall Manor Hospital (Respiratory Ward and Acute Medical Unit)
- Data collection – Prospective
  - Cycle 1: 15th January 2024 – 31st January 2024 (110 patients)
  - Cycle 2: 22nd April 2024 – 26th April 2024 (80 patients)
- Parameters: Documentation of smoking status, Very brief smoking cessation advice, NRT prescription, Referral to smoking cessation service

Results Data collection in first cycle illustrated that one in four medical inpatients were current smokers. Only 4% of the current smokers were offered smoking cessation advice and referred to smoking cessation team. No patient was offered nicotine replacement therapy.

We employed departmental teachings to highlight the impact of nicotine addiction and using hospital admission as a point of intervention. We also arranged talks by Smoking Cessation Lead, who highlighted the pharmacokinetics of various forms of NRT and answered junior doctors' queries. Educational huddles were done with junior doctors about NRT dosage and Poster circulated in hospital social media groups to spread awareness.

Re-audit 3 months later demonstrated 100% compliance with Very Brief smoking cessation advice. 96% of current smokers were prescribed NRT and referred to smoking cessation team.

Conclusion Smoking cessation gets overlooked during the acuity of hospital admission. Educating clinicians about nicotine addiction and empowering them to engage in smoking cessation discussion with their patients is crucial to improving the long-term health of our medical inpatients.

REFERENCES

1. Tobacco control delivery plan 2017 to 2022 (Gov.uk).
2. https://doi.org/10.1183/13993003.congress-2023.PA1345.

'Call of the ILD'

P142 HIGH FLOW NASAL OXYGEN (HFNO) INCREASES EXERCISE TOLERANCE IN PATIENTS WITH FIBROSING INTERSTITIAL LUNG DISEASES DURING A CONSTANT WORK RATE CYCLE TEST (CWRCT) IN COMPARISON WITH CONVENTIONAL OXYGEN THROUGH A NASAL CANNULA

[1]J Jimenez, [1]N Hirani, [2]H Pinnock, [1]R Rabinovich. *[1]CIR Centre for Inflammation Research, Institute Of Regeneration and Repair, University of Edinburgh, Edinburgh, UK; [2]Usher Institute, University of Edinburgh, Edinburgh, UK*

10.1136/thorax-2024-BTSabstracts.303

Background Interstitial Lung Disease (ILD) is a diverse group of entities that cause damage to the lung parenchyma through varying degrees of inflammation and fibrosis, leading to exertional hypoxemia and decreased exercise tolerance. High-flow nasal oxygen (HFNO) is a novel treatment allowing oxygen supplementation even in acutely ill patients with ILD and may constitute a strategy to ameliorate hypoxemia triggered by exercise in these patients.

Objective Our aim was to evaluate the effect of HFNO on exercise tolerance measured with a constant work rate cycle test (CWRCT) at 75% of the maximal workload obtained from a maximal Cardio-Pulmonary Exercise Test (CPET) conducted beforehand in comparison to conventional oxygen delivered through a nasal cannula in ILD patients.

Methods We performed a prospective randomized controlled crossover trial enrolling 18 ILD patients who desaturated during exercise. On day 1, without supplemental oxygen, an incremental CPET in a cycle-ergometer was performed followed by a CWRCT at 75% of the maximal workload achieved in the incremental CPET. On day 2 participants performed two CWRCT at the same intensity as day 1 but received oxygen delivered via nasal cannula and HFNO to maintain an oxygen saturation above 88%. The tests were separated by 60 minutes. The primary outcome was endurance time. The secondary outcomes were SpO2, heart rate, Borg scale (dyspnoea and leg fatigue) and patient comfort. Isotime values for all variables were also measured and defined at the end of the CWRCT performed without supplemental oxygen.

Abstract P142 Table 1 Primary and secondary endpoints (NC and HFNO)

	NC	HFNO	Difference (95% CI)	p - value
Endurance time (min)	7.5	10.8	-3.3 (-4.8 – -1.7)	<0.001
End SPO2 (%)	88.7	92.7	-4 (-5.4 – -2.5)	<0.001
HR (bpm)	131.6	125.1	6.4 (-5.7 - 18.6)	0.282
Nadir SPO2	84.9	88.4	-3.5 (-4.5 – -2.4)	<0.001
Max HR (bpm)	141.2	133.5	7.7 (-1.7 - 17.2)	0.104
Dyspnoea (Borg)	5.2	4.1	1.1 (0.3 – 1.7)	0.007
Leg fatigue (Borg)	4.8	4.9	-0.1 (-0.8 – 0.5)	0.677
Patient comfort	7.1	7.9	-0.7 (-1.7 - 0.2)	0.100
Isotime SPO2 (%)	89.2	93.2	-3.9 (-6.0 - -1.8)	<0.001
Isotime HR (bpm)	124.1	112.5	11.5 (3.7 – 19.3)	0.006
Isotime Dyspnoea (Borg)	3.4	2.6	0.8 (0.1 – 1.3)	0.015
Isotime Leg fatigue (Borg)	3.3	3.5	-0.2 (-0.9 – 0.5)	0.596

Data are presented as number (%) or mean (95% CI). P-values calculated with paired t-tests. NC: nasal cannula, HFNO: high-flow nasal oxygen, SpO2: oxygen saturation, HR: heart rate, BPM: beats per minute.

Results We found a statistically significant difference ($p<0.05$) in favour of HFNO in endurance time, end oxygen saturation, nadir oxygen saturation, end dyspnoea (Borg scale), isotime heart rate, isotime oxygen saturation and isotime dyspnoea. There were no differences in end heart rate, maximal heart rate, leg fatigue (Borg scale), isotime leg fatigue or patient comfort (table 1).

Conclusions HFNO allows the patients to tolerate more exercise in comparison to conventional oxygen potentially allowing higher training loads during pulmonary rehabilitation.

P143 REAL-WORLD MULTICENTRE EVALUATION OF LIVER FUNCTION MONITORING IN PATIENTS WITH IDIOPATHIC OR PROGRESSIVE PULMONARY FIBROSIS RECEIVING ANTI-FIBROTIC THERAPY IN THE UNITED KINGDOM

[1]C Masey, [2]G Dixon, [3]M Naqvi, [3]A Behrendt, [3]A Lawrence, [4]H Stone, [4]S Bikmalla, [4]R Muthusami, [4]K Rajalingam, [5]A Crawshaw, [5]A Ahmer, [5]L Crowley, [6]A Fahim, [6]A Zahid, [7]G Saini, [7]E Butcher, [7]H Gorensweigh, [7]K Brennan, [8]F Khan, [8]A Murphy, [8]S Hira, [8]S Yasir, [9]L Spencer, [9]V Randles, [9]M McCaffrey, [9]E Gillison, [9]H Edwards, [10]S Hart, [10]A Muthusami, [10]S Naureen, [11]L Nicol, [11]M Cartlidge, [12]H Parfrey, [12]I Mobein, [13]N Khine, [13]W Soe, [13]SV Fletcher, [14]N Chaudhuri, [2]H Adamali, [3]A West, [1]M Gibbons, [2]S Barratt. *[1]Royal Devon University Healthcare NHS Trust, Exeter, UK; [2]North Bristol NHS Trust, Bristol, UK; [3]Guys and St Thomas NHS Foundation Trust, London, UK; [4]University Hospitals of North Midlands, Stoke, UK; [5]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [6]The Royal Wolverhampton NHS Trust, Wolverhampton, UK; [7]Nottingham University Hospitals, Nottingham, UK; [8]University Hospitals of Leicester NHS Trust, Leicester, UK; [9]Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK; [10]Hull University Teaching Hospitals NHS Trust, Hull, UK; [11]Royal Infirmary of Edinburgh – NHS Lothian, Edinburgh, UK; [12]Royal Papworth Hospital, Cambridge, UK; [13]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [14]University of Ulster, Ulster, UK*

10.1136/thorax-2024-BTSabstracts.304

As per Summary of Product Characteristics (SpC) there is a requirement to regularly monitor liver function tests (LFT) in patients receiving nintedanib or pirfenidone. Providing this service is placing unsustainable strain on the NHS both financially and in clinical time.

This service evaluation aimed to determine the timing of LFT abnormalities (Bilirubin or ALT/AST or ALP) above the SpC defined threshold of 'three times the upper limit of normal' (3 x ULN) and whether patients were symptomatic of these abnormalities.

Thirty-one anti-fibrotic prescribing centres were contacted across the UK. Ten centres participated. Participating centres confirmed adherence to the SpC recommendation.

Retrospective LFT data were collected on all patients started on anti-fibrotic therapy between 01/01/2022 and 01/06/2023. The monitoring period ended 01/01/2024.

LFT abnormalities were recorded in relation to 1. anti-fibrotic start date and 2. whether the patients were 'symptomatic' - defined by one or more of: jaundice, abdominal pain, nausea, vomiting.

1482 patients were included in the analysis. 67 of the 1482 (4.5%) patients developed LFT abnormalities > 3xULN.

58 of the 1172 patients who commenced nintedanib experienced LFT abnormalities > 3xULN (4.95%); 17 (29%) were symptomatic of their liver abnormalities. 52 of the 58 patients who experienced LFT abnormality >3xULN did so within the first 12 months of therapy. Of those patients monitored beyond 12 months, 6 encountered an LFT abnormality > 3xULN after 12 months of treatment.

9 of the 310 patients commenced on pirfenidone experienced LFT abnormalities > 3xULN (2.9%). 3 of the 9 patients (33.3%) were symptomatic. 7 of the 9 patients who experienced LFT abnormalities > 3xULN did so within 12 months of monitoring. Of those patients monitored beyond 12 months, 2 developed LFT abnormalities > 3xULN after 12 months of treatment.

Within the limitations of this service evaluation, we demonstrate that rates of LFT abnormality > 3xULN are low beyond 12 months of therapy. Around 30% of patients are symptomatic of their LFT abnormalities, based on current definition. This work should encourage discussion around the practicalities, safety, service and financial implications of long term LFT monitoring in patients receiving anti-fibrotic therapy.

P144 THE USE OF CLINICAL PARAMETERS TO DIFFERENTIATE BETWEEN RARE CYSTIC LUNG DISEASES

[1]M Avoseh, [1]YL Pang, [2,3]SJ Marciniak, [4]ID Stewart, [1,5]SR Johnson. *[1]National Centre for Lymphangioleiomyomatosis, Nottingham University Hospitals NHS Trust, Nottingham, UK; [2]Cambridge Institute for Medical Research (CIMR), University of Cambridge, Cambridge, UK; [3]Cambridge University Hospitals NHS Trust, Cambridge UK and Royal Papworth Hospital NHS Trust, Cambridge, UK; [4]Margaret Turner Warwick Centre for Lung Fibrosis, Imperial College, London, UK; [5]Translational Medical Sciences, NIHR Biomedical Research Centre and Biodiscovery Institute, University of Nottingham, Nottingham, UK*

10.1136/thorax-2024-BTSabstracts.305

Introduction Rare cystic lung diseases (RCLD) have similar radiological appearances, but differ in clinical characteristics, trajectory and treatment options. Diagnostic uncertainty is often prevalent, leading to unnecessary investigations, delays in diagnosis and initiation of treatment affecting lung function long-term. This study assessed whether presenting characteristics could be used to effectively discriminate between four common RCLD: Birt-Hogg-Dubé syndrome (BHD), lymphangioleiomyomatosis (LAM), Langerhans cell histiocytosis (LCH) and lymphocytic interstitial pneumonia (LIP).

Methods Eighteen clinical characteristics from 73 patients with a final diagnosis of BHD, LAM, LCH and LIP from the National LAM centre in Nottingham (n=65) and the NHS Familial Pneumothorax Rare Disease Collaborative Network based in Cambridge were included. Ethical approvals were obtained from the East Midlands and University of Cambridge Human Biology Research Ethics Committees. Analysis of variance and chi-squared tests were used for comparison between RCLDs for continuous and binary variables respectively. Bayesian Information Criterion was used to test between different numbers of class solutions for the best latent class analysis (LCA).

Results Patients with LIP were older ($p<0.0001$) with a shorter time from symptom onset to diagnosis ($p=0.034$) and were the only group with a connective tissue disease (CTD) or CTD-related autoantibody ($p<0.00001$). Lymphatic involvement or the presence of angiomyolipoma only occurred in LAM ($p<0.0001$). LCA separated the 18 baseline characteristics into three classes. Presentation with cough and smoking history led to a high probability of Class 1 membership. Lung function and renal tumour was discriminatory for Class 2, pneumothorax and fibrofolliculoma led to a higher probability of Class 3. LCH and LIP patients had a 91% and 87% probability of being in Class 1, respectively, patients with LAM had a 78% probability of being in Class 2 and patients with BHD an 88% probability of being in Class 3. A four class LCA model did not improve discrimination of LCH and LIP.

Conclusion In this analysis, we find that the use of LCA may help improve diagnostic accuracy for patients with RCLD by allowing targeted investigations to expedite diagnosis and treatment.

P145 CHARACTERISING ANTIFIBROTIC TREATMENT PATTERNS IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS IN THE US: A RETROSPECTIVE COHORT STUDY

[1]MC Penaloza Ramos, [1]AA Londhe, [1]P Pimple, [2]S Langham, [1]M Lavallee, [1]Y Fan, [1]T Cork, [3]AH Limper, [4]J Quint. *[1]Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany; [2]Maverex Limited, Newcastle-upon-Tyne, UK; [3]Department of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, USA; [4]School of Public Health, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.306

Introduction Antifibrotics slow progression and improve survival in idiopathic pulmonary fibrosis (IPF). There are limited data on real-world antifibrotic treatment patterns in patients with IPF in the US.

Objective Describe antifibrotic treatment patterns during follow-up in patients with newly diagnosed IPF.

Methods This is a retrospective cohort study of adult patients (≥18 years) diagnosed with incident IPF using a US Electronic Health Records database with linked insurance claims. Patients were required to have ≥2 claims for IPF between 1/10/2014 and 31/12/2021 and continuous enrolment for 1 year prior and 1 year after first IPF diagnosis date (index date). Treatment patterns included initiation of antifibrotic and time to initiation of antifibrotic post-index date, duration of use, proportion of patients switching between antifibrotic treatments, treatment interruption and discontinuation. A sub-cohort with recorded forced vital capacity (FVC) measurements was defined and disease progression calculated as a decline in% predicted FVC ≥10% during follow-up.

Results 19,946 patients were included. Median age was 74 (IQR 66–81) years; 40.7% were female and 73.2% White. Median duration of follow-up was 23 (IQR 11–44) months. 3,179 (15.9%) initiated antifibrotic treatment (9.4% nintedanib and 6.7% pirfenidone), with 3.4% initiating treatment within 4 weeks of diagnosis. Median time to treatment initiation was 3.8 (IQR 1.2–10.4) months. Median time on treatment was 4.8 (IQR 1.8–10.7) months; 2,291 (72.1%) discontinued within 1 year. 626 (19.6%) interrupted treatment and 177 (5.6%) switched treatment.

1,113 (5.6%) had FVC measurements, with 304 (27.3%) experiencing progression. Among these, 254 (22.8%) initiated treatment (12.7% nintedanib and 10.1% pirfenidone), with 56 (5.0%) initiating within 4 weeks of diagnosis. Median time to treatment initiation was 4.1 (IQR 1.1–12.0) months. Median time on treatment was 6.62 (IQR 2.4–13.8) months; 168 (66.1%) discontinued initial drug within 1 year. 38 (14.9%) interrupted initial treatment and 16 (6.3%) switched antifibrotic. 27.0% of patients who initiated treatment had progression in future versus 27.2% of those who never initiated treatment.

Conclusions Antifibrotic initiation among IPF patients is low, with 15.9% initiating treatment and 3.4% initiating within 4 weeks of diagnosis. Discontinuation rates are high, with 72.1% discontinuing within 1 year.

P146 NINTEDANIB AND CONCOMITANT ANTIDEPRESSANT USAGE IS ASSOCIATED WITH NO BLEEDING RISK: RETROSPECTIVE OBSERVATIONAL DATA

[1]H Stone, [1]S Bikmalla, [1]R Muthusami, [2]L Bowyer, [2]V Mhlanga, [2]D Desai. *[1]University Hospitals of North Midlands, Stoke on Trent, UK; [2]University Hospital of Coventry and Warwickshire, Coventry, UK*

10.1136/thorax-2024-BTSabstracts.307

Introduction Nintedanib is a Tyrosine Kinase Inhibitor licensed for treatment of Idiopathic Pulmonary Fibrosis (IPF) and Progressive Pulmonary Fibrosis (PF-ILD). Due to its action on Vascular Endothelial Growth Receptor there is a theoretical increase in risk of bleeding events (BE). Antidepressants (AD) Proton Pump Inhibitors (PPI) and H2 receptor antagonists (H2RA) specifically CYP3A4 enzyme inhibitors can theoretically reduce the metabolism of Nintedanib by sharing this common pathway; increasing the risk of BE. There is paucity of real world data of these adverse events and manufacturer advises caution whilst prescribing.

Methods Retrospective data from two UK ILD centres was examined for AD prescribing using hospital records and GP Integrated Care Records concomitant with PF-ILD and IPF patients on treatment with Nintedanib for patients issued this prescription within the last 12 months. Antacid treatment included PPI and H2RA.

Results 13% of patients were on antidepressants. 3% patients were on a combination of Nintedanib, an antidepressant and anticoagulation. 6 Patients were deceased by the time of data collection and the death certificate did not list bleeding as the cause of death. 1 patient reported epistaxis but this did not require hospital admission and was treated by ENT as an OP and was on apixaban and Nintedanib but no anti depressant.

Conclusion Real world data did not reveal significant bleeding in patients taking Nintedanib and antidepressants although the patient numbers were small. Further data could easily be collated from ILD registries to try to quantify adverse event incidence in this patient cohort with multiple co-morbidities taking medication with poorly studied drug interactions. Guidelines could then be developed to screen those at highest risk and tailor drug therapy accordingly and to allow patients to make informed decisions about treatment.

Abstract P146 Table 1

N	138
M (n)%	(101) 73
Age (Yrs)	76*
IPF (n)% PF-ILD	(92) 66/(45) 34
Time since starting Nintedanib, mths	15*
AD prescribing (n)%	(18) 13
Anticoagulant prescribing (n)%	(5) 3
Antacid prescribing (n)%	(84) 60
AD and Anticoagulant prescribing (n)%	(2) 1

*Mean

P147 BPF-GILD STUDY: AN OBSERVATIONAL COHORT STUDY OF UK PIGEON FANCIERS

[1]RJ Allen, [2]J Wellens-Mensah, [1]OC Leavy, [3]S Bourke, [4]W Henderson, [5]H Smith, [2]E Johnson, [5]D Marks, [5]Y Myat, [6]C Rafique, [1]G Parcesepe, [1]T Hernandez-Beeftink, [1]B Guillen-Guio, [2]E Cheng, [2]C Chan, [7]S Henderson, [2]M Embley, [8]P Lynch, [8]G Boyd, [1]B Gooptu, [9]C McSharry, [1]LV Wain, [10]M Spears. *[1]University of Leicester, Leicester, UK; [2]NHS Tayside, Dundee, UK; [3]Newcastle Hospitals NHS Trust, Newcastle, UK; [4]NHS Greater Glasgow and Clyde, Glasgow, UK; [5]Sheffield University Hospitals NHS Trust, Sheffield, UK; [6]North East England Foundation Trust, Newcastle, UK; [7]NHS Lothian, Edinburgh, UK; [8]British Pigeon Fanciers Medical Research, UK; [9]University of Glasgow, Glasgow, UK; [10]NHS Forth Valley, Stirling, UK*

10.1136/thorax-2024-BTSabstracts.308

Introduction Hypersensitivity pneumonitis (HP), a common interstitial lung disease (ILD), presents in two distinct but related forms, acute and fibrotic (fHP). HP is classically described as a disease triggered by inhaled exposure to a proven or likely causative antigen. However, a wide range of inhaled triggers are described and in ~50% of cases no clear trigger is identified, rendering observational studies challenging. The British Pigeon Fanciers Genetics of ILD (BPF-GILD) study aims to address this by studying a population with a clear history of exposure to a common trigger.

Objective Create an observational cohort of individuals who have been exposed to the same antigens to determine pathways relevant to the development of fHP.

Methods Participants were recruited from 2019 to 2023 at UK Pigeon Fancier meetings. Each participant performed spirometry, completed a standardised questionnaire with an experienced doctor, and provided blood samples for antigen tests and generation of omics data (such as genetics and proteomics).

Results 417 subjects were recruited from four meetings. The median age of the cohort was 63 years, 95% were male and 94% self-reported white ethnicity. Cohort members kept a median number of 80 pigeons (range 4–800), kept pigeons for a median of 40 years (1 – 79) and participants spent a median of 14 hours per week [1–100] in their lofts. 51% of participants also had occupational dust exposures. 49% of individuals reported at least one respiratory symptom related to loft exposure, with the most common loft-related symptoms being sneezing (22%) and wheezing (20%). 14% of the cohort had suspected ILD diagnosis and these individuals appeared more likely to wear a mask when with their pigeons (73% vs 55%). Positive responses to questions employed to detect occult connective tissue disease in ILD clinics were present in 41% of participants, with the most common responses being sicca (23%) and myalgia (17%).

Conclusion Our well characterised pigeon fanciers commonly experience acute HP symptoms and are likely to be at increased risk of fHP. Subsequent work using stored samples will enable us to determine genetic risk factors and pathways relevant to the development of fHP.

P148 TELOMERE ASSESSMENT IN PULMONARY SARCOIDOSIS

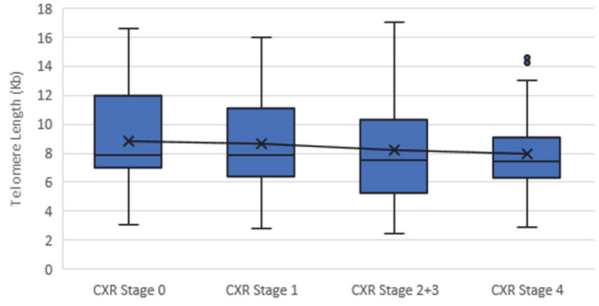
[1]R Crooks, [2]M Watson, [1]R Gilpen, [1]P Logue, [3]D Linden, [3]P Minnis. [1]*Antrim Area Hospital, Northern HSC Trust, UK*; [2]*C-TRIC, Altnagelvin Hospital, UK*; [3]*QUB, Belfast, UK*

10.1136/thorax-2024-BTSabstracts.309

Introduction and Aims The clinical course varies widely, from asymptomatic cases to severe progressive pulmonary fibrosis. The mechanisms driving inflammatory lung disease towards fibrotic transformation in sarcoidosis remain undefined but may include cellular senescence, impaired tissue repair and immune dysregulation. In fibrotic interstitial lung disease accelerated ageing is a pivotal concept. Emerging evidence suggests that telomere length (TL) plays a crucial role in sarcoidosis. We aim to measure TL in sarcoid patients and assess the impact on clinical features.

Methods Genomic DNA was extracted from human buffy coat samples from 79 patients with sarcoidosis. TL was quantified using the Absolute Human Telomere Length Quantification qPCR Assay Kit. Clinical data including demographics, pulmonary function tests, CXR stage, disease duration and need for treatment were analysed. A subgroup analysis (n 19) assessing fibrotic burden by quantitative CT was performed in those who had Lung Texture Analysis (LTA) [Imbio^{TM}]. LTA reported percentage Hyperlucency, Ground Glass Opacity, Reticulation, Honeycomb change and Pulmonary Vascular Volume.

Results The mean age of the cohort was 58.4 (SD 11.6), 66% were male, with an average disease duration of 7.4 years (SD 6.1), and 54% required treatment. Average TL was 8.3 +/- 0.6 Kb, with no significant gender differences. There were only weak correlations for age (r -0.028) at blood draw, disease duration (r -0.06), FVC (r 0.067), and transfer factor (r -0.013). Figure 1 presents Telomere Length stratified by CXR stage, revealing a trend towards shorter telomeres with fibrotic disease (p 0.78). LTA found stronger correlation between TL and Hyperlucency (r 0.538) thought to represent air trapping, and reticulation (r -0.188). This suggests that stratification by CXR stage may underestimate the burden of disease.



Abstract P148 Figure 1 Telomere length stratified by CXR stage

Conclusion Our data indicates a trend towards fibrotic disease in association with shorter telomeres. Plain CXR evaluation may underestimate this association. It is unclear whether an innate telomere defect or stress-induced telomere erosion is responsible for evolution into fibrotic sarcoidosis. Further research and time points are needed to tease out this relationship.

P149 GENDER DIFFERENCES IN BREATHLESSNESS IN IDIOPATHIC PULMONARY FIBROSIS

SP Manivarmane, AB Clark, AM Wilson. *University of East Anglia, Norwich, UK*

10.1136/thorax-2024-BTSabstracts.310

Introduction Idiopathic pulmonary fibrosis (IPF) is a progressive restrictive lung disease, predominantly seen in men, with a high symptom burden. There is evidence to suggest dissimilar experiences of IPF between women and men, with women experiencing greater breathlessness than men. The King's Brief Interstitial Lung Disease Questionnaire (KBILD) is widely used for measuring quality of life in interstitial lung disease, it compromises of different domains of symptoms: psychological, breathlessness and activity (B&A), and chest symptoms. Our objective was to identify if the nature of the relationship between forced vital capacity (FVC) and different domains in the KBILD varies according to gender.

Methods We collated data on total and domains of KBILD, gender and lung function (FVC), involving 481 (396 male) participants from two multicentre clinical studies (JAMA 2020;324:2282–2291, Chron Respir Dis 2021;18:14799731211033925). We modelled the relationship between the four domains of KBILD and FVC using linear regression. We modelled KBILD domains as the outcome, with covariates of FVC, gender, and an interaction between gender and FVC.

Results There was no evidence of a relationship between gender and total KBILD (95% CI -5.33 to 17.89 p= 0.29), neither was there for gender and the psychological symptoms (95% CI -10.34 to 17.04 p=0.63) or the chest symptoms domain (95% CI -29.50 to 15.65 p=0.55) of the KBILD questionnaire. However, there was a significant relationship between gender and the B&A domain of the KBILD questionnaire. When controlled for FVC and the interaction between FVC and gender, males had a 13.40 higher B&A score compared to females (95% CI 1.03 to 25.76, p=0.034).

Discussion We have found that gender, independent of FVC, impacts breathlessness and activity, as measured by a KBILD questionnaire, but not psychological or chest symptoms. Understanding that males and females with interstitial lung disease may perceive breathlessness differently is important in managing their disease and comparing the treatment effects of interventions. Further research is required to explore these differences and how they can be mitigated.

P150 EXPLORATION OF SEX-RELATED DIFFERENCES IN VENTILATOR-INDUCED FIBROTIC SIGNALLING

[1,2]D Gersht, [1]RF Baldi, [1]C Thomas, [1]N Jawhar, [1]M Takata, [1]MR Wilson. [1]*Imperial College, London, UK*; [2]*University of Liverpool, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.311

Background Acute Respiratory Distress Syndrome (ARDS) occurs following damage to the alveolar-capillary membrane increasing capillary permeability, leading to pulmonary oedema. In the United Kingdom, ARDS criteria is met by 12.5 percent of intensive care patients, with mortality reaching 53.5 percent. In severe ARDS, patients often develop pulmonary fibrosis with mechanical ventilation being known to initiate fibrotic signalling. In animal models of chronic fibrosis,

Abstract P150 Table 1 Table showing concentrations of measured markers in BALF and plasma samples recovered from male and female mice. Data is displayed as means± standard deviations

	Male LV_T	Female LV_T	Male HV_T	Female HV_T
BALF Protein (mg/mL)	0.188 ±0.02	0.168 ±0.05	1.63 ±0.6****	1.18 ±0.38****
BALF IL6 (pg/mL)	70.5 ±19.36	83.6 ±21.44	183 ±28.4***	247 ±84.87****
BALF CXCL1 (pg/mL)	53.4 ±20.84	52.5 ±15.21	159.6 ±11.53**	187 ±48.37****
BALF TGF-β (pg/mL)	23.1 ±17.44	23.2 ±10.86	97.6 ±70.63	81.5 ±47.88
BALF PAI-1 (pg/mL)	300 ±29.72	280 ±31.79	526 ±89.05****	342 ±31.13$^{£££}$
Plasma TGF-β (pg/mL)	4,431 ±2,121.02	3,777 ±1,947.97	3,924 ±3,441.32	2,472 ±980.85
Plasma PAI-1 (pg/mL)	151 ±42.28	50.1 ±23.67$^{$$}$	573 ±441.37*	175 ±58.61**

Parametric data were analysed using an ordinary two-way ANOVA with Šidák's test for multiple comparisons. Non-parametric data were log-transformed, with an ordinary two-way ANOVA performed on the transformed data with Šidák's test for multiple comparisons.
N=6–8 across all groups, except plasma TGF-β which is N=4–6.
LV_T = low-stretch ventilation, HV_T = high-stretch ventilation.
*p<0.05, **p<0.01, ***p<0.001, ****p<0.0001= vs LV_T equivalent.
$^{£££}$p<0.001=vs male HV_T.
$^{$$}$p<0.01=vs male LV_T.

evidence suggests females exhibit downregulated fibrotic signalling. However, whether females are similarly protected from fibrosis development following ventilation is unclear.

Methods C57BL6 male and female mice were ventilated for up to 3 hours using high-stretch (tidal volume 28–35 ml/kg) or low-stretch ventilation (tidal volume 6–9 ml/kg). ELISA was used to measure Interleukin-6 (IL-6), Chemokine Ligand-1 (CXCL1), Transforming Growth Factor-β (TGF-β) and Plasminogen Activator Inhibitor-1 (PAI-1) in bronchoalveolar lavage fluid (BALF) and plasma. BALF total protein was measured using the Bradford Assay.

Results BALF total protein, IL-6 and CXCL1 increased following high-stretch ventilation, with no differences between the sexes. In contrast, BALF PAI-1 increased only in male animals, with females showing significantly attenuated upregulation. Plasma PAI-1 was significantly different between the low-stretch animals, with higher concentration in males. In high-stretch mice, plasma PAI-1 concentration was numerically higher in males than females, yet it was not statistically significant (p=0.07). TGF-β showed no significant increase with high-stretch ventilation in either sex, presumably due to very substantial variability (table 1).

Discussion These results indicate there may be differences in fibrotic signalling pathways between sexes following mechanical ventilation. Considering the similarity in concentration of PAI-1 in BALF (which is diluted) and plasma (which is not), our data suggest this is because of local alveolar production of PAI-1, potentially released by alveolar macrophages activated during ventilation, rather than leakage from the circulation. Oestrogen has been suggested to regulate PAI-1, perhaps explaining the attenuated response in female mice.

Conclusion There seems to be a sex-related difference in the signalling pathway involving PAI-1. Females may be less susceptible to pulmonary fibrosis following mechanical ventilation via PAI-1 signalling.

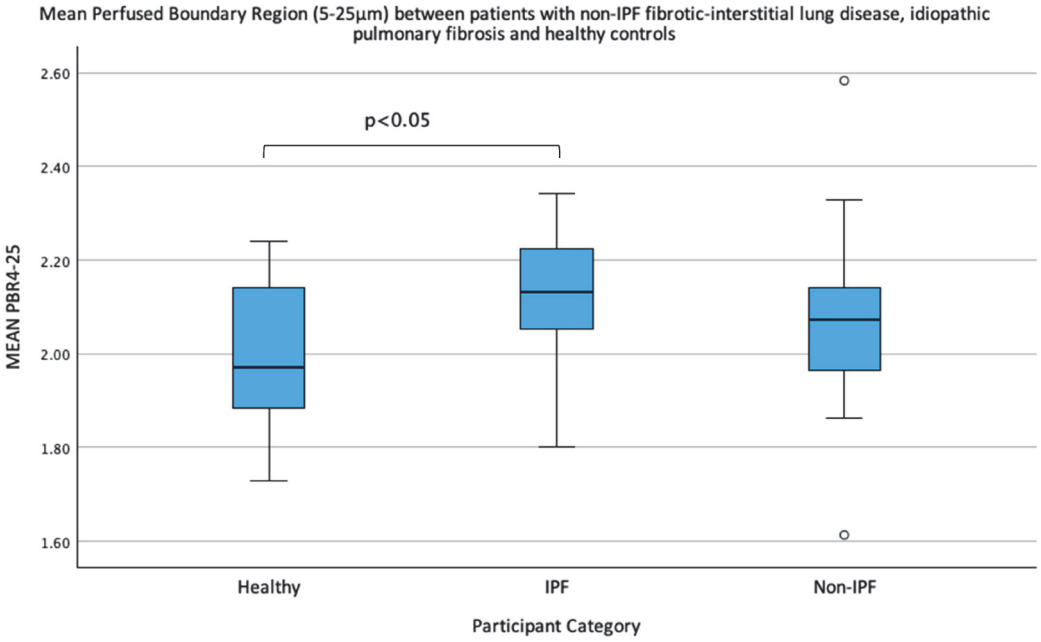
P151 THE ROLE OF THE ENDOTHELIAL GLYCOCALYX IN FIBROTIC INTERSTITIAL LUNG DISEASE

[1,2,3,4]G Dixon, [4,5]JCL Rodrigues, [6,7,8]K Tsaneva-Atanasova, [1]CJ Scotton, [3]MA Gibbons, [2]SL Barratt. *[1]Department of Clinical and Biomedical Sciences, University of Exeter, Exeter, UK; [2]Bristol Interstitial Lung Disease Service, North Bristol NHS Trust, Bristol, UK; [3]South West Peninsula ILD Network, Royal Devon University Healthcare NHS Foundation Trust, Exeter, UK; [4]Royal United Hospitals Bath NHS Foundation Trust, Bath, UK; [5]Department of Health, University of Bath, Bath, UK; [6]Department of Mathematics and Statistics, Faculty of Environment, Science and Economy, University of Exeter, Exeter, UK; [7]EPSRC Hub for Quantitative Modelling in Healthcare, University of Exeter, Exeter, UK; [8]Living Systems Institute, University of Exeter, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.312

Background and Aims The interstitial lung diseases are a heterogenous group of conditions with varying degrees of inflammation and fibrosis of the lungs. Disruption of the endothelial glycocalyx (EG) and subsequent vascular remodelling has been implicated in the pathogenesis of organ fibrosis but its role in the pathogenesis of pulmonary fibrosis is unknown. We aimed to assess the acceptability of EG assessment using sublingual video-microscopy and compare EG health between patients with fibrotic-ILD and healthy controls.

Methods Patients with fibrotic-ILD and age and sex matched healthy controls were recruited to a prospective observational study (PREDICT-ILD NCT05609201). Participants with diabetes, renal disease (eGFR<60) or connective tissue disease were excluded. EG assessment was performed using sublingual sidestream darkfield video-microscopy (GlycoCheck^{TM}). GlycoCheck^{TM} measures perfused boundary region (PBR) in vessels 5–25μm in width, a surrogate for EG width. Acceptability was measured using a modified theoretical framework of acceptability questionnaire. Participants in the fibrotic-ILD arms underwent pulmonary function testing on the same day as EG assessment.



Abstract P151 Figure 1 Mean perfused boundary region (5–25µm) between patients with non-IPF fibrotic-ILD, IPF and healthy controls. IPF = Idiopathic pulmonary fibrosis. PBR = Perfused Boundary Region

Results 18 patients with IPF, 18 patients with non-IPF fibrotic-ILD (11 fibrotic hypersensitivity pneumonitis, 3 unclassifiable-ILD, 3 fibrotic non-specific interstitial pneumonia and 1 asbestosis) and 16 healthy controls were recruited. There was no significant difference in age or gender between groups. There was no significant different in% predicted FVC or% predicted DLCO between IPF and non-IPF fibrotic-ILD arms (76.5% vs 68.7%, p=0.197 and 50.9% vs 47.5%, p=0.534 respectively).

EG measurement was not possible in 2 participants in the non-IPF fibrotic ILD arm due to breathing pattern and tongue movement. There was no statistically significant difference between groups in intervention comfort, burden, self-efficacy and overall acceptability (p=0.169–0.987).

Mean PBR 5–25µm was higher in the IPF group vs controls 2.12µm vs 1.99µm (p=0.019) (figure 1). There was no difference between the non-IPF fibrotic-ILD group and IPF patients (p=0.492) or controls (p=0.216). The IPF group demonstrated significant correlation between% predicted FVC and PBR (5–25) r=-0.478 p=0.045.

Conclusions Sublingual video-microscopy is an acceptable test in patients with fibrotic-ILD. Baseline results suggest there may be a decrease in sublingual endothelial glycocalyx thickness in patients with IPF compared to healthy controls.

P152 IDIOPATHIC PULMONARY FIBROSIS RELATED EXPRESSION OF CELL EXTRUSION GENES WITHIN EPITHELIAL CELL TYPES

[1]K Bhatti, [1]D Wang, [2]I Uwagboe, [1]C Dean, [2]J Rosenblatt, [2]M Parsons, [1]G Jenskins, [1]AE John, [1]ID Stewart. *[1]Imperial College London, London, UK; [2]King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.313

Background Idiopathic pulmonary fibrosis (IPF) is characterised by scarring of lung interstitium and destruction of epithelial basement membrane. Cell extrusion maintains tissue architecture, whilst dysfunction may promote persistence of damaged and apoptotic cells, compromising barrier integrity, potentially resulting in fibrotic remodelling. Cell extrusion is a difficult process to capture experimentally, and it's not known whether it occurs in the alveolus. PIEZO1 is a stretch-activated ion channel and mechanosensor described as an upstream factor in live cell extrusion. It is a key mediator of extrusion therefore, to help validate whether extrusion is happening in alveolus an extrusion gene signature was needed. Hence, we created a gene panel based on network interactions with PIEZO1 to investigate dysfunctional extrusion in IPF. We hypothesised that dysregulated extrusion-related genes are differentially expressed in IPF lung cells compared to control.

Methods Using PIEZO1 as a hub gene, a panel of extrusion-related genes was curated with STRING database, PANTHER classification and KEGG pathway analysis. Differential expression was evaluated with Seurat using IPF and control single cell RNA sequencing (scRNAseq), integrated from three publicly available datasets (GSE136831; GSE135893; GSE128033). Cell types of focus included AT2, pan-endothelial, basal and dividing cells annotated with CellMarker2.0.

Results A total of 74 cell extrusion-related genes that interacted with PIEZO1 were selected using STRING database for evaluation in scRNAseq data from 52 IPF and 48 control lung tissues. Epithelial cell types showed six upregulated genes (RHOB, TRPV4, ACTN1, EGFR, PLXNB1, IL18) and seven downregulated genes (NAIP, CAV1, ARHGEF1, EFNA1, TSPAN5, PIEZO2, TRAF6). AT2 cells showed robust upregulation of RHOB (p=2.19E-07) and TRPV4 (p=4.36E-05), downregulation in CAV1 (p=1.75E-06), ARHGEF1 (p=1.349E-3) and EFNA1 (p=2.017E-03). Basal cells showed upregulation in TRPV4 (p=3.767E-03), ACTN1 (p=8.22E-05), EGFR (p=4.26E-07), PLXN1 (p=1.31E-05) and IL18 (p=1.002E-03). A downregulation of TRAF6 was observed in dividing cells (p=4.742E-03).

Conclusion Using PIEZO1 as a hub gene, a restricted set of extrusion-related genes were found to be differentially expressed in IPF lung epithelial cells. Expression changes in the gene panel can be further utilised in the design of mechanistic studies to assess and validate the role of epithelial cell extrusion in IPF pathology.

P153 INSIGHTS INTO THE BIOLOGICAL MECHANISMS OF SIGNALS FROM A GENOME-WIDE ASSOCIATION STUDY OF SUSCEPTIBILITY TO IDIOPATHIC PULMONARY FIBROSIS USING ALTERNATIVE GENETIC MODELS

[1,2]T Hernandez-Beeftink, [1,2]D Chin, [3]L Donoghue, [1,2]B Guillen-Guio, [1,2]OC Leavy, [4]P Cullinan, [4]C Reynolds, [5]F Martinez, [6]I Noth, [7]HL Booth, [8]WA Fahy, [9,10]IP Hall, [11]SP Hart, [12]MR Hill, [13]N Hirani, [9,10]RB Hubbard, [14,15]TM Maher, [16]RJ McAnulty, [17]AB Millar, [18,19]PL Molyneaux, [20,21,22]V Navaratnam, [8]E Oballa, [23]H Parfrey, [9]G Saini, [9]I Sayers, [1,2]MD Tobin, [13]MKB Whyte, [24]A Adegunsoye, [25,26,27]C Flores, [28]N Kaminski, [6]SF Ma, [29]JM Oldham, [24]ME Strek, [30]Y Zhang, [31]TE Fingerlin, [32]DA Schwartz, [27,33,34]M Molina-Molina, [3]A Stockwell, [3]M Neighbors, [3]XR Sheng, [3]M McCarthy, [3]BL Yaspan, [4]RG Jenkins, [1,2]RJ Allen, [1,2]LV Wain. *[1]Department of Population Health Sciences, Leicester, UK*; *[2]NIHR Leicester Biomedical Research Centre, Leicester, UK*; *[3]Genentech, California, USA*; *[4]Imperial College London, London, UK*; *[5]Weill Cornell Medicine, New York, USA*; *[6]University of Virginia, Virginia, USA*; *[7]University College London Hospitals, London, UK*; *[8]GlaxoSmithKline, London, UK*; *[9]University of Nottingham, Nottingham, UK*; *[10]National Institute for Health Research, Nottingham Biomedical Research Centre, Nottingham, UK*; *[11]University of Hull, Hull, UK*; *[12]University of Oxford, Oxford, UK*; *[13]University of Edinburgh, Edinburgh, UK*; *[14]National Heart and Lung Institute, Imperial College London, London, UK*; *[15]Division of Pulmonary and Critical Care Medicine, University of Southern California, Los Angeles, USA*; *[16]University College London, London, UK*; *[17]University of Bristol, Bristol, UK*; *[18]National Institute for Health Research Respiratory Clinical Research Facility, Royal Brompton Hospital, London, UK*; *[19]National Heart and Lung Institute, Imperial College, London, UK*; *[20]Division of Epidemiology and Public Health, University of Nottingham, Nottingham, UK*; *[21]National Institute for Health Research, Nottingham Biomedical Research Centre, Nottingham University Hospitals NHS Trust, Nottingham, UK*; *[22]Queensland Lung Transplant Service, The Prince Charles Hospital, Brisbane, Australia*; *[23]Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK*; *[24]University of Chicago, Chicago, USA*; *[25]Research Unit, Hospital Universitario Nuestra Señora de Candelaria, Instituto de Investigación Sanitaria de Canarias, Santa Cruz de Tenerife, Spain*; *[26]Genomics Division, Instituto Tecnologico y de Energias Renovables, Granadilla, Spain*; *[27]Centro de Investigacion Biomedica en Red de Enfermedades Respiratorias (CIBERES), Instituto de Salud Carlos III, Madrid, Spain*; *[28]Yale School of Medicine, Connecticut, USA*; *[29]University of Michigan, Michigan, USA*; *[30]University of Pittsburgh, Pittsburgh, USA*; *[31]National Jewish Health, Colorado, USA*; *[32]University of Colorado Medicine, Colorado, USA*; *[33]Servei de Pneumologia, Laboratori de Pneumologia Experimental, Instituto de Investigación Biomédica de Bellvitge (IDIBELL) Barcelona, Spain*; *[34]Campus de Bellvitge, Universitat de Barcelona, Barcelona, Spain*

10.1136/thorax-2024-BTSabstracts.314

Introduction Idiopathic pulmonary fibrosis (IPF) is a rare progressive lung disease with limited treatment options and poor prognosis. Genome-wide association studies (GWAS) using additive genetic models which assumes an increase in risk for each copy of the coded allele, have identified multiple relevant genes. Since, the genetic variation of complex traits could also be influenced by non-additive effects, we performed association analyses using a dominant model, where one or more copies of the coded allele are sufficient to increase risk, and recessive model, where two copies are required to alter risk. Our previous GWAS comprising 5,159 IPF cases and 27,459 controls from seven independent studies revealed seven novel signals (five recessive, two dominant) that were not significant in the additive model.

Objective We analysed *in silico* the biological and functional implications of these novel signals.

Methods We queried several databases, including Genotype-Tissue Expression Project v8, and annotated variants with Variant Effect Predictor, to determine which IPF signals were associated with expression of nearby genes (eQTLs), and to assess their potential regulatory roles.

Results Two of the recessive signals were annotated as exonic within *PMF1* and *EPN3*, the latter as deleterious. Both signals also showed significant eQTL with their respective genes and overlapped with histone modifications indicative of enhancer/promoter sites and a DNase hypersensitivity peak in lung cell types. *PMF1* is involved in chromosome segregation, while *EPN3* is involved in endocytosis. The intronic variant in *ARHGEF7* was a significant eQTL for *ARHGEF7*, Rho-guanine nucleotide exchange factor 7, in tibial artery and overlapped with histone modifications in blood cells. An intergenic variant on chromosome 9 was a significant eQTL for *CNTNAP3*, a cell-cell adhesion gene, in brain tissue. The intergenic recessive variant (nearest gene: *CDS2*) and the two dominant signals (nearest genes: *CEACAM5* and *RPL38*) had no informative annotations.

Conclusions In-depth *in silico* analyses of genetic IPF signals have provided new functional insights into the biological mechanisms of IPF, highlighting the importance of chromosome segregation and cell-cell adhesion genes.

P154 EXPLORATION OF MITOCHONDRIAL-TARGETED HYDROGEN SULFIDE DONORS AS NOVEL THERAPEUTICS FOR FIBROPROLIFERATIVE LUNG DISEASE

X Dun, R Torregrossa, M Whiteman, C Scotton. *University of Exeter, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.315

Pulmonary fibrosis is a disease of ageing, associated with mitochondrial dysfunction and cellular senescence. Recently, hydrogen sulfide (H_2S) was identified as the third known gasotransmitter, alongside nitric oxide and carbon monoxide. It is an endogenously synthesised mediator, generated enzymatically by the cytosolic enzymes cystathionine-β-synthase (CBS), cystathionine-γ-lyase (CSE) and by the predominantly mitochondrial enzyme 3-mercaptopyruvate sulfurtransferase (3MST). H2S levels are reported to be lower in pulmonary fibrosis, asthma and COPD. Evidence is increasing that H_2S administration may have beneficial impact on metabolic processes, mitochondrial function, oxidative stress, RNA splicing, inflammation and apoptosis – all mechanisms which contribute to lung, liver, cardiac and kidney fibrosis. We are studying if fibroproliferative lung disease is a condition of H_2S deficiency, which leads to or is mediated by mitochondrial dysfunction and cellular senescence. Human lung scRNA-seq data analysis revealed that the expression of CBS, CSE and 3MST were down-regulated in epithelium, fibroblasts, myofibroblasts and macrophages in IPF lung tissue. We used novel mitochondrial-targeted H_2S donors to target the key hallmarks of pulmonary fibrosis and study H_2S as a senotherapeutic in the context of pulmonary fibrosis. Seahorse XF Cell Mito Stress assay demonstrated that H_2S could improve mitochondrial function of senescent human primary lung fibroblasts. H_2S donors can modify mitochondrial morphology, enhance epithelial barrier integrity and attenuate collagen production. Further investigation will be carried out in order to understand the molecular mechanism of H_2S action using both in vitro and ex vivo approaches with precision cut lung slices.

'A Fine Balance' – Lung cancer screening

P155 INTEROBSERVER VARIABILITY IN CAUSE OF DEATH IN A LUNG CANCER SCREENING TRIAL: A PILOT METHOD STUDY

[1]DO Cheng, [1]CR Khaw, [1]A Bhamani, [1]R Prendecki, [1]P Verghese, [1]A Creamer, [2]M Mullin, [1]H Hall, [1]JL Dickson, [1]C Horst, [1]S Tisi, [3]K Gyertson, [4]A Hacker, [4]L Farrelly, [1]J McCabe, [3]A Nair, [1]J Jacob, [1]N Navani, [4]A Hackshaw, [1]SM Janes. *[1]University College London, London, UK; [2]University of British Columbia, Vancouver, Canada; [3]University College London Hospitals NHS Foundation Trust, London, UK; [4]CRUK and UCL Cancer Trials Centre, London, UK*

10.1136/thorax-2024-BTSabstracts.316

Background A reliable process to determine cause of death (CoD) is important in the context of lung cancer screening trials to differentiate between all-cause and lung cancer related mortality. Previous lung cancer screening trials have used independent expert reviewers to report a consensus. Here, we adapt this method for a large lung cancer screening trial and report the interobserver agreement for CoD, and the agreement with death certificates.

Methods Patients diagnosed with cancer following baseline at lung cancer screen in the SUMMIT study (NCT03934866) who had died were selected sequentially. Two observers (respiratory registrars with minimum 4 years specialty training) independently conducted review of available clinical notes, including pathology reports, radiology reports, and blood results to determine lung cancer related CoD. Deaths were classed as 'Definitely', 'Probable', 'Possible', 'Unlikely', 'Definitely Not', and 'Contributory to other CoD' (adapted from[1]). After consensus review, the final rating was compared to medical certificates of cause of death, where CoD was classed as lung cancer related if lung cancer was listed in 1(a), 1(b) or 1 (c).

Results Thirty-nine patients were included, who had a mean age of 69 and were 51% male. Most cancers were stage 1 at diagnosis (51%), with the next most common being stage 3 (31%). Overall agreement between reviewers was moderate (table 1). When 'definitely' and 'probable' were combined as lung cancer related deaths, and all other categories as non-lung cancer related death, agreement was excellent (κ=0.84). At review, 5/39 cases had disagreement between observers and were resolved by consensus. Agreement between reviewers and the death certificates was moderate (κ=0.54). The methods had agreement in 19/39 cases, and an equal number of lung cancer related deaths (23/39).

Conclusion Independent blinded review to determine cause of death has excellent interobserver agreement. Robust definitions of lung cancer related mortality are important for trial endpoints. Independent cause of death review may provide more consistent definitions of lung cancer related death than death certificates.

Abstract P155 Table 1 Interobserver agreement for lung cancer related cause of death

Lung cancer death	Reviewer 1	Reviewer 2	Agreement
	N = 39 (%)	N = 39 (%)	κ
Definitely or probable	24 (62)	21 (54)	0.84
- Definitely	11 (28)	11 (28)	0.37
- Probable	13 (33)	10 (26)	0.57
Possible	1 (3)	0	-
Unlikely	7 (18)	4 (10)	0.61
Definitely not	5 (13)	7 (18)	0.48
Contributory to other CoD	2 (5)	7 (18)	0.20

REFERENCE

1. Horeweg Nanda, *et al.* 'Blinded and uniform cause of death verification in a lung cancer CT screening trial.' *Lung Cancer* 2012;**77**(3):522–525.

P156 ASSESSING THE IMPACT OF AN EDUCATIONAL INTERVENTION ON PRIORITISATION OF CT REPORTING IN LUNG CANCER SCREENING

[1]K Desai, [1]L Anandan, [2]SB Naidu, [2]A Bhamani, [2]T Patrick, [1]S Coe, [1]A Nair, [1]S Patel, [1]R Thakrar, [2]N Navani, [2]S Janes. *[1]University College London Hospital NHS Foundation Trust, London, UK; [2]Lungs for Living Respiratory, University College London, London, UK*

10.1136/thorax-2024-BTSabstracts.317

Introduction Low-dose computed tomography (LDCT) screening reduces lung cancer-related mortality. The national standard for participants to receive results is four weeks. Timely reporting of abnormal scans is essential to avoid diagnostic delays. In our Targeted Lung Health Check (TLHC) programme, radiographers prioritised scans for reporting if they identified an abnormality at the time of scanning. We assess the impact of an educational intervention for radiographers on outcomes.

Methods Radiographers were first able to prioritise scans on 18th May 2023. Participants with a LDCT from then to 14th December 2023 were included in pre-teaching analysis (group A). Consultant thoracic radiologist-led teaching for radiographers occurred on 14th December 2023. Post-teaching analysis included participants with a LDCT prioritised from then until 17th April 2024 (group B). Data on time from LDCT to report, scan outcomes and consistency between reason for prioritisation and abnormality detected by the reporting radiologist were collected.

Results 307/6328 (4.85%) LDCTs were prioritised. Following teaching, more CTs were prioritised [A - 119/4099 (2.9%)vs B - 188/2229 (8.4%), p<0.001] with similar mean time from prioritised LDCT to report (A – 3.5 days vs B - 3.65 days, p=0.82). Documenting the reason for prioritisation improved following teaching (A – 95/119 (79.8%) vs B – 187/188 (99.5%), p<0.001).

Concordance between the radiographer's reason for prioritisation and the abnormality detected by the reporting radiologist did not change post-teaching (A – 56/119 (47.1%) vs B – 97/188 (51.6%), p=0.44). However, there was a significant improvement in the number of scans prioritised that were suspicious for lung cancer (A - 18/115 (15.7%) vs B - 20/62 (32.3%), p=0.01).

Pre-teaching, 5/18 (27.8%) participants with prioritised scans who were referred for findings suspicious of lung cancer were diagnosed with lung cancer, with a median time-to-diagnosis of 48.5 days. Post-teaching, 10/20 (50%) were diagnosed with lung cancer, with a median time-to-diagnosis of 39 days.

Conclusions Empowering radiographers to prioritise LDCTs in lung cancer screening has the potential to expedite the diagnostic pathway for participants with significant findings. Training staff improves documentation and prioritisation of scans with actionable outcomes, meaning participants with significant findings are referred earlier for investigation.

P157 MAXIMISING THE OPPORTUNITIES IN LUNG CANCER SCREENING: UPTAKE OF CONSENT TO CONTACT FOR RESEARCH

[1,2]T Patrick, [1,3]SB Naidu, [1]L Anandan, [1]K Desai, [1]V Marshman, [1]P Robinson, [1]S Patel, [1]A Nair, [1]R Thakrar, [1,3]N Navani, [2]JR Hurst, [1,3]SM Janes, [1,3]A Bhamani. *[1]University College London Hospitals NHS Foundation Trust, London, UK; [2]UCL Respiratory, University College London, London, UK; [3]Lungs for Living Research Centre, University College London, London, UK*

10.1136/thorax-2024-BTSabstracts.318

Introduction Low-Dose CT (LDCT) screening reduces lung cancer mortality. However, the benefits of Lung Cancer Screening (LCS) can be extended, for example, by offering individuals the opportunity to participate in research. We investigated the proportion and characteristics of individuals willing to be approached about research participation in our Targeted Lung Health Check programme.

Methods In our programme, eligible individuals as assessed in an initial telephone questionnaire proceed to a face-to-face lung health check and LDCT. An additional question for eligible individuals ('Are you happy to be approached by a member of our research team about participating in research?') was introduced on 4th December 2023. All individuals subsequently completing a telephone questionnaire up to 20th May 2024 were included in this analysis.

Results 1708/3095 (55.2%) individuals consented to being approached about participating in research. Of these, 1068 (62.5%) were male, 746 (43.7%) were current smokers and 1380 (80.8%) were of white ethnicity. Multivariable binary logistic regression analysis (table 1) showed that the factors associated with an increased likelihood of agreeing to research contact were: personal cancer history (aOR 1.39 (95% confidence interval (CI) 1.15–1.69)) and exposure to asbestos (aOR 1.63 (95%CI 1.34–1.99)). Being Asian (aOR 0.56 (95%CI 0.44–0.72)), having fewer years of formal education (finished education aged 15 or less aOR 0.44 (95%CI 0.33–0.60)) and a self-reported medical history of COPD (aOR 0.83 (95%CI 0.69–0.99) were associated with a reduced likelihood of consenting to research contact.

Discussion Increasing public participation in research is important and part of the current NHS Long Term Plan.[1] The majority of individuals undergoing LCS consented to be approached about research. However, groups already underrepresented in research were less likely to consent. Future studies should focus on increased diversity in research, potential benefits of which include increased public trust, promotion of fairness and improved generalisability of research findings.[2]

Abstract P157 Table 1 Multivariable binary logistic regression analysis of characteristics associated with agreeing to research contact

	All (n=3095)	Consented to research contact (n=1708)	Adjusted odds ratio (95%CI)	p-value
Age	66 (62-70)	66 (62-71)	1.00 (0.99-1.02)	0.84
Sex				
Female	1201 (38.8%)	640 (37.5%)	0.89 (0.76-1.04)	0.14
Male	1894 (61.2%)	1068 (62.5%)	1 (ref)	
Smoking status				
Former smoker	1729 (55.9%)	962 (56.3%)	1 (ref)	
Current smoker	1366 (44.1%)	746 (43.7%)	1.08 (0.92-1.27)	0.32
Ethnicity				
White	2424 (78.3%)	1380 (80.8%)	1 (ref)	
Asian	318 (10.3%)	138 (8.1%)	0.56 (0.44-0.72)	**<0.001**
Black	188 (6.1%)	97 (5.7%)	0.79 (0.58-1.07)	0.13
Mixed	68 (2.2%)	45 (2.6%)	1.00 (0.63-1.59)	1.00
Other	76 (2.5%)	44 (2.6%)	1.00 (0.63-1.61)	0.99
Prefer not to say	11 (0.4%)	4 (0.2%)	0.34 (0.10-1.21)	0.10
Education				
Further degree (Masters/PhD)	262 (8.5%)	177 (10.4%)	1 (ref)	
Bachelor's degree	540 (17.4%)	298 (17.4%)	0.60 (0.44-0.83)	**0.002**
Further education but no degree	374 (12.1%)	213 (12.5%)	0.61 (0.44-0.86)	**0.004**
A-levels	310 (10.0%)	184 (10.8%)	0.72 (0.51-1.02)	0.06
GCSE's	692 (22.4%)	393 (23.0%)	0.64 (0.47-0.88)	**0.004**
Finished school before 15	917 (29.6%)	443 (25.9%)	0.44 (0.33-0.60)	**<0.001**
Medical history				
Exposure to asbestos	561 (18.1%)	366 (21.4%)	1.63 (1.34-1.99)	**<0.001**
Personal history of cancer	556 (18.0%)	349 (20.4%)	1.39 (1.15-1.69)	**0.001**
COPD	679 (21.9%)	351 (20.6%)	0.83 (0.69-0.99)	**0.04**

REFERENCES

1. Hughes L. 2023. 'Creating an NHS for all: the importance of increasing public involvement in research'. NHS Accelerated Access Collaborative. Available at: https://www.england.nhs.uk/aac/2023/03/10/creating-an-nhs-for-all-the-importance-of-increasing-public-involvement-in-research/
2. Schwartz AL, *et al.* 'Why Diverse Clinical Trial Participation Matters', *New England Journal of Medicine*, 2023;**388**(14):252–1254.

P158 EXPLORING DIFFERENCES ACROSS AGE GROUPS IN THOSE DIAGNOSED WITH LUNG CANCER THROUGH THE TARGETED LUNG HEALTH CHECK

R Wollerton, C Pearce, B Probyn, O Mole, A Iyer, C Daneshvar. *University Hospitals Plymouth NHS Trust, Plymouth, UK*

10.1136/thorax-2024-BTSabstracts.319

Background The targeted lung health check (TLHC) programme uses the $PLCO_{m2012}$ prediction tool to identify those with a 6-year risk-threshold for lung cancer of 1.5% aged between 55 and 75 years. We reviewed the incidence and characteristics of those with lung cancer across age groups in our cohort over the first 21 months.

Methods All lung cancers diagnosed through the TLHC screening programme in the Peninsula Cancer Alliance served by the University Hospitals Plymouth NHS Trust were reviewed. Clinical data including cancer stage, treatment intent/modality, and performance status were recorded. Incidence was calculated by age group against those invited for a TLHC undergoing index low dose CT scanning. Proportional comparisons across groups by age were explored.

Results Between August 2022 and May 2024, 118 of 11,117 participants were diagnosed with lung cancer, giving an overall incidence of 1.16% (95%CI: 0.95–1.37%). Across age groups lung cancer incidence was in those aged: 55–59 years 0.94% (9/316); 60–64 years 1.1%(24/538); 65–70 years 1.25%(35/747); and those aged 70–75 years 1.19%(50/763). No significant differences across age was identified (p= 0.37).

Of those diagnosed with lung cancer, 105(89%) were treated with curative intent. Stage distribution did not vary

between age groups (p=0.331), and were in line with national figures – with Stage I/II diagnosed in 90(76%) patients and Stage IV in 11(9%) of patients. Treatment intent varied between 83–94% across age groups, but with no significant difference observed (p=0.774). Recorded performance status and likelihood of surgery was also consistent across age groups. The 60–64 year age group had the best performance status and highest rate of surgical treatment, whilst the 65–69 year age group had both the highest incidence and highest proportion of patients receiving radical treatment.

Discussion The incidence of lung cancer in our group was lower than the expected 1.5%, a consistent finding to date in the TLHC program and may reflect the $PLCO_{m2012}$ prediction tool underestimating the risk in deprived UK populations. We found no significant differences across age groups for the incidence, stage, or treatments. Extending the TLHC beyond 75 years of age, targeting individuals who retain a good performance status should be explored.

P159 LUNG FUNCTION IN THOSE WITH SUSPECTED LUNG CANCER: IS THERE A DIFFERENCE BETWEEN THOSE REFERRED VIA TLHC SCREENING AND THOSE REFERRED VIA OTHER METHODS?

VC Moore, K Alsabbagh, A Kan, A Harrison, JV Drought. *University Hospitals Coventry and Warwickshire, Coventry, UK*

10.1136/thorax-2024-BTSabstracts.320

Introduction Patients with suspected lung cancer reach Coventry and Warwickshire's lung cancer service either via the GP, other specialities (radiological findings/symptoms), or via the National Targeted Lung Health Check (TLHC) programme (currently offering lung screening including low dose CT to ever smokers aged 55–74 years). The aim of this study was to assess whether the patient's lung function differs between TLHC and other referral sources.

Methods Consecutive patients seen by the lung cancer team between April 2021 and June 2023 who had been requested to have spirometry, lung volumes and gas transfer were included. Demographic information and lung function parameters were collected. The percentage of patients with abnormal lung function was analysed separately for each parameter and Pearson's chi square used to assess abnormality differences between TLHC referral and other referral routes. T-Test, Mann-Whitney U and Pearson's/Spearman's correlation was also used with continuous variables.

Results 484 patients required lung function and 384 completed at least 1 of the tests (spirometry, gas transfer or static lung volumes). Of the 384, 40% were referred via TLHC. Mean BMI was 33, mean age was 67 years and the majority were females (54%). Patients had smoked for a mean of 45 pack years and 56% were not taking any form of inhaler. Table 1 shows the mean or median z-scores for each lung function parameter (FEV1/FVC ratio, FRC and RV were not normally distributed), the percentage of abnormal values for each parameter (z-score <-1.645 for spirometry and gas transfer or >1.645 for lung volumes) and significance for those seen via a TLHC referral compared to other referral routes. Normal lung function was seen in 18%. Smoking pack years were significantly correlated with airflow obstruction, gas trapping, hyperinflation and reduced gas transfer.

Conclusion TLHC lung function had less spirometry abnormality, but more gas trapping. Gas transfer was similar in both groups. The higher prevalence of a reduced FEV1 in those referred by other sources may be a factor in patients presenting via this pathway.

Abstract P159 Table 1

Parameter	Mean z-score (SD) or Median (IQR) - TLHC referral	Mean z-score (SD) or Median (IQR) – Other referral	P value	% abnormal - TLHC referral	% abnormal- Other referral	P value
FEV1	-1.26 (1.20)	-1.55 (1.29)	0.027	34.9	47.8	0.012
FEV1/FVC ratio	-1.37 (1.79)	-1.26 (2.19)	0.743	52.0	60.3	0.105
FVC	-0.38 (1.14)	-0.73 (1.35)	0.01	15.1	24.5	0.028
TLCO	-1.23 (1.54)	-1.52 (1.59)	0.091	36.6	48.3	0.073
KCO	-1.38 (1.57)	-1.18 (1.53)	0.240	43.4	40.0	0.519
TLC	1.01 (1.27)	0.14 (1.55)	<0.001	29.9	29.0	0.862
FRC	1.04 (2.05)	0.46 (2.24)	0.004	32.8	33.5	0.900
RV	1.52 (2.49)	0.78 (2.29)	<0.001	46.7	34.9	0.033
RV/TLC ratio	1.07 (1.59)	0.89 (1.59)	0.320	33.6	39.2	0.296

P160 OPTIMISING MANAGEMENT OF THORACIC AORTIC DILATATION IDENTIFIED THROUGH LUNG CANCER SCREENING

[1]K Desai, [1]L Anandan, [2]S Kim, [3]SB Naidu, [3]T Patrick, [1]A Sirker, [1]A Nair, [1]S Patel, [1]R Thakrar, [3]N Navani, [3]S Janes, [3]A Bhamani. *[1]University College London Hospital NHS Foundation Trust, London, UK; [2]North Middlesex University Hospital NHS Trust, London, UK; [3]Lungs for Living Respiratory, University College London, London, UK*

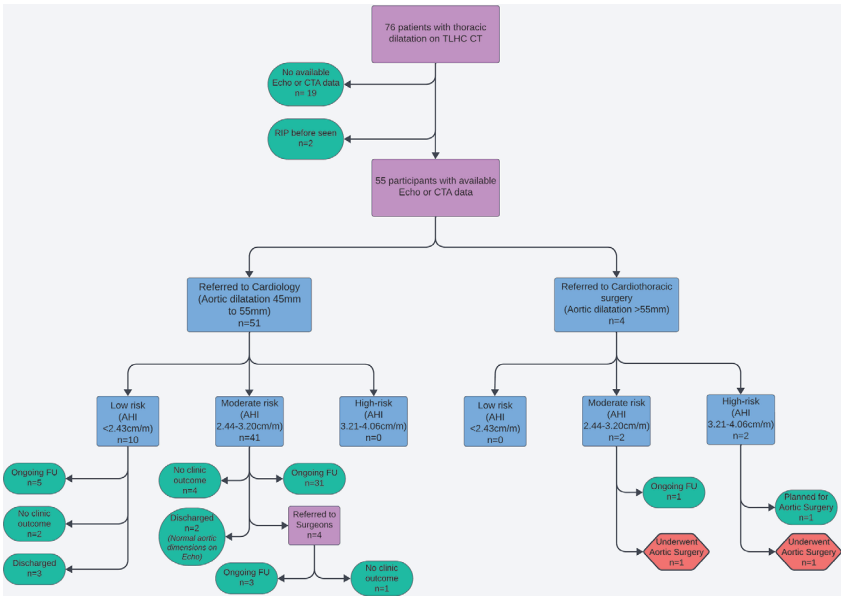
10.1136/thorax-2024-BTSabstracts.321

Introduction Risk factors for lung cancer overlap with aortic disease. National standards for Lung Cancer Screening (LCS) recommend that participants with thoracic aortic dilatation (TAD) >4cm on low-dose computed tomography (LDCT) are investigated. We evaluate the prevalence of TAD in our LCS population and the concordance of LDCT with cardiac investigations.

Methods All participants who underwent LDCT between 3rd January and 13th October 2023 and were referred to secondary care for incidental TAD were included. Pearson co-efficient (r) was calculated for correlation between LDCT, echocardiogram, and CT aortogram (CTA) measurements. Aortic height index (AHI) was calculated from LDCT to further risk-stratify patients.

Results 76/4747 (1.6%) participants had reported TAD (median 4.5cm (IQR 4.3–4.7)) (figure 1). 5/76 (6.6%) participants were referred directly to cardiothoracic surgeons due to TAD >5.5cm. 71/76 (93.4%) were referred to Cardiology for TAD 4–5.5cm. Follow-up data was unavailable for 27.6% (21/76), including two who died prior to review. 72.4% (55/76) were included for final analysis.

Individuals underwent investigation with echocardiogram (60%, n=33), CTA (9.1%, n=5), or both (30.9%, n=17). LDCT showed moderate correlation with echocardiogram (r=0.531), and high correlation with CTA (r=0.821). Echocardiogram had moderate correlation with CTA (r=0.577).



Abstract P160 Figure 1 Follow up of TLHC participants with thoracic aortic dilatation

Following investigation, surveillance was recommended for 37/55 (69.1%) participants. 4/55 (7.3%) were referred to surgeons by Cardiology, 5/55 (9.1%) were discharged. 6/55 (10.9%) had no available outcome.

When stratified by AHI, 10/55 (18.2%) participants were low-risk (AHI <2.43cm/m) and 43/55 (78.2%) were moderate-risk (AHI 2.44–3.20cm/m), both in whom radiographic surveillance is recommended. All low-risk participants were either discharged or kept under surveillance. 2/55 (4.7%) were high-risk (AHI 3.21 4.06cm/m) and underwent, or were planned for surgery.[1]

Conclusions LDCT measurements of TAD show high correlation with CTA, but moderate correlation with echocardiogram. This discrepancy may be due to variations in echocardiogram aortic measurements, whilst LDCT is more consistent. Risk-stratifying participants using AHI could avoid unnecessary referral for participants who could be monitored within programme, reducing burden on multi-disciplinary colleagues.

REFERENCE

1. Zafar, *et al.* Height alone, rather than body surface area, suffices for risk estimation in ascending aortic aneurysm. *JThorac CardiovascSurg*. 2018 May;**155** (5):1938–1950.

P161 RECRUITMENT FROM LUNG CANCER SCREENING TO A COPD CLINICAL TRIAL

[1]T Patrick, [2]A Aboelhassan, [3]M Parenti, [3]A Mugambwa, [3]J Moody, [3]N Voase, [3]A Macwan, [1]SB Naidu, [4,5]A Bhamani, [6]K Scully, [7]S Cano, [8]S Doffman, [9]MG Belvisi, [4,5]SM Janes, [1]JR Hurst. *[1]UCL Respiratory, University College London, London, UK; [2]Royal Free London NHS Foundation Trust, London, UK; [3]NIHR Royal Free Clinical Research Facility, London, UK; [4]University College London Hospitals NHS Foundation Trust, London, UK; [5]Lungs for Living Research Centre, UCL Respiratory, University College London, London, UK; [6]Clinical Operations, Site Management and Monitoring, Biopharma RandD, AstraZeneca, Luton, UK; [7]Clinical Development, Early Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Barcelona, Spain; [8]Clinical Development, Early Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK; [9]Research and Early Development, Respiratory and Immunology, BioPharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden*

Introduction Clinical trial recruitment in COPD is challenging for multiple reasons, including mismatch between location of COPD care and clinical trial expertise. Lung Cancer Screening (LCS) offers a way of reaching more patients who are already showing willingness to engage with healthcare. We report the response rate and characteristics of individuals with self-reported COPD invited to an interventional COPD trial through LCS.

Methods The SUMMIT LCS study (NCT03934866) used a screening questionnaire to determine lung cancer risk.

Abstract P161 Table 1 Characteristics of those who did and did not respond to clinical trial invitations

	Responded n=98	Did not respond n=374	p-value
Age (median, IQR)	67 (62-71)	67 (62-71)	0.73
Male	59 (60%)	208 (56%)	0.42
Smoking history			
Current smoker	46 (47%)	175 (47%)	0.98
Pack years (median, IQR)	45 (34-57)	47 (35-59)	0.85
Ethnicity			0.24
White	89 (90%)	337 (90%)	
Black	<5 (2%)	10 (3%)	
Asian	7 (7%)	14 (4%)	
Mixed	0 (0%)	10 (3%)	
Other	0 (0%)	<5(1%)	
Education status			<0.001
Finished school at or before 15	33 (34%)	195 (52%)*	
Completed GCSEs	20 (20%)	94 (25%)	
Completed A levels	13 (13%)	27 (7%)	
Further education but no degree	10 (10%)	22 (6%)	
Bachelor's degree	13 (13%)	28 (7%)	
Further degree (Masters/PhD)	9 (9%)*	8 (2%)	

*Bonferroni corrections p-value <0.05 for within group comparison

10.1136/thorax-2024-BTSabstracts.322

Questions included medical history of COPD, ethnicity, educational attainment and smoking status. Consent to contact for future research was included. Invitation letters were sent to individuals with COPD who met age, spirometry and BMI eligibility requirements of an interventional COPD trial. Individuals who were interested contacted the COPD clinical trial team by telephone or email and entered a pre-screening process.

Results 473 invitation letters were sent. 98 (21%) responses were received (84 by telephone and 14 by email). Table 1 shows differences in characteristics between those who did and did not respond. Educational attainment was significantly different. Individuals with the lowest educational attainment were less likely to respond.

Conclusions A significant proportion of individuals responded when invited to a COPD trial through LCS, which is encouragingly comparable to other methods of community recruitment.[1] Invitation through LCS is a novel and effective way of extending the reach of recruitment to COPD trials and should be considered in other diseases. However, the generalisability of findings and implementation of this recruitment mechanism in an NHS LCS programme require further research, with particular focus on increasing responses in individuals with lower educational attainment.

REFERENCE

1. Quint JK, *et al.* Recruitment of patients with Chronic Obstructive Pulmonary Disease (COPD) from the Clinical Practice Research Datalink (CPRD) for research. *NPJ Prim Care Respir Med*. 2018 Jun 19;**28**(1):21.

P162 INCIDENTAL INTERSTITIAL LUNG ABNORMALITIES IDENTIFIED WITHIN A LUNG CANCER SCREENING PROGRAMME: INITIAL EXPERIENCE WITHIN A PILOT UK SITE

J Naftel, E Hunter, B Marshall, R Limbrey, K Spinks, S Fletcher, J Shambrook, T Wallis, J Dunbar, M Jones. *University Hospital Southampton NHS Foundation Trust, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.323

Background In 2020, a Targeted Lung Health Check (TLHC) lung cancer screening pilot launched at our University hospital. Eligible patients (aged 55 to 74) identified at high-risk of lung cancer proceed to low-dose CT (LDCT) chest. In individuals undergoing a LDCT, a significant proportion have incidental findings including interstitial lung abnormalities (ILAs) generating onward referrals. Our aim was to evaluate the outcomes of those referred from screening to an interstitial lung disease (ILD) service.

Methods Retrospective analysis of patients referred to the local ILD service via the TLHC programme between August 2020-August 2023. This included patients with an ILA $\geq$5% lung volume affected or potentially clinically significant respiratory bronchiolitis-interstitial lung disease (RB-ILD). Electronic case notes were reviewed to ascertain patient demographics and outcomes.

Results Of 7307 patients undergoing LDCT, 2.4% (n=176) were referred to the ILD service (ILA n=126, RB-ILD n=50). Of those with an ILA, 64.3% (n=81) were male with a mean age of 71.0 years. 71.4% (n=90) were ex-smokers with a 41.0 mean pack year history. Baseline lung function was preserved (FEV1% predicted 92.3%, FVC% predicted 95%) whilst gas transfer was reduced (TLCO% predicted 69.6%). 11.9% (n=15) commenced anti-fibrotics and 2.4% (n=3) started immunosuppression. 0.8% (n=1) died, 24.6% (n=31) were discharged, 48.4% (n=61) remain under respiratory follow-up, 7.9% (n=10) were lost to or declined follow-up and 4.0% (n=5) are awaiting assessment.

Individuals with RB-ILD had a mean age of 66.4 years and 46.0% (n=23) were male. 76.0% (n=38) were current smokers with a 45.9 mean pack year history. Lung function testing identified obstructive spirometry (FEV1% predicted 86.5%, FVC% predicted 98.9%) with preserved gas transfer (TLCO% predicted 84.4%). 12% (n=6) remain under respiratory follow up, 74.0% (n=37) were discharged, and 14% (n=7) were lost to or declined follow-up.

Conclusion The TLHC programme generates a significant workload for ILD services but presents an opportunity for early disease intervention. Improved understanding of risk factors for ILA progression is required to better predict those at risk of progression requiring specialist review and follow-up.

P163 EXTENDING TLHC AGE LIMITS: A PATH TO MORE EARLY LUNG CANCER CURES?

[1,2]C Sprules, [1,2]L Searle, [1,3,4]N Davies, [1,3,4]A Nasimudeen, [1,3,4]M Kyi. [1]*Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust, Doncaster, UK*; [2]*Yorkshire and Humber Deanery, Leeds, UK*; [3]*Doncaster TLHC Programme, Doncaster, UK*; [4]*Bassetlaw TLHC Programme, Bassetlaw, UK*

10.1136/thorax-2024-BTSabstracts.324

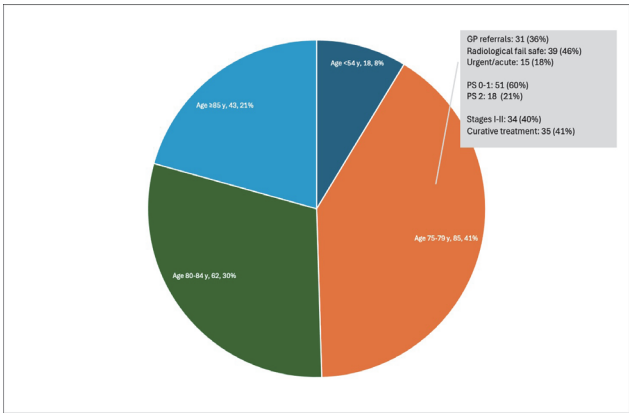
Introduction The Targeted Lung Health Check (TLHC) programme has been operational for over three years at one site and nearly two years at another in our institution. We diagnosed 242 lung cancers through the programme. However, a significant number of lung cancer cases continue to be diagnosed outside the TLHC programme: 345 out of 381 (91%) in 2021, 259 out of 377 (69%) in 2022, and 339 out of 410 (83%) in 2023.

In 2023, 310 of the 339 lung cancer diagnoses made outside the TLHC programme were non-small cell lung cancer (NSCLC) or presumed NSCLC. We previously reported on 102 patients who met the basic TLHC screening criteria (aged 55–75 and ever-smokers) but were not diagnosed through the programme. This study focuses on the remaining 208 patients diagnosed outside the programme in 2023.

Methodology We interrogated the trust lung cancer database for 2023. Missing data were redressed by review of primary source data: MDT outcomes and clinic letters.

Findings Among the 208 patients, 18 (8%) were aged under 54, 85 (41%) were 75–79, 62 (30%) were 80–84 and 43 (21%) were over 85. In the 75–79 age group, 87% were ever-smokers, 51 were of performance status (PS) 0–1, and 18 were of PS 2. Notably, 34 (40%) of this group were diagnosed at stages I-II. Most were referred through GP (31, 36%) or failsafe reports (39, 46%) rather than as emergencies (15, 18%). A majority (60 out of 69 with PS 0–2, 87%) presented with one or more red-flag symptoms, and 26 (31%) were current smokers. In the 75–79 age group, 35 (41%) received curative treatment (surgery or radical radiotherapy) and 27 (32%) received palliative oncology treatment, resulting in 62 (73%) receiving cancer treatment. (Figure 1)

Conclusion Extending the TLHC programme age criteria to 79, coupled with an integrated smoking cessation programme, may enable more early-stage curative treatments for lung cancer. Additionally, continuing to raise public awareness of lung



Abstract P163 Figure 1

cancer symptoms and the importance of early medical attention is crucial alongside the TLHC programme, given the symptomatic presentations.

P164 ASSESSING THE PROGRESSION OF INTERSTITIAL LUNG ABNORMALITIES ON CT

[1,2]U Sivakumar, [3,4,5,6]RJ Hewitt, [3,4]PM George, [1,2]EC Bartlett, [2,7]JL Garner, [2,7]LT Chan, [1,4,2]A Devaraj. *[1]Department of Radiology, Royal Brompton and Harefield Hospitals, London, UK; [2]National Heart and Lung Institute, Imperial College London, London, UK; [3]Interstitial Lung Disease Unit, Royal Brompton and Harefield Hospital, London, UK; [4]The Margaret Turner Warwick Centre for Fibrosing Lung Diseases, NHLI, Imperial College London, London, UK; [5]King's Centre for Lung Health, London, UK; [6]School of Immunology and Microbial Sciences, Faculty of Life Sciences and Medicine, King's College London, London, UK; [7]Department of Lung Cancer and Interventional Bronchoscopy, Royal Brompton Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.325

Background Interstitial lung abnormalities (ILA) are incidental CT findings compatible with or which can potentially progress to interstitial lung disease[1]. High attenuation areas (HAA) are regions of lung with greater density autonomously quantified on CT, which are associated with physiological decline and show potential as a quantifiable metric of ILA progression.[1] This study explored the prevalence of ILA progression in a lung cancer screening predominant cohort and association of Forced Vital Capacity (FVC) change with visually assessed disease progression and automated HAA analysis.

Methods This retrospective cohort study identified participants with ILA from a lung cancer screening pilot and a ILD clinic. Participants underwent serial CT and lung function tests as part of work up following referral. A consultant thoracic radiologist visually evaluated serial CT for disease progression. Syngo.via Pulmo3D software was used to autonomously quantify HAA within an attenuation range of -600 and -250 Hounsfield units. 40 participants with ILA met the inclusion criteria.

Results Following a median observation period of 40.5 months, 9/40(22.5%) participants exhibited unequivocal ILA progression on CT from visual assessment and 31(77.5%) demonstrated stable disease. Progressors exhibited decline across all measures of FVC change (absolute and relative change in FVC predicted (%) and relative change of FVC in litres (%)) whereas non-progressors experienced improvement. Absolute change in FVC predicted (%) demonstrated a weak inverse relationship with HAA change (%) (p = 0.036, r = -0.332). Progressors defined visually exhibited greater HAA increase compared to non-progressors (p = < 0.001). Cases that experienced â©¾ 10% relative decline in FVC in litres (%) exhibited greater HAA increase on average compared to cases with <10% decline (p = 0.0089).

Conclusion Lung function decline is a feature of unequivocal progression of ILA determined through visual assessment of CT. Clinically relevant physiological decline was associated with disease progression based on autonomously assessed HAA change. These findings highlight the importance of surveillance for identifying patients with ILA progression with associated physiological decline.

REFERENCE

1. Hatabu H, *et al.* Interstitial lung abnormalities detected incidentally on CT: a position paper from the fleischner society. *LancetRespi Med* 2020;**8**:726–737.

P165 OUTCOMES OF A HOSPITAL-BASED INVESTIGATIVE PATHWAY FOR EMPHYSEMA INCIDENTALLY IDENTIFIED THROUGH A LUNG CANCER SCREENING PROGRAMME IN THE UK

[1]T Macdonald, [1]H Greetham, [1]C O'Leary, [1]B Green, [1]D Neville, [1]A Wallis, [1]P McParland, [1]S Ramachandraiah, [2]A Hughes, [1]A Hicks. *[1]Portsmouth Hospitals University NHS Trust, Portsmouth, UK; [2]Solent NHS Trust, Portsmouth, UK*

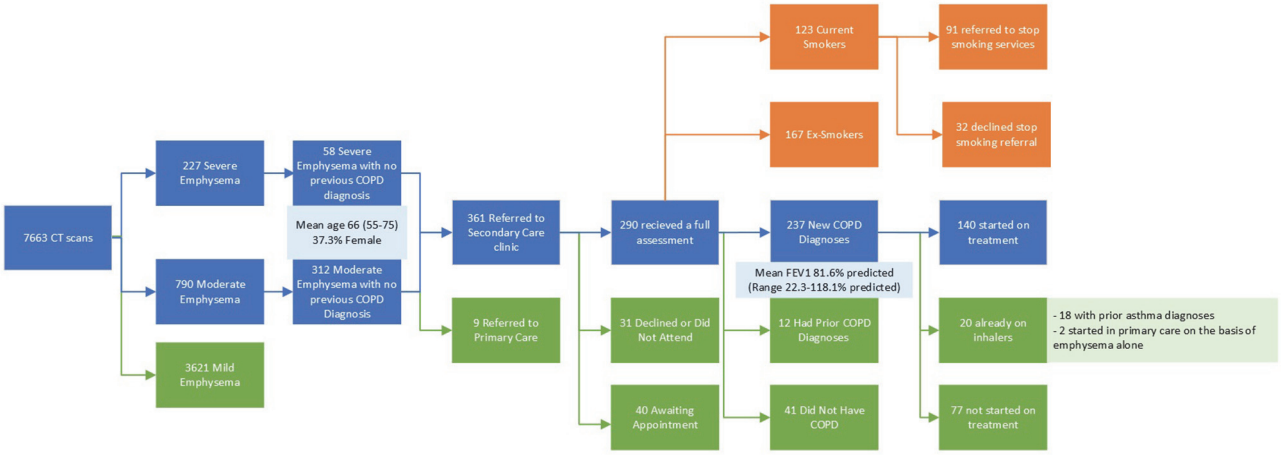
10.1136/thorax-2024-BTSabstracts.326

Background Lung cancer screening by the targeted lung health check (TLHC) program not only offers the potential for early cancer diagnosis but can also identify additional findings that may require management, including emphysema. As the screening programmes extend throughout England, managing these incidental findings could be perceived as a challenge for the healthcare system.

Some services prioritise review of patients with newly-identified emphysema by MRC scoring. Here we report outcomes from a TLHC where all CT scans are reviewed by a chest radiologist and, if emphysema is identified, it is classified as mild, moderate or severe based on the visual extent of disease (<25%, 25–50%, and >50% respectively). Patients with emphysema but without a pre-existing diagnosis of COPD are referred for further investigation – those with mild emphysema to primary care and those with moderate and severe emphysema to secondary care including post-bronchodilator spirometry.

Methods We retrospectively assessed the number of patients with newly identified moderate or severe emphysema from our TLHC and recorded their spirometry results, whether a diagnosis of COPD was made, their smoking status and whether a referral was made to the stop smoking service or COPD treatment commenced.

Results Our trust has had a TLHC programme since April 2022. After screening of an eligible population of ~24000, 7663 have had CT scans. 1017 of 7663 participants were identified as having moderate or severe COPD on their CT. 370 of these did not have a pre-existing COPD diagnosis and were referred onwards for assessment. Of 290 referrals to secondary care with moderate or severe emphysema who have completed assessment, 81.7% received a new diagnosis of COPD, with 59% of these starting on new inhaled treatment for symptoms. 42.4% were current smokers, all of whom



Abstract P165 Figure 1

were offered smoking cessation team referral with 74% accepting.

Discussion As lung cancer screening programmes become more widespread, services should be prepared to manage incidental emphysema diagnoses and seize the opportunity to optimise care for those patients affected. Visual classification of the extent of emphysema may be an effective method for objectively stratifying those most likely to be diagnosed with COPD and require treatment.

P166 THREE-MONTH FOLLOW-UP FOR CONSOLIDATION IDENTIFIED IN LUNG CANCER SCREENING

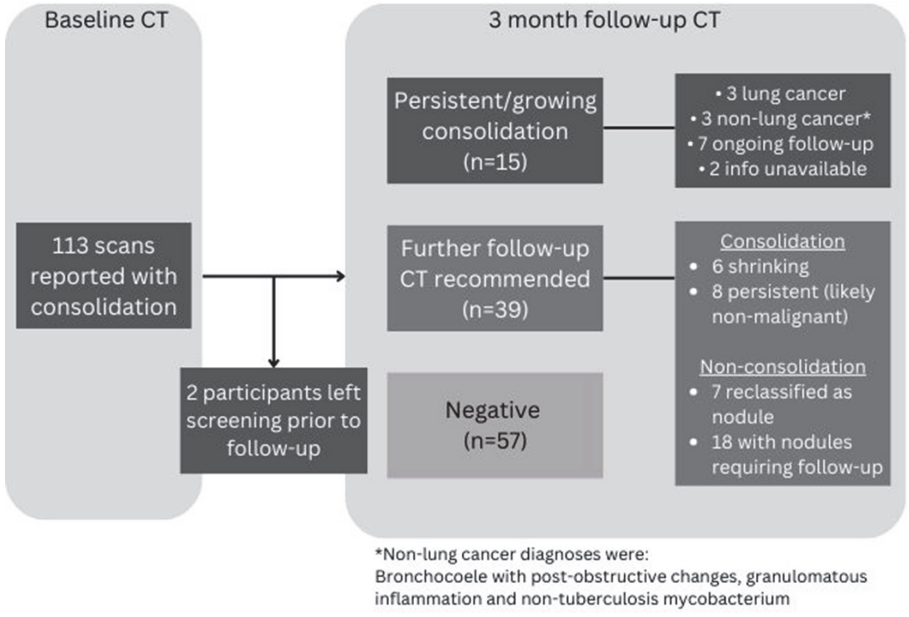
[1]SB Naidu, [1]T Patrick, [2]L Anandan, [2]K Desai, [2]A Nair, [2]S Patel, [2]V Marshman, [2]R Thakrar, [1]N Navani, [1]S Janes, [1]A Bhamani. *[1]Lungs for Living Respiratory, University College London and University College London Hospital NHS Foundation Trust, London, UK; [2]University College London Hospital NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.327

Introduction Persistent consolidation may be consistent with lung cancer. In line with follow-up recommendations for indeterminate pulmonary nodules, the Targeted Lung Health Check (TLHC) programme recommends that inflammatory-appearing consolidation is followed up with three-month interval low dose computed tomography (LDCT). The need to assess outcomes of such protocols has recently been highlighted.[1]

Methods We identified participants in our regional TLHC programme who completed a baseline LDCT between 7/12/2022 and 31/1/2024 and who required three-month interval LDCT primarily for consolidation. Following three-month LDCT, individuals with persistent/growing consolidation (as defined by increasing diameter) were referred to local lung cancer MDT for further assessment. Where multiple foci of consolidation were present, the largest lesion was used for reference.

Results 113/6708 (1.68%) participants who completed a baseline LDCT were identified as having a focus of consolidation.



Abstract P166 Figure 1 Follow-up LDCT outcomes for participants in our regional programme

111/113 (98.2%) completed follow-up LDCT at a median interval of 91 days (IQR 91–100) (figure 1). 15/111 (13.5%) required lung cancer MDT referral, 14 of whom had persistent/growing consolidation. 3/15 (20%) were subsequently diagnosed with lung cancer; all of these were stage I. 7/15 (46.7%) remain under surveillance with their local hospital. 3/15 (20%) have had non-cancer diagnoses. 39/111 (35.1%) inflammatory lesions were designated for further follow-up. Further in-programme interval LDCT was recommended for six participants with shrinking consolidation, and eight with persistent consolidation where the radiologist felt this represented non-malignant pathology e.g. scarring; none have subsequently been diagnosed with lung cancer. 7/39 (17.9%) were reclassified as pulmonary nodules on interval LDCT. 18/39 (46.2%) had shrinking/resolved consolidation but required further surveillance due to other pulmonary nodules. 57/111 (51.4%) no longer require further LDCT follow-up.

Discussion In our cohort, participants with consolidation were safely followed up with three-month interval LDCT. All three individuals subsequently diagnosed with lung cancer had stage I disease. Our findings suggest the current national protocol is efficient, pragmatic and safe.

REFERENCE

1. O'Dowd EL, Tietzova I, Bartlett E, *et al.* ERS/ESTS/ESTRO/ESR/ESTI/EFOMP statement on management of incidental findings from low dose CT screening for lung cancer. *Eur Respir J* 2023;**62**:2300533. doi:10.1183/13993003.00533-2023.

Abstract P167 Table 1 Summary data of patients identified with a lung cancer diagnosis via an emergency admission from Infoflex data and electronic patient record. LC- lung cancer; LCED- Lung Cancer diagnosed at emergency admission; PS – performance status at initial lung cancer multidisciplinary team meeting

Patients identified as an emergency admission (/total number of LC diagnoses)	100/297 (34%)
LCED smokers or ex smokers aged 55–74	40 (40%)
LCED Male patients	52 (52%)
LCED stage I	17 (17%)
LCED Stage II	4 (4%)
LCED stage III	22 (22%)
LCED Stage IV	55 (55%)
LCED patients deceased	70 (70%)
LCED patients age >74	52 (52%)
LCED patients aged <55	8 (8%)
LCED PS 0	15 (15%)
LCED PS 1	24 (24%)
LCED PS 2	21 (21%)
LCED PS 3	29 (29%)
LCED PS 4	7 (7%)
LCED PS 5	4 (4%)

P167 LUNG CANCER DIAGNOSIS AT EMERGENCY ADMISSION: WILL TLHC HELP?

RL Johnson, A Moore, A Talwar, J Park. *Oxford Universities NHS Foundation Trust, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.328

Introduction 30 - 35% of patients diagnosed with lung cancer in England presented as emergency admissions (LCED) in 2023 and 2024.[1] This is associated with poorer outcomes. With the introduction of targeted lung health checks (TLHC), it is hoped that the proportion of LCED will fall, improving prognosis and reducing costly emergency admissions.

We sought to determine whether local LCED would have been identified within the targeted lung health check programme, hence avoiding emergency admissions.

Methods We identified patients diagnosed with lung cancer in 2021 at our trust via the Infoflex database. The electronic patient record was then reviewed for each patient to determine method of presentation. We also recorded additional parameters including ethnicity, postcode, stage, performance status (PS) at diagnosis, pathology and death.

Results Of the 297 lung cancer diagnoses identified in 2021, 100 of those presented as an emergency (33%, table 1). 40 of the 100 (40%) were current or previous smokers between the ages of 55 and 74 and hence could have been identified by TLHC. Stage at LCED varied between IA -IVB, with median stage of IVA. 24 (24%) did not have an ethnicity recorded. The commonest histopathology was adenocarcinoma (45%).

56 LCED patients (55%) clustered within 6 postcodes (total 23 postcodes); these postcodes are associated with areas of highest deprivation and hence are likely to have been targeted by TLHC.

Conclusion As expected, the majority of LCED present at stage III-IV (77%). Whilst 40% of patients could have been identified via TLHC, the majority might not have been. This highlights, despite TLHC rollout, the importance of improving detection of symptomatic lung cancer earlier, prior to emergency admission, particularly in a more elderly population. Unsurprisingly the majority of LCED patients lived in postcodes of higher socioeconomic deprivation. Ethnicity data was poorly recorded and requires improvement to help further target aspects of health inequalities. These data will help direct local awareness campaigns.

REFERENCE

1. NLCA State of the Nation Report 2024 and 2023. https://www.lungcanceraudit.org.uk/wp-content/uploads

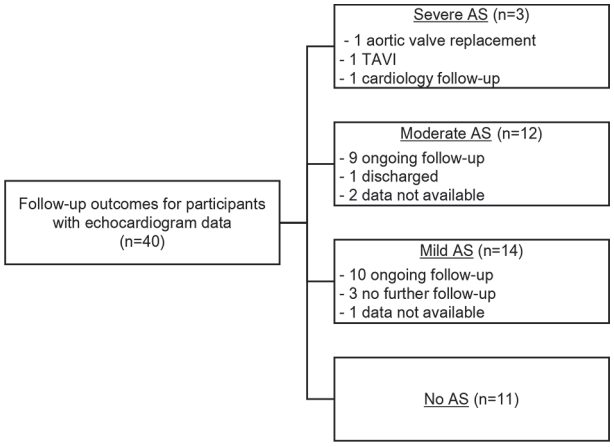
P168 OUTCOMES FOR INDIVIDUALS WITH AORTIC VALVE CALCIFICATION INCIDENTALLY IDENTIFIED DURING LUNG CANCER SCREENING

[1]SB Naidu, [1]T Patrick, [2]L Anandan, [2]K Desai, [3]C Jacklin, [2]A Nair, [2]S Patel, [2]V Marshman, [2]R Thakrar, [2]A Sirker, [1]N Navani, [1]S Janes, [1]A Bhamani. *[1]Lungs for Living Respiratory, University College London and University College London Hospital NHS Foundation Trust, London, UK; [2]University College London Hospital NHS Foundation Trust, London, UK; [3]North Middlesex University Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.329

Introduction Optimising the management of incidental findings such as aortic valve calcification is important for the implementation of lung cancer screening (LCS) nationally to ensure that only findings with clinical implications are acted upon.

Aortic valve calcification is associated with aortic stenosis (AS). NICE guidelines recommend individuals with moderate-severe AS be referred to a specialist and symptomatic individuals with severe AS be considered for further intervention. We aimed to understand outcomes of participants incidentally found to have aortic valve calcification.



Abstract P168 Figure 1 Follow-up outcomes for participants with aortic stenosis (AS)

Methods Until 06/09/2023, participants in our regional LCS programme with screen-detected moderate aortic valve calcification (i.e. involving more than one cusp) on LCS low-dose computed tomography (LDCT) were directly referred to cardiology for further assessment. We collected demographic, symptom and outcome data (including echocardiogram findings) for these participants.

Results 55/4170 (1.3%) participants completing LCS LDCT had at least moderate aortic valve calcification. Their median age was 70 (IQR 67–73) and 49/55 (89.1%) were male. 7 (12.7%) had significant breathlessness (mMRC≥2), of whom 5/7 (71.4%) had co-existing respiratory comorbidities. 33 (60%) had at least moderate coronary artery calcification on LDCT.

Echocardiogram data were unavailable for 15 participants for reasons including rejection of referral, inaccessible electronic records and missed appointments.

Of the remaining 40 participants, mean time to echocardiogram was 115.7 days (SD 86.5).

3 (7.5%) participants had severe AS, 12 (30.0%) participants had moderate, 14 (35.0%) mild and 11 (27.5%) no AS on echocardiogram. Amongst participants with at least moderate AS, none had significant breathlessness and 6/15 (40.0%) had moderate-severe coronary artery calcification.

Follow-up outcomes were available for 37/40 participants (figure 1). Of three participants with severe AS, two subsequently had an aortic valve intervention. Ongoing follow-up in primary or secondary care, usually with echocardiogram, was recommended for most of the remaining participants (25/35, 71.4%).

Discussion In our cohort, the prevalence of moderate-severe AS amongst individuals with aortic valve calcification was 37.5%. None of these participants had significant breathlessness.

Most participants with screen-detected aortic valve calcification require ongoing follow-up. This should be considered when planning pathways for the management of incidental findings in the context of a national LCS programme.

'Coming up for Air' – Severe asthma, from pollution to service delivery

P169 ESMENA: A PATIENT-CENTRED EDUCATION PROGRAMME FOR IMPROVING ASTHMA CONTROL

L Wiffen, T Brown, R Harvey, R De Vos, J Micklam, A Munns, M Chauhan, L DCruz, AJ Chauhan. *Portsmouth Hospitals University NHS Trust, Portsmouth, UK*

10.1136/thorax-2024-BTSabstracts.330

Background and Objectives Poor asthma control leads to high symptom burden, impaired quality of life, and frequent exacerbations. Effective self-management requires patient understanding and empowerment, yet there is limited provision of patient-centred asthma education in the UK. ESMENA, a multidisciplinary team intervention, was developed to provide comprehensive education for patients with poorly controlled asthma, aiming to improve asthma control and self-management skills.

Methods Adults referred to the asthma clinic with persistent poor control despite moderate/high-dose ICS and additional controller therapy were invited to participate in ESMENA. The programme consisted of a 4-hour face-to-face session covering asthma science, treatments, inhaler technique, comorbidities, and personalised action plans. Participants also had access to an online portal with summary videos. Asthma control, healthcare utilisation, quality of life, lung function, and T2 biomarkers were measured at baseline, 6, and 12 months. Patient feedback and confidence measures were also collected.

Results 57 patients attended ESEMENA sessions between May and November 2022, with 51 completing 12-month follow-up. The cohort had a mean age of 57.7 years (SD 13.2), was predominantly female (78%), and had a mean BMI of 30.4 (SD 6.4). At baseline, 61% were on high-dose ICS. Thirteen patients (25%) were escalated to biologic therapy during follow-up. Significant improvements were observed in asthma control, quality of life, exacerbation frequency, emergency

Abstract P169 Table 1 Key outcomes at baseline and 12 months post-ESMENA (excluding patients on biologics)

Outcome	Baseline	12 months post	p-value
ACQ6	2.09 [1.0 – 2.67]	1.33 [0.54 – 1.96]	0.007
Mini AQLQ (total)	4.4 [3.17 – 5.18]	5.33 [4.25 – 5.98]	<0.001
OCS courses	2 [1 – 4]	1 [0 – 2]	<0.001
≥3 Exacerbations (%)	39%	16%	0.01
ED attendances	0 [0 – 1]	0 [0 – 0]	0.01
Hospital admissions	0 [0 – 1]	0 [0 – 0]	0.03
≥1 hospital admissions (%)	32%	8%	0.002
FEV1 (% pred)	91 [75 – 100]	87 [74 – 96]	ns
FEV1/FVC ratio (%)	73 [67 -77]	73 [66- 78]	ns
FeNO (ppb)	26 [18 – 52]	20 [17 – 40]	0.007
Blood eosinophil counts (x10^9/L)	0.2 [0.1 – 0.4]	0.2 [0.1 – 0.3]	0.04

Data presented as median [IQR] unless otherwise specified.

department attendances, and hospital admissions (table 1). T2 biomarkers also improved significantly. Patient feedback was positive, with improved confidence in understanding treatments and self-managing symptoms.

Conclusions ESMENA demonstrated the value of a comprehensive asthma education programme delivered as part of routine clinical care. The intervention facilitated rapid access to biologic therapy for 25% of patients, while significant benefits were observed in the remaining 75% without further treatment escalation (table 1). Empowering patients with knowledge about their condition reduces the burden on emergency care providers and improves overall asthma management and patient confidence.

P170 DOES A DIGITISED REFERRAL FORM IMPROVE THE REFERRAL PATHWAY FOR PATIENTS WITH UNCONTROLLED ASTHMA?

S Prigmore, C Fitz-Avon, R Stone. *Musgrove Park Hospital, Somerset Foundation Trust, Taunton, UK*

10.1136/thorax-2024-BTSabstracts.331

Introduction and Objective Patients with uncontrolled asthma (UA) can experience delays when referred to specialist services, resulting in unnecessary symptom burden, inappropriate treatment and poorer outcomes. Delays are likely due to factors such as sub-optimal identification or understanding of severe asthma, inappropriate triage of referrals and 'bottlenecks' in general respiratory clinics, due to waiting times and lab capacity.

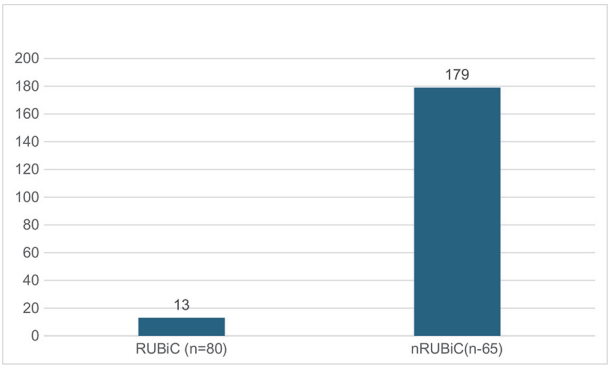
We wanted to test if a digitised referral form could improve the referral pathway in patients with UA.

Method Using quality improvement methodology, we have developed and trialled the Rapid Uptake of Biologic Checker ('RUBiC') referral form. RUBiC is designed for use in conjunction with asthma reviews in primary care, to expedite expert opinion from the severe asthma team (SAT) in patients with uncontrolled asthma. Practices were invited to trial RUBiC during asthma education sessions.

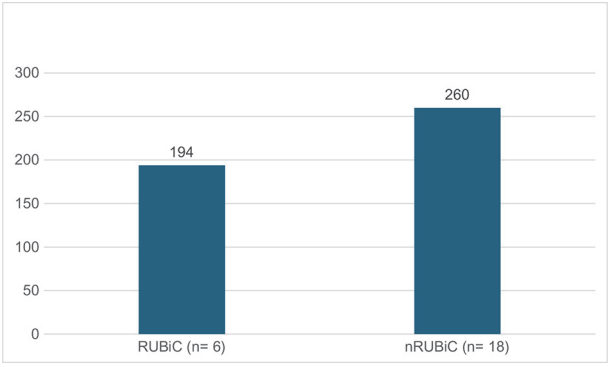
We compared the time from referral to discussion at the severe asthma multidisciplinary team meeting (SAMTM), and the time from referral to commencing biologic treatment when indicated,in RUBiC and non-RUBiC (nRUBiC) referrals.

Results Eighty RUBiC referrals were received from 14 GP Practices between Jan 2022- May 2024. Ten were returned to the referee due to incomplete or inappropriate referral. A further 7 were returned with advice and guidance, following discussion at the SAMTM. Sixty-three patients required further assessment and treatment optimisation. Six met the criteria for biologic therapy. The time to both SAMTM discussion and commencing biologic treatment was shorter for RUBiC referrals when compared with nRUBiC referrals (n= 65) presented for discussion at the SAMTM during the same period, (Graph 1 and 2).

Discussion RUBiC facilitates triage of patients with UA and potential severe asthma for further assessment by the SAT. It appears to streamline the severe asthma pathway, resulting in earlier access to the SAT and biologic therapy. The number of RUBiC forms returned to referrer highlight the need for better treatment optimisation in primary care and emphasises the importance of cross-system collaboration to support education, advice, and guidance.



Abstract 170 Graph 1 Median time from receipt of referral to MDT (days)



Abstract P170 Graph 2 Median time from receipt of referral to initation of biologics (days)

Conclusion RUBiC improves access to the SAT and reduces the time from referral to commencing biologics.

P171 THE ASSOCIATION BETWEEN 7-DAY HOSPITAL WORKING AND DELIVERY OF BEST PRACTICE IN ADULT ASTHMA CARE

[1]AJ Adamson, [2]J Dodd, [3]T Wilkinson, [1]J Quint. *[1]Imperial College London, London, UK; [2]University of Bristol, Bristol, UK; [3]University of Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.332

Introduction The 'weekend effect', whereby patients appear to have a higher risk of death if admitted on the weekend, has been demonstrated internationally.[1] Using National Respiratory Audit Programme (NRAP) data, we assess whether the 'weekend effect' applies to elements of asthma care received within hospital and whether hospitals implementing 7-day working provide best practice on the weekend.

Methodology NRAP is a continuous national audit in primary and secondary care across England and Wales to which hospitals submit clinical data on emergency admissions. This study used data from the 2022–23 adult asthma secondary care clinical and organisational audit. Patients were included if they were admitted with acute asthma to hospitals in England that had taken part in the organisational audit; could be linked with HES; were male or female; and were alive at discharge. Mixed effects logistic regression models with an interaction term between weekend admission/discharge and 7-day working were used to assess the relationship between 7-day working

for ST3 respiratory ward round or adult asthma nurse review and receipt of a respiratory specialist review (RSR) and discharge bundle.
Results 11,039 patients from 121 hospitals were included. 60/121 and 28/121 hospitals respectively reported 7-day respiratory ward round and adult asthma nurse review. Patients discharged (but not admitted) on the weekend from hospitals without 7-day working for respiratory ward round were less likely to receive a RSR (OR 0.44, 95%CI 0.37–0.53) and discharge bundle (OR 0.59, 95%CI 0.49–0.72) compared with patients discharged on a weekday. Patients discharged on the weekend from hospitals with 7-day working were more likely to receive RSR (OR 1.60, 95%CI 1.21–2.11) and discharge bundle (OR 1.32, 95%CI 1.01–1.72) than patients at hospitals without 7-day working. Patients discharged on the weekend from hospitals with 7-day adult asthma nurse review were more likely to receive a discharge bundle (OR 1.39, 95%CI 1.03–1.87) but not RSR (OR 1.25, 95%CI 0.91–1.73) than patients discharged from hospitals without 7-day working.
Conclusion 7-day working is associated with improved quality of care in adult asthma patients in England.

REFERENCE

1. Ruiz, *et al. BMJ Quality&Safety* 2015;**24**:492–504.

P172 VIDEO SUPPORTED SPIROMETRY IN SEVERE ASTHMA - ARE HIGH QUALITY REMOTE SESSIONS POSSIBLE?

[1]J Logan, [2]K Wetherall, [3]G Sowman, [3]F Keane, [3]J O'Keeffe, [3]J Ibarra, [3]H Wilson, [4]L Gillespie, [2]A McConnachie, [1]WTN Lee, [5]T Brown, [6]H Burhan, [7]R Kurukulaaratchy, [8]DJ Jackson, [9]P Patel, [10]S Faruqi, [11]D Saralaya, [12]SJ Fowler, [13]AH Mansur, [14]J Brown, [15]J Lordan, [16]S Siddiqui, [17]ID Pavord, [18]LG Heaney, [19]CE Brightling, [20]R Chaudhuri. *[1]Gartnavel General Hospital, Glasgow, UK; [2]Robertson Centre for Biostatistics, School of Health and Wellbeing, University of Glasgow, Glasgow, UK; [3]Vitalograph Ltd, Buckingham, UK; [4]NHS GGC Research and Innovation, Glasgow, UK; [5]Queen Alexandra Hospital, Portsmouth, UK; [6]Royal Liverpool University Hospital, Liverpool, UK; [7]University of Southampton, Southampton, UK; [8]School of Immunology and Microbial Sciences, Guy's Hospital, King's College London, London, UK; [9]Royal Brompton and Harefield Hospitals, London, UK; [10]Hull Royal Infirmary, Hull, UK; [11]NIHR National Patient recruitment Centre – Bradford, Bradford, UK; [12]University of Manchester, Manchester, UK; [13]Heartlands Hospital, Birmingham, UK; [14]Royal Free London NHS Foundation Trust, London, UK; [15]Freeman Hospital, Newcastle, UK; [16]Imperial College London, Royal Brompton and Hammersmith Hospitals, London, UK; [17]University of Oxford, Oxford, UK; [18]Queen's University Belfast, Belfast, UK; [19]University of Leicester, Leicester, UK; [20]University of Glasgow, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.333

Background The COVID-19 pandemic necessitated the inclusion of remote study procedures in clinical trials. Adaptations to the BenRex Study (Benralizumab Exacerbation Study) allowed for validation of video supported home spirometry against on-site face-to-face sessions in a cohort of patients with severe asthma.
Methods At screening, participants received a Micro spirometer [Vitalograph, Buckingham, UK] and education on its use. A spirometry session was performed on site with face-to-face coaching from study staff, followed by a remote spirometry session within 24 hours, with coaching over video link at 3 visits. All spirometry sessions had an over-read for quality assessment, by Respiratory Physiologists at Vitalograph, with grading as per the ATS-ERS 2019 Standardisation of Spirometry Guidelines. Statistical summaries were produced to compare the acceptability grade of FEV_1 and FVC at each session.
Results There were 245 sessions in total with clinic and off-site spirometry readings, from 112 subjects. An FEV_1 grade of A or B (as per ATS/ERS 2019 guidelines, suggestive of good quality spirometry) was achieved in 231 sessions (94.3%) conducted on-site and 222 (90.6%) conducted at home. An FVC grade of A or B was achieved in 216 sessions (88.2%) on-site and 212 (86.5%) conducted at home. For 214 sessions (87.3%), an equal or better grade for FEV_1 was achieved at remote session, compared to on site. An equal or greater FVC grade was achieved remotely at 216 (88.2%) sessions. Analysis into baseline characteristics of those unable to achieve good quality spirometry remotely is ongoing.
Discussion The results from the BenRex cohort suggest that there is a high level of reproducibility of technical quality for remote spirometry [FEV_1 and FVC] conducted via video coaching. This has implications for study design and may support remote decentralised asthma trials in populations limited by geographical or time constraints. Increased confidence in the quality of remote spirometry may also have implications for broader clinical practice.

P173 CLINICAL UTILITY OF SPUTUM CELL COUNT IN SEVERE ASTHMA

S Khan, S Gilbey, A Cass, H Stephens, J Shingler, A Pillai, AH Mansur. *University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.334

Background Sputum cell count can be used for phenotyping airway inflammation. However, its clinical use remains limited due to technical challenges and limited evidence for its role in severe asthma. At present, sputum analysis is predominantly used as a research tool. In this context, we developed a clinical sputum service for patients with severe asthma.
Aim Assess performance of a clinically delivered sputum cytology service in phenotyping airway inflammation and guiding clinical decision-making in severe asthma.
Methods Patients with severe asthma uncontrolled on standard and biologic treatment provided supervised spontaneous sputum samples. Those who failed underwent sputum induction. Samples were processed and reported by hospital pathology department using standardised protocol. The asthma multidisciplinary team used results to guide treatment decisions. Phenotypic categories included eosinophilic (eosinophil count $\geq$3%), neutrophilic (neutrophil count $\geq$60%), mixed eosinophilic & neutrophilic, or pauci-granulocytic.
Results Of 126 patients, sputum quality was sufficient for differential count in 73 (57.9%): 46 (63%) female, mean age 52.1±16.2 years, mean blood eosinophil count 0.23±0.50 $x10^9$/L, mean FeNO 36.52±38.91ppb. Spontaneous samples were obtained from 102 patients, of which 59 (57.8%) were successful. There were 24 sputum inductions performed, 14 (58.3%) of which worked. Of sputum tests that were successful (n=73), mean eosinophil sputum count was 9.38±19.11, and neutrophil count was 60.14±27.44. Samples were eosinophilic in 20.5% (n=15), neutrophilic in 35.6% (n=26), mixed eosinophilic and neutrophilic in 23.3% (n=17), and pauci-granulocytic in 20.5% (n=15). Phenotypic distribution amongst samples obtained from patients on biologics (n=34) are shown in table 1. Correlation between blood and sputum eosinophils (r=0.2258, p=0.0602), and FeNO and sputum eosinophils (r=0.2140, p=0.1036) was negligible. Following sputum results, 15% (n=10) commenced biologic treatment. Of those already on biologics, treatment was switched for 6

Abstract P173 Table 1 Breakdown of airway phenotype by biologic

	Mepolizumab	Benralizumab	Omalizumab	Dupilumab	Tezepelumab
Eosinophillic	3 (30%)	1 (12.5%)	1 (14.3%)	2 (33.3%)	0 (0%)
Neutrophillic	2 (20%)	4 (50%)	2 (28.6%)	2 (33.3%)	2 (66.7%)
Mixed	3 (30%)	2 (25%)	3 (42.8%)	2 (33.3%)	0 (0%)
Pauci-granulocytic	2 (20%)	1 (12.5%)	1 (14.3%)	0 (0%)	1 (33.3%)
Total	**10 (29.4%)**	**8 (23.5%)**	**7 (20.6%)**	**6 (17.6%)**	**3 (8.8%)**

patients. Prophylactic antibiotics were started in 13 (19.4%), extended for 1 (1.9%), and stopped for 1 (1.9%) patient following sputum results.

Conclusion Sputum analysis as part of clinical service was successful in 57.9% of samples, allowing airway phenotyping that guided management where alternative biomarkers proved inconclusive. Further standardisation of sputum analysis as part of clinical service, and greater exploration of inducible sputum analysis with larger patient dataset is required.

P174 A SERVICE EVALUATION OF DIGITAL ASSESSMENT OF LUNG FUNCTION AND ICS/LABA TREATMENT AMONG IRISH SEVERE ASTHMA CENTRES

A Allami, O Smith, C Ottewill, E MacHale, G O'Donnell, B Kent, M Mokoka, D Murphy, D Ryan, O Mikulich, M Harrison, B McCullagh, A Scott, A O'Brien, RW Costello. *Department of Medicine, RCSI University of Health Sciences, on behalf of the HSE Digital Living Lab, Dublin, Ireland*

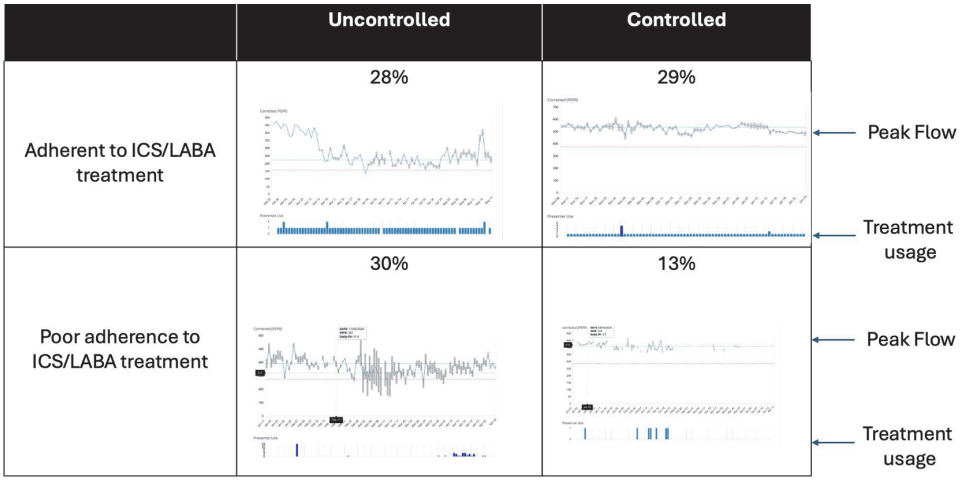
10.1136/thorax-2024-BTSabstracts.335

Aims Guidelines recommend that asthma patients with elevated biomarkers of T2 inflammation, and who have repeated exacerbations, be considered for add-on biologic treatment. In previous clinical trials, we have shown that when lung function and ICS/LABA treatment use are digitally recorded, less than half the patients have either objective evidence of poor asthma control or sufficient ICS/LABA treatment adherence. It is unknown if it is feasible to use digital measurement of these parameters in practice.

Methods The Irish National Health Service Executive commissioned a real-world evaluation of assessing these parameters as part of a MDT work up of the poorly controlled patient. This was a service evaluation of a service developed to manage the digital aspects of setting up and engaging patients, with a concurrent clinical decision software displaying the data to clinicians. Clinicians at 10 specialist asthma centres in Ireland referred patients with uncontrolled asthma, who were being considered for step-up treatment, to a specialist digital hub. Patients were contacted, issued a digital peak flow meter and digital recording device specific for their ICS/LABA treatment. Patients were repeatedly supported by the digital team to maximise treatment adherence and engage in peak flow recording.

Results One hundred patients with severe asthma, 68 of whom were non-smokers were evaluated for a three-month period. The median age was 50 (16–74), 92 were prescribed Step 4 or higher ICS/LABA treatment, (10% salmeterol/fluticasone propionate, 17% formoterol/budesonide and 65% salmeterol/Fluticasone fumarate, 8% others). ICS/LABA adherence was greater than 60% in 70% of patients. PEF data was interpretable in 87% of participants. Twenty eight percent of patients were uncontrolled and had good ICS/LABA treatment adherence, 30% were uncontrolled but had poor ICS/LABA treatment adherence, 30% were controlled and adherent, while 13% were controlled despite poor adherence, see figure 1.

Conclusion The data support a period of digital monitoring of peak flow and adherence to identify whether the cause of poor control and repeated exacerbations is refractory disease or poor adherence to ICS/LABA treatment.



Abstract P174 Figure 1 The proportion of patients classified as having controlled or uncontrolled PEF and as having reasonable or poor adherence to ICS/LABA treatment is shown

P175 SEVERE ASTHMA HEALTHCARE RESOURCE UTILISATION (HRU) PRE AND POST MEPOLIZUMAB IN THE UK AND ITALY – REALITI-A AT 2 YEARS

[1]B Egan, [1]J Weir, [2]A Smith, [3]I Clifton, [4]P Pfeffer, [5]P Howarth, [6]R Chaudhuri. *[1]UK Medical Affairs, Specialty Medicine, GSK, Brentford, UK; [2]University Hospital Wishaw, Wishaw, UK; [3]St James' University Hospital, Leeds, UK; [4]Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK; [5]Global Medical Affairs, Specialty Medicine, GSK, Brentford, UK; [6]Gartnavel General Hospital, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.336

Introduction REALITI-A was a 2 year global, prospective observational study in severe asthma patients newly prescribed mepolizumab 100mg subcutaneously. By-country analysis describes HRU-related outcomes in the UK (n=200) and Italy (n=244), the 2 largest cohorts with differing eligibility criteria while contextualising to the global cohort (n=822).

Methods Comparing pre-mepolizumab exposure with post-exposure at 2 years, outcomes included asthma hospitalisation events, emergency department visits, patients with ≥1 exacerbation requiring hospitalisation, asthma outpatient events and telephone calls.

Results 24 months post-initiation, asthma hospitalisation rates/year were reduced 59% globally (0.41 pre-treatment vs 0.17, p<0.001), 56% in the UK (0.95 pre-treatment vs 0.42) and 78% in Italy (0.18 pre-treatment vs 0.04). Patients experiencing ≥1 exacerbation requiring hospitalisation reduced from 24% to 9.9% globally, from 39% to 22% in the UK and from 18% to 3.7% in Italy.

Asthma related emergency department visit rates/year were reduced 64% globally (0.56 pre-treatment vs 0.20, p<0.001), 48% in the UK (0.72 pre-treatment vs 0.38) and 77% in Italy (0.21 pre-treatment vs 0.05).

The number of overnight stays in hospital was reduced 42% globally (2.4 to 1.4), 38% in the UK (4.8 to 3.0) and 59% in Italy (1.7 to 0.7).

Asthma outpatient events (planned/unplanned) rate/year reduced 63% globally (4.99 pre-treatment vs 1.86, p<0.001), 58% in the UK (6.45 pre-treatment vs 2.71) and 92% in Italy (3.67 pre-treatment vs 0.30).

Outside of hospital, telephone call rates/year were reduced 31% globally (1.09 pre-treatment vs 0.75, p=0.056) and 41% in the UK (2.18 pre-treatment vs 1.28), whilst increasing by 8% in Italy (0.75 pre-treatment vs 0.81).

Conclusion Global and by-country REALITI-A data demonstrate effectiveness of mepolizumab in the real world in severe asthma patients. A range of factors may contribute to differing HRU in the UK versus Italy and the global cohort such as eligibility criteria for biologic initiation, patient behaviour, or severe asthma service structure. Improved understanding of the impact of differences between countries HRU may highlight areas for change in management of severe asthma patients.

P176 AFTER WEIGHT LOSS: TWO-YEAR OUTCOMES FOLLOWING A WEIGHT MANAGEMENT PROGRAMME IN DIFFICULT-TO-TREAT ASTHMA AND OBESITY

[1]V Sharma, [1]HC Ricketts, [1]L McCombie, [1,2]N Brosnahan, [1]L Crawford, [1]L Slaughter, [3]A Goodfellow, [3]F Steffensen, [1]R Chaudhuri, [1]MEJ Lean, [1,3]DC Cowan. *[1]University of Glasgow, Glasgow, UK; [2]Counterweight Ltd, London, UK; [3]Glasgow Royal Infirmary, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.337

Introduction We delivered a one-year weight management programme (Counterweight Plus, CWP) in participants with difficult-to-treat asthma and obesity in a single-centre randomised controlled trial resulting in median weight loss of 14kg and improvements in Asthma Quality of Life Questionnaire (AQLQ) and exacerbation frequency at one-year. CWP was a dietitian-supported total diet replacement programme lasting one year in total. Following this, participants were invited back one year after intervention completion at the two-year mark for further assessments. Here we report asthma outcomes at two years.

Methods We randomised (1:1 CWP: Usual Care, UC) adults with difficult-to-treat asthma and body mass index (BMI) ≥30kg/m^2. CWP with dietitian support: 12-week total diet replacement phase (850kcal/day low-energy formula); stepwise food reintroduction phase and weight loss maintenance phase up to one-year. Study visits occurred at baseline, four months, one and two years. Outcomes measured include AQLQ and exacerbation frequency (defined as courses of high dose oral corticosteroid required to achieve asthma symptom control).

Results Of 35 participants randomised at baseline, 23 attended at two-years: 9 CWP and 14 UC. Median weight decreased with CWP from 103.0 (IQR 100.1 to 115.4kg) at baseline to 96.0 (91.7 to 97.6kg) at two years (Wilcoxon test p=0.008), with no change in UC (p=0.224). Mean (95% CI) AQLQ score (minimal clinically important difference is 0.5) improved with CWP from 3.9 (3.3, 4.5) to 4.4 (3.9, 5.0) at two years (p=0.049) with no change in UC (p=0.611). Median annualised exacerbation frequency reduced with CWP from 4 (2 to 5) to 2 (1 to 3) at two years (Wilcoxon test p=0.004) with no difference in UC (0.623).

Conclusion Our results suggest persistent improvement in weight loss, AQLQ and asthma exacerbation frequency one year after stopping CWP, though no between group differences were observed. Observations are limited by small numbers at the two-year mark and there are signs of weight regain compared to the one-year mark likely with associated reduction in the improvements to asthma-related outcomes. Despite this, there are signals suggesting benefit one year after stopping CWP. A larger sample study is needed to confirm.

P177 PREVALENCE OF RESPIRATORY VIRUSES IN STABLE AND ACUTE ASTHMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

[1]S Ananth, [2]GS Alimani, [3]C Boccabella, [4]E Khaleva, [4,5]G Roberts, [6,7]NG Papadopoulos, [6]C Kosmidis, [6,8]J Vestbo, [2]E Papageorgiou, [2]A Beloukas, [6,8]AG Mathioudakis. *[1]London North West University Healthcare NHS Trust, London, UK; [2]University of West Attica, Athens, Greece; [3]Fondazione Policlinico Universitario 'A Gemelli'—IRCCS, University of the Sacred Heart, Rome, Italy; [4]University of Southampton, Southampton, UK; [5]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [6]University of Manchester, Manchester Academic Health Science Centre, Manchester, UK; [7]National and Kapodistrian University of Athens, Athens, Greece; [8]Manchester University NHS Foundation Trust, Manchester, UK*

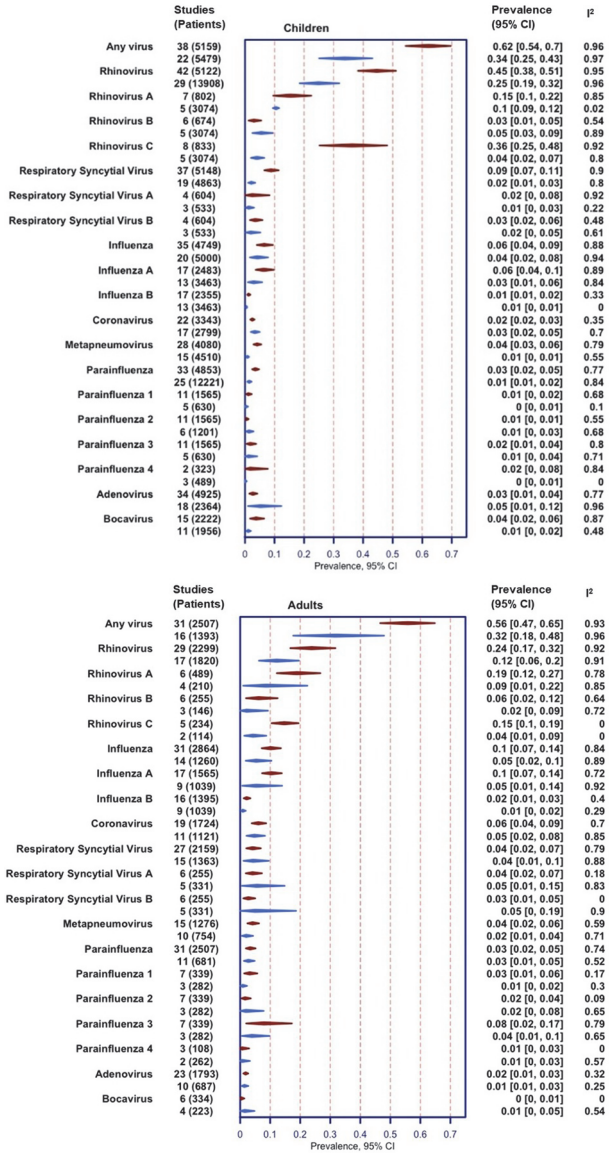
10.1136/thorax-2024-BTSabstracts.338

Introduction and Objective Assessing the prevalence of respiratory viruses in stable and acute asthma is necessary to clarify the role of these viruses in the aetiology of asthma exacerbations. This is the first meta-analysis to assess differences in the prevalence of specific respiratory viruses between stable and acute asthma.

Methods MEDLINE and EMBASE were systematically searched. Studies assessing the prevalence of respiratory viruses using molecular techniques in acute and/or stable asthma were included (1990–2023). Virus prevalence was assessed using meta-analyses of proportions. Risk of bias was assessed for each included study.

Results 19,195 abstracts were screened and 111 studies were included (61 assessed children only and 44 assessed adults only). The average sample size was 131.9 patients. Paediatric patients were on average 7.6 years old, 62.5% male and had an average FEV1/FVC ratio of 83.3% (n = 9841); adult patients were on average 44.9 years old, 35.7% male and had an average FEV1/FVC ratio of 77.0% (n = 4123). Virus prevalence was greater in acute asthma in children (62.0%; 95% CI 54.0 - 70.0%) and adults (56.0%; 95% CI 47.0 – 65.0%) compared to stable disease in children (34.0%; 95% CI 25.0 – 43.0%) and adults (32.0%; 95% CI 18.0- 48.0%) (figure 1). Apart from rhinovirus in both patient populations and respiratory syncytial virus (RSV) in children, the prevalence of most specific viruses was similar in acute and stable asthma. Rhinovirus was the most prevalent virus across disease states and patient populations. RSV prevalence in paediatric acute asthma (9.0%; 95.0% CI 7.0 – 11.0%) was more than double the prevalence in adult acute asthma (4.0%; 95% CI 2.0 – 7.0%). Heterogeneity was high for most viruses assessed. All studies had 'low' or 'moderate' risk of bias

Conclusions Respiratory viruses are overall more prevalent in acute asthma compared to stable disease, mainly driven by differences in rhinovirus between disease states. Future research comparing viral loads of respiratory viruses in stable and acute asthma may provide further insight into the mechanisms of acute asthma exacerbations.



Abstract P177 Figure 1

P178 A GLOBAL SYSTEMATIC LITERATURE REVIEW TO INVESTIGATE THE IMPACT OF ENVIRONMENTAL FACTORS ON THE PREVALENCE, CONTROL AND SEVERITY OF SEVERE OR DIFFICULT-TO-TREAT ASTHMA

[1]I Vlachaki, [1]S Donhauser, [2]M Chakarwarthy, [3]P Agrawal, [1]A Madoni. [1]*Chiesi Farmaceutici Spa, Parma, Italy*; [2]*IQVIA, Gurugram, India*; [3]*IQVIA, Bangalore, India*

10.1136/thorax-2024-BTSabstracts.339

Asthma is one of the most common chronic noncommunicable diseases in children and adults, with severe asthma comprising 5% to 10% of cases. Disparities, influenced by factors like living conditions and environmental pollutants, contribute to increased respiratory issues. However, gaps exist in understanding the impact of environmental factors on asthma, particularly in underserved populations. The objective of this study was to investigate the impact of environmental factors on the prevalence, control, and severity of severe or difficult-to-treat asthma.

A systematic literature review (SLR) was conducted according to the general recommendations of the Cochrane Handbook for Systematic Reviews of Interventions, the general principles of the Centre for Reviews and Dissemination guidance (UK), and the PRISMA guidelines. Embase® and MEDLINE® databases via OvidSP® were searched for the period between November 2019 and November 2023, supplemented by hand-searching of relevant conferences and previously published literature to identify the relevant studies.

A total of 1,344 records were identified from electronic database searches, of which 11 studies were included following full-text screening; no additional studies were identified from hand searches. The studies examined the influence of various environmental factors on the prevalence and severity of asthma. Occupational exposure to gas, fumes, dust and higher exposure to black carbon were linked with increased asthma prevalence. Elevated nitrogen dioxide (NO_2) levels were identified as a contributing factor to increased asthma severity. Additionally, a significant correlation was reported between exposure to particulate matter ($PM_{2.5}$) at levels $\geq$10.0 $\mu g/m^3$ and a nearly five-fold increase in uncontrolled asthma, particularly in females residing near outdoor air pollution sites (e.g., industrial sites such as steel works, power stations). Furthermore, it was reported that traffic-related air pollution, in particular higher NO_2 exposures, are associated with increased odds of uncontrolled asthma, suggesting adverse effects of vehicular emissions on respiratory health.

In conclusion, exposure to environmental pollution has been connected with both greater occurrence of asthma, increased asthma severity and poorer disease control. Given

climate change may be expected to contribute to worsening air quality, the impact on people living with asthma may continue to increase.

P179 RELATIONSHIP BETWEEN POLLUTION LEVELS AND OUTCOMES OF BIOLOGICAL THERAPIES AMONG PATIENTS WITH SEVERE ASTHMA

F Fyles, R Burton, A Nuttall, H Joplin, H Burhan, L Watkins. *Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.340

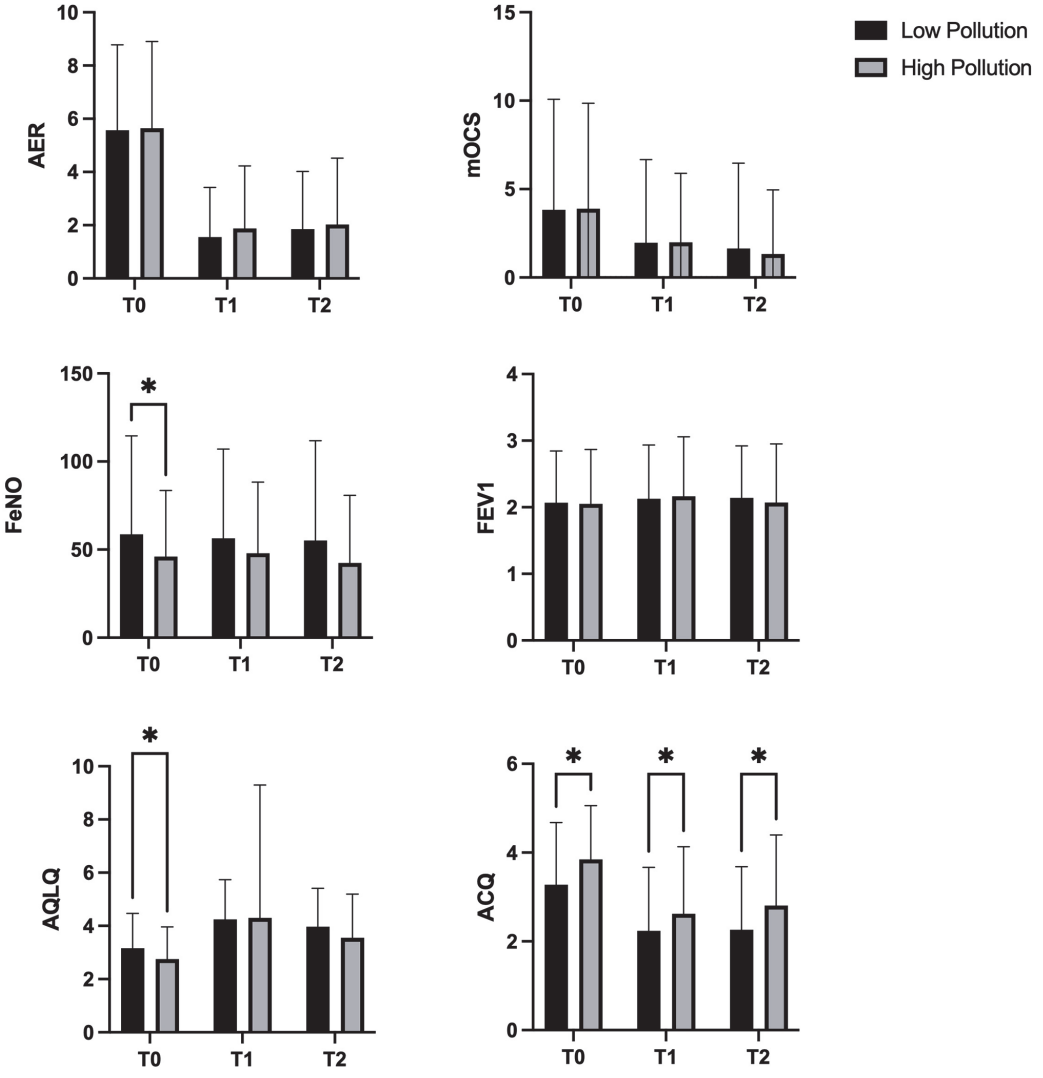
Introduction Air pollution is associated with increased asthma-related admission rates (*Lancet*, 2014;383(9928):1581–92). The impact of pollution on outcomes of monoclonal antibody (MAb) therapy in patients with severe asthma (SA) is under-explored. We completed a retrospective analysis exploring the impact of air pollution levels on MAb therapy outcomes.

Methods Data were collected on patients with physician-confirmed SA completing ≥24 months' MAb therapy January 2013 – December 2021. Clinical outcomes (annualized exacerbation rate [AER], maintenance oral corticosteroids [mOCS], fractional exhaled nitric oxide [FeNO], Forced Expiratory Volume over 1 Second [FEV1], Asthma Control Questionnaire [ACQ-6], and Asthma Related Quality of Life Questionnaire [AQLQ]) were collected at baseline (T0), 12 months (T1), and 24 months (T2). Rates of remission – defined as mOCS = 0, AER = 0, and ACQ-6 ≤1.5 – were also collected.

Postcode data were cross-referenced with levels of particulate matter (PM) 2.5, PM10, nitrous dioxide (NO_2), and national pollution percentile ranking of pollution. Outcomes were compared between those in above- and below-average pollution areas using Student's T-test/Chi-squared test.

Results 282 patients completed ≥24 months MAb therapy (age 52.1±15.7 years, 62% female, BMI 32.8±7.7 kg/m^2). All were on high-dose ICS with at least one add-on therapy. 51% were on Benralizumab, 32% on Mepolizumab, 15% on Omalizumab, 2% on Dupilumab, and 1% on Reslizumab. Average pollution levels were PM2.5=10.6mg/m^3, PM10=16.9mg/m^3, and NO_2=21.7mg/m^3 – all above recommended WHO limits. 168 patients (59.6%) lived in areas with pollution above UK average.

At baseline, patients in higher pollution areas demonstrated higher ACQ-6 (3.85 v 3.28, p<0.001), lower AQLQ (2.76 v 3.17, p<0.01), and lower FeNO (46.0 v 58.7ppb, p<0.05).



Abstract P179 Figure 1 Clinical outcomes as baseline (TO), 12 months (T1), and 24 months (T2)

The difference in ACQ persisted at T1 and T2, and was consistent across all pollution subtypes. There was no significant difference in remission rates at T1 or T2 between the cohorts.

Conclusions Air pollution appeared to be associated with reduced asthma-related quality of life measures, but not with increased FeNO, suggesting this finding may not be driven by airway inflammation alone. ACQ-6 differences persisted despite two years' MAb therapy, suggesting ongoing impact of pollution on perceived asthma control.

P180 RED BLOOD CELLS TRANSPORT INHALED TRAFFIC-DERIVED CARBONACEOUS PARTICULATE MATTER IN VIVO

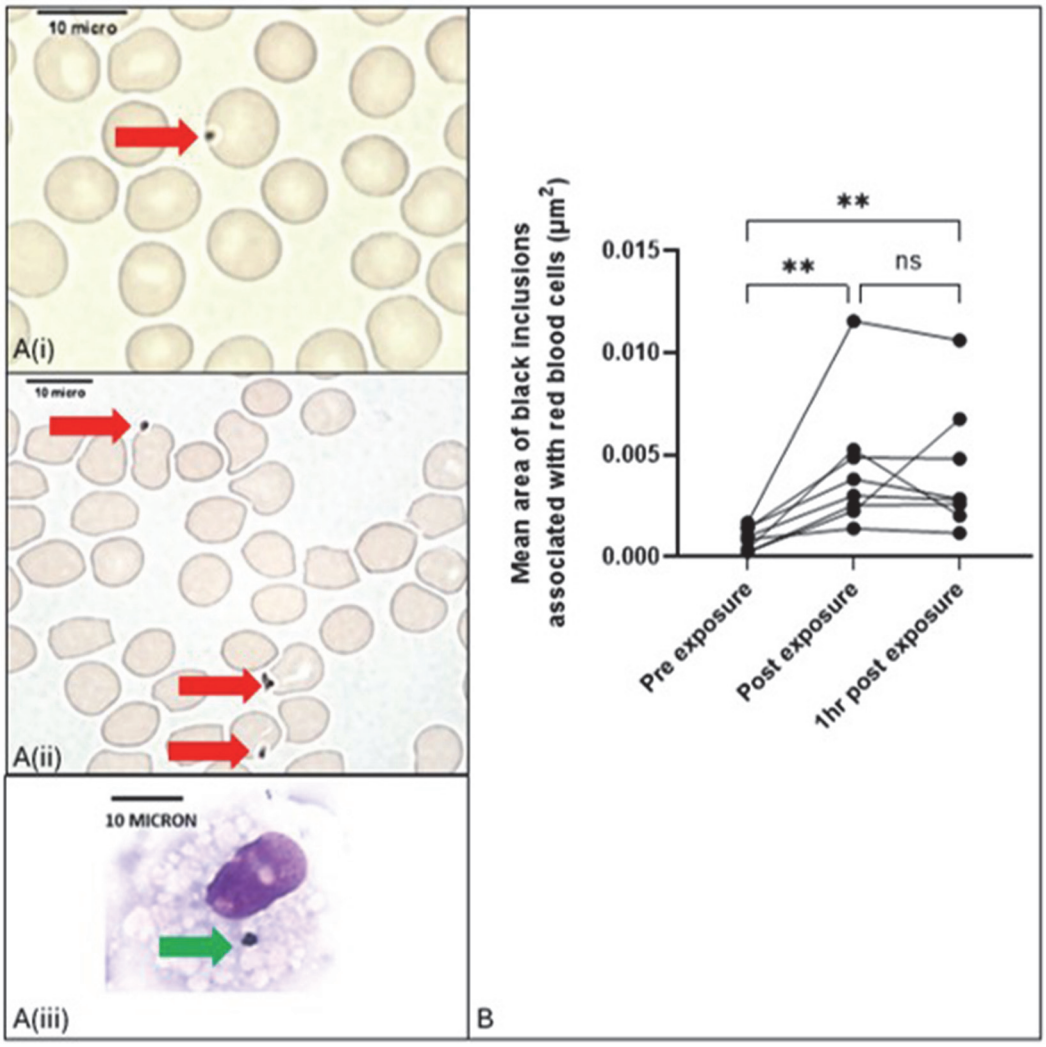
NM Liu, L Miyashita, J Grigg. *Queen Mary University of London, London, UK*

10.1136/thorax-2024-BTSabstracts.341

Introduction A fraction of inhaled ultrafine particulate matter (PM) from air pollution reach distant organs. For example, we have found PM in the human placenta.[1] Since PM attach to red blood cells *in vitro*,[2] we sought evidence that inhaled traffic-related PM translocate into the systemic circulation and attach to human red blood cells (RBCs) *in vivo*.

Methods After informed consent, healthy adults (n=8, aged 25–50 years) donated blood samples at 3 timepoints: 'pre-exposure' (indoors in air-conditioned office ≥ 4hr), 'post-exposure' (after 1hr of standing next to a busy road), and '1hr post-exposure' (after returning indoors for 1hr). Personal exposure to black carbon was measured by an aethalometer. A blood smear was performed on blood samples, and examined for black PM. If present, the mean area black carbon from 3000 randomly selected RBC was determined by ImageJ. Results are expressed as mean ± SEM and compared by one-way ANOVA and multiple comparisons.

Results Nano-sized black PM on RBC were observed in all blood samples (figure 1A). Mean pre-exposure, post-exposure, and 1hr post-exposure BC were 257 ± 73 μg/m^3, 2689 ± 755 μg/m^3, and 219 ± 60 μg/m^3 respectively. RBC carbon increased post-exposure (vs. pre-exposure, 0.0009 ± 0.0002 vs. 0.0043 ± 0.0011 μm^2, $p<0.01$). RBC carbon did not fall at 1hr post-exposure (figure 1B).



Abstract P180 Figure 1 (A) Black inclusions (red arrows) associated with red blood cells (i) pre-exposure and (ii) post-exposure from the same participant; appearance of inclusions are compatible with inhaled black carbon (green arrow) in airway macrophages (iii, Liu, Miyashita, Sanak, et al. 2021). (B) Mean area of black inlcusions associated with red blood cells pre-exposure, post-exposure, and 1hr post-exposure

Conclusion This is the first evidence of transport of inhaled and translocated PM by RBCs, and the first evidence in humans that transient exposure to PM increases the amount of systemic carbonaceous PM. The effect of PM on RBCs, and whether RBC-PM is a valid exposure biomarker, remains to be determined.

REFERENCES

1. Liu NM, *et al. Evidence for the presence of air pollution nanoparticles in placental tissue cells. Science of The Total Environment*, 2021;**751**:142235.
2. Nemmar A, *et al. Interaction of diesel exhaust particles with human, rat and mouse erythrocytes in vitro. Cell Physiol Biochem*, 2012;**29**(1–2):163–70.

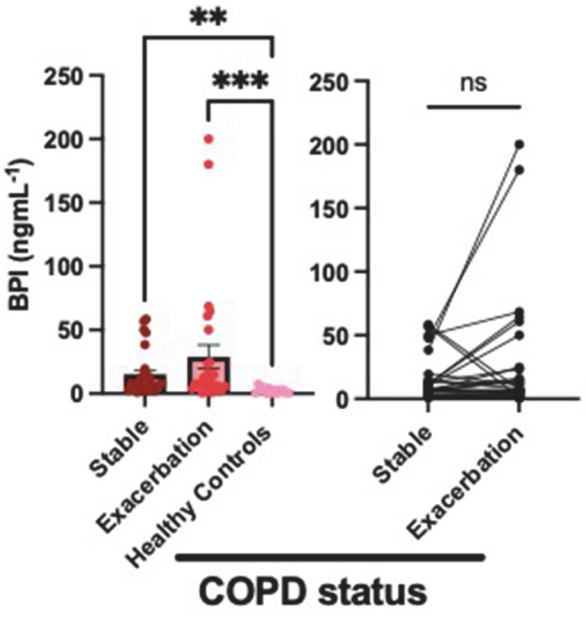
'Catching Fire' – Measuring and targeting inflammation in COPD

P181 BACTERICIDAL/ PERMEABILITY-INCREASING PROTEIN IS PRESENT IN PLASMA OF STABLE AND EXACERBATING COPD PATIENTS

[1]YY Wong, [1]SP Cass, [2]S Ramakrishnan, [1]M Bafadhel, [1]REK Russell. *[1]King's Centre for Lung Health, King's College London, London, UK; [2]School of Medical and Health Sciences, Edith Cowan University, Perth, Australia*

10.1136/thorax-2024-BTSabstracts.342

Background Chronic obstructive pulmonary disease (COPD), the third leading cause of mortality worldwide, is characterised by a gradual decline in respiratory function. Whilst COPD pathogenesis remains to be fully understood it is evident that chronic inflammation is a key aspect. Acute exacerbations caused by recurrent bacterial infections contribute to poor prognosis. Bactericidal/permeability-increasing protein (BPI) stored within the azurophil granules of neutrophils has potent antimicrobial activity against gram-negative bacteria. BPI aids in opsonisation and subsequent phagocytosis of bacteria. Despite this the role of BPI in stable and COPD exacerbation is unknown.



Abstract P181 Figure 1

Method BPI level was quantified in plasma samples from adult COPD patients (n=28), and healthy controls (n=13) using BPI ELISA kit (R&D System, UK, DY7468). BPI levels were compared to patient characteristics using GraphPad Prism 10. Statistical analysis Kruskal-Wallis test, Wilcoxon test, Mann-Whitney test and Spearman correlation were performed. Samples were collected from approved studies (17/LO/1135 and 14/LO/1699). All participants provided informed consent.

Results COPD participants were older (median age 73.4±6.5 versus 36.8±13.2), predominately male (64.0% male versus 38% male) with a greater prevalence of current (21.4% COPD versus 7.7% healthy controls) than healthy controls. Plasma BPI was present in stable and exacerbation COPD patients. BPI was elevated 6.3-fold at stable state ($p = 0.0012$) and 12.1-fold at exacerbation ($p = 0.0002$) compared to healthy controls. A non-significant 1.9-fold increased at exacerbation compared to stable COPD was observed. No significant correlations were observed between lung function ($r = 0.055$, $p = 0.786$) and BPI levels. BPI levels were equivalent based on exacerbation frequency (>2/year) ($p = 0.1205$) and symptoms scores ($p = 0.2495$). BPI is predominately released by neutrophils and we observed a non-significant weak negative correlation between neutrophil count and BPI ($r = -0.332$, $p = 0.104$). Lastly, neither smoking history (smoking pack year: $r = -0.122$, $p = 0.545$) or current smoking status ($p = 0.1748$) was observed to alter BPI levels.

Conclusions BPI is elevated in COPD patient plasma in stable and exacerbation status compared to healthy controls. This suggests increased BPI at stable disease may contribute to the pathogenesis of COPD.

P182 COPD AND HEART FAILURE INSIGHTS IN A REAL-WORLD POPULATION INITIATING TRIPLE THERAPY FROM THE UNITED STATES

[1]M Pollack, [2]E Rapsomaniki, [2]J Marshall, [2]H Mullerova. *[1]AstraZeneca, Wilmington, DE, USA; [2]AstraZeneca, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.343

Rationale Many patients with COPD have cardiovascular disease, and COPD is an independent risk factor for adverse cardiovascular outcomes. Patients with heart failure (HF) may be most vulnerable to these risks but specific analyses are lacking. This study assessed baseline characteristics, cardiopulmonary event rates, and all-cause mortality (ACM) among COPD patients initiating triple therapy stratified by HF.

Methods This retrospective analysis used Optum's de-identified Clinformatics® Data Mart Database. Patients were ≥40-years with ≥2 separate diagnoses for COPD and initiating single- or multiple-inhaler triple therapy (SITT/MITT) between 10/1/2020–6/30/2023, had ≥12-month baseline history prior to 1st prescription fill, no history of triple therapy use; patients had ≥1 day of follow-up. Patients were stratified by presence of baseline HF diagnosis. Descriptive statistics (significance level: $p<0.05$) were used to assess baseline demographics, clinical characteristics, and presence of cardiopulmonary events (hospitalizations for: severe exacerbations, myocardial infarction, heart failure, cardiac arrest), and ACM rates per 100 patient-years.

Results 64,409 patients with COPD were included: 27.1% with HF, 72.9% without HF. HF patients were older (73.7 vs. 71.0 years), more likely male (48.2% vs. 43.6%) and

Medicare dual eligible (16.5% vs. 12.2%) (all values p<0.001). Mean Charlson Comorbidity Index was nearly 2-times higher for HF patients (5.09 vs. 2.60; p<0.001). HF patients were more likely to have any baseline COPD exacerbation (55.4% vs. 41.1%; OR: 1.77 (1.71–1.84) and severe exacerbations (31.3% vs. 10.5%; OR: 3.87 [3.70–4.04]). HF patients were more likely to have any baseline cardiopulmonary event (45.4% vs. 11.1%; OR: 1.64 [1.58–1.70]). Use of statin and hypertensive treatments was common (HF: 74.9% and 95.3%; without HF: 61.4% and 74.4%, respectively), but COPD treatment use was less common (59.5% HF and 61.5% without HF). Rates of ACM were nearly 3x greater for HF patients.

Conclusion Patients with COPD and heart failure have higher multimorbidity and greater baseline presence of cardiopulmonary events compared to those without heart failure. All-cause mortality was also higher among those with HF. Use of inhaled COPD treatments was lower than statins and antihypertensives. COPD and HF are syndemic, treatments for both conditions need to be optimized to address these associated risks.

Abstract P182 Table 1

	CHF=No (N=46925)	CHF=Yes (N=17484)	p-value
Age (yrs)	71.03 (9.03)	73.70 (9.03)	< 0.001
Sex (M)	43.6%	48.2%	< 0.001
Race: White (%)	75.0%	71.9%	< 0.001
MAPD Dual-Eligible	12.2%	16.5%	< 0.001
Baseline Multimorbidity			
Charlson Comorbidity: Mean (SD)	2.60 (1.69)	5.09 (2.20)	<0.001
Select Conditions of Interest (n/%)[a]			
Hypertension	75.6%	90.1%	< 0.001
Dyslipidemia	71.8%	84.1%	< 0.001
Smoker	41.3%	37.1%	< 0.001
Diabetes	29.7%	49.6%	< 0.001
Pulmonary vascular disease	28.8%	49.6%	< 0.001
Obesity	27.6%	44.4%	< 0.001
Malaise/frailty	26.2%	40.8%	< 0.001
Anxiety	28.0%	31.7%	< 0.001
Renal disease	18.0%	43.3%	< 0.001
Depression	23.5%	28.5%	< 0.001
Asthma	22.9%	24.5%	< 0.001
Baseline COPD Exacerbations[b] and Cardiopulmonary Events[c]			
Any COPD Exacerbation	41.1%	55.4%	
Moderate Exacerbation	34.5%	34.7%	
Severe Exacerbation	10.5%	31.3%	
Any Cardiopulmonary Event	11.1%	45.4%	
Baseline Medication Use (% with ≥1 prescription fill)			
Statins	61.4%	74.9%	<0.001
Any hypertension medication	74.4%	95.3%	<0.001
Any COPD maintenance	61.5%	59.5%	<0.001
Follow-Up All-Cause Mortality			
Number of ACM events	2990	2771	
Percent of patients with ACM	6.4%	15.8%	
Rate [100PYs; mean (95% CI)]	5.86 [5.65, 6.07]	15.87 [15.28, 16.47]	

[a]Comorbidities occurring in ≥20% of the overall study cohort
[b]Exacerbations as defined by Mapel et al. Development and Validation of a Healthcare Utilization-Based Algorithm to Identify Acute Exacerbations of Chronic Obstructive Pulmonary Disease. Int J COPD 2021; 16: 1687–1698. Moderate: outpatient and emergency visits for related conditions; Severe: inpatient hospitalizations for related conditions.
[c]Cardiopulmonary includes acute events for heart failure, myocardial infarction, severe COPD exacerbation, and cardiac arrest

P183 RELATIONSHIP BETWEEN QUANTITATIVE CT AND CARDIAC FUNCTION IN PATIENTS WITH SEVERE COPD EXACERBATIONS (ECOPD)

[1]G Mussell, [1]J Kibbler, [2]M Bennett, [2]T Wilkinson, [1]D Ripley, [1]SC Bourke, [1]J Steer. *[1]Northumbria Healthcare NHS Foundation Trust, North Shields, UK; [2]Southampton NIHR Respiratory Biomedical Research Unit, University Hospital Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.344

Introduction Quantitative assessment of emphysema, gas trapping and airway wall thickness on CT correlates with COPD disease severity and exacerbation risk.[1] In stable COPD, airway wall thickness is associated with prior myocardial infarction.[2] Cardiac disease is often undiagnosed in COPD and the risk of cardiac events following hospitalised ECOPD is high. CT scans performed during hospitalised exacerbations may help clinicians identify patients with heart disease.

We examined relationships between CT parameters and cardiac disease in patients hospitalised for ECOPD who also underwent detailed investigations for cardiac disease.

Methods As part of SCATECOPD study (IRAS 277817), patients with severe ECOPD underwent a detailed cardiac assessment encompassing an ECG, echocardiogram, CT coronary calcium score, and inspiratory and expiratory CT chest. Expiratory gas trapping (Exp%856), emphysema (Insp%950) and airway wall thickness (pi10) were extracted and compared with clinical and cardiac data.

Results We recruited 57 people: 34 (60%) female; mean (SD) age 72.6 (7.5) years and FEV1 50 (19.5)% predicted. 2 patients could not tolerate a CT scan. CT scans were not of sufficient quality to extract data in: 11/55 Exp%856; 4/55 Insp%950; 1/55 Pi10.

Cardiac investigations identified diagnoses of moderate-severe LV dysfunction in 22.8%; HFpEF in 14.5%; RV dysfunction in 27.2%. These were new diagnoses in 18.2%, 9.1% and 23.6% respectively. Significant coronary artery disease was found in 47.3%.

Abstract P183 Table 1 Correlations between CT parameters and spirometry, previous admissions and measures of cardiac disease

	FEV1% pred	FEV1/ FVC	Admissions ECOPD in past year	LVEF	TAPSE	CT CACS
Pi10 n	54	54	54	52	45	49
Rho	0.20	0.26	-0.12	-0.43	-0.11	-0.08
p value	0.15	0.06	0.38	0.001	0.48	0.61
Exp% 856 n	44	44	44	43	35	39
Rho	-0.66	-0.81	0.24	-0.13	-0.31	0.05
p value	<0.001	<0.001	0.123	0.41	0.07	0.78
Insp% 950 n	51	51	51	49	41	46
Rho	-0.61	-0.76	0.24	-.026	-0.30	0.19
p value	<0.001	<0.001	0.08	0.07	0.06	0.22

Airway wall thickness (pi10), Exp%856 (expiratory gas trapping), Insp%950 (emphysema), left ventricular ejection fraction (LVEF), tricuspid annular plane systolic excursion (TAPSE) used as a marker of right ventricular function, CT coronary artery calcium score (CT CACS).

More severe gas trapping and emphysema were strongly correlated with worse spirometric abnormalities (table 1). Greater airway wall thickness was associated with lower LV ejection fraction. More severe gas trapping was weakly correlated with worse RV function, and more severe emphysema was weakly correlated with lower LV and RV systolic function (table 1).

Airway wall thickness was significantly higher in those who died at 90 days (Pi10 6.61 vs 6.10mm; p = 0.03).

Conclusion Quantitative CT during severe ECOPD provides useful data that relates to COPD severity and cardiac disease. Of note, many patients had previously undiagnosed cardiac disease and incidental CT findings of increased airway wall thickness and emphysema should prompt investigation for cardiac disease.

REFERENCES

1. *Lancet Digit Health*. 2023 Feb;**5**(2):e83-e92.
2. *Therapeutic Advances in Respiratory Disease*. 2023;**17**:17534666221148663.

P184 DEFINING TRAJECTORIES IN HEALTH STATUS WITH CHRONIC AIRWAYS ASSESSMENT TEST (CAAT) IN A REAL-LIFE COHORT OF PATIENTS WITH ASTHMA AND/OR COPD (NOVELTY)

[1,2]A Ritchie, [3,4]S Franzen, [5,6,7,8]A Agusti, [9]R Beasley, [10]R Hughes, [11]C Janson, [12]B Make, [13]A Papi, [14]H Mullerova, [15,16]HK Reddel, on behalf of the NOVELTY scientific community and NOVELTY study investigators. *[1]Real World Data Science, Medical Evidence, BioPharmaceuticals Medical, AstraZeneca, UK*; *[2]National Heart and Lung Institute, Imperial College London, London, UK*; *[3]Research and Early Development, Respiratory and Immunology, Clinical, BioPharmaceuticals RandD, AstraZeneca, Gothenburg, Sweden*; *[4]Health Metrics Unit, Institute of Medicine, Sahlgrenska Academy, Göteborg University, Gothenburg, Sweden*; *[5]Càtedra Salut Respiratoria, Universitat, Barcelona, Spain*; *[6]Servei Pneumologia, Respiratory Institute, Hospital Clinic, Barcelona, Spain*; *[7]Institut d'Investigacions Biomèdiques August Pi I Sunyer (IDIBAPS), Barcelona, Spain*; *[8]CIBER Enfermedades Respiratorias, Madrid, Spain*; *[9]Medical Research Institute of New Zealand, Wellington, New Zealand*; *[10]Research and Early Development, Respiratory and Immunology, Clinical, BioPharmaceuticals RandD, AstraZeneca, Cambridge, UK*; *[11]Department of Medical Sciences: Respiratory, Allergy and Sleep Research, Uppsala University, Uppsala, Sweden*; *[12]National Jewish Health and University of Colorado Denver, Denver, USA*; *[13]Respiratory Medicine Unit, Department of Translational Medicine, Università di Ferrara, Ferrara, Italy*; *[14]Respiratory Evidence Strategy, BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK*; *[15]The Woolcock Institute of Medical Research and Macquarie University, The University of Sydney, Sydney, Australia*; *[16]Sydney Local Health District, Sydney, Australia*

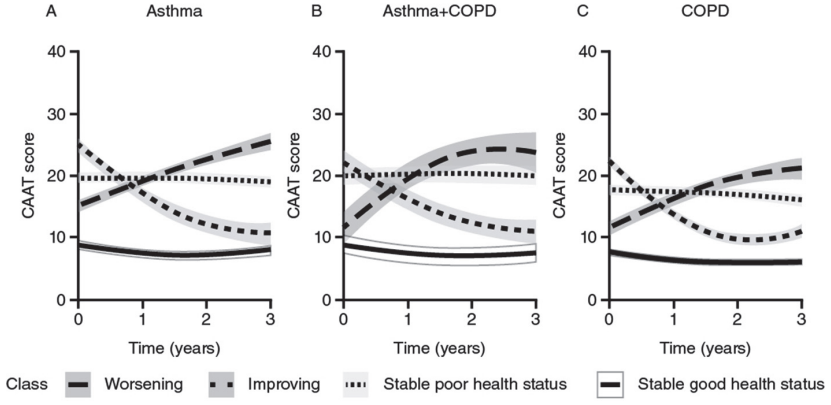
10.1136/thorax-2024-BTSabstracts.345

Rationale The Chronic Airways Assessment Test (CAAT), a validated modification of the Chronic Obstructive Pulmonary Disease (COPD) Assessment Test (CAT), is a standardised, easily completed patient-reported outcome for assessing health status across chronic airway diseases. We hypothesised that trajectories of improvement or worsening in health status could be identified from longitudinal assessment of the CAAT in patients with asthma and/or COPD in the global, real-world NOVEL observational longiTudinal studY (NOVELTY) cohort.

Methods The CAAT was completed every 3 months for 3 years by 10,379 patients (asthma, n=5,270; asthma+COPD, n=1,366; COPD, n=3,743) in the NOVELTY cohort (NCT02760329), a prospective, observational study of patients with a physician-assigned diagnosis of asthma and/or COPD. CAAT trajectories over time were assessed using a latent class trajectory mixture model with up to seven second degree polynomials fitted to the quarterly observations during up to two years of follow-up. The number of classes was determined using Bayesian Information Criterion based on a sampled subset of the data, together with posterior probability of assigned values and clinical judgment.

Results The mean CAAT score at baseline was 13.8 (SD 8.5), 16.9 (SD 8.6) and 16.6 (SD 8.3) in the asthma, asthma +COPD, and COPD groups, respectively, and was higher in patients with COPD versus asthma ($p<0.001$). Analysis identified four trajectory clusters in each of the three diagnostic groups (figure 1), which we labelled as Worsening; Improving; Stable poor health status; and Stable good health status. The proportions of patients in the four trajectory clusters were significantly different between diagnostic groups (chi-square analysis, $p<0.001$). There were more patients with worsening health status in the COPD group than in the asthma or the asthma+COPD groups (10.0% vs 4.3% and 3.4%, respectively). Likewise, the proportion of those patients whose health status improved was lower in the COPD group (4.2%) than in the asthma group (6.3%) and the asthma+COPD group (7.5%).

Conclusions There are different CAAT trajectories in patients with chronic airway diseases and their prevalence varies across clinically assigned disease type. This may have implications for clinical management and for patient selection and outcomes for clinical trials.



CAAT, Chronic Airways Assessment Test; COPD, chronic obstructive pulmonary disease.

Abstract P184 Figure 1 The four mean CAAT trajectories for asthma, asthma+COPD and COPD.

P185 PROMPTLY ESCALATING TO BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FROM DUAL THERAPY REDUCES EXACERBATIONS AND CARDIOPULMONARY EVENTS IN PATIENTS WITH COPD (MITOS EROS + CARDIOPULMONARY STUDY)

[1]H Mullerova, [2]J Tkacz, [2]J Schinkel, [2]B Agatep, [3]E Portillo, [4]H Germack, [5]M Crooks, [6]C Strange, [1]J Marshall. *[1]AstraZeneca, Cambridge, UK; [2]Inovalon, Bowie, MD, USA; [3]University of Wisconsin-Madison, Madison, WI, USA; [4]AstraZeneca, Wilmington, DE, USA; [5]Hull York Medical School, University of Hull, Hull, UK; [6]The Medical University of South Carolina, Charleston, SC, USA*

10.1136/thorax-2024-BTSabstracts.346

Rationale Timely escalation from dual to triple therapy reduces risks of acute COPD exacerbations (AECOPD). This study examined whether prompt escalation to budesonide/glycopyrronium/formoterol fumarate (BGF) from dual therapy following an AECOPD also lowers risk of severe cardiopulmonary events.

Methods This retrospective study used US claims data from patients with COPD who were ≥40 years with no prior SITT and any of the following qualifying exacerbation events: ≥1 severe or ≥2 moderate AECOPD, or ≥1 moderate AECOPD while on non-SITT treatment (earliest event = index date); all patients escalated from dual therapy to BGF within 1-year following index. Outcomes were annualized rates per person per year (PPPY) of AECOPD and cardiopulmonary events. Severe cardiopulmonary events included mortality, severe AECOPD and hospitalizations for heart failure (HF), acute myocardial infarction (AMI), and cardiac arrest. Descriptive results were presented and stratified by time to BGF initiation post AECOPD: prompt (≤30 days), delayed (31–180 days), and very delayed (181–365 days).

Results 10103 patients qualified: 1122 prompt, 4064 delayed, and 4917 very delayed. The rate PPPY (95% CI) of post-index AECOPD increased as the time to BGF escalation increased: prompt 1.42 (1.36–1.49); delayed 1.86 (1.82–1.89); and very delayed 2.06 (2.03–2.09). Total severe cardiopulmonary event rates (PPPY) were: prompt 0.31 (0.28–0.34); delayed 0.38 (0.37–0.40); and very delayed 0.36 (0.34–0.37).

Conclusion Promptly escalating to BGF from dual therapy after an exacerbation was associated with 23% and 31% fewer subsequent AECOPD and 19% and 13% fewer cardiopulmonary events compared to delayed and very delayed groups. Proactive disease management with BGF may be warranted to prevent future AECOPD and cardiopulmonary events among patients with COPD.

P186 PROMPT INITIATION OF BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL REDUCES EXACERBATIONS AND CARDIOPULMONARY EVENTS IN PATIENTS WITH COPD (MITOS EROS + CARDIOPULMONARY STUDY)

[1]M Pollack, [2]J Tkacz, [2]J Schinkel, [2]B Agatep, [3]E Portillo, [1]H Germack, [4]M Crooks, [5]C Strange, [6]J Marshall, [6]H Mullerova. *[1]AstraZeneca, Wilmington, DE, USA; [2]Inovalon Health, Bowie, MD, USA; [3]University of Wisconsin-Madison, Madison, WI, USA; [4]Hull York Medical School, University of Hull, Hull, UK; [5]The Medical University of South Carolina, Charleston, SC, USA; [6]AstraZeneca, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.347

Rationale Timely initiation of therapy reduces risks of acute COPD exacerbations (AECOPD). This study examined whether prompt initiation of single inhaler triple therapy (SITT) with budesonide/glycopyrronium/formoterol fumarate (BGF) following an AECOPD also lowers risk of future AECOPD and severe cardiopulmonary events.

Methods This retrospective study used US claims data from patients with COPD who were ≥40 years with no prior SITT and any of the following qualifying exacerbation events: ≥1 severe or ≥2 moderate AECOPD, or ≥1 moderate AECOPD while on non-SITT treatment (earliest event = index date); all patients initiated BGF within 1-year following index. Outcomes were annualized rates per person per year (PPPY) of AECOPD and severe cardiopulmonary events. Severe cardiopulmonary events included mortality, severe AECOPD and hospitalizations for heart failure (HF), acute myocardial infarction (AMI), and cardiac arrest. Descriptive results were presented and stratified by time from AECOPD to BGF initiation: prompt (≤30 days), delayed (31–180 days), and very delayed (181–365 days).

Results 17613 patients qualified: 2192 prompt, 7230 delayed, and 8191 very delayed. The rate PPPY (95% CI) of post-index AECOPD increased as the time to BGF initiation increased: prompt 1.35 (1.30–1.40); delayed 1.77 (1.74–1.79); and very delayed 1.98 (1.95–2.00). Total severe cardiopulmonary event rates (PPPY) were: prompt 0.34 (0.32–0.37); delayed 0.39 (0.38–0.40); and very delayed 0.38 (0.37–0.39).

Conclusion Promptly initiating BGF following an exacerbation event was associated with 24% and 32% fewer subsequent AECOPD and 12.3% and 9.3% fewer severe cardiopulmonary events compared to delayed and very delayed groups. Proactive disease management with BGF may be warranted to prevent future AECOPD and cardiopulmonary events among patients with COPD.

P187 LUNG EXPOSURE BIOEQUIVALENCE WITH BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FUMARATE DIHYDRATE WITH THE NEXT GENERATION PROPELLANT HYDROFLUOROOLEFIN-1234ZE VERSUS HYDROFLUOROALKANE-134A IN HEALTHY ADULTS: A CHARCOAL BLOCK STUDY

[1]A Bednarczyk, [2]M Aurivillius, [3]I Raphiou, [4]D Petullo, [4]J Xu, [1]M Kokot, [1]K Sychowicz, [5]K Collison, [6]C Silva, [6]J Reddy, [7]R Goldwater, [8]M Gillen, [6]M Patel. *[1]AstraZeneca Pharma Poland, Warsaw, Poland; [2]AstraZeneca AB, Gothenburg, Sweden; [3]Formerly of AstraZeneca, Durham, NC, USA; [4]AstraZeneca, Gaithersburg, MD, USA; [5]AstraZeneca, Durham, NC, USA; [6]AstraZeneca, Cambridge, UK; [7]Parexel, Baltimore, MD, USA; [8]Creek Lane PK, LLC, Waterford, VA, USA*

10.1136/thorax-2024-BTSabstracts.348

Rationale Pressurised metered dose inhalers (pMDIs) require propellants. However, the hydrofluoroalkane-134a propellant (HFA-134a) currently used in pMDIs has high global warming potential (GWP). Next generation propellants are needed to address climate concerns and safeguard essential medication access. We assessed lung exposure bioequivalence for budesonide/glycopyrronium/formoterol fumarate dihydrate (BGF; 160/7.2/5.0 μg per actuation) components delivered via pMDI using the near-zero GWP propellant hydrofluoroolefin-1234ze (HFO-1234ze) versus HFA-134a with oral activated charcoal, allowing for examination of respiratory tract absorption.

Methods This Phase 1, randomised, double-blind, single-dose, single-centre, partial-replicate, 3-way crossover study included healthy adults (18–60 y; forced expiratory volume in the first second (FEV_1) ≥80% predicted normal; FEV_1/forced vital

capacity ratio >70%). The study included 3 phases: screening, 3 treatments with 3- to 7-day washouts, and follow-up. Participants were randomised to 4 inhalations of BGF 160/7.2/5.0 µg with oral activated charcoal with the test (HFO-1234ze; treatment A) or reference (HFA-134a; treatment B) formulation in 1 of 3 sequences (ABB; BAB; BBA). The primary pharmacokinetic outcome was lung exposure bioequivalence for each BGF component measured by maximum observed plasma concentration (Cmax) and area under the plasma concentration curve from time zero to the last quantifiable concentration (AUClast) for the test (HFO-1234ze) versus reference (HFA-134a) formulation. Bioequivalence was considered established if the geometric mean ratio was within the 80–125% range and associated 90% confidence intervals met regulatory criteria. The partial-replicate design allowed for assessment of within-subject variability of HFA-134a and equivalence limit expansion, if appropriate. Safety and tolerability were also assessed.

Results Of 108 randomised participants, 105 were included in the analyses. Lung exposure to each BGF component based on Cmax and AUClast met bioequivalence criteria for HFO-1234ze relative to HFA-134a (**table 1**). Adverse events (AEs) were observed in 11.7% of HFO-1234ze participants and 18.1% and 3.8% (replicates 1 and 2, respectively) of HFA-134a participants. There were no serious AEs or AEs leading to discontinuation.

Conclusion Lung exposure to each BGF component met bioequivalence criteria for HFO-1234ze relative to HFA-134a, with no new or unexpected safety findings. These data provide clinical evidence that the near-zero GWP HFO-1234ze propellant is a viable replacement for HFA-134a.

Abstract P187 Table 1 Comparison of budesonide, glycopyrronium and formoterol pharmacokinetic parameters for the HFO-1234ze test formulation relative to the HFA-134a reference formulation

Analyte	Parameter	GMR (90% CI)
US approach[a]		
Budesonide	Cmax[b]	104.24 (95.78, 113.44)
	AUClast[b]	106.87 (99.30, 115.01)
Glycopyrronium	Cmax[b]	93.45 (84.31, 103.58)
	AUClast[b]	102.02 (89.12, 116.79)
Formoterol	Cmax[b]	100.14 (91.90, 109.11)
	AUClast[b]	107.76 (94.91, 122.36)
EU approach[c]		
Budesonide	Cmax[b]	103.12 (94.44, 112.60)
	AUClast	106.10 (98.39, 114.41)
Glycopyrronium	Cmax[b]	93.39 (85.29, 102.26)
	AUClast	97.02 (84.18, 111.82)
Formoterol	Cmax[b]	99.70 (91.44, 108.71)
	AUClast	105.74 (92.59, 120.75)

[a]US approach results based on the Average Bioequivalence Method (ABE; a linear mixed effects model, with the log-transformed pharmacokinetic parameter as a dependent variable; sequence and period as fixed effects; and participant and treatment nested within-participant as random effects) or the Reference Scaled Average Bioequivalence Method (RSABE). ABE used if intra-subject CV% <30%, or RSABE used for Cmax and AUClast as intra-subject CV% ≥30%.
[b]Expanded limits applied as CV% ≥30%.
[c]EU approach results based on an analysis of variance model, with the log-transformed pharmacokinetic parameter as a dependent variable, and sequence, period, treatment, and participant within sequence as fixed effects. Average bioequivalence with expanding limits method used for Cmax as intra-subject CV% ≥30%, and average bioequivalence method used for AUClast.
AUClast, AUC from time zero to the time of the last quantifiable concentration; CI, confidence interval; Cmax, maximum observed plasma concentration; CV%, percent coefficient of variation; EU, European Union; GMR, geometric mean ratio; HFA-134a, hydrofluoroalkane-134a; HFO–1234ze, hydrofluoroolefin-1234ze; US, United States.

P188 SYSTEMIC EXPOSURE BIOEQUIVALENCE OF BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FUMARATE DIHYDRATE WITH THE POTENTIAL NEXT GENERATION PROPELLANT HYDROFLUOROOLEFIN-1234ZE VERSUS HYDROFLUOROALKANE-134A IN HEALTHY ADULTS

[1]A Bednarczyk, [2]M Aurivillius, [3]M Shah, [4]I Raphiou, [3]D Petullo, [3]J Xu, [1]M Kokot, [1]K Sychowicz, [5]K Collison, [6]C Silva, [6]J Reddy, [7]D Han, [8]M Gillen, [6]M Patel. *[1]AstraZeneca Pharma Poland, Warsaw, Poland; [2]AstraZeneca AB, Gothenburg, Sweden; [3]AstraZeneca, Gaithersburg, MD, USA; [4]Formerly of AstraZeneca, Durham, NC, USA; [5]AstraZeneca, Durham, NC, USA; [6]AstraZeneca, Cambridge, UK; [7]Parexel, Glendale, CA, USA; [8]Creek Lane PK, LLC, Waterford, VA, USA*

10.1136/thorax-2024-BTSabstracts.349

Rationale Pressurised metered dose inhalers (pMDIs) require propellants for drug delivery. Hydrofluoroalkane-134a (HFA-134a), a currently-used propellant in pMDIs, has relatively high global warming potential (GWP). Therefore, next generation propellants are required to address climate impacts and safeguard access to essential medications. We describe total systemic bioequivalence for each component of budesonide/glycopyrronium/formoterol fumarate dihydrate (BGF; 160/7.2/5.0 µg per actuation) delivered via pMDI using the near-zero

Abstract P188 Table 1 Comparison of budesonide, glycopyrronium and formoterol pharmacokinetic parameters for the HFO-1234ze test formulation relative to the HFA-134a reference formulation

Analyte	Parameter	GMR (90% CI)
US approach[a]		
Budesonide	Cmax[b]	98.63 (92.11, 105.61)
	AUClast	100.62 (96.95, 104.43)
Glycopyrronium	Cmax[b]	85.41 (77.78, 93.79)
	AUClast[b]	95.74 (89.13, 102.84)
Formoterol	Cmax[b]	92.61 (87.53, 97.98)
	AUClast	102.34 (98.20, 106.66)
EU approach[c]		
Budesonide	Cmax[b]	99.29 (92.70, 106.34)
	AUClast	100.63 (96.81, 104.60)
Glycopyrronium	Cmax[b]	85.58 (78.84, 92.89)
	AUClast	96.06 (90.16, 102.34)
Formoterol	Cmax[b]	93.87 (88.56, 99.50)
	AUClast	102.48 (98.21, 106.94)

[a]US approach results based on the Average Bioequivalence Method (ABE; a linear mixed effects model, with log-transformed pharmacokinetic parameter as a dependent variable; sequence and period as fixed effects; and participant and treatment nested within-participant as random effects) or the Reference Scaled Average Bioequivalence Method (RSABE). ABE used if intra-subject CV% <30%, or RSABE used if intra-subject CV% ≥30%.
[b]Expanded limits applied as CV% ≥30%.
[c]EU approach results based on an analysis of variance model, with log-transformed pharmacokinetic parameter as dependent variable, and sequence, period, treatment and participant within sequence as fixed effects. Average bioequivalence with expanding limits method used for Cmax as intra-subject CV% ≥30%, and average bioequivalence method used for AUClast.
AUClast, AUC from time zero to the time of the last quantifiable concentration; Cmax, maximum observed plasma concentration; CI, confidence interval; CV%, percent coefficient of variation; EU, European Union; GMR, geometric mean ratio; HFA-134a, hydrofluoroalkane-134a; HFO-1234ze, hydrofluoroolefin-1234ze; US, United States.

GWP propellant hydrofluoroolefin-1234ze (HFO-1234ze) versus HFA-134a.

Methods This Phase 1, randomised, double-blind, single-dose, single-centre, partial-replicate, 3-way crossover study included healthy adults (18–60 y; forced expiratory volume in the first second (FEV_1) ≥80% predicted normal; ratio of FEV_1/forced vital capacity >70%). The study included 3 phases: screening, 3 treatments with 3- to 7-day washouts and follow-up. Participants were randomised to 4 inhalations of BGF 160/7.2/5.0 µg with the test (HFO-1234ze; treatment A) or reference (HFA-134a; treatment B) formulation in 1 of 3 treatment sequences (ABB; BAB; BBA). Primary pharmacokinetic outcomes for assessing total systemic bioequivalence for each BGF component for the test (HFO-1234ze) versus reference (HFA-134a) formulation included maximum observed plasma concentration (Cmax) and area under the plasma concentration curve from time zero to the time of the last quantifiable concentration (AUClast). If geometric mean ratios were within the 80–125% range, and associated 90% confidence intervals met regulatory criteria, bioequivalence was considered established. The partial-replicate design allowed for assessment of within-participant variability for HFA-134a and equivalence limit expansion, if appropriate. Safety and tolerability were also assessed.

Results All 108 randomised participants were included in the analyses. Total systemic bioequivalence of each BGF component based on Cmax and AUClast met bioequivalence criteria for HFO-1234ze relative to HFA-134a (**table 1**). Adverse events (AEs) were observed in 14.8% of participants with HFO-1234ze and 19.6% (replicate 1) and 8.4% (replicate 2) of participants with HFA-134a. There were no reports of serious AEs or AEs leading to discontinuation.

Conclusion Total systemic exposure to all BGF components met bioequivalence criteria for HFO-1234ze relative to HFA-134a, with no new or unexpected safety findings. These data provide evidence that the near-zero GWP HFO-1234ze propellant is a viable replacement for HFA-134a.

P189 DUPILUMAB REDUCES EXACERBATIONS AND IMPROVES LUNG FUNCTION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND EMPHYSEMA

[1]SP Bhatt, [2,3]KF Rabe, [4]NA Hanania, [5]CF Vogelmeier, [6]M Bafadhel, [7]S Christenson, [8]A Papi, [9]D Singh, [10]E Laws, [11]P Dakin, [11]J Maloney, [10]X Lu, [10]D Bauer, [11]A Bansal, [12]LB Robinson, [12]RM Abdulai. *[1]University of Alabama at Birmingham, Alabama, USA America; [2]LungenClinic Grosshansdorf, Airway Research Center North (ARCN), Grosshansdorf, Germany; [3]Christian-Albrechts University, Airway Research Center North (ARCN), Kiel, Germany; [4]Baylor College of Medicine, Houston, USA; [5]University of Marburg, German Center for Lung Research, Marburg, Germany; [6]King's Centre for Lung Health, King's College London, London, UK; [7]University of California San Francisco, San Francisco, USA; [8]University of Ferrara, S. Anna University Hospital, Ferrara, Italy; [9]Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [10]Sanofi, Bridgewater, USA; [11]Regeneron Pharmaceuticals Inc., Tarrytown, USA; [12]Sanofi, Cambridge, USA*

10.1136/thorax-2024-BTSabstracts.350

Purpose Clinical phenotypes of chronic obstructive pulmonary disease (COPD) include chronic bronchitis and emphysema, which have a high degree of overlap. In the phase 3 BOREAS (NCT03930732) trial, add-on dupilumab vs placebo significantly reduced the rate of moderate or severe exacerbations and improved lung function, health-related quality of life, and symptoms in patients who had COPD, type 2 inflammation, and an elevated exacerbation risk despite inhaled triple therapy. This analysis assessed annualized rates of moderate or severe acute exacerbations and improvements in lung function in patients with COPD and type 2 inflammation, with and without investigator-reported emphysema.

Methods BOREAS was a 52-week, phase 3, randomized trial of the efficacy and safety of subcutaneous add-on dupilumab 300 mg or placebo once every 2 weeks in patients with COPD and type 2 inflammation (blood eosinophils ≥300 cells/µL at screening), moderate or severe airflow limitation, on triple therapy consisting of inhaled corticosteroids (ICS), long-acting β_2-agonists (LABA), and long-acting muscarinic antagonists (LAMA), or LABA/LAMA if ICS were contraindicated. Assessed endpoints were the annualized rate of moderate or severe exacerbations and the change from baseline in pre-bronchodilator forced expiratory volume in 1 second (FEV_1) at Week 12 in patients with and without investigator-reported emphysema.

Results At baseline, 306/939 (32.6%) of enrolled patients had an investigator-reported diagnosis of emphysema, and a higher exacerbation rate and lower FEV_1 than patients without emphysema at baseline. Relative reduction of the annualized rate of moderate or severe exacerbations was 29.0% in patients with emphysema (relative risk 0.710 [95%CI 0.533–0.945]), and 31.5% without emphysema (relative risk 0.685 [95%CI 0.527–0.891]). The least squares mean difference from baseline to Week 12 for dupilumab vs placebo in pre-bronchodilator FEV_1 (L) was 0.071 ([95%CI 0.002–0.141]) in patients with emphysema, and 0.088 ([95%CI 0.036–0.140]) in patients without emphysema.

Conclusions Dupilumab efficacy was similar in patients with COPD and type 2 inflammation, with and without emphysema. Phenotypes of chronic cough and emphysema are not dichotomous among patients with COPD. These data demonstrate the efficacy of dupilumab in patients with type 2 inflammation, a high exacerbation risk, and symptomatic COPD, with or without emphysema.

P190 DUPILUMAB IMPROVES PATIENT-REPORTED RESPIRATORY SYMPTOMS IN NON-EXACERBATORS WITH MODERATE-TO-SEVERE COPD AND TYPE 2 INFLAMMATION: PHASE 3 BOREAS TRIAL

[1]KF Rabe, [2]CF Vogelmeier, [3]SP Bhatt, [4]NA Hanania, [5]M Bafadhel, [6]SA Christenson, [7]A Papi, [8]D Singh, [9]E Laws, [10]J Maloney, [9]X Lu, [9]D Bauer, [10]A Bansal, [11]LB Robinson, [11]RM Abdulai. *[1]LungenClinic Grosshansdorf and Christian Albrechts University of Kiel, Airway Research Center North, German Center for Lung Research, Grosshansdorf, Germany; [2]University of Marburg, German Center for Lung Research (DZL), Marburg, Germany; [3]University of Alabama at Birmingham, Birmingham, Alabama, USA; [4]Baylor College of Medicine, Houston, Texas, USA; [5]King's Centre for Lung Health, King's College London, London, UK; [6]University of California San Francisco, San Francisco, CA, USA; [7]University of Ferrara, Ferrara, Italy; [8]Manchester University NHS Foundation Trust, University of Manchester, Manchester, UK; [9]Sanofi, Bridgewater, New Jersey, USA; [10]Regeneron Pharmaceuticals Inc., Tarrytown, New York, USA; [11]Sanofi, Cambridge, Massachusetts, USA*

10.1136/thorax-2024-BTSabstracts.351

Introduction and Objectives Dupilumab, a fully human monoclonal antibody that blocks the shared receptor component for IL-4 and IL-13, lowered exacerbation frequency and improved

Abstract P190 Table 1 Change from baseline in E-RS:COPD score at Week 52 in patients who did not experience an exacerbation

	Placebo (n=257)	Dupilumab 300 mg q2w (n=281)
Mean (SD)	−1.85 (4.64)	−3.32 (5.40)
LS mean (SE)[a]	−1.643 (0.327)	−2.826 (0.313)
LS mean difference (95% CI)[a]		−1.183 (−2.043 to −0.323)
Nominal *P*-value vs placebo[a]		0.0071

[a]Derived from mixed model of repeated measures (MMRM); change from baseline as response variable. Treatment, region, ICS dose, smoking status at screening, treatment-by-visit interaction, baseline score, and baseline-by-visit interaction as covariates. ER-S:COPD scores ranging from 0 to 40 with higher scores indicating more severe symptoms. CI, confidence interval; E-RS:COPD, Evaluating Respiratory Symptoms™ in Chronic Obstructive Pulmonary Disease; LS, least squares; q2w, every two weeks; SD, standard deviation; SE, standard error.

health-related quality of life and respiratory symptoms in phase 3 BOREAS (NCT03930732). Herein, we evaluated whether dupilumab results in an improvement in daily symptom burden using the Evaluating Respiratory Symptoms in COPD (E-RS^{TM}:COPD) tool in patients who did not experience an exacerbation ('non-exacerbators').

Methods In BOREAS, patients with COPD with moderate-to-severe airflow limitation and type 2 inflammation (screening blood eosinophils ≥300 cells/μL), on triple therapy, received add-on dupilumab 300mg q2w or placebo for 52 weeks. E-RS:COPD score was analyzed in the ITT population and in non-exacerbators during BOREAS.

Results In ITT population, dupilumab (n=468) improved E-RS:COPD scores (least squares [LS] mean difference −1.137; *P*=0.0012) compared to placebo (n=471). For non-exacerbators, mean baseline scores were similar for both treatment groups and, at Week 52, dupilumab (n=286) decreased the severity of symptoms compared to placebo (n=259) (LS mean difference −1.183; nominal *P*=0.0071) (**table 1**). Dupilumab demonstrated an acceptable safety profile in the ITT.

Conclusions Dupilumab reduced daily symptom burden compared to placebo in the ITT population and in non-exacerbators.

P191 BLOOD EOSINOPHIL SUBGROUPS AND SPUTUM CULTURE IN COPD PATIENTS FROM A COMMUNITY SERVICE

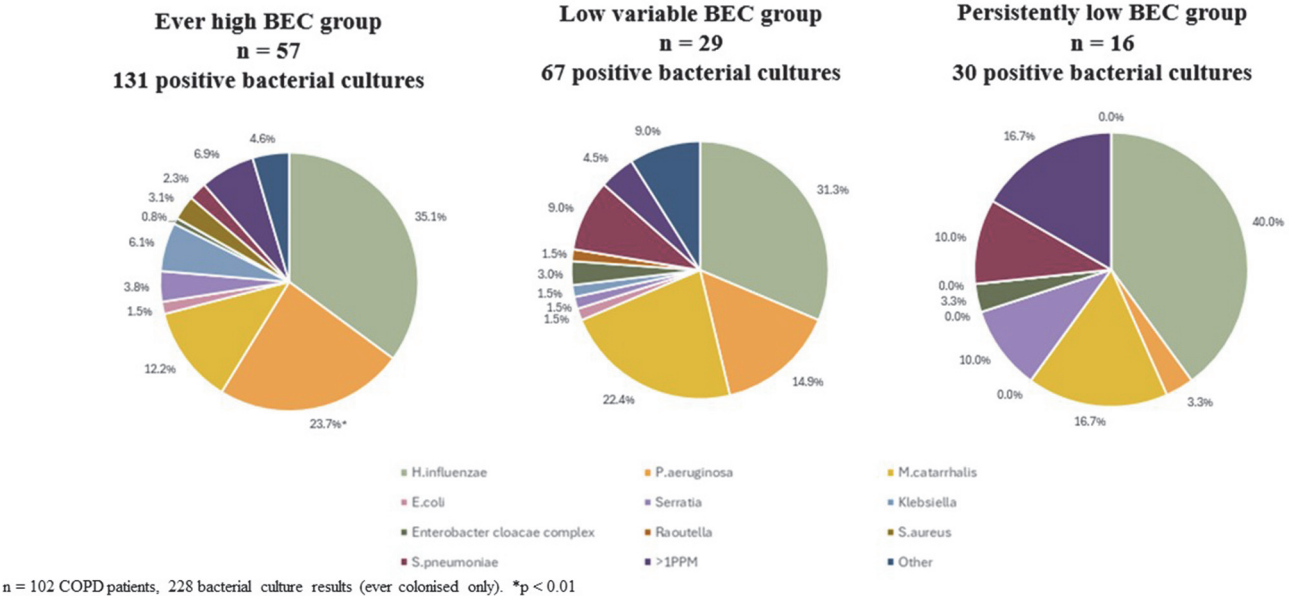
[1]A Beech, [2]J Thomas, [2]G Traynor, [2]A Betterton, [2]C Pownall, [2]B Kane, [1]D Singh. [1]*University of Manchester, Manchester, UK*; [2]*Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.352

Introduction Eosinophilic inflammation in COPD is associated with increased inhaled corticosteroid (ICS) response, while low eosinophil numbers are associated with increased proteobacteria, specifically *Haemophilus*, in the lungs. Blood eosinophil counts (BECs) are a surrogate biomarker of eosinophilic airway inflammation. Previous studies on eosinophils and microbiome during exacerbation have focused on research settings or hospitalised patients. This retrospective analysis uses clinical results obtained from a COPD community service (CCS). We investigated the relationship between eosinophilic inflammation and pulmonary microbiota using multiple BECs to define subgroups.

Methods BEC and sputum samples collected over a 2-year period were retrospectively analysed, from patients under the care of a University NHS Foundation Trust CCS. Exacerbation sample collection occurred when patients contacted CCS because of a worsening of symptoms. Groups were defined using multiple BEC measurements: ever high (BEC^{HIGH}≥300cells/μL on ≥1 occasion), persistently low (BEC^{LO}; always <150 cells/μL) and low variable (BEC^{VAR}; never ≥300 cells/μL and not BEC^{LO}). Mean (SD) is presented.

Results Sputum culture and BEC were collected on ≥1 occasion for n = 128. COPD patients were 71.7 (10.0) years of age, 56.3% female and 43.9% (22.6) were current smokers, with 91% ICS-users. The annual exacerbation rate was 2.3 (2.1) and 0.7 (1.3) for mild-moderate and severe exacerbations, respectively. 1,533 BEC were analysed: BEC^{LO}, BEC^{VAR} and BEC^{HIGH} groups represented 52.2, 31.3 and 16.4% of the population, respectively. 228 positive sputum cultures



Abstract P191 Figure 1 Characterisation of pulmonary microbiota in groups defined using BEC, including positive cultures based on a 2-year history

were reported for n = 102 patients, representing 43.5, 51.5 and 53.6% of results for BEC^{LO}, BEC^{VAR} and BEC^{HIGH} respectively (p = 0.17). *Pseudomonas Aeruginosa* (*PA*) was identified in a higher proportion of BEC^{HIGH}patients compared to BEC^{LO} (p = 0.01, figure 1). Proteobacteria, including *Haemophilus influenzae (HI)*, were not different between groups.

Conclusion In a longitudinal exacerbation sampling analysis, we found no difference between different BEC groups for *HI* positive cultures, while *PA* positivity was associated with eosinophilic inflammation. Results of this real-world analysis may differ from previous studies due to patient characteristics and definition of eosinophil subgroups by repetitive sampling. Also, sputum culture results may differ from 16sRNA based analysis.

P192 FROM DEVELOPMENT TO DEPLOYMENT: ACTIONABLE AI MODELS THAT ACCURATELY PREDICT ADMISSIONS AND EXACERBATIONS IN PATIENTS WITH COPD

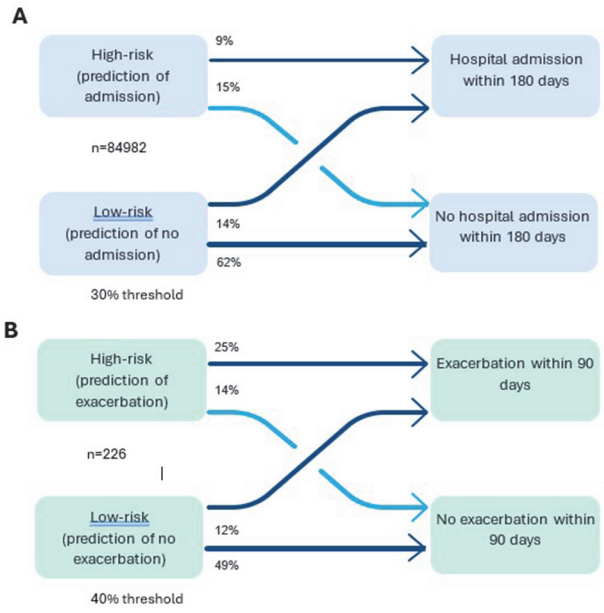
[1]N Fernando, [1]K Goldsmith, [1]A Cushing, [2]A Taylor, [1]S Burns, [3]DJ Lowe, [2]C Carlin. *[1]Lenus Health, Edinburgh, UK; [2]NHS Greater Glasgow and Clyde, Glasgow, UK; [3]University of Glasgow, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.353

Introduction Deployment of validated, accurate, fair and explainable machine-learning models that provide risk-stratifying actionable insights offer prospects for the proactive transformation of care pathways for COPD and other long-term conditions. Risk prediction models developed to date have mainly focussed on readmission and electronic health record (EHR) data. While readmission models are useful, proactive identification of patients who have not recently admitted allows for earlier intervention, preventing admissions and improving patient outcomes. Although EHR data is crucial for longer-term predictions, short-term models benefit from real-time, patient-captured information. We have developed and validated complementary 180-day admission and 90-day exacerbation risk prediction models, using different data sources.

Methods Model development was undertaken on de-identified data within our trusted research environment, with ethics approval. We trained a LightGBM admission risk model using routinely collected EHR data - demographics, hospital admission, prescribing and labs from 47601 patients. An XGBoost exacerbation risk model was trained using data captured by a remote patient management service from 208 patients, including exacerbation records and responses to patient reported outcomes (PROs – CAT, symptom diary, MRC, Eq5D), which are sought on a daily, weekly and monthly basis. Model training and cross-validation involved 80% of the patient cohort, with a matched 20% reserved for the holdout test cohort. SHAP (SHapley Additive exPlanations) was used to provide the reasoning behind the risk scores and explanations were evaluated with clinicians for bio-plausibility.

Results The admission and exacerbation models achieved ROC-AUC scores of 0.66 and 0.80, and PR-AUC scores of 0.38 and 0.69 on the respective holdout test cohort. Utility of these models to stratify and prioritise high-risk patients with acceptable sensitivity and specificity (figure 1) was confirmed at clinical advisory review. SHAP analysis identified prescription and comorbidity history as key features for the admission model, and prior exacerbation history and PRO scores for the exacerbation model. Local explainability plots provide patient-specific insights for personalized interventions.



Abstract P192 Figure 1 Flowcharts showing model prediction of high and low-risk groups and the percentages of predictions that were accurate (straight arrows) and inaccurate (curved arrows) for the 180-day admission model (A) and the 90-day exacerbation model (B). n represents the number of rows in the holdout test cohort, which is larger than the number of patients in the same cohort as some patients had multiple rows in the data

Conclusions Our developed and validated 180-day admission and 90-day exacerbation models address gaps in existing risk prediction frameworks. These models have been approved for deployment to live use within the DYNAMIC-AI clinical investigation.

'Lord of the Tracheal Rings' – Interventional bronchoscopy

P193 DAY-CASE DEEP SEDATION BRONCHOSCOPY WITH TARGET-CONTROLLED SEDATION (TCS) AND HIGH-FLOW NASAL OXYGEN (HFNO) IN THE BRONCHOSCOPY SUITE

[1]T Wijayaratne, [1]Z Aung, [2]P Thiagarajan, [2]R Annamaneni, [1]R Sudhir, [1]R Panchal. *[1]Department of Respiratory Medicine, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK; [2]Department of Anaesthetics, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.354

Introduction Conscious sedation during flexible bronchoscopy (FB) is commonly performed with intravenous benzodiazepines and opioids. Patients who fail to tolerate bronchoscopy under such conditions require a general anaesthetic (GA) in a theatre environment which delays faster diagnostics. We explored the feasibility of utilising deep sedation in FB with target-controlled sedation (TCS) and high-flow nasal oxygen (HFNO) in the bronchoscopy suite.

Abstract P193 Table 1 Summary table of deep sedation bronchoscopy cases

Case No	Age	Sex	Procedure	High Flow Nasal Oxygen		Duration (minutes)	Complications
				FiO2 (%)	O2 Flow Rate (l/min)		
1	50	M	EBUS	40–50	20–40	55	Nil
2	82	F	EBUS	50–60	20–30	50	Nil
3	32	M	Chartis Assessment + EBV insertion	50–60	30–40	45	Nil
4	51	M	EBUS	50–60	30–50	45	Nil
5	62	F	EBUS	40–50	20–50	60	Nil
6	64	F	EBUS	50–60	30–50	45	Nil
7	47	F	EBUS	40–50	20–50	30	Nil
8	62	F	Bronchoscopy + wash	50–60	30–50	25	Nil
9	63	M	EBUS	50–60	40–50	55	Nil
10	47	M	EBUS	40–60	20–40	68	Nil
11	63	F	Bronchoscopy + wash	40–60	30–50	20	Nil
12	52	M	Bronchoscopy + endobronchial cryobiopsy	50–60	20–40	44	Nil
13	79	M	EBUS + CryoEBUS	50–60	30–40	56	Nil
14	65	F	EBUS + CryoEBUS	50–60	20–50	50	Nil
15	65	M	EBUS + CryoEBUS	50–60	30–40	45	Nil
16	70	M	EBUS + Endobronchial biopsies	50–60	20–50	45	Nil

Methods This feasibility study included patients who were unable to tolerate bronchoscopic procedures under conscious sedation (4/16) and those identified early with severe anxiety (12/16). Patients who needed standard FB, endobronchial ultrasound (EBUS) and EBUS-cryobiopsy (CryoEBUS) were included. An anaesthetist provided TCS with propofol and remifentanil using target controlled infusion (TCI) while HFNO was delivered through a Fisher & Paykel Healthcare Airvo™ 2 nasal high flow circuit. Monitoring during deep sedation adhered to the standards set by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and end-tidal CO_2 was also observed.

Results 16 patients (9/16 male [56%]) underwent deep sedation bronchoscopy with a mean age 60 years. Pre-anaesthetic review was undertaken on the procedure day and all cases were performed as a day-case in the bronchoscopy suite. 12 (75%) patients had EBUS procedures (3 had CryoEBUS) for hilar and/or mediastinal lymphadenopathy, 3 patients had standard FB and 1 patient had FB for Chartis assessment and endobronchial valve (EBV) insertion. TCI of propofol and remifentanil was used to achieve deep sedation. An Airvo™ 2 nasal high flow circuit delivered oxygen at an average flow rate of 20–50 litres/minute to achieve an average fraction of inspired oxygen (FiO_2) of 40–60%. The mean time taken for a procedure in the deep sedation list was 46 minutes and none of the patients had any immediate or late anaesthetic procedure related complications. All patients were discharged from hospital on the same day. Table 1 shows the summary of cases performed.

Conclusion Deep sedation FB with TCS and HFNO with Airvo™ 2 circuit provides an alternative to GA procedures and can be safely performed in the bronchoscopy suite avoiding the need for anaesthetic gases and theatre space.

P194 ENDOBRONCHIAL ULTRASOUND-GUIDED TRANSBRONCHIAL CRYOBIOPSY (CRYOEBUS): A NOVEL TECHNIQUE WHICH OFFERS A HIGHER DIAGNOSTIC YIELD IN OUR EBUS TOOLBOX

[1]T Wijayaratne, [2]C Richards, [1]R Sudhir, [1]R Panchal. *[1]Department of Respiratory Medicine, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK; [2]Department of Pathology, Leicester Royal Infirmary, University Hospitals Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.355

Introduction Endobronchial ultrasound (EBUS) diagnostic yield is influenced by the likely underlying aetiology of intra-thoracic lymphadenopathy and the biopsy method employed. EBUS can be challenging in lymphoproliferative and granulomatous disorders and thus it is important that the bronchoscopist has a toolbox of modalities to obtain a diagnosis and avoid repeated procedures. We explored the feasibility of day-case EBUS-guided transbronchial cryobiopsy (cryoEBUS) in the bronchoscopy suite under conscious sedation.

Method This evaluation included 24 patients requiring EBUS sampling of lymph nodes (LNs) and had EBUS-TBNB (transbronchial needle biopsy) and cryoEBUS as a single day-case procedure using a Medi-Globe SonoTip TopGain®22G crown-cut needle (FNB) and a 1.1-mm ERBECRYO® 2 cryoprobe. All patients apart from 3 patients had moderate sedation with midazolam and fentanyl and the same LN underwent FNB (1–3 passes) and cryoEBUS sampling (3 passes).

Results 24 patients (12/24- male [50%]) were included with a mean age of 64 years. Station-7 LN was sampled in 75% of cases (18/24) and remainder were stations 4R, 10R and 11R. The mean size of LNs sampled and the mean cryoEBUS tissue size was 26.7mm (95% CI:23.5–29.9mm) and 4.67mm (95% CI:4.06–5.27), respectively. Mean midazolam and fentanyl

Abstract P194 Table 1 Summary of cases whereby FNB was non-diagnostic and cryoEBUS yielded a diagnosis

Age	Suspected Diagnosis	Sampled Lymph Node Station and Size (cm)	cryoEBUS tissue sample size (mm)	EBUS-TBNB Histology	EBUS-TMC Histology	Midazolam Dose (mg)	Fentanyl Dose (mcg)	Procedure duration (min)
77	Sarcoidosis	Station 7- 3cm	5	Non-Diagnostic. No lymphoid tissue is identified	Sarcoidosis. Preserved architecture of sample	2	50	30
58	Sarcoidosis/ Lymphoma	Station 7- 2cm	6	Insufficient lymphoid tissue for diagnosis. Crushed sample	Adequate lymphoid tissue- no abnormality	4	100	45
70	Lymphoma	Station 7- 5cm	5	Insufficient lymphoid tissue for diagnosis	Diffuse large B-cell lymphoma	3	100	60
81	Lung Cancer	Station 7- 2cm	5	No lymphoid tissue for diagnosis	Good samples of intact lymph node tissue. Normal Mediastinal LN- No Cancer	3	100	60
79	Lung Cancer recurrence	Station 7- 3cm	6	Insufficient lymphoid tissue for diagnosis. Crushed sample	Classic Hodgkin lymphoma- Intact fragments of lymph node material	3	100	50
68	Sarcoidosis	Station 7- 2cm	5	Inadequate material for assessment- no lymphoid tissue	Preserved lymph node architecture with no evidence of metastatic malignancy	2	100	30
44	Sarcoidosis	Station 7- 3cm	3	Inadequate material for assessment- no lymphoid tissue	Sarcoidosis. Preserved architecture of sample	2	75	60
66	Lung Cancer	Station 7- 2cm	6	Inadequate material for assessment- no lymphoid tissue	Preserved lymph node architecture with no evidence of metastatic malignancy	3	75	60
36	Lymphoma/ TB	Station 7- 3cm	4	Non-necrotising granulomatous inflammation- Crushed sample- TB	Non-necrotising granulomatous inflammation- TB- Preserved architecture of sample	3	100	47
65	Sarcoidosis/ Lymphoma	Station 7- 3cm	5	Scanty fragments of lymphoid tissue- partly crushed- no pathology identified	Sarcoidosis. Preserved architecture of sample	3	50	58
44	Sarcoidosis	Station 7- 3cm	4	Inadequate material for assessment- no lymphoid tissue	Sarcoidosis. Preserved architecture of sample	3	100	35

doses were 2.97mg (95% CI:2.67–3.29) and 82.14µg (95% CI:72.53–91.76), respectively. The mean duration of a procedure was 48 minutes (95% CI:44.6–52.23) and all patients were discharged on the same day. The overall diagnostic yield of FNB vs cryoEBUS was 54% and 96%, respectively. Subgroup analysis showed that diagnostic yield for non-lymphoproliferative malignancy was 100% for both techniques, however, for lymphoproliferative disorders was 30% vs 100% (FNB vs cryoEBUS) and granulomatous conditions was 20% vs 100% (FNB vs cryoEBUS). Diagnostic yield of identifying non-pathological LNs was 16% vs 100% (FNB vs cryoEBUS). 2 patients had minor episodes of controllable bleeding (<5mls) and there were no complications. Table 1 shows a summary whereby FNB was non-diagnostic and cryoEBUS yielded a diagnosis.

Conclusion CryoEBUS can be safely performed as a day-case under conscious sedation and offers a higher diagnostic yield in suspected lymphoproliferative and granulomatous disorders and can be easily incorporated into our toolbox of EBUS resources avoiding the need for mediastinoscopy.

P195 IS PET-CT ESSENTIAL PRIOR TO MEDIASTINAL STAGING OF LUNG CANCER WITH EBUS

H OBrien, L Piggott, F OConnell, P Nadarajan. *Department of Respiratory Medicine, St James's Hospital, Dublin, Ireland*

10.1136/thorax-2024-BTSabstracts.356

Rationale Lung cancer is the fourth most common cancer in Ireland, with over 2500 new cases diagnosed annually. It remains the leading cause of cancer death nationally.

PET-CT is a crucial tool in mediastinal staging, particularly in early stage lung cancer., however national waiting times are long, and may result in diagnosis delays. Tissue sampling is often delayed until this is completed, resulting in further unnecessary delays in the diagnostic pathway.

In our centre, patients often undergo EBUS prior to PET-CT being completed. We hypothesise that minimally invasive mediastinal staging should not be delayed until PET-CT is completed and proceeding without this imaging modality does not result in unnecessary duplication of procedures.

Methods Data on patients who underwent an EBUS in 2023 were collated. Patients with a diagnosis other than primary lung cancer were excluded with remaining patients divided into two groups: EBUS done before or after PET-CT imaging. Detailed case reviews established need for repeat procedure based on PET-CT and mediastinal staging as determined by both MDT discussion and radiological report.

Results In 2023, 984 referrals were made to the rapid access clinic. 704 procedures were carried out during, with 459 of these being EBUS. 56% (n=258) of cases were done for new diagnosis of lung cancer. Other indications for EBUS included benign lymphadenopathy (17%), sarcoid (13%) and previously documented malignancy (10%).

95 patients had EBUS done prior to their PET-CT. Of those, 15 (16%) patients required repeat EBUS, 7 (7%) for

repeat mediastinal staging based on their PET-CT result, with the remaining 8 (8%) requiring a repeat EBUS for further molecular analysis. Of the 7 patients who required a repeat EBUS for mediastinal staging, ultimately only 1 case result in an upstaging in their final staging.

128 patients had PET prior to EBUS. 32 patients from this group were upstaged by PET-CT compared to final histological diagnosis as confirmed by EBUS, giving PET-CT a false positive rate of 25% in this cohort.

Conclusion While PET-CT is crucial in the diagnostic algorithm in lung cancer, mediastinal staging and tissue sampling should not be postponed if access is delayed.

P196 EVALUATING THE DIAGNOSTIC SENSITIVITY OF RAPID ON-SITE EXAMINATION (ROSE) IN EBUS-TBNA SAMPLING OF POSSIBLE GRANULOMATOUS PATHOLOGY

[1,2]O Hatem, [1]A Hamilton-Shield, [1,2]M Park, [3]G Satta, [2]J Nanan, [2]B Tomas-Cordero, [1]M Coleman, [1]L Martin, [2]K Manalan, [4]A Datta, [4]A Whittington, [5]M Loebinger, [5]H Burgess, [6]L Castle, [7]H Kunst, [8]R Breen, [9]A Dunleavy, [10]T Gorsuch, [11]S Khan, [11]M Lipman, [12]P Haldar, [1,2]OM Kon. *[1]Imperial College NHS Trust, London, UK; [2]National Heart Lung Institute (NHLI), London, UK; [3]University College London NHS Trust, London, UK; [4]London North West University NHS Trust, London, UK; [5]Chelsea and Westminster NHS Trust, London, UK; [6]Barts Health NHS Trust, London, UK; [7]Queen Mary University of London, London, UK; [8]Guys and St Thomas NHS Trust, London, UK; [9]St Georges University NHS Trust, London, UK; [10]Manchester University NHS Trust, Manchester, UK; [11]Royal Free London Hospitals NHS Trust, London, UK; [12]University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.357

Introduction and Objectives Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) plays an important role in the diagnosis of non-malignant mediastinal lymphadenopathy. Rapid on-site evaluation (ROSE) provides contemporaneous information to the bronchoscopist as to whether further sampling, and or procedures, such as transbronchial lung biopsy (TBLB) or specific microbiological diagnostics, are required. However, its utilisation is not standard practice. We sought to further evaluate the sensitivity of ROSE in combination with EBUS-TBNA for the diagnosis of granulomatous disease.

Methods Patients undergoing EBUS-TBNA for suspected tuberculosis (TB) lymphadenopathy had retrospective data collected at one UK centre between 2018–2019, and prospectively at 10 UK centres between 2021–2022 in. 95 patients with a confirmed cytological diagnosis of granulomatous pathology for whom ROSE was performed were included, and results from preliminary ROSE findings were compared to final cytopathology for accuracy.

Results Our population included 55 males and 40 females with a median age of 46 years (IQR 34.1- 59.5). There was concordance between preliminary ROSE findings and final cytological granuloma diagnosis in 82.1% (78/95) of patients identified. In epithelioid reactions with caseation ROSE sensitivity was 60% (6/10) and without caseation ROSE sensitivity was 83.5% (71/85).

Conclusion Our study demonstrated a good level of concordance between initial ROSE sampling and final cytological diagnosis in granulomatous disease comparable to the existing literature, which showed a sensitivity of 81.6%.[1] This adds weight to the argument for its continued use during EBUS-TBNA procedures for the investigation of benign mediastinal lymphadenopathy. Further studies should now evaluate the impact of ROSE in optimising the number of passes for diagnostic yield and potentially improving the patient's experience with a shorter duration of the procedure.

REFERENCE

1. Rokadia HK, Mehta A, Culver DA, Patel J, Machuzak M, Almeida F, Gildea T, Sethi S, Zell K, Cicenia J. Rapid on-site evaluation in detection of granulomas in the mediastinal lymph nodes. *Ann Am Thorac Soc*. 2016 Jun;**13**(6):850–5. doi: 10.1513/AnnalsATS.201507-435OC. PMID: 27097233.

P197 ENDOBRONCHIAL VALVE MANAGEMENT OF PERSISTENT AIR LEAK FROM PNEUMOTHORAX: A WESTERN AUSTRALIAN AUDIT

[1]SJ O'Riordan, [1]N Setty, [1]D Thakkar, [2]T Huseini, [2]R Shrestha, [2]L Yagnik, [2]M Salamonsen, [1]R Thomas, [1,3,4]YCG Lee. *[1]Department of Respiratory Medicine, Sir Charles Gairdner Hospital, Perth, Australia; [2]Department of Respiratory Medicine, Fiona Stanley Hospital, Perth, Australia; [3]Pleural Medicine Unit, Institute for Respiratory Health, Perth, Australia; [4]School of Medicine, University of Western Australia, Perth, Australia*

10.1136/thorax-2024-BTSabstracts.358

Introduction/Aim Persistent air leak (PAL) frequently complicates pneumothorax, especially secondary spontaneous and iatrogenic/traumatic pneumothoraces. PAL requires prolonged (and often multiple) chest tube drainage, resulting in extended hospital stay and associated morbidity, mortality, and healthcare costs. Endobronchial valve (EBV) is a new strategy for management of PAL but is supported only by case series. We report the experience from the two tertiary interventional pulmonology (IP) centres in Western Australia.

Methods All patients who underwent EBV placement for PAL were identified from IP databases of Sir Charles Gairdner Hospital (SCGH) and Fiona Stanley Hospital (FSH). Patient demographics and clinical outcomes were retrieved from case records (WA NHMS GEKO approval #50272).

Results Patients (n=29) who underwent EBV placement for PAL between 1/1/2017 and 5/10/2023 (82% male; mean age 71) were included. Pneumothorax were most commonly spontaneous (69%) especially from COPD, bronchiectasis and interstitial lung diseases. Iatrogenic causes (especially from lung biopsy) account for 24% of cases. The mean number of EBVs required was 3.3 (SD 1.3) per patient and 48% of patients had valves placed in the right upper lobe, followed by the left upper and lower lobes. The mean length of hospitalization was 25 days. Prior to undergoing EBV placement 48% had another procedure trialled; 5 patients had blood patch, 1 patient had iodine, 4 patients had talc, 2 patients had surgical pleurodesis, 1 patient had 3 procedures (blood patch, iodine and talc) and 2 patients had blood patch and talc.

EBV was successful with 86% of patients discharged and 8 patients had drains removed within 3 days whereas another 15 patients between 3–7 days. Most (72%) patients had no complications. Four had pleural infection and 3 requiring further EBV placement. One patient coughed up an EBV. Four (14%) patients died in hospital from causes unrelated to EBVs. EBVs were removed in 5 (17%) patients, 1 (3%) had recurrence of pneumothorax, 18 (62%) died within the next 3 years and 2 (6%) received lung transplant.

Conclusion Endobronchial valves (EBVs) placement is feasible and safe and can be useful in PAL but is often employed after prolonged hospitalization.

P198 RADIAL EBUS WITH ELECTROMAGNETIC NAVIGATION BRONCHOSCOPY: REAL WORLD UK EXPERIENCE

AR Teagle, FR Millar, S Giavedoni, JB McCafferty, ADL Marshall. *Royal Infirmary of Edinburgh, Edinburgh, UK*

10.1136/thorax-2024-BTSabstracts.359

Background Early diagnosis of lung cancer is essential to improve outcomes however diagnosis of isolated peripheral lung lesions presents a clinical challenge. Electromagentic Navigation Bronchoscopy (ENB) is an emerging tool used to access the lung periphery. There is a paucity of relevant data available to describe the experience in the UK healthcare setting where access to advanced imaging and general anaesthesia is limited. We present the real world experience of ENB from a UK bronchoscopy unit.

Methods Cases were identified retrospectively from a single institution. 150 consecutive diagnostic peripheral bronchoscopy cases performed from June 2020 to June 2024 were included. Procedures were performed by 2 operators from a team of 4 experienced bronchoscopists.

Results 150 procedures were performed in 148 patients. Median lesion size was 25mm and 58% had a leading bronchus into the lesion. The majority (98%) of cases were performed under conscious sedation. Radial EBUS was used in 99% of procedures and fluoroscopy in 3%.

Overall diagnostic yield was 69% using the strict definition,[1]79% if using intermediate definition. Diagnostic yield increased after the first 75 cases suggesting a sustained learning curve. Yield was reduced for lesions £15mm in size and in lesions with negative bronchus sign.

One patient (1%) had moderate bleeding managed bronchoscopically and 5 patients (3%) developed a pneumothorax.

Conclusions ENB is a safe and effective tool for the diagnosis of peripheral pulmonary lesions and can be performed in a standard bronchoscopy suite using conscious sedation. Yield is reduced in smaller lesions without bronchus sign and more advanced techniques should be considered for these cases.

REFERENCE

1. Gonzalez AV, Silvestri GA, Korevaar DA, *et al.* Assessment of advanced diagnostic bronchoscopy outcomes for peripheral lung lesions: a delphi concensus definition of diagnostic yield and recommendations for patient-centred study designs. *An Official American Thoracic Society/American College of Chest Physicians Research Statement. AJRCCM* 2024;**209**:634–646.

P199 OUR EXPERIENCE WITH ENDOBRONCHIAL ULTRASOUND-GUIDED TRANSBRONCHIAL MEDIASTINAL TRANSBRONCHIAL CRYOBIOPSY

[1]EJ Soto Hurtado, [2]E Salcedo Lobera, [3]Y Rodríguez Gallego. *[1]Neumology Service. Hospital La Axarquía, Vélez-Málaga, Spain; [2]Neumology Service, Hospital Regional Universitario de Málaga, Málaga, Spain; [3]Centro de Salud Palma-Palmilla, Málaga, Spain*

10.1136/thorax-2024-BTSabstracts.360

Introduction Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is the technique of choice in the evaluation of malignant lymph nodes and staging of lung cancer. However, more and more suitable and larger tissue samples are increasingly needed, in particular for molecular analysis, thus combinations of techniques such as EBUS-guided intrabronchial transbronchial intraganglionic cryobiopsy (Cryo-EBUS) have emerged. Our objective is to analyze the patients performed in our unit.

Abstract P199 Table 1 Results EBUS TBNA and CRIO-EBUS

	Results EBUS TBNA	Results CRIO-EBUS
Neoplasm	75 patients	94 patients
Inflammatory	15 patients	37 patients
Infections	3 patients	3 patients
Negative	20 patients	30 patients
Inadequate for diagnosis	30 patients	3 patients
Insufficient material	29 patients	0 patients
Others (pneumoconiosis)	0 patients	5 patients

Methods Descriptive study of 172 patients who underwent EBUS together with mediastinal intraganglionic cryobiopsy. General data, type of sedation, sample size, anatomopathological results, concordance between both techniques and complications were collected.

Results Of the 172 patients, 66.27% were male with a mean age of 61.3±23.2 years. The procedure was performed under conscious sedation with midazolam and fentanyl in 40% of cases, midazolam and ketamine in 22% being the rest performed under general anesthesia.

EBUS-TBNA was performed 112 times on subcarinal neuropathy, 28 cases on hilar adenopathy, 20 on right paratracheal and 12 on a mediastinal mass, on average 2.31 punctures were performed, the mean sample size was 0.3±0.05 cm, after which a 1.1mm cryoprobe was introduced for sample collection, taking an average of 3.13 samples with a mean size of 0.47±0.26cm to complete the study.

Cryo-EBUS was adequate for diagnosis obtaining valid and sufficient material in 93.9% versus 62.2% of EBUS-TBNA (table 1), in addition 85% did not suffer complications.

Conclusions

- The cost-effectiveness of Cryo-EBUS is very high.
- The combination of both techniques can be an advance in the diagnosis of diseases at an earlier stage, although a larger number of patients is needed to confirm the data.

P200 THE ROLE OF RAPID ON-SITE EVALUATION (ROSE) IN DIAGNOSTIC EBUS-TBNA (ENDOBRONCHIAL ULTRASOUND TRANSBRONCHIAL NEEDLE ASPIRATION) PROCEDURES FOR ISOLATED MEDIASTINAL AND HILAR LYMPHADENOPATHY (IMHL)

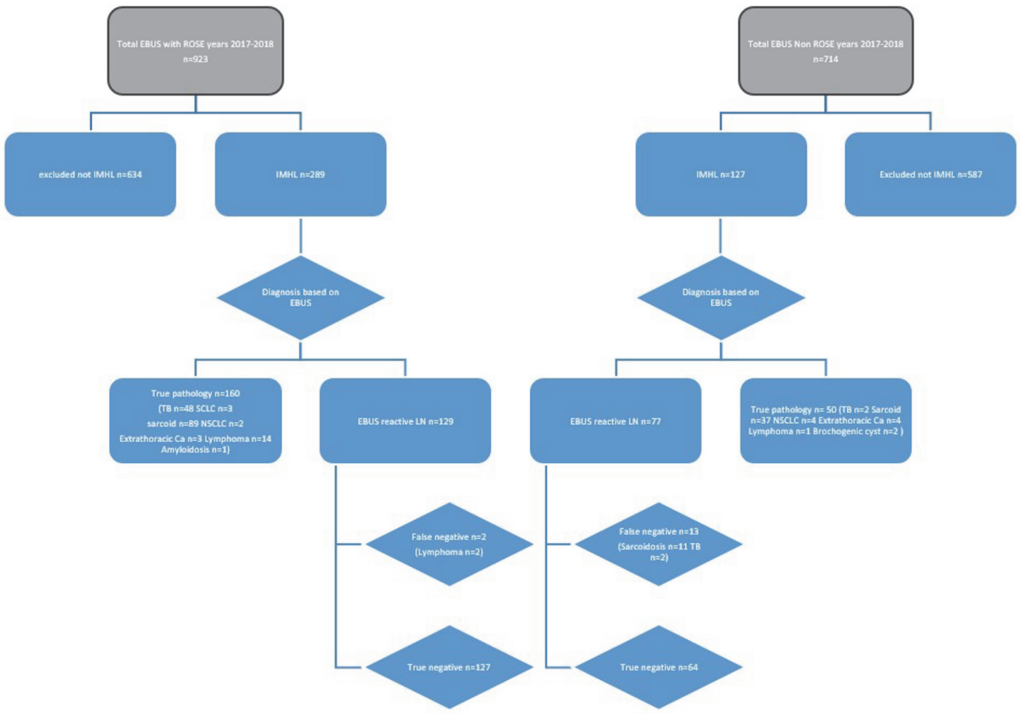
[1]H Yousif, [2]M Almadhi, [1]A Rajai, [1]M Evison, [1]H Balata, [1]H Al-Najjar. *[1]Manchester University NHS Foundation Trust, Manchester, UK; [2]Manchester University, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.361

Introduction EBUS-TBNA has become a standard diagnostic tool for investigating IMHL. Studies suggest coupling EBUS-TBNA and ROSE can enhance diagnostic efficiency, reduce biopsy numbers, lower sedation dose and minimise complications.

Aims To evaluate added value of ROSE in EBUS-TBNA for IMHL.

Methods Two-centre retrospective cohort study using prospectively maintained database of convex EBUS in years 2017–2018. One centre used conventional EBUS-TBNA with ROSE, the other did not. We compared number of sites sampled, days to pathology, sedation dose and diagnostic outcome. Results are presented as median [interquartile range].



Abstract P200 Figure 1

Results In total 289 EBUS procedures (with ROSE) and 127 EBUS procedures (without ROSE) were analysed. Number of sites sampled was lower with ROSE (2.0 [1.0, 2.0]) than without (2.0 [2.0, 2.0]), p 0.011. ROSE procedures had less days to pathology (2.0 [0.0, 3.0]) than without (3.0 [2.0, 4.0]), p<0.001. Less sedation was used in ROSE (Midazolam 2.5 mg [2.0, 4.0] vs 4.0 mg [3.0, 4.3], p<0.001, and Fentanyl 50.0 µg [25.0, 75.0] vs 115.5 µg [92.4, 167.4], p<0.001). Correct diagnosis was achieved in 99.3% of cases with ROSE and 89.9% without, p<0.001. Sensitivity for granulomatous diseases was TB 100% (48/48) with ROSE vs 50% (2/4) without and sarcoidosis 100% (89/89) with ROSE vs 77% (37/48) without. Possibly high pre-test radiology probability influences practice where ROSE is used until granuloma is seen. Of note the centre with ROSE had more TB cases (16.3%) than without ROSE (3.1%).
Conclusions Supplementing EBUS with the ROSE in IMHL cuts turnaround time, reduces sedation, and improves procedure efficacy.

P201 EVALUATING AND SUPPORTING COMMUNITY CARE OF PATIENTS WITH INDWELLING PLEURAL CATHETERS IN INNER LONDON

N Thoppuram, J Liang, O Kadwani, J Zhang. *Guys and St Thomas NHS Foundation Trust, London, UK*

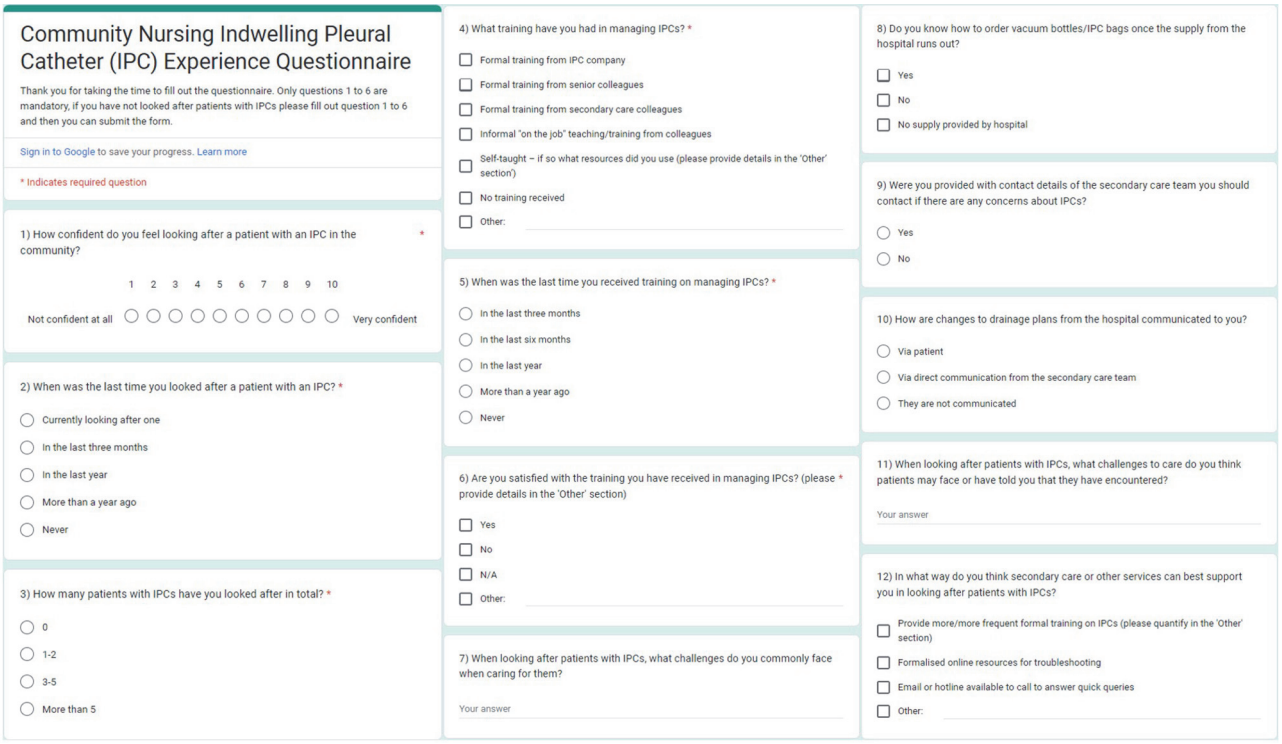
10.1136/thorax-2024-BTSabstracts.362

Background Indwelling pleural catheters (IPCs) are a recommended first line treatment option in the management of malignant pleural effusions. The MY-IPC study highlighted the variability of psychosocial impacts experienced by patients with IPCs, with quality of community care being a key modulatory factor.

Aims 1. Investigate the training, confidence, and experience of district nurses (DNs) in managing IPCs and identify commonly encountered issues

2. Develop and implement strategies to support DNs based on the above
Methods A questionnaire evaluating aim 1 was designed and distributed to DNs working in two central London boroughs between January and February 2024 (figure 1).
Results 19 responses were received. 16/19 (84%) respondents felt fairly or very confident looking after IPC patients, with 8/19(42%) having looked after an IPC within the last 3 months.17/19 (89%) respondents had received some form of training on IPC management, ranging from formal training to informal 'on the job' training. Of those trained, 5/17 (29%) were not satisfied with the training received. Key issues reported by DNs when looking after IPC patients included medical problems (drainage haemodynamic parameters, blockages, infection, pain), managing patient expectations and absence of patient care plans. 4/17 (24%) did not know how to order more bottles. 10/17 (59%) did not have contact details for the secondary care teams to contact with queries. DN perceived challenges that patients faced with community IPC care included medical and practical drainage issues; none recognised wait time for community drainage as a challenge. When asked how they could be better supported in looking after IPC patients, 16/19 (84%) felt more frequent training on IPC management would be helpful.
Outcome Given the heterogenous training, confidence, and experience of IPC management amongst DNs, the following strategies were instigated to support them.

1) Biannual secondary care led training sessions on IPC management and troubleshooting focusing on DN highlighted issues. The first session received highly positive feedback with 8/9 (89%) of post-attendance respondents reporting an increase in their confidence managing IPCs.



Abstract P201 Figure 1 Questionnaire distributed to the District Nurses, exploring their training, confidence and experience, and issues encountered in managing IPCs in the community

2) Crib sheet on troubleshooting IPC related issues with consolidated contact information for local secondary care teams and industry liaisons to facilitate communication

P202 LOCAL ANAESTHETIC THORACOSCOPY: A DECADE OF EXPERIENCE AT A SINGLE UK CENTRE

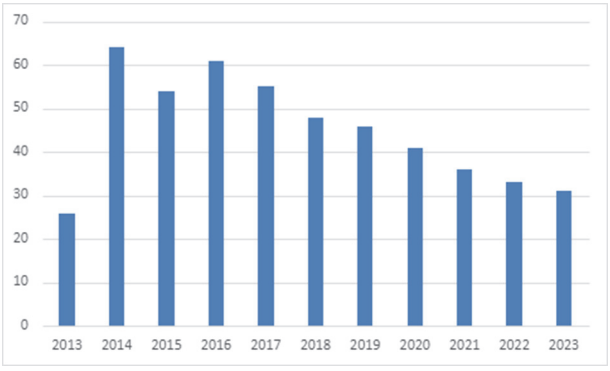
[1,2]HF Schiff, [1]G Sreejith, [1]A Sachdev, [1]S Cooper, [1]S Gunatilake. [1]*Hampshire Hospitals NHS Foundation Trust, Winchester, UK*; [2]*Clinical and Experimental Sciences, University of Southampton, UK*

10.1136/thorax-2024-BTSabstracts.363

Local anaesthetic thoracoscopy (LAT) is increasingly being performed by respiratory physicians for the diagnosis and treatment of exudative pleural effusions, the most common cause of which is malignancy. We performed a retrospective study of a decade of LAT practice at Hampshire Hospitals NHS Trust, UK, to assess safety, diagnostic and clinical outcomes. Procedural reports, clinical records and laboratory data were examined for all LAT procedures undertaken between 2013 and 2023.

495 cases were assessed, of which 300 (61%) were males. The average age was 72 years (range 26–97 years). 474 (96%) of procedures were completed. Histology samples were sent in 430 (91%) of cases. The most common diagnosis was metastatic malignancy (112/446, 25%). The most common single histological diagnosis was mesothelioma (106/430, 24%) with epithelioid being the most common subtype. Non-specific pleuritis was also a frequent finding (105/447, 23%). Lung cancer was found histologically in 8% of cases. Of the 120 cases that had benign macroscopic appearances, 99 (83%) had benign histology. In 21/120 (17%) of cases histology was malignant (28% mesothelioma, 24% lung cancer, 24% metastatic disease and 24% other diagnoses). Cytology samples we sent in 379 (80%) of cases. Adenocarcinoma was the most common single cytological diagnosis in 80 (17%) of cases. Mesothelioma was diagnosed cytologically in 31 (7%) cases. Talc poudrage was performed in 332/474 (70% of cases). There were no procedure-related deaths and no major complications. The minor complication rate was 2.81%.

LAT is a safe and well tolerated procedure in our centre with a complication rate significantly lower than nationally accepted standards. Lung cancer was a relatively uncommon histological diagnosis at LAT, comprising less than 10% of cases. Subgroup analysis of cases with benign macroscopic appearances at LAT revealed that nearly 1 in 5 cases went on to have malignancy histologically. Of these, lung cancer is present in a significantly higher proportion (approximately 1/4) of cases. Divergent proportions of histological and cytological diagnoses of mesothelioma reflect the importance of tissue biopsy in obtaining a diagnosis.



Abstract P202 Figure 1 Local anaesthetic thoracoscopy procedures by year

P203 CLINICAL IMPORTANCE OF SURGICAL EMPHYSEMA (SE) POST LOCAL ANAESTHETIC THORACOSCOPY (LAT)

[1]S Misra, [1]L Waller, [2]S Kiran, [2]R Naseem, [3]M Haris, [2]R Reddy, [3]Y Dhary, [3]V Oakden, [1]E Turnball, [1]A Aujayeb. *[1]Northumbria Healthcare NHS Foundation Trust, Newcastle upon Tyne, UK; [2]Kettering General Hospital NHS Foundation Trust, Kettering, UK; [3]University Hospital of North Midlands NHS Trust, Stoke on Trent, UK*

10.1136/thorax-2024-BTSabstracts.364

Introduction Medical thoracoscopy (MT) is crucial in the investigation of unexplained pleural effusions. It is increasingly performed as a day case procedure with indwelling pleural catheter (IPC) insertion. Prospective data on complications is unknown. We postulate that post-procedure surgical emphysema (SE) in the absence of an air leak is not a clinical problem. Some centres advocate concurrent IPCs and surgical drains to avoid SE.

Methods We performed a case note review of all patients undergoing day case MT and ESP insertion in 3 centres performing day case MT with IPC insertion. We collected demographics and clinically relevant outcomes. This was registered as a multicentre audit from Northumbria Healthcare (Ref 8491).

Results 256 day case MTs were analysed. Mean age was 72 years (34–86), 93 patients were male. 64 patients (25%) developed post procedure SE, and 4 of those had concurrent air leaks (due to lung shearing away at pneumothorax induction and not visceral puncture). 4 of 64 required admission with 2 IPCs connected to an underwater seal, and 1 needed a surgical drain. 1 was managed with an ambulatory bag. All other patients with SE were discharged on the day with no issues.

Conclusions In the absence of simultaneous air leaks, the presence of SE is of no clinical importance. The pleural community should move away from including it as a complication. Concurrent IPCs and surgical drains are not required.

P204 DOES PHYSICIAN LED ULTRASOUND GUIDED PLEURAL BIOPSY HAVE A ROLE IN THE DIAGNOSIS OF MALIGNANT PLEURAL EFFUSION?

MER Shuvo, M Burton, YH Man. *Ipswich General Hospital, Ipswich, UK*

10.1136/thorax-2024-BTSabstracts.365

Background Pleural Cytology is the first line investigation for suspected malignant effusion (except known asbestos exposure) according to the latest BTS guidelines. Despite this we know that pleural cytology is only 60% effective[1] [2] and only gives enough tissue for new biological anticancer treatment in a less than half of cases.[3]

Aim A retrospective analysis to see if physician led pleural biopsy can help lead to a timely, accurate diagnosis.

Method All the patients who had physician led pleural biopsy in 2023 were identified. Biopsy results, pleural cytology results, time to diagnosis, number and types of procedures needed, and complications were all recorded.

Results 35 Pleural biopsies were done on 33 patients. 24 (68.6%) had pleural aspirates done at the same time or before biopsy. 13 patients had cancer on their initial biopsy. 4 additional patients were considered to have cancer as their final diagnosis either based on further biopsy (n=3) or radiological diagnosis (n=1). 1 had non-diagnostic sample.

Abstract P204 Table 1

Total Patients	33
Cancer on Initial Pleural Biopsy (percentage)	13 (39.4%)
Cancer as Final Diagnosis (percentage)	17 (51.5%)
Pleural Fluid Cytology Positive	4
Positive Biopsy where Cytology is Negative	9
False Negative Rate for Biopsy	23.5%
False Negative Rate for Cytology	73.3%
Mean time to diagnosis (95% confidence interval)	27 (18.5–35.5)
Diagnosis could be achieved after 1 procedural session (percent)	11 (64.7%)

Mesothelioma was identified in 7 patients, breast cancer in 4 patients, lung cancer in 3 patient, and others in the remaining 3.

Complications were unusual and not serious with 3(8%) post procedure pneumothoraces requiring no intervention.

Conclusion Physician Led pleural biopsy is safe and effective way to identify the cause of pleural effusions. It clearly identified cases with a negative pleural fluid cytology. Our rate of cytological diagnosis are much lower than those suggested in other studies.

This is a small sample and further work to explore larger samples is needed. We plan to do prospective studies to see if pleural biopsy is a useful and safe tool at the time of first presentation to pleural clinic.

REFERENCES

1. Salyer WR, *et al.* Efficacy of pleural needle biopsy and pleural fluid cytopathology in the diagnosis of malignant neoplasm involving the pleura. *Chest*. 1975 May;**67**(5):536–9.
2. Frank W. [Current diagnostic approach to pleural effusion]. *Pneumologie*. 2004 Nov;**58**(11):777–90.
3. Tsim S, *et al.* Baseline predictors of negative and incomplete pleural cytology in patients with suspected pleural malignancy - Data supporting 'Direct to LAT' in selected groups. *Lung Cancer*. 2019;**133**:123–9.

'The (Richard) Light Fantastic' – Pleural disease diagnosis and outcomes

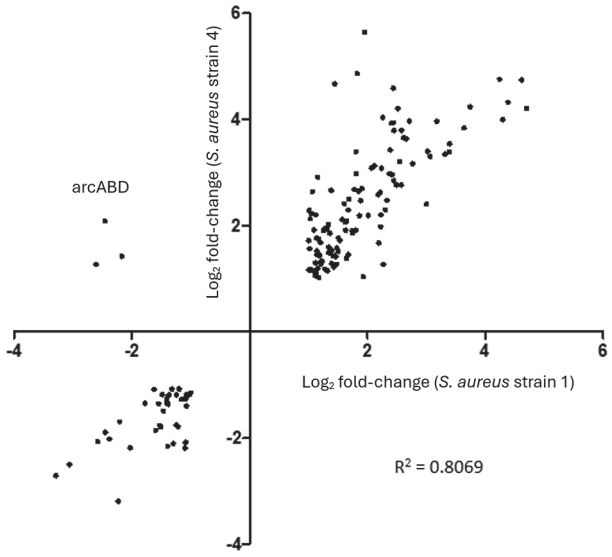
P205 IDENTIFYING KEY REQUIREMENTS FOR BACTERIAL GROWTH IN PLEURAL FLUID

[1]DK Sethi, [2]L Sims, [2]H Felgate, [3]EK Mishra, [3]MA Webber. *[1]Norfolk and Norwich University Hospital, Norwich, UK; [2]Quadram Institute Bioscience, Norwich, UK; [3]University of East Anglia, Norwich, UK*

10.1136/thorax-2024-BTSabstracts.366

Introduction and Objectives Indwelling pleural catheters (IPCs) are used to manage pleural effusions, commonly caused by cancer. In ~5% of cases, usage is complicated by infection, with *Staphylococcus aureus* the most common cause. Bacterial growth on IPCs and in pleural fluid has not been studied extensively, and little is known about the biology of bacterial growth in this specific environment. This study aims to identify key metabolic pathways required for successful bacterial growth in pleural fluid.

Methods Three clinical isolates (two *S. aureus*, one *Pseudomonas aeruginosa*) were grown in triplicate to mid-log phase in Mueller-Hinton Broth (MHB), then washed and exposed to either Pleural Fluid (PF) or MHB. To identify genes



Abstract P205 Figure 1 Log_2 fold-change in expression of genes identified as significantly (q<0.05) differentially expressed in the presence of pleural fluid in both *Staphylococcus aureus* strains, showing a high level of similarity between the datasets

differentially expressed in PF, RNA was extracted to sequence the transcriptome.

RNA sequencing data was analysed using HISAT and DeSeq2, and visualised with Degust. Genes with changes in expression greater than two-fold with a false discovery rate <0.05 were considered significantly changed between PF and MHB.

Results High quality RNA was successfully recovered from bacteria exposed to both PF and MHB. The *S. aureus* isolates demonstrated high congruence in gene expression (figure 1). Pathways with altered transcription in PF in *S. aureus* involved the biosynthesis of amino acids, specifically arginine. Additionally, genes associated with metal homeostasis and iron and nickel absorption were upregulated.

For *P. aeruginosa*, the most significantly upregulated pathways again involved metal homeostasis, including the ferribactin and superoxide dismutase pathways. Additionally, *katB*, a gene involved in the catalase pathway, was highly downregulated.

Discussion This work identifies key pathways activated by two major pathogens upon exposure to PF and suggests potential therapeutic targets to prevent bacterial growth in PF. Metal acquisition and superoxide defence appear to be conserved key requirements for bacterial growth in PF. We now intend to manipulate these pathways *in vitro*, by altering concentrations of important co-factors, allowing us to validate selected pathways' importance for growth in PF. This represents a starting point for development of informed interventions to manage or prevent IPC infections.

P206 EXPLORING PATIENTS' PERCEPTION FOLLOWING MANAGEMENT OF PLEURAL INFECTION AT OXFORD UNIVERSITY HOSPITALS NHS FOUNDATION TRUST. A QUALITATIVE STUDY

A Elsheikh, B Iqbal, A Sundaralingam, N Kaushal, A Saad, WM Chew, D Addala, R Hallifax, NM Rahman. *Oxford Centre for Respiratory Medicine and Oxford Respiratory Trials Unit, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.367

Introduction Pleural infection is associated with significant morbidity and mortality with a significant healthcare burden. Average hospital stay is 14 days. The current standard of care of intercostal chest drain placement and antibiotics with intrapleural enzyme therapy (IET), or surgical intervention in the event of treatment failure).

The RAPID score is validated in risk stratification tools, but its ability to alter treatment remains unproven. A paucity of high-quality qualitative studies exists that assess the patient experience of pleural infection and recovery.

Objectives The objective of this study is to gain insight into patients' experiences of the management of pleural infection in a tertiary care centre.

Method Semi-structured interviews were conducted with 15 participants with lived experiences of pleural infection between December 2022 and June 2023.

Results 20 patients were interviewed (10 female, 10 male), the mean age was 66.8 years, average hospital stay was 14.5 days. All participants were admitted to hospital and received standard care in the form of chest drain and antibiotics. A further 17 (85%) IET and five (25%) required surgery. The majority (18, 90%) of patients felt their preferences were taken into account when choosing which intervention to undergo after standard care.

There were significant negative effects from the disease and treatment; (12, 60%) of patients experienced adverse effects of chest drainage(pain, breathlessness and impact on quality of life) and (4,20%) experienced significant employment and income impacts after discharge. Half of the participants felt positive about RAPID score directed therapy.

Conclusion The current sequential approach to pleural infection may result in prolonged hospitalisation and adverse events. In this study, patients felt their views were considered. Furthermore, participants expressed a desire for more personalised treatment, leading to the proposal of a RAPID-driven treatment model.

P207 OUTCOMES IN MICROBIOLOGY POSITIVE VS NEGATIVE PLEURAL INFECTION: RESULTS FROM THE MIST-2 DATASET

[1]M Bhatnagar, [2,3,4,5]NI Kanellakis, [2,5]A Elsheikh, [2,5]B Iqbal, [2,5]D Addala, [2,5]A Sundaralingam, [2,4,5]NM Rahman. *[1]South Tyneside and Sunderland NHS Foundation Trust, South Tyneside, UK; [2]Oxford Centre for Respiratory Medicine, Churchill Hospital, Oxford, UK; [3]Laboratory of Pleural and Lung Cancer Translational Research, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [4]Oxford NIHR Biomedical Research Centre, Oxford, UK; [5]Oxford Respiratory Trials Unit, Nuffield Department of Medicine, University of Oxford, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.368

Introduction Despite advancements in managing pleural infection, patient outcomes remain poor. In approximately 40% of patients, the microbiological aetiology remains unknown. It is not clear whether correctly identifying microbiological aetiology affects clinical outcomes. The RAPID score predicts mortality risk in pleural infection but does not include data on microbiology. This study assessed whether positive microbiology results from pleural fluid or blood cultures predicts patient outcome.

Methods Patients from the MIST-2 trial were grouped according to baseline diagnostic pleural fluid and blood microbiology (either culture or Gram stain positive) results. Outcomes analysed included 3-month mortality, need for surgery, and

hospital length of stay. Logistic regression was used for binary outcomes and linear regression for continuous outcomes, with adjustments for treatment effects. Analyses were conducted using R statistical software.

Results A total of 191 patients, where microbiology data was available, were included. In total 32.6% had positive pleural fluid microbiology and 12.4% positive blood microbiology. Overall, 3-month mortality was 7.3%, and the 3-month surgery rate was 16.1%. Patients with negative pleural fluid microbiology had lower likelihood of mortality at 3 months (OR 0.1, 95% CI 0.04 to 0.14, $p < 0.01$). Positive blood microbiology was associated with higher mortality (OR 3.5, 95% CI 0.88 to 11.60, $p = 0.05$ and OR 3.2, 95% CI 0.79 to 10.91, $p=0.08$ when adjusted for treatment effect). Patients with positive microbiology (pleural fluid or blood) were more likely to undergo surgery (OR 1.2, 95% CI 0.54 to 2.97, $p=0.64$) compared to those with negative microbiology (OR 4.8, C.I. 3.11–7.82, $p<0.01$) although this difference was not very large. Positive blood microbiology was also associated with longer hospital stays (coefficient 6.3, $p = 0.03$).

Conclusion Positive pleural fluid and blood microbiology in pleural infection is associated with higher mortality and longer hospital length of stay. These findings suggest that patients with conventional positive and negative microbiology behave differently, and further exploration of behaviour and validation is now required from larger, comprehensive datasets.

P208 USE OF SHOX2 METHYLATION AS A DIAGNOSTIC BIOMARKER IN MALIGNANT PLEURAL EFFUSION: A DIAGNOSTIC TEST ACCURACY META-ANALYSIS

[1]MS Aissani, [2]M Hendawy, [3]K Mahrous Gerges, [3]M Abouzid, [4]M Hossam El Din Moawad, [5]RM Rakha, [6]AAR Mohamed Hussein, [6]IH Yousef. *[1]Blida University 01, Blida, Algeria; [2]Alexandria University, Alexandria, Egypt; [3]Faculty of Medicine, Sohag University, Sohag Governorate, Egypt; [4]Alexandria Main University Hospital, Alexandria, Egypt; [5]Faculty of Medicine, Port Said University, Port Said, Egypt; [6]Assiut Faculty of Medicine, Assiut University, Assiut, Egypt*

10.1136/thorax-2024-BTSabstracts.369

Introduction and Objectives It has been demonstrated that Short Stature Homeobox gene two (SHOX2) DNA methylation in particular occurs at a high prevalence (96%) in lung carcinomas, particularly in squamous cell and small cell carcinomas.

Aim In this study we aimed to investigate the diagnostic accuracy of SHOX2 methylation in the diagnosis of malignant pleural effusion.

Methods We searched PubMed, Scopus, Web of Science, and Cochrane library from inception to January 2024 for eligible articles using the following search strategy: ((methylation) OR (methylated) OR (methyl*) OR (SHOX2) OR (short state homeobox 2)) AND ((pleura) OR (pleural) OR (mesothelioma) OR (malignant pleural effusion)). We extracted the true positive (TP), true negative (TN), false positive (FP), false negative (FN), sensitivity, and specificity. We used Review Manager V.5.4 calculator to calculate TP, TN, FP, and FN from sensitivity and specificity to be used in diagnostic test accuracy meta-analysis using Open Meta Analyst software. We implemented the random effect model and conducted subgroup analysis based on study design (case control and cohort).

Results Six articles were included in the final meta-analysis. The obtained sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio were 66.3%, 87.6%, 5.39, and 0.459, respectively. The sensitivity was observed to be higher in the case-control studies subgroup compared to cohort studies (75.1% vs 66.3%), while specificity remained the same in both subgroups (88%).

Conclusion Methylation of SHOX2 can be used in the diagnosis of malignant pleural effusion and its differentiation from benign pleural effusion with a moderate sensitivity (66.3%), and high specificity (87.6%).

P209 A RETROSPECTIVE STUDY OF THE INCIDENCE OF POST CARDIOVASCULAR OPERATIVE PLEURAL COMPLICATIONS

CS Pearce, BJ Probyn, R Wollerton, JP Corcoran, AA Bashir, CJ Daneshvar. *University Hospitals Plymouth NHS Trust, Plymouth, UK*

10.1136/thorax-2024-BTSabstracts.370

Introduction Post-cardiac surgery pleural effusions are common and resolve. There is however a small number of patients in whom go on to develop pleural complications - with persistent effusions at 12 months. We set out to determine the proportion of patients this effects in our local cohort, along with the involvement of the pleural team.

Methods Retrospective review of post-procedure imaging for cardiothoracic surgeries performed between September and November 2022.

Results Over three months, 232 procedures were performed by the cardiothoracic team. Of these, 193 had chest radiograph imaging to assess. CABG and aortic valve operations were the two commonest procedures (134 and 72 respectively), with elective procedures accounting for 47% of cases. Major aortic surgery was performed in 15 patients. The overall inpatient mortality was 1.6% (3/193), with all 3 cases being urgent/emergency presentations.

During the post-operative period, 158/193 (82%) had pleural effusions. The dominant effusion side was left and 74/158 (47%) were unilateral. Additional pleural procedures were performed in 12 (6%) patients. Pleural interventions were less common in CABG versus non-CABG procedures (2/132 vs 10/49; $p<0.01$).

Following discharge, follow-up imaging was available for 54 patients and 10 had persistent effusions. Of these, there was evidence that all but one resolved. Therefore, we found the long-term, persistent effusions occurred in 1/193 (0.5%; 95% confidence intervals 0.01%-2.9%) patients. A further one patient was identified as having persistent left pleural scarring.

Conclusion The long-term outcomes of post cardiac pleural effusions appear favourable, with pleural team involvement being limited. Optimal management to avoid long-term complications remains a challenge in the context of the low risk of sequelae.

P210 FEDERATED LEARNING FOR DIFFERENTIATION OF RARE CAUSES OF PNEUMOTHORAX: BIRT-HOGG-DUBÉ SYNDROME (BHD) AND LYMPHANGIOLEIOMYOMATOSIS (LAM)

[1]T Cowan, [2]MT Wetscherek, [2]JD Kaggie, [2]The Rare Pulmonary Diseases Imaging Consortium, [2]SJ Marciniak. *[1]University of Cambridge, Cambridge, UK*; *[2]Cambridge University Hospitals, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.371

Introduction Birt-Hogg-Dubé Syndrome (BHD) and lymphangioleiomyomatosis (LAM) are clinically important causes of pneumothorax. Although they can both present with pulmonary cysts on thoracic CT scanning, their clinical courses and the available treatment options differ markedly. It is therefore important to make timely diagnoses of each condition, though this is made challenging by their rarity, which can lead to prolonged diagnostic odysseys.

Artificial intelligence approaches can offer valuable support to thoracic physicians and radiologists faced with rare disorders, but equally, the process of machine learning can be hampered by limited access to rare cases scattered geographically around the globe. We therefore set out to explore the potential of 'federated learning' for radiomic differentiation of these diseases, addressing data privacy concerns often encountered in medical image analysis. Federated learning enables the training of machine learning models on distributed datasets residing at multiple institutions without directly sharing patient data. This approach can leverage the collective power of large datasets while maintaining patient privacy.

Method We have developed a federated learning framework for extracting and analysing radiomic features from chest CT images including size, shape, intensity, texture, and spatial distribution of lung cysts.

Results A central model is being built upon local models collaboratively trained at participating institutions within the Rare Pulmonary Diseases Imaging Consortium in the UK and USA, thus overcoming the limitations of single-centre studies and potentially achieving generalisable results. This is facilitating continuous learning and model improvement as more data become available.

Conclusion Our international approach is generating robust radiomic signatures for BHD and LAM in a privacy-preserving manner. These signatures, when integrated into clinical workflows, have the potential to automatically support clinicians, including non-experts unfamiliar with these rare conditions. Ongoing work involves implementing and validating our federated learning models using radiomic features from multi-institutional chest CT datasets. This approach has the potential to revolutionize the diagnosis and management of BHD and LAM.

P211 QUALITATIVE STUDY ON PATIENT VIEWS OF PROGNOSTIC INFORMATION IN THE MALIGNANT PLEURAL EFFUSION

[1]C Mounsey, [2]N Kanellakis, [1]D Addala, [1]MW Chew, [1]B Iqbal, [1]E Alguili, [1]A Saad, [1]N Kaushal, [1]N Russell, [1]J Cabildo, [1]R Hallifax, [1]N Rahman. *[1]Oxford Pleural Unit, Oxford, UK*; *[2]Chinese Academy of Medical Sciences Oxford Institute, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.372

Introduction MPE typically carries a poor prognosis with a median survival of 3–12 months. Prognostic scores to predict survival in MPE have been developed, the two most prominent being the LENT[1] and PROMISE[2] scores. However, uptake of the scores in practice has been limited, and the output from the scores is different, with LENT predicting median survival time and PROMISE the likelihood of survival at 90 days. The form in which patients wish to receive prognostic information is poorly understood, as is the impact of prognostic information on quality of life in patients with MPE.

Methods Patients with a diagnosis of MPE attending pleural lists were approached for involvement in the study. Enrolled patients completed a questionnaire and a semi-structured interview regarding prognostic information.

Results Ten patients (7 male and 3 female) were included. 90% (9/10) had been offered prognostic information since developing MPE. 70% (7/10) of patients wanted to receive information regarding their prognosis. Of these, most felt the information provided had been adequate (6/7), however 4/7 reported that uncertainty regarding their prognosis significantly impacted their quality of life. In terms of the form of prognostic information, two patients preferred an average number of days, one the chance of survival at subsequent timepoints and seven were either unsure or would like to be offered both.

Discussion Discussions regarding prognosis must be patient-led, as not all patients wished to receive survival information and the form of preferred information differs between patients. The ability to precisely predict survival time in MPE is clearly important, as for a number of patients uncertainty regarding prognosis has a detrimental impact on quality of life. This highlights the importance of accurate prognostic scores for MPE to allow patients to be offered precise information regarding prognosis.

REFERENCES

1. Clive AO, *et al.* Predicting survival in malignant pleural effusion: development and validation of the LENT prognostic score. *Thorax* 2014;**69**:1098–1104.
2. Psallidas I, *et al.* Development and validation of response markers to predict survival and pleurodesis success in patients with malignant pleural effusion (PROMISE): a multicohort analysis. *Articles Lancet Oncol* 2018;**19**:930–969.

P212 EVALUATING THE TREATMENT AND OUTCOMES OF TRANSUDATIVE PLEURAL EFFUSIONS: A TERTIARY CENTRE EXPERIENCE

D Hiestermann, J Zhang, A Graham, N Thoppuram, F Vivian, D Stein, O Kadwani. *Guys and St Thomas NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.373

Introduction Transudative pleural effusions is challenging to manage, with high morbidity and mortality rates.[1] They are usually secondary to organ failure with treatment targeted towards the underlying disease process rather than the effusion itself. Lack of data has contributed to difficulty in manging these patients.[2]

Aim Evaluating our local centre experience of managing transudative effusions and outcomes.

Methods Retrospective review of pleural effusion referrals to pleural clinic from January 2020 - December 2021. Transudative effusions as per Light's criteria were included for analysis.

Results 632 patients referred over 2 years. 351 had undiagnosed pleural effusion: 55 (16%) transudates, 36 (10%) discordant exudates and 260 (74%) exudates. Commonest causes of transudative effusions were congestive cardiac failure (CCF), renal failure (RF) and malignant pleural effusion

Abstract P212 Table 1 Analysis of transudative effusions

	Sample size		Initial management strategy based on aetiology					Effusion related symptoms based on aetiology					Secondary care encounters related to underlying diagnoses over 2 years					Deceased at 2 years		
Aetiology of transudative pleural effusion	**Number of patients**	**% of patients**	**Invasive**		**Conservative**		**Not explicit**	**Yes**		**No**		**Not stated**	**Yes**		**No**		**Not stated**	**Deceased**		**Alive**	
Congestive cardiac failure (CCF)	23	42%	1	4%	21	91%	1	4%	12	52%	9	39%	2	9%	16	70%	4	17%	3	13%	14	61%	9	39%
Renal failure (RF)*	5	9%	0	0%	5	100%	0	0%	4	80%	1	20%	0	0%	4	80%	1	20%	0	0%	2	40%	3	60%
Combined CCF and RF*	6	11%	0	0%	6	100%	0	0%	5	83%	1	17%	0	0%	6	100%	0	0%	0	0%	1	17%	5	83%
Liver failure	4	7%	1	25%	3	75%	0	0%	2	50%	2	50%	0	0%	1	25%	3	75%	0	0%	3	75%	1	25%
Malignant pleural effusion (MPE)	7	13%	4	57%	2	29%	1	14%	7	100%	0	0%	0	0%	5	71%	1	14%	1	14%	7	100%	0	0%
Infection	2	4%	0	0%	2	100%	0	0%	0	0%	2	100%	0	0%	1	50%	1	50%	0	0%	1	50%	1	50%
Other**	8	11%	0	0%	8	100%	0	0%	5	63%	3	38%	0	0%	5	63%	3	38%	0	0%	5	63%	3	38%
Total	**55**	**100%**	**6**	**11%**	**47**	**85%**	**2**	**4%**	**35**	**64%**	**18**	**33%**	**2**	**4%**	**38**	**69%**	**13**	**24%**	**4**	**7%**	**33**	**60%**	**22**	**40%**

*7/11 patients on dialysis (5 RF and 2 combined CCF+RF)
**Other: benign pleuritis, chylothorax, haemothorax, reactive pleural effusion based on cytology

(MPE) *(table 1)*. 47 (85%) were initially planned for conservative management, 5 (9%) subsequently receiving invasive management. 35 (65%) had effusion related symptoms, the highest incidence in the MPE and RF groups (table 1). Repeated secondary care encounters were prominent, with RF and CCF having the most encounters (table 1). Two-year mortality was 7(100%) for MPE and 14(61%) for CFF.

Conclusion Commonest causes of transudative effusions were organ failure followed by malignancy. Majority of transudative effusions were successfully managed conservatively with low rates of conversion to invasive management. All cases converted to invasive management had CCF, suggesting a role for more invasive management in this subgroup.Transudative effusions were associated with high symptom burden and frequent secondary care encounters, highlighting the morbidity and difficulty in management. The next step would be to assess whether more invasive management could improve symptom burden.

REFERENCES

1. Walker SP, Morley AJ, Stadon L, *et al.* Nonmalignant pleural effusions: a prospective study of 356 consecutive unselected patients. *Chest* 2017;**151**:1099–1105. doi:10.1016/j.chest.2016.12.014.
2. Gilbert C, Porcel JM. Management of recurrent transudative pleural effusions: can we REDUCE unnecessary interventions? *European Respiratory Journal* Feb 2022;**59**(2):2101942; DOI: 10.1183/13993003.01942-2021.

P213 DISCORDANT EXUDATES: A DIAGNOSTIC DILEMMA

[1]H OBrien, [2]J Ulm, [1,2]L Gleeson. *[1]Department of Respiratory Medicine, St James's Hospital, Dublin, Ireland; [2]School of Medicine, Trinity College Dublin, Dublin, Ireland*

10.1136/thorax-2024-BTSabstracts.374

Rationale Light's criteria is a cornerstone in work-up of pleural effusions. Though highly sensitive for identifying exudates, specificity is lower, with some transudates misclassified as exudates. In practice, diagnostic uncertainty can arise where only a single Light's criterion is met – a 'discordant exudate'.

We sought to determine the proportion of discordant exudates treated in our centre over five years, establish the clinical classification of these effusions, and assess utility of additional criteria proposed to improve classification where uncertainty remains following application of Light's criteria.[1]

Methods Data on pleural fluid samples received in the cytology laboratory from 2019 to 2023 were collated. Samples with insufficient data to calculate Light's criteria were excluded. Effusions classified exudative based on one criterion (discordant exudates) were identified. Detailed clinical case review was performed to establish the clinical classification of each effusion.

Results Of 1203 pleural fluid samples, 297 (25%) had sufficient data available. 33 (11%) were discordant exudates. 11/33 (33%) effusions were clinical transudates, and 22/33 (67%) were clinical exudates.

Malignancy was the most common aetiology off all discordant exudates (n=12/33;36%). The most common aetiology of clinical transudates was heart failure (n=8/11; 73%). The most common aetiology of clinical exudates was malignancy (n=12/22;55%). The majority of clinical transudates were classified exudative based on Fluid/Serum Protein Ratio (7/11;64%). The majority of clinical exudates were classified exudative based on Fluid/Serum LDH Ratio or Fluid LDH/ULN LDH Ratio (13/22;59%).

Abstract P213 Table 1 Effusion characteristics of discordant exudates

		Total (n=33)	Clinical Transudates (n=11)	Clinical Exudates (n=22)
Age	Mean +/-SD		81 +/- 8	64 +/- 14
Male gender	N (%)	22 (67%)	6 (55%)	16 (73%)
Bilateral effusion	N (%)	17 (52%)	6 (55%)	11 (50%)
Fluid characteristics				
Fluid Protein (g/L)	Mean +/-SD	30 +/- 8	31 +/- 7	29 +/- 9
Fluid LDH	Mean +/-SD	152 +/- 93	114 +/- 32	171 +/- 108
Fluid/Serum Protein Ratio	Mean +/-SD	0.5 +/- 0.19	0.54 +/- 0.12	0.48 +/- 0.11
Fluid/Serum LDH Ratio	Mean +/-SD	0.54 +/- 0.15	0.5 +/- 0.16	0.55 +/- 0.15
Malignant cytology (n=)	N (%)	6 (18%)	0 (0%)	6 (27%)
Exudate based on:				
F/S protein ratio	N (%)	16 (48%)	7 (64%)	9 (41%)
F/S LDH ratio	N (%)	10 (30%)	3 (27%)	7 (32%)
F LDH/S ULN LDH ratio	N (%)	7 (21%)	1 (9%)	6 (27%)
Effusion Aetiology				
Heart Failure	N (%)	8 (24%)	8 (73%)	0 (0%)
Cirrhosis	N (%)	1 (3%)	1 (9%)	0 (0%)
Nephrotic syndrome	N (%)	0 (0%)	0 (0%)	0 (0%)
Parapneumonic	N (%)	7 (21%)	0 (0%)	7 (32%)
Malignant	N (%)	12 (36%)	0 (0%)	12 (55%)
Autoimmune	N (%)	1 (3%)	0 (0%)	1 (5%)
Other	N (%)	4 (12%)	2 (18%)	2 (9%)
Comorbidities				
Heart failure	N (%)	18 (55%)	10 (91%)	8 (36%)
Cirrhosis	N (%)	3 (9%)	1 (9%)	2 (9%)
CKD	N (%)	4 (12%)	1 9(%)	3 (14%)
Malignancy	N (%)	18 (55%)	4 (36%)	14 (64%)
Outcome				
RIP in hospital	N (%)	18 (55%)	5 (45%)	13 (59%)
Resolution of effusion	N (%)	6 (18%)	3 (27%)	3 (14%)
Persistent effusion	N (%)	9 (27%)	3 (27%)	6 (27%)

Serum/Fluid Protein Gradient <31mg/dL and Fluid LDH <160IU/mL have been proposed as additional criteria for classification.[1] 8/11 (73%) and 10/11 (91%) of clinical transudates were correctly reclassified based on application of SFPG and Fluid LDH, respectively. However, 10/22 (45%) and 13/22 (59%) of clinical exudates were incorrectly reclassified as transudates by application of these additional criteria.

Conclusions One third of discordant exudates were clinical transudates in our cohort. While SPFG and Fluid LDH improved classification accuracy of clinical transudates, a substantial number of clinical exudates were incorrectly reclassified as transudates. Given the high prevalence of malignant effusions in this cohort, caution should be exercised in applying criteria that reduce sensitivity for identifying exudates.

REFERENCE

1. Kummerfeldt, *et al. Chest*. 2014;**145**(3):586–92.

P214 PLEURA-PERITONEUM CROSS-TALK: A RETROSPECTIVE STUDY OF MALIGNANT PLEURAL EFFUSIONS AND ASCITES IN GYNAECOLOGICAL CANCERS

[1]B Iqbal, [2]K Goh, [2]X Hartwig, [2]I Mechie, [2]K Bhullar, [1]NM Rahman. *[1]Oxford Respiratory Trials Unit, Oxford, UK; [2]Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.375

Introduction Malignant ascites (MA) is commonly seen with advanced gynaecological cancers. Many of these patients also develop malignant pleural effusions (MPE), however little is known about the correlation between MA and MPE in these patients.

Methods We performed a retrospective analysis of all patients referred to the oncology clinic for advanced gynaecological cancer from Jan-Dec'22. MPE and MA were determined by confirmed fluid cytology, or presumed to be malignant with confirmatory histology elsewhere.

Results A total of 72 patients were treated with a median age of 70(IQR: 60–79)years, and most had ovarian cancer(88.9%). Most patients(90.3%) had received treatment including chemotherapy alone, or surgery and neo- or adjuvant chemotherapy. At the time of analysis, 32(44.4%) patients had passed away. During the course of disease, 53(73.6%) patients developed MA, with 46(63.9%) patients found to have clinical or radiological evidence of ascites at the time of cancer diagnosis, and 25(34.7%) patients requiring 1 or more therapeutic ascitic drainages. 28(38.9%) patients also developed MPE, of whom 9(32.1%) were left sided, and 13(46.4%) were bilateral. 11 patients required at least one therapeutic chest drainage with 6 patients undergoing indwelling pleural catheter insertions. Among patients with MPE, almost all(27 patients or 96.4%) had presented with, or developed ascites during the course of their disease. Similarly, in 11 patients requiring therapeutic chest drainage, 10(90.9%) patients required at least one therapeutic ascitic drainage.

Conclusion MPE in gynaecological cancers is closely associated with MA and ascitic drainage. This could be due to the common embryological origin of pleural and peritoneal membranes. Further research is required to understand the pathophysiology of MPE and MA in malignancies to develop targeted treatments.

P215 VIRTUAL REALITY HEADSETS: AN INNOVATIVE TOOL TO MINIMISE PLEURAL PROCEDURAL-RELATED PAIN AND ANXIETY

T Wijayaratne, R Samarasinghe, S Johnstone, F Hinchcliffe, R Sudhir, R Panchal. *Department of Respiratory Medicine, Glenfield Hospital, University Hospitals Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.376

Introduction Virtual reality (VR) headsets are increasingly being utilised as an innovative non-pharmacological tool to alleviate pain and anxiety. This approach has demonstrated promising outcomes across various clinical settings, encompassing chronic pain management and alleviation of preoperative anxiety.[1] We explored the feasibility of using VR during various invasive pleural procedures to alleviate pain and anxiety.

Methods 20 patients were included in this feasibility study. Patients in the intervention arm (n=12) used a DR.VR™ headset (Rescape®) and the control arm (n=8) did not use a VR headset during the pleural procedure. Patients underwent medical thoracoscopy, pleural aspirations, IPC insertions and removals in both groups. Data regarding pain and anxiety levels was gathered using a questionnaire with numerical Likert scale (0- no pain/anxiety, 10-worst pain/anxiety).

Results Mean age 72 vs 74 years (VR vs control). Mean anxiety and pain levels prior to the procedure were 3.67 ± 0.75 vs 6.25 ± 1.27 and 4.92 ± 0.84 vs 6.63 ± 0.99 (VR vs control), respectively. Mean pain level during the pleural

Abstract P215 Table 1 Mean Likert scores for pain and anxiety mid-procedure in different pleural procedures

	Mean Likert score for pain mid-procedure		Mean Likert score for anxiety mid-procedure	
	VR	Non-VR	VR	Non-VR
Pleural aspiration	6	7	6	9.5
IPC Insertion	4.3	9.5	4	7.5
IPC Removal	4.7	1	3.3	1.5
Thoracoscopy	3.7	3	3.3	2.5

procedure for VR vs control, was 3.67 ± 0.79 vs 5.13 ± 1.46 (P=0.44), respectively, and did not reach statistical significance. Similarly, mean anxiety level during the pleural procedure for VR vs control was 3.17 ± 0.67 vs 5.25 ± 1.36 (P=0.22) and did not reach statistical significance, given the small cohort of patients. All patients who used the VR headset enjoyed using it and expressed that they would use it again and would recommend it to other patients. No claustrophobia or motion sickness was reported. 60% of patients thought that they were 'very much' distracted during the pleural procedure. Table 1 shows the mean Likert scores for pain and anxiety mid-procedure in different pleural procedures.

Conclusion Our feasibility study has shown that virtual reality headsets may have a role in alleviating pain and anxiety during pleural procedures and are worth validating through larger studies.

REFERENCE

1. Mallari B, *et al*. Virtual reality as an analgesic for acute and chronic pain in adults: a systematic review and meta-analysis. *Journal of Pain Research*, 2019;**12**:2053–2085. doi:10.2147/JPR.S225847.

P216 UNRAVELLING PAIN IN MALIGNANT PLEURAL MESOTHELIOMA: A LONGITUDINAL STUDY

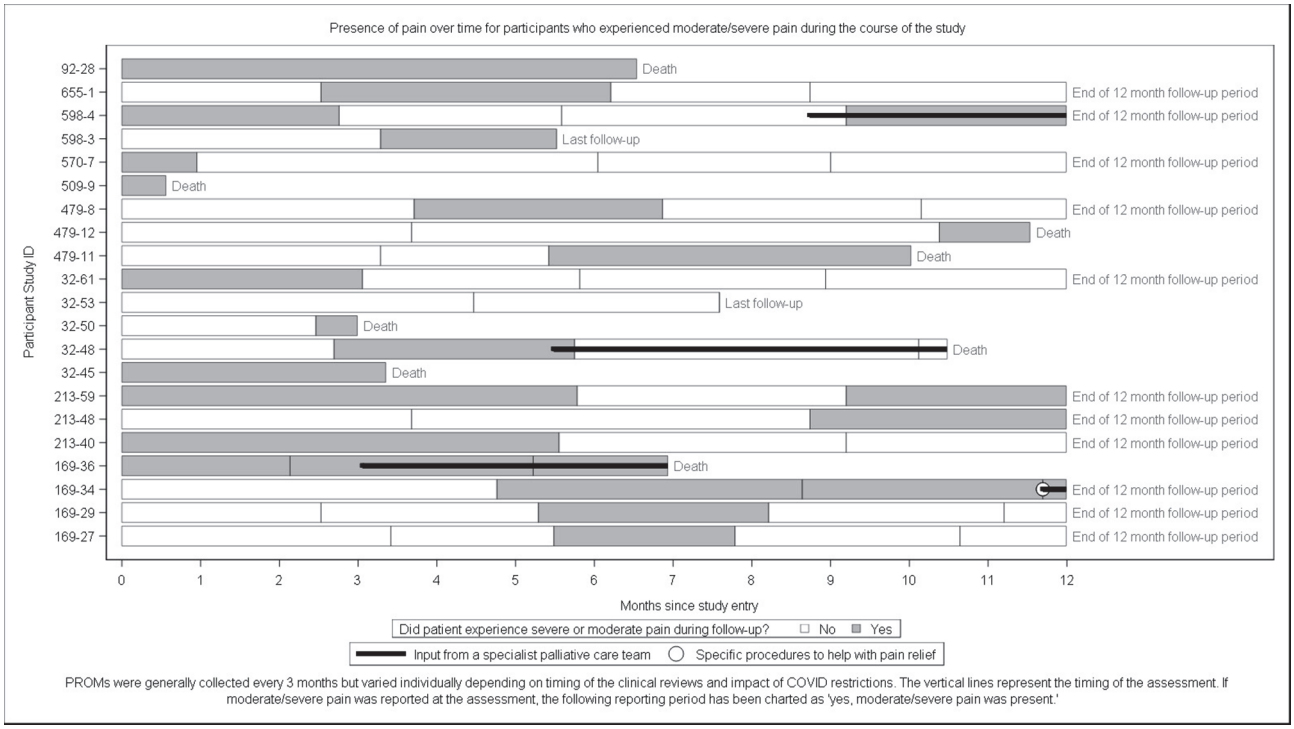
[1,2]CR Mayland, [3]M Collinson, [1]S Ahmedzai, [3]J Lucas, [2]J Gath, [4]L Darlison, [2]D Defonseka, [5]B Laird, [2]H Stanley, [1]C Gardiner, [1]S Danson, [6,7]A Bibby. *[1]University of Sheffield, Sheffield, UK; [2]Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; [3]Clinical Trials Research Unit, University of Leeds, Leeds, UK; [4]University Hospitals of Leicester, Leicester, UK; [5]Institute of Genetics and Cancer, University of Edinburgh, Edinburgh, UK; [6]Bristol Academic Respiratory Unit, University of Bristol, Bristol, UK; [7]North Bristol NHS Trust, Bristol, UK*

10.1136/thorax-2024-BTSabstracts.377

Introduction Pain associated with malignant pleural mesothelioma (MPM) can be complex and severe. It can be especially problematic at the end of life, but the natural course of pain over the course of this disease is less well studied.

Methods We undertook a prospective sub-study of a nationally representative, multi-centre, observational cohort study, 'ASSESS-meso.' Data collected longitudinally (12-month follow-up) on the frequency, severity and impact of pain over time for people newly diagnosed with MPM. Data collection included demographics, clinical data and Patient Reported Outcome Measures (PROMS) for pain (VAS, BPI), quality of life (EQ-5D, EORTC-C15-PAL) and anxiety and depression (HADS). These PROMS were collected at follow-up visits, alongside information on specialist palliative care (SPC) input.

Results There were 150 participants; 112 (74.7%) were men; mean age 72.4 years (SD 8.1); 69 (46.3%) were living in poorer areas (IMD decile<=5). The majority (141, 94.0%) had pleural disease and epithelioid histology (104, 79.4%). Twenty-one (14.0%) participants reported moderate/severe pain (defined as >=40 or >=70, respectively, on a 100-point VAS at any point during 12-month follow-up) with median duration of 14.1 weeks (range 2.3 to 37.3). Those with moderate/severe pain were more frequently men (81.0% vs. 73.6%); a greater proportion had a lower performance status (2/3)



Abstract P216 Figure 1

(25.1% vs. 16.7%) and received SPC input (22.2% vs. 12.5%). Overall, at 9–12 months follow-up, quality of life was poorer in those reporting moderate/severe pain (mean overall EORTC-C15-PAL score, 41.7 [SD=20.4] vs. 71.6 [SD=19.5]) and pain caused more interference with daily activities (mean BPI interference index, 29.1 [SD=19.1] vs. 14.4 [SD=14.5]). Differences in mood did not show consistent trends over time.

Conclusions To our knowledge, this is the largest prospective study to assess the prevalence, severity, and impact of pain over time in individuals with malignant pleural mesothelioma. While a relatively small proportion of participants reported moderate/severe pain, and infrequent specialist palliative care (SPC) input, the pain experienced had a significant impact on quality of life. This suggests the current multi-disciplinary teams provide good quality support. However, implementing a 'trigger-based' referral system to identify and flag significant pain may be necessary for more, timely SPC engagement.

P217 TEACHING PLEURAL PROCEDURAL SKILLS WITH AUGMENTED REALITY – A PILOT STUDY

TJ Davies, A Amprapala, A Chapman, A D'Souza, K Dhas, H Sajjad, R Murphy-Lonergan, O Orhan, B Bartholomew. *Chelsea and Westminster Hospital NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.378

Background Pleural procedural training requires facilitator expertise and availability, and learning opportunities are often infrequent, limited to ad hoc procedures and oversubscribed clinics. Augmented Reality (AR) assisted simulation offers greater opportunity for learning and has been shown to support adherence to protocols in other procedural skills including endotracheal intubation.

Objectives 1) To compare learning of intercostal chest drain (ICD) insertion via the HoloLens AR Headset to traditional clinical skills lab learning

2) To assess trainees' experience of learning ICD insertion with AR

Methods Foundation year doctors, novices in pleural procedures, were recruited and taught ICD insertion in two arms: 1) Control group via traditional instructor-led simulation teaching, and 2) HoloLens group with AR playback of pre-recorded instructor video alongside simulation. Following teaching both groups received an individual assessment against 18 essential procedural steps. Assessment was repeated after 6 weeks, with both groups encouraged to arrange practice sessions using their original learning method during this period at a frequency of their choosing. Quantitative and qualitative data on trainees' learning experiences was collected at each stage.

Results 12 foundation doctors participated in the study; the Control group (n=6) had a higher mean assessment score (table 1) and 66.7% passed the assessment compared to 0% from the HoloLens group (n=6). Confidence in pleural procedures increased to a comparable degree for both groups (table 1). 7 doctors completed reassessment after 6 weeks; the pass rate was 0% for both the Control (n=3) and HoloLens groups (n=4) and the mean score of each group after 6 weeks were very similar.

Conclusions Traditional instructor-led training resulted in higher initial scores and pass rate for ICD insertion than AR-assisted teaching, though both similarly increased trainees' confidence. Limitations experienced with the HoloLens may have affected baseline results, and addressing of these issues is required for a true comparison. Poor skill retention after 6-weeks highlights that neither method alone ensures long-term proficiency without ongoing practice. Despite AR's potential for greater training access, this was not utilised. Future research should focus on overcoming these limitations in exploring the use of AR in the teaching and skill maintenance of pleural procedures.

Abstract P217 Table 1 Comparison of skills acquisition between Control and HoloLens Groups

Baseline	Control Group (n = 6)	HoloLens Group (n=6)
Mean Score on Assessment (out of 18)	17.3	12.8
Assessment pass rate	66.7%	0%
Mean confidence in pleural procedures on Likert scale (1 = not confident at all, 5 = very confident)		
Before teaching	1.17	1
After teaching	3.67	3
After 6 weeks	**Control Group (n=3)**	**HoloLens Group (n=4)**
Total number of procedures performed in clinical practice during 6-week period	1	0
Mean number of practice sessions in own time	0	0
Mean Score on Reassessment (out of 18)	14	13
Reassessment pass rate	0%	0%

'The TB Manager' – Clinical problems in TB

P218 PULMONARY TUBERCULOSIS TREATMENT DELAYS: HAS THE COVID-19 PANDEMIC CAUSED DELAYS IN PATIENTS PRESENTING TO HEALTH CARE PROFESSIONALS?

SJ Davis, S Aslam, S Menzies. *Wexham Park Hospital, Slough, UK*

10.1136/thorax-2024-BTSabstracts.379

Aim Following the Covid-19 pandemic there has been concern about delays in healthcare, which is particularly concerning in tuberculosis (TB) infection. We aimed to assess whether there were increased delays post-pandemic for pulmonary TB (PTB) patients, and to identify at which stage in their pathway these occurred if so.

Method We retrospectively analysed the patient pathway for PTB cases diagnosed at our Trust in 2022 and 2023. We recorded the time from symptom onset to presentation to a healthcare professional (HCP), time from first presentation to referral to secondary care, secondary care review to TB team referral, TB referral to TB team review, and TB treatment start date. These results were compared to a historic dataset from patients diagnosed with PTB by 2 Trusts in our region in 2018.

Results 31 PTB patients in 2022/23 were compared to 28 patients in 2018.

The median time from symptom onset to starting TB treatment in 2022/23 was 93 days (range 14–949 days) compared

with 73 days (range 0–720 days) in 2018. 9 out of the 31 (29%) patients in 2022/23 were > 120 days.

The median time from symptom onset to presentation to a HCP was 28 days in 2022/23 (range 0–195 days) compared to 11 days (range 0–102 days) in 2018. 14/31 (45%) of patients presented to a GP in the 2022/23 cohort, and 8/10 of those presenting with >28 days of symptoms presented to a GP.

The median time from presentation to a GP to hospital referral was 14 days (range 0–824 days) compared to 31 days (range 0–240 days) in 2018. The median time from ED review to TB team referral was 6 days and from other hospital teams was 7 days. The median time from TB team referral to review was 1 day.

Conclusion The time taken to diagnose and start treatment for PTB has increased post-pandemic, notably due to delays in patients presenting to healthcare, particularly to GPs.

Improving accessibility and presentation to healthcare is crucial to reduce the risk of TB transmission.

P219 UROGENITAL TUBERCULOSIS (TB), A RARE MANIFESTATION OF EXTRAPULMONARY TB, A RETROSPECTIVE STUDY

[1]K Boza, [1]N Smallcombe, [1]S Dart, [1]R Bamford, [1]V White, [2]H Kunst, [2]A Malhotra. *[1]Respiratory Medicine Department, Royal London Hospital, Barts Health NHS Trust, London, UK; [2]Queen Mary University of London, London, UK*

10.1136/thorax-2024-BTSabstracts.380

Introduction Urogenital tuberculosis (TB) is a rare manifestation of extrapulmonary TB. Globally it is thought to account for 10% of extrapulmonary TB cases. It is often associated with disseminated spread of TB from another site.

Methods a retrospective study of patients diagnosed with urogenital TB at a large London NHS Trust, between 2018 and 2023 was conducted. Cases were identified from the London TB Registry, with additional clinical information gathered from electronic notes.

Results Of 796 patients identified as having EPTB, 14 (1.8%) patients were diagnosed with urogenital TB. The cohort of urogenital TB included seven patients with renal TB, two with testicular TB, one endometrial, one bladder wall/renal/epidymo-orchitis, one extra-testicular epididium, and one lymph node with renal TB. The median age at diagnosis was 34.5 years (IQR 20). Ten (71%) urogenital TB patients were male. Ten of fourteen were born outside of the UK, from Bangladesh, India, Pakistan, Somalia and Sri Lanka. Five patients had pre-existing renal disease and one a diagnosis of HIV.

Table 1 summarises patients presenting signs and symptoms, with the most common presentation being acute kidney injury or deterioration in renal function. Median time from symptom onset to date of presentation was 135 days (IQR 161 days). Patients were diagnosed at a median of 61 days (IQR 93 days) from presentation. One patient presented to the TB service initially whilst others were referred to renal (six), urology (five), gynaecology (one), and general surgery (one) departments.

Eleven patients underwent cross-sectional imaging (CT, PET-CT or MRI) which facilitated diagnosis. All fourteen patients underwent biopsy of lesions however only five were AFB culture positive. All patients successfully completed anti-tubercular treatment for six months or longer.

Abstract P219 Table 1 Presenting signs and symptoms for urogenital tuberculosis (n=14)

Presenting signs/symptoms	Number of patients
Acute kidney injury or deteriorating renal function	6
Weight loss	3
Testicular symptoms: lump, pain	3
Fever and/or night sweats	3
Haematuria	1
Vaginal bleeding	1
Groin swelling	1
Haematuria	1
Epidiymo-orchitis	1
Rash	1
Bloating and/or abnormal abdominal swelling	1

Conclusion Although urogenital TB is rare, biopsies of urogenital lesions in patients from high TB incidence countries should always be sent for TB culture.

P220 CHEMOPROPHYLAXIS FOR LATENT TUBERCULOSIS IN THE UK: CHANGING TRENDS ACROSS THREE COHORTS OVER 13 YEARS

[1]A Patankar, [1]C Aydemir, [2]M Raza. *[1]University of Buckingham, Buckingham, UK; [2]Milton Keynes University Hospital, Milton Keynes, UK*

10.1136/thorax-2024-BTSabstracts.381

Introduction UK national guidance for screening for tuberculosis (TB) has changed over the years. This study retrospectively evaluated the shifts across three cohorts of latent TB cases managed over a thirteen-year period in our hospital.

Methods Patients diagnosed with latent TB between January 2019-December 2021 (Cohort-3) were evaluated and compared to previous studies of Cohort-1 (September 2008-October 2011) and Cohort-2 (November 2011-October 2014). Patient demographics, screening rationale, chemoprophylaxis acceptance and completion rates, and side effect profiles were compared.

Results This study included 363 latent TB patients, with increasing cohort size of 59, 113, and 191 respectively. Over half of Cohort-1 and 3 were aged 35 and under. Cohort-1 and 2 predominately comprised patients from sub-Saharan

Abstract P220 Table 1

	Cohort 1	Cohort 2	Cohort 3
Total Patients	59	113	191
% of Patients Under 35	>50%	42%	51%
Most common ethnicity	Sub-Saharan Africa (62%)	Sub-Saharan Africa (54%)	White (31%)
Chemoprophylaxis Acceptance Rate	79%	92%	74%
Chemoprophylaxis completion rates	91%	93%	96%
Adverse Event Rate	38%	24%	36%
Uptake Among Healthcare Workers	58%	93%	72%
Occupational Health Screening	32%	63%	35%
Recent TB Contacts	41%	21%	19%
Other Referrals	27%	16%	46%

Africa (62% and 54%), while Cohort-3 had a majority of 'White-British' patients (31%) with only 14% from sub-Saharan Africa. Referral sources varied;Cohort-1 included contact screening (41%) and occupational health (32%); Cohort-2 mainly occupational health (63%) and contact screening (21%); in Cohort-3, most referrals were from other specialties (46%). Chemoprophylaxis acceptance was highest in Cohort-2 (92%), followed by Cohort-1 (79%) and Cohort-3 (78%). Completion rates were 91% for Cohort-1, 93.4% for Cohort-2, and 96% for Cohort-3. Chemoprophylaxis uptake varied among healthcare workers across cohorts, and side effects were variable across the three cohorts.

Conclusion Demographic shifts reflect changes in TB screening guidance, with increasing referrals from specialties requiring immunosuppressive therapy.Interestingly, acceptance rates closely mirrored healthcare worker uptake in Cohort-1 & 2. Most referrals from other specialties had limited treatment choice, possibly contributing to higher uptake in Cohort-3.

P221 CUTANEOUS ADVERSE DRUG REACTIONS TO ANTI-TUBERCULAR DRUGS

SA Bokhari, G Haque, A Hamud, JL Potter. *North Middlesex University Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.382

Introduction Tuberculosis (TB) is the leading cause of death among infectious diseases. Treatment requires a combination of drugs which can cause adverse reactions (ADR) contributing to morbidity, mortality and treatment completion. Most anti-TB treatments (ATT) can cause skin reactions. Previous publications report an incidence of cutaneous ADR in people treated with ATT for drug sensitive active TB as 5.7%[1] and latent TB infection up to 2.7%.[2]

Objectives The aim of this study was to determine the incidence of cutaneous adverse drug reactions among people taking treatment for drug-sensitive latent infection and active disease.

Methodology We retrospectively identified everyone treated for latent or active TB at the North Middlesex University Hospital between 1st January 2023 and 31st December 2023. Data was extracted from hospital records and the national TB register. Demographic information, ADRs, type of TB, ATT regimen, comorbidities, pattern and onset of drug rash and laboratory parameters were collected.

Results In total, 133 cases were reviewed; 69 treated for active TB and 64 for latent infection. ATT regimens included rifampicin, isoniazid, ethambutol, pyrazinamide, and moxifloxacin in various combinations. Cutaneous reactions were observed in 9 people on active treatment (13%) and 2 on latent treatment (3%). An itchy, blanching, maculopapular rash was the most frequent reaction described. People with medical co-morbidities were more likely to have a rash than those without (11% vs 6%). People from white ethnicity were more likely to have cutaneous reactions than people with darker skin types (16% vs 5%).

Conclusion In our cohort, cutaneous reactions to ATT were more common in people taking treatment for active TB than the reported literature. The lower rates among people with darker skin types may reflect underdiagnosis due to lack of representation in teaching materials. It is unclear whether the higher-than-expected rates of cutaneous reactions are representative of a wider pattern. The Yellow card scheme in the UK helps in monitoring the safety of all healthcare products. To ensure identification of unexpected trends early, we use our data as a reminder for healthcare providers to report adverse drug reactions through this mechanism.

REFERENCES

1. Tan WC, Ong CK, Kang SC, Razak MA. Two years review of cutaneous adverse drug reaction from first line anti-tuberculous drugs. *Med J Malaysia*. 2007 Jun;**62** (2):143–6. PMID: 18705448.
2. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(19)30575-4/fulltext#tables

P222 MAPPING THE CASCADE OF CARE FOR PEOPLE WITH POSITIVE IGRA RESULTS: A DESCRIPTIVE SINGLE-CENTRE ANALYSIS

A O'Reilly, V Tobert, J Hoy, E Bateman, S Dubey, A McCallum. *Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.383

In low-TB-incidence countries, the interferon gamma release assay (IGRA) plays a key role in screening for TB infection prior to immunosuppressants, and in new entrants and contacts of people with active TB. However, there is little guidance on appropriate use of IGRA testing and wide variation in understanding the indications for and results of IGRA tests.

The cascade of care from a positive IGRA result to TB preventive treatment (TPT) is vital. If the result is not actioned appropriately, this can lead to preventable morbidity and mortality associated with active TB disease. However, many people are lost at each step in the cascade from screening to treatment.[1 2]

This study describes the cascade of care for the cohort of people with positive IGRA results at Oxford University Hospitals NHS Foundation Trust, 2016–2022.

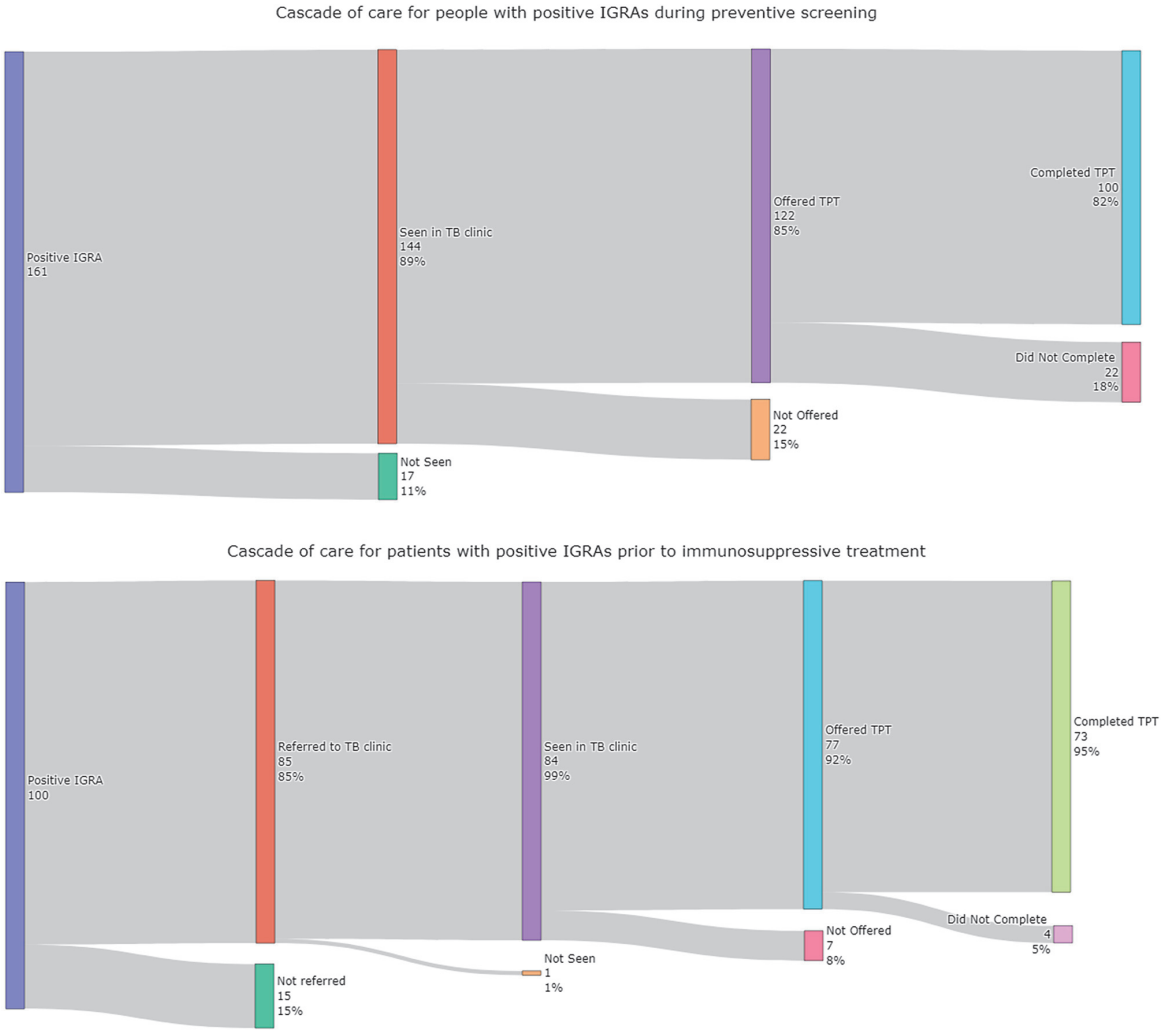
Of 3350 IGRA tests (excluding duplicates), 465 (13.9%) gave positive results.

Among 405 people with positive IGRAs and adequate records, 140 (35%) were under investigation for active TB, 161 (40%) were tested as part of preventive screening (146 contacts of people with active TB disease, 11 new entrants to the UK and 4 People Living with HIV), and 100 (25%) were tested prior to receiving biologic (86) or non-biologic (15) immunosuppressants.

Rates for completion of TPT were 62% (100/161) for the preventive screening and 73% (73/100) for the pre-immunosuppression cascades, indicating significant attrition overall. The Sankey diagrams (figure 1) summarise the proportion of people lost at each step in these two cascades. Two patients developed active TB. Strengthening each step in both cascades of care is indicated to increase the proportion of people completing TPT.

REFERENCES

1. Alsdurf H, Hill PC, Matteelli A, Getahun H, Menzies D. The cascade of care in diagnosis and treatment of latent tuberculosis infection: a systematic review and meta-analysis. *Lancet Infect. Dis.* 2016;**16**:1269–1278.
2. Min J, *et al.* The cascade of care for latent tuberculosis infection in congregate settings: a national cohort analysis, Korea, 2017–2018. *Front. Med.* 2022;**9**.



Abstract P222 Figure 1

P223 INTERFERON-GAMMA RELEASE ASSAYS USED IN THE DIAGNOSTIC WORK-UP FOR ACTIVE TUBERCULOSIS

K Baker, JL Potter. *North Middlesex University Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.384

Background Tuberculosis (TB) is a common infection worldwide, existing on a spectrum between latent infection and active disease. Screening and treating people at-risk of TB reduces the incidence of developing active TB in the future and is an important part of England's national TB strategy. Interferon-gamma release assays (IGRA) are blood tests used to identify people with TB infection. IGRA tests cannot discriminate between latent and active TB. Furthermore, false negatives can occur in active TB leading to delays in diagnosis.

Aims We reviewed all IGRA tests performed between 1 April 2022 and 31 March 2023 at North Middlesex University Hospital to determine how many were performed to screen for TB infection and identify whether tests were being requested inappropriately.

Methods A total of 2233 tests from 1424 different patients were identified. Tests requested by teams known to screen regularly for TB infection including occupational health, specialist rheumatology and inflammatory bowel nursing teams and the TB nursing team were assumed to follow guidelines. The remaining 570 tests were individually analysed. All tests that did not yield a result were excluded leaving a total of 134 tests.

Results We examined the rationale for sending an IGRA in 134 cases. A total of 73 (55%) were requested for suspected active TB. Of these, 10 were positive, 15 indeterminate and 73 negative. One person with an indeterminate test and three with positive tests were treated for active TB. Nobody with a negative IGRA test was diagnosed with active TB. Of the 61 people screened for latent TB ,15 patients received multiple IGRA tests.

Conclusion We found multiple teams within our hospital ordered IGRA tests to exclude a diagnosis of active TB. Aside from the financial cost of these tests (£2,555), all positive results required additional action (either investigations and/or a review) and potential patient anxiety. Clearer guidance is required on the appropriateness of using an IGRA as part of the diagnostic toolkit for active TB. During our review we noted people screened for latent TB prior to biologics were tested repeatedly. Evidence is lacking on the frequency of screening required in this setting.

P224 IMPACT OF TUBERCULOSIS (TB) TRAINED PHARMACIST FOR MEDICINES OPTIMISATION IN A MULTIDISCIPLINARY TB CLINIC

C Chen, S Dart, A Paton, A Dewshi, I Isman, M Yusuff, P George, E Hanzaree, S Monaghan, V White, N Smallcombe, H Kunst. *Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.385

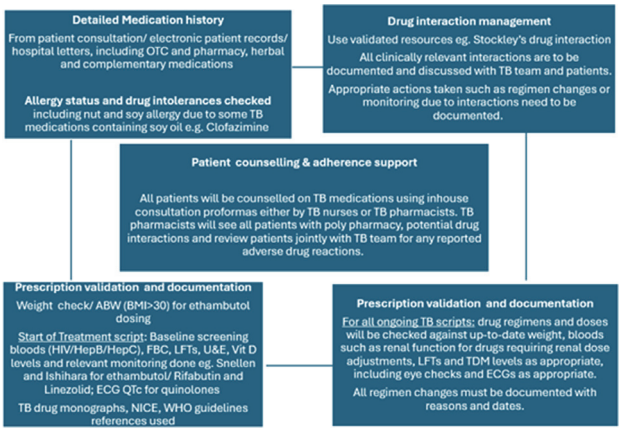
Introduction Tuberculosis (TB) management, including preventative treatment requires multiple drugs with potential risks of drug interactions and adverse drug reactions (ADR). Medicines optimisation (MO) of TB treatment aims to ensure patients obtain the best outcomes from their medicines, often requiring multidisciplinary team (MDT) input. Pharmacists are optimally placed to provide MO role but TB teams rarely have access to TB trained pharmacists.

Aim To review the impact of a TB trained pharmacist in improving quality of care at a large TB centre with an annual average case load of 87 active and 103 latent patients in East London, UK.

Methods All pharmacists supporting the TB clinic underwent training according to an inhouse TB pharmacist clinic framework (figure 1). MO interventions for all patients commenced on active and latent TB treatment from September 23-April24 were recorded including drug interactions, ADRs and recommendations to treatment changes. Drug interaction severity is categorised as per Stockley's Drug Interaction checker.[1] TB staff feedback was surveyed on the role of a pharmacist.

Results Thirty-two active and 77 latent TB patients had a detailed medication history taken and counselled by a TB trained pharmacist. Three hundred and fifty-nine TB medications were prescribed and clinically validated using the framework. Thirty-three (30%) patients had 64 (14 severe; 50 moderate) drug interactions identified and managed. Twenty-three (21%) patients experienced ADRs. Eighteen (16%) scripts had regimen and dose changes to optimise treatment. Thirteen clinically significant interactions required drugs to be changed, dose titrated and blood monitoring increased. These included tacrolimus, methadone, apixaban, lamotrigine, methotrexate, sulfasalazine and prednisolone. Seven patients required alternative contraceptive options and advice. Four patients' own herbal medications were stopped. TB staff survey responses indicated that complex patient groups with identified drug interactions or experiencing an ADR require and benefit from pharmacist consultations. All MDT members surveyed agreed that a TB trained pharmacist should be embedded in TB services and clinically validate TB prescriptions.

Conclusion TB pharmacists make clinically impactful interventions and are an essential part of the TB MDT in supporting the treatment journey of TB patients.



Abstract P224 Figure 1 TB Pharmacist clinic framework

REFERENCE

1. Stockley's Drug Interactions. Via Medicines Complete Online. https://www.medicinescomplete.com/#/interactions/stockley

P225 RETROSPECTIVE ANALYSIS OF MULTI-DRUG RESISTANT TUBERCULOSIS (MDR-TB) DIAGNOSIS AMONG CONTACTS IN EAST LONDON: INSIGHTS AND IMPLICATIONS

S Joseph, C Chen, N Smallcombe, V White, H Kunst. *Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.386

Introduction Despite a decline in the incidence of multi-drug resistant tuberculosis (MDR-TB) in the last decade, East London continues to experience a significant burden of disease. MDR-TB poses concern for clinicians due to its poorer clinical outcomes and public health implications. Current guidelines do not differentiate between contact tracing for MDR-TB and fully sensitive TB, nor do they recommend preventative treatment for MDR-TB contacts.

Methods We conducted a retrospective cohort study of all consecutive MDR-TB cases treated by our service in the past five years, using data from the National TB Registry and local electronic records.

Results Between January 2019 and June 2024, our service treated 33 MDR-TB cases. Of these, six (18.1%) were contacts of an index case, distributed across three separate clusters. All contact cases were linked to smear-positive household index cases. Screening followed NICE guidelines, including symptom assessment, chest radiograph (CXR), and interferon gamma release assay (IGRA).

One contact was symptomatic at screening, with a sputum culture confirming MDR-TB. Of the remaining five, four were IGRA positive at screening and one was IGRA negative. All five had normal CXRs at screening, and two of these also had a normal CT chest at the time. Four of the five contacts later developed symptoms with subsequent diagnosis of MDR-TB, while one remained asymptomatic but had an abnormal interval CXR with subsequent CT chest and bronchoscopy leading to MDR-TB diagnosis. None of the contacts were smear-positive. The median time to contact diagnosis following MDR-TB confirmation in the index case was 25 weeks (IQR 11 weeks).

Conclusion Our findings suggest current screening guidelines for MDR-TB contacts may be inadequate. Contacts of smear-positive MDR-TB index cases might benefit from closer radiological follow-up, with serial CXRs in the first six to twelve months or a baseline CT chest at screening. While the use of preventative levofloxacin in MDR-TB contacts has shown effectiveness in high incidence settings, randomised controlled trials evaluating preventative treatment of MDR-TB contacts in low incidence settings are urgently needed.

P226 THE IMPACT OF COVID-19 ON TUBERCULOSIS CASE PRESENTATION – THE BHRUT EXPERIENCE. A COMPARATIVE ANALYSIS OF PRE-AND POST-PANDEMIC TRENDS

SK Singh, S Rajesh, A Ainley. *Barking, Havering and Redbridge University Hospitals NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.387

Introduction The COVID-19 pandemic has significantly influenced the incidence and presentation of tuberculosis (TB) globally and in the UK. To understand these changes and potential reasons, we conducted a retrospective analysis of TB cases managed within our trust before and after the pandemic.
Methods This retrospective cohort study analyzed patient data from 2018 to 2023, categorizing cases into pre-COVID (2018–2019) and post-COVID (2020–2023) periods. Data were stratified by TB site, risk factors, and initial presentation location.
Results Among 665 patients, the distribution of TB sites remained relatively stable between pulmonary (50.2%) and extrapulmonary TB (49.8%) pre-pandemic. Post-pandemic, pulmonary TB cases increased to 54.88%, marking a 4.68% rise (χ^2 = 1.09, p = 0.297). However, there was a significant shift in primary presentation settings: pre-pandemic, 48.37% of patients sought initial care at A&E, whereas this increased to 66.22% post-pandemic. This represents a substantial 17.85% rise, over GP consultations post-pandemic (χ^2 = 23.75, p < 0.001).

Post-pandemic, certain TB risk factors changed notably. Alcohol misuse significantly increased from 5.83% pre-pandemic to 15.16% post-pandemic (χ^2 = 5.90, p = 0.015). Smoking trends changed from 39.16% to 28.8% (χ^2 = 3.61, p = 0.057). Other risk factors showed no significant differences: any risk factor (25% to 27.07%, χ^2 = 0.094, p = 0.759), asylum seeker (2.5% to 4.33%, p = 0.553), drug misuse (4.16% to 5.05%, p = 0.901), homelessness (7.5% to 6.13%, p = 0.777), mental health issues (8.33% to 7.22%, p = 0.858), and prison history (7.5% to 6.13%, p = 0.777).
Conclusion The COVID-19 pandemic has profoundly impacted TB presentation locally, with an increased severity of

Abstract P226 Table 1

	PRE-PANDEMIC			POST- PANDEMIC				
	2018 (n=117)	2019 (n=98)	Total (n=215)	2020 (n=87)	2021 (n=107)	2022 (n=105)	2023 (n=151)	Total (n=450)
SITE n (%)								
Pulmonary	**61 (52%)**	**47(48%)**	**108(50%)**	**41 (47%)**	**50 (47%)**	**66 (63%)**	**90(60%)**	**247(55%)**
Extra-Pulmonary	56 (48%)	51(52%)	107(50%)	46 (53%)	57 (53%)	39 (37%)	61(40%)	203(45%)
PLACE OF PRESENTATION n (%)								
A&E + Others	**63(54%)**	**41(42%)**	**104(49%)**	**54(62%)**	**72(67%)**	**77(75%)**	**95(63%)**	**298(66%)**
GP	54(46%)	57(58%)	111(51%)	33(38%)	35(33%)	28(27%)	56(37%)	152(34%)
RISK FACTORS n (%)								
Any risk factor	17(24%)	13(27%)	30(25%)	10(29%)	24(33%)	18(22%)	23(26%)	75(27%)
Alcohol misuse	**5(7%)**	**2(4%)**	**7(6%)**	**5(15%)**	**16(22%)**	**10(12%)**	**11(12%)**	**42(15%)**
Asylum seeker	3(4%)	0(0%)	3(3%)	1(3%)	0(0%)	6(7.41%)	5(6%)	12(4%)
Drug misuse	5(7%)	0(0%)	5(4%)	2(6%)	3(4%)	3(4%)	6(7%)	14(5%)
Homeless	6(8%)	3(6%)	9(8%)	2(6%)	2(3%)	10(12%)	3(3%)	17(6%)
Mental health	5(7%)	5(10%)	10(8%)	3(9%)	6(8%)	3(4%)	8(9%)	20(7%)
Smoking	25(35%)	22(45%)	47(39%)	7(21%)	18(25%)	25(31%)	30(34%)	80(29%)
Prison	5(7%)	4(8%)	9(8%)	4(12%)	4(5%)	6(7%)	3(3%)	17(6%)

pulmonary TB cases and a shift towards acute care settings for initial presentation. Social risk factors have worsened, reflecting broader health and social challenges that have an impact on acute and post-TB care. Our findings further highlight the need for more targeted interventions to address the TB resurgence, and improve health equity. Findings have supported work to improve A&E in-reach and education and collaborative efforts between organisations to address local health inequality and determinants of health.

P227 QUALITATIVE EXPLORATION OF HEALTHCARE-SEEKING EXPERIENCE OF PATIENTS DIAGNOSED WITH ACTIVE TUBERCULOSIS IN LEICESTERSHIRE, UK

[1]N Grolmusova, [1]JW Kim, [2]M Gogoi, [1]J Lee, [1]I Novsarka, [1]P Haldar. *[1]NIHR Respiratory Biomedical Research Centre, University of Leicester, Leicester, UK; [2]Department of Respiratory Sciences, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.388

Introduction Multiple patient and healthcare factors contribute to delays from symptom onset to the start of treatment for tuberculosis (TB). This study aimed to explore barriers and facilitators to early care-seeking for patients previously diagnosed with TB in Leicestershire.

Methods This qualitative study was performed using semi-structured interviews with adult patients treated for active TB between 2019–2023. Purposive sampling was used to represent the local TB population. Participants completed a demographic questionnaire followed by in-person interviews analysed using thematic analysis.

Results Ten interviews have been conducted to date (6 females, median age 34yrs). Four participants were South Asian, three White British, two Eastern European and one African. Median delay from symptom onset to the start of treatment was 12 weeks (range 1–130 weeks).

The main themes identified from the interviews are summarised in table 1. Patient factors that delayed care-seeking included symptom minimisation and denial, which continued until either sudden deterioration or external pressure from others triggered healthcare engagement. Several participants expressed loss of trust in the system associated with negative experiences including delayed appointments, multiple appointments to address persisting symptoms, or if symptoms were dismissed. Frustration with access and efficiency in the NHS led two participants to seek healthcare abroad. Importantly, patients reported a change in these perceptions with positive healthcare experiences during the TB treatment period that helped rebuild future trust towards healthcare providers. These included feelings of being looked after, reassuring communication, including cross-cultural engagement. Following TB treatment, some patients stated a new willingness to engage with healthcare for future problems. Several participants mentioned incorrect prior knowledge of the disease and awareness of stigma about TB diagnosis.

Conclusion Our findings highlight multiple interrelated patient and healthcare factors that variably contribute to delays in TB diagnosis. Education in the form of community information

Abstract P227 Table 1 Main themes including example quotations

Theme	Examples
1. Patients delay seeking help for varied reasons, and wait until a precipitating event occurs to trigger healthcare-seeking	*"For me, like cough is normal, because it's for my work everybody has like a cough, like runny nose, like flu. Everybody has it, because it's the working in a cold place." QTB-A-001 "I was indecisive whether to go for checkup or not. And I decided to continue with my, what, with my medicine that I was buying, that I bought at the, at the pharmacy with the coughing medicine, and then suddenly one day just exploded. And then I started coughing blood." QTB-A-003*
2. Healthcare delays in TB diagnosis lead to loss of trust in the system	*"And then the third course I think GP gave me 14 days, two weeks. And it's still… by that time I did give up and said I'm gonna go see somebody who knows what they're doing." QTB-A-002*
	"And if you don't have a valid reason you are not seen here, you are just prescribed paracetamol unfortunately. So that's why whenever we going with Romania, I choose to do my blood test and all that. And on one of these occasions, that's how I discovered that I have TB." QTB-A-004
3. Holistic and flexible approach to patient care can rebuild trust towards healthcare	*"Like when right at first when they said I had tuberculosis, I didn't believe it. So from that point, I was very upset and like 'yeah, I don't think that I've got it', but I kept an open mind. But then when I did believe that I did have it, I'd put an eye on things on early doors while I was in the hospital and because things lined up anytime I asked the question, they could answer it. They showed me that they knew what they were doing. They had, they had the knowledge, probably the experience. And yeah, I was in safe hands so that I could just turn my brain off, I went on autopilot…there's not too many people I trust " QTB-A-010*
	"Because before I have this problem (TB), I was refusing every single treatment. For everything… Yeah, they change me a lot. I'm not scared anymore about it." QTB-A-005
4. Importance of clear communication and cultural engagement	*"My father wasn't able to talk in the English, so I used to translate all the doctors. But in his case he (the doctor) talked with my father in his own language and explain everything. 'Everything is going to be OK. You will be alright. It's a bit suffering at the beginning, but you'll feel OK'. So that's why he explained to him in his own language and he was like, OK, he was more relieved. He felt better. So he had the, you know, the willpower to say 'I'm going to be OK, doctor said I'm going to be OK. So I'm going to be OK'" QTB-A-006*
5. Ongoing knowledge gaps and stigma around TB	*"It kills people, but mostly in Africa. So I didn't know much. That's what I knew about it. And knew that it was associated with sexual transmitted diseases like HIV. " QTB-A-003 "Yeah if you go dusty places if they go on inside, you take lots of dust inside then TB will be there." QTB-A-009 "It's almost like a, like a dirty disease, isn't it? Almost? And yeah, I mean, I've told as few people as possible really. Cause I think it it's almost quite embarrassing having that even though you can't help it, can you?" QTB-A-007*

campaigns for the public and refresher teaching for clinicians are helpful to address misinformation raise awareness about TB. Importantly, the individual interactions of patients with healthcare providers during TB treatment have an important bearing on their trust and future healthcare engagement. Optimising care for TB patients may therefore have longer term secondary benefits to health.

P228 UPTAKE, EFFECTIVENESS AND ACCEPTABILITY OF ROUTINE SCREENING OF PREGNANT MIGRANTS FOR LATENT TUBERCULOSIS INFECTION IN ANTENATAL CARE: A FEASIBILITY STUDY

[1]A Rahman, [2]S Thangaratinam, [3]A Copas, [1]D Zenner, [4]PJ White, [1]C Griffiths, [3]I Abubakar, [5]C McCourt, [1]H Kunst. *[1]Queen Mary University of London, London, UK; [2]University of Birmingham, Birmingham, UK; [3]University College London, London, UK; [4]Imperial College London, London, UK; [5]City University, London, UK*

10.1136/thorax-2024-BTSabstracts.389

Rationale Globally, tuberculosis (TB) is a leading cause of death in women of reproductive age. There is high risk of reactivation of latent tuberculosis infection (LTBI) in pregnancy. The uptake of routine screening of migrants for LTBI in the UK in primary care is low. Our study evaluates the uptake, effectiveness and acceptability of offering routine opt-out screening for LTBI in antenatal care (ANC).

Methods Observational feasibility study with a nested qualitative component. Inclusion criteria were pregnant migrant women aged 16–35 years, attending antenatal clinics in an NHS Trust, from countries with a TB incidence of greater than 150/100,000 including sub-Saharan Africa, and who have been in the UK for less than 5 years.

Abstract P228 Table 1 Demographic and outcome data for women offered an IGRA test

		N (%) or mean (s.d.)
Mean age, years (s.d.)		27.2 (4.2)
Country of birth	Bangladesh	158 (52.5)
	Pakistan	72 (23.8)
	India	40 (13.3)
	Africa	19 (6.3)
	Others	13 (4.3)
Smoking status	Never	301 (99.7)
	Current smoker	1 (0.3)
HIV status	HIV-infected	0 (0.0)
	HIV-uninfected	302 (100.0)
Diabetes Mellitus	Diabetes	1 (0.3)
	No diabetes	301 (99.7)
Previous history of TB/LTBI	Treated for active TB	1 (0.3)
	Treated (unclear for active TB/LTBI)	1 (0.3)
	No previous treatment for active TB or LTBI	300 (99.3)
IGRA blood test	Consent	302 (100.)
	Declined	0 (0.0)
IGRA result	Positive	40 (13.3)
	Negative	262 (86.8)
Active TB diagnosed		0 (0.0)

Participants were offered opt-out screening with an interferon gamma release assay (IGRA). Analysis estimated the proportion of eligible women who were offered LTBI screening, the rate of uptake of LTBI screening, and IGRA test positivity. Semi-structured interviews and focus groups conducted with migrant women and midwives evaluated acceptability, understanding and feasibility of LTBI screening.

Results 750 participants were eligible for LTBI screening, of whom 302 (40.3%) were offered an IGRA test. Uptake was 100%. Forty of 302 women (13.3%) had a positive IGRA test (table 1).

Qualitative research identified some awareness of TB but a lack of prior knowledge about LTBI in pregnant migrant women. The biggest barrier to screening uptake was in relation to language and access to interpreters. Midwives commented on the public health benefits of screening and noted that for many migrant women this may be the first regular contact with the NHS. Midwives acknowledged the importance of routine opt-out screening for LTBI in pregnancy as an important measure to reduce stigma and improve uptake. They report busyness of ANC clinics and low confidence due to lack of detailed knowledge about LTBI as some of the barriers to offer of screening.

Conclusions Our study reported an uptake rate of 100% for routine opt-out LTBI screening in ANC but offer of screening was low. Routine opt-out LTBI screening in ANC is both feasible and acceptable to pregnant migrant women and midwives.

P229 PREVALENCE AND IMPACT OF INCIDENTAL FINDINGS ON RESEARCH PET-CT SCANS AMONG RECENT TB CONTACTS PARTICIPATING IN A PROSPECTIVE OBSERVATIONAL STUDY

[1]JW Kim, [2]A Kamil, [1]J Lee, [1]I Novsarka, [3]W Branchett, [3]A O'Garra, [1]P Haldar. *[1]NIHR Respiratory Biomedical Research Centre, University of Leicester, Leicester, UK; [2]University Hospitals of Leicester NHS Trust, Leicester, UK; [3]Francis Crick Institute, London, UK*

10.1136/thorax-2024-BTSabstracts.390

Introduction Positron emission tomography with computed tomography (PET-CT) shows promise as a highly sensitive research tool for characterising tuberculosis infection (TBI). Incidental findings, defined as unexpected features not typically associated with the investigated pathology, are common and carry clinical, ethical, and cost implications. Here we report the prevalence and outcome of incidental findings not typically related to TBI, on research PET-CT scans in TB contacts.

Methods We performed prospective observational study of immunocompetent asymptomatic household TB contacts between September 2021 and April 2024. Participants had QuantiFERON-TB Gold Plus (QFT) testing and fluorodeoxyglucose (FDG) PET-CT scans at baseline. Incidental FDG uptake reported by PET-CT radiologists was further investigated according to radiologist recommendation, and clinician assessment of the patient's medical history and symptoms. Incidental findings were classified as 'clinically significant' if they required immediate intervention, and 'possibly significant' if they required surveillance.

Results 132 TB contacts (118 (89.4%) pulmonary TB contacts), were included in analysis. Fifty-one (38.6%) were QFT-positive. The median age (IQR) was 37.5 years (25.3 – 48.8); 69 (52.3%) were female; 39 (29.5%) had a smoking history;

Abstract P229 Table 1 Number of reported incidental FDG uptakes in extra-thoracic organs

	Sino-nasal	Upper GI tract	Lower GI tract	Non-GI abdominal organ	Pelvis (female)	Prostate (male)	Any other sites
Total Number	18	9	6	4	26	3	18
Number of further investigations requested	2	1	3	2	4	3	4
Clinical significance among those with further investigation requested							
Significant/N	1	0	1	2	0	0	0
Possibly Significant/N	0	0	0	0	1	1	2
Not Significant/N	0	0	0	0	3	1	2
Unknown Significance (Pending follow up)/N	1	1	1 (1)	0	0	(1)	0

37 (28.0%) had comorbidities; and 108 (81.8%) were foreign-born.

Incidental FDG uptake in extra-thoracic organs was reported in 68 (51.5%) participants (table 1). Twenty (15.2%) had at least one further investigation, including blood tests (n=5), other imaging (n=8), invasive procedures (n=4), and specialist referrals (n=7). There were four clinically significant outcomes: renal cell carcinoma, cholangiocarcinoma, inverted sinonasal papilloma, and multiple colorectal tubular adenomas >10mm. Findings with possible clinical significance (n=4) included prostate nodule, breast nodule, hydrosalpinx, and subclinical hypothyroidism.

Forty-six participants (34.8%) had FDG uptake in extra-thoracic lymph nodes (LN), including 33 (25.0%) cervical, 13 (9.8%) axillary, and 10 (7.6%) inguinal LN. Two cervical LN were investigated for suspected TB lymphadenitis; the remainder were deemed non-specific on radiological and clinical grounds and did not have further investigations. Extra-thoracic LN uptake was not associated with QFT status (χ^2=0.698, p=0.403).

Clinical significance was not determined in five cases.

Conclusions Incidental findings were common, requiring further investigation in over 15% of the cohort. Our findings can inform discussion with potential participants enrolling to future TBI studies using PET-CT.

P230 ISONIAZID MONO-RESISTANT PULMONARY TUBERCULOSIS AND ITS CLINICAL OUTCOMES: A PROSPECTIVE MULTICENTER COHORT STUDY IN KOREA

J Min, JM Lee, HW Kim, JS Kim. *The Catholic University of Korea College of Medicine, Seoul, Republic of Korea*

10.1136/thorax-2024-BTSabstracts.391

Background Resistance to isoniazid is the most common type of anti-tuberculosis drug resistance. The Republic of Korea is an intermediate-tuberculosis-burden and high-income country with increasing burden of elderly people with tuberculosis. We evaluated effects of isoniazid resistance on treatment outcomes in people with pulmonary tuberculosis.

Abstract P230 Table 1 Factors associated with unfavourable outcome in pulmonary tuberculosis

Variables	Unfavourable (n=143)	Favourable (n=615)	Total (n=758)	Crude OR (95% CI)	Adjusted OR (95% CI)
Isoniazid resistance	17 (11.9%)	37 (6.0%)	54 (7.1%)	2.108 (1.150-3.863)	1.996 (1.028-3.877)
Male	96 (67.1%)	385 (80.0%)	481 (63.5%)	1.220 (0.830-1.974)	1.312 (0.859-2.006)
Age (year)					
≥ 65	84 (58.7%)	257 (41.8%)	341 (45.0%)	1.983 (1.371-2.870)	1.976 (1.309-2.893)
< 65	59 (41.3%)	358 (58.2%)	417 (55.0%)		
Body mass index (kg/m^2)					
< 18.5	44 (31.7%)	107 (17.7%)	151 (20.3%)	2,156 (1.425-3.61)	2.176 (1.400-3.382)
≥ 18.5	95 (68.3%)	498 (82.3%)	593 (79.7%)		
Nationality					
Foreign	3 (2.1%)	11 (1.8%)	14 (1.8%)	1.177 (0.324-4.273)	1.818 (0.453-7.292)
Korean	140 (97.9%)	604 (98.2%)	744 (98.2%)		
Diabetes	45 (31.5%)	165 (26.8%)	210 (27.7%)	1.252 (0.843-1.860)	2.903 (1.607-5.243)
Cancer	24 (16.8%)	41 (6.7%)	65 (8.6%)	2.824 (1.644-4.850)	1.549 (1.028-2.334)
Initial Symptoms					
Yes	114 (79.7%)	429 (69.8%)	543 (71.6%)	1.704 (1.095-2.653)	1.685 (1.045-2.716)
No	29 (20.3%0	186 (30.2%)	215 (28.4%)		
Prior TB history					
Yes	29 (20.6%)	73 (11.9%)	102 (13.5%)	1.912 (1.188-3.077)	2.092 (1.240-3.528)
No	112 (79.4%)	539 (88.1%)	651 (86.5%)		
Initial disease severity					
Severe	90 (62.9%)	323 (52.5%)	413 (54.5%)	1.535 (1.056-2.232)	1.549 (1.028-2.334)
Mild	53 (37.1%)	292 (47.5%)	345 (45.5%)		

OR, odds ratio; CI, confidence interval; TB, tuberculosis

Methods Among 1,126 adults ≥19 years with pulmonary tuberculosis enrolled in a multicentre prospective cohort study of pulmonary tuberculosis (COSMOTB) between 2019 and 2021, those with isoniazid mono-resistant tuberculosis and with pan-susceptible tuberculosis were identified. Isoniazid-resistance was defined based on results of molecular or phenotypic drug susceptibility tests. Those with rifampicin resistance, other types of drug resistance, and unknown drug resistance profiles were excluded. All patients were regularly followed up until the end of anti-tuberculosis treatment. We evaluated factors associate with treatment outcome among pulmonary TB cases. Multivariable logistic regression models were employed to evaluate whether isoniazid-resistance was associated with an unfavourable outcome; death, failure, loss-to-follow-up, still-on-treatment, and transfer-out. For the sensitivity analysis, we identified cases of death, failure, and still-on-treatment to redefine the secondary unfavourable outcome and conducted additional multivariable logistic regression analyses to assess the effect of isoniazid-resistance on the redefined unfavourable outcome.

Results Among 758 pulmonary TB cases, 54 (7.1%) had isoniazid mono-resistance. Frequency of unfavourable outcomes was significantly higher in those with isoniazid resistance, compared to those with pan-susceptible tuberculosis (31.5% vs. 17.9%; p=0.014). Old age, low body mass index, cancer, prior tuberculosis history, presence of initial symptoms, and initial severe disease (either positive smear result or presence of cavity on chest x-ray) were significantly associated with unfavourable outcome. Using multivariable logistic regression model, isoniazid resistance was independently associated with unfavourable outcomes (adjusted odds ratio [aOR], 2.00; 95% confidence interval [CI], 1.03–3.89]). In the sensitivity analysis, isoniazid resistance was also significantly associated with redefined unfavourable outcome (aOR, 2.18; 95% CI, 1.07–4.44).

Conclusions Isoniazid mono-resistant pulmonary tuberculosis was predictive of unfavourable outcome. Effective treatment regimens for isoniazid-resistant tuberculosis are needed to improve outcomes.

P231 THE TBC3 STUDY: A MIXED METHODS INVESTIGATION OF THE FACTORS THAT INFLUENCE SUCCESSFUL TUBERCULOSIS CONTACT TRACING IN LOW PREVALENCE SETTINGS

[1]HL Perez, [1,2]PJ Collini. *[1]Division of Clinical Medicine, School of Medicine and Population Health, University of Sheffield, Sheffield, UK; [2]Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK*

10.1136/thorax-2024-BTSabstracts.392

Background Identifying and treating infected contacts of infectious tuberculosis is central to global tuberculosis control. Developing and implementing national contact tracing evidence-based guidance is a key priority in the UKHSA Tuberculosis action plan for England, 2021–2026.[1] We conducted a mixed methods study to investigate factors influencing progression along the contact tracing cascade across the four TB services in South Yorkshire to identify barriers that might be effectively addressed by intervention in low-incidence settings such as England.

Abstract P231 Figure 1 The themes and subthemes regarding barriers and facilitators to contact tracing that emerged from interviews

Methods

1. We extracted and analysed 2018–2023 data from the National Tuberculosis Surveillance System (NTBS) to establish timings and proportions of index case contacts' progression through the cascade and identify index case factors predictive of progression.
2. We conducted semi-structured interviews with service users and providers then used thematic analysis to draw out barriers and facilitators to contact cascade progression. We then discussed these results with a provider focus group to further explore which factors could be amenable to intervention.

Results

1. 1044 contacts were identified for 258 index cases; 22.9% were never screened, and 25.5% of those with latent TB infection did not complete treatment. Index case factors predictive of successful contact identification were high infectivity, Pakistani ethnicity, and Central/Eastern European birth. Contacts were less likely to progress if the index case was of non-white ethnicity or resided in a higher deprivation area. Differences between services were also observed.
2. 4 major themes, encompassing 23 subthemes, emerged from 18 interviews (figure 1).

The focus group corroborated these themes. Crucially, the group identified where factors were specific to particular services (communication method, screening procedure) or populations (community-specific illness behaviours, health literacy) and thus might yield best-targeted rather than across-the-board interventions.

Conclusion We have identified patient and service factors affecting contact tracing that could be amenable to targeted intervention and are likely to be generalisable to similar settings. Informed by these findings, we will conduct a broader questionnaire survey of index cases and their contacts, e.g. to include individuals who declined screening, to substantiate and add to our findings.

REFERENCE

1. UKHSA,2021<https://www.gov.uk/government/publications/tuberculosis-tb-action-plan-for-england/tuberculosis-tb-action-plan-for-england-2021-to-2026>

'The Number One Asthma Detective Agency' – Asthma diagnostics

P232 THE DIAGNOSIS OF ASTHMA: SENSITIVITY AND SPECIFICITY OF DIFFERENT DIAGNOSTIC TEST THRESHOLDS

[1]AJ Simpson, [2]S Drake, [3]R Wang, [3]L Healy, [3]H Wardman, [2]M Bennett, [3]CS Murray, [3]SJ Fowler, [3]A Simpson. *[1]School of Sport, Exercise and Rehabilitation Sciences, University of Hull, Hull, UK; [2]Manchester University NHS Foundation Trust, Manchester, UK; [3]Division of Immunology, Immunity to Infection and Respiratory Medicine, School of Biological Sciences, Faculty of Biology, Medicine and Health, The University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.393

Introduction The under- and over-diagnosis of asthma is widespread and may cause significant risks to patients. There is no single gold standard test to diagnose asthma. There remains considerable variability in published asthma diagnostic guidelines, which incorporate several different tests, often with different cut-off values denoting a positive test.

Aim To determine threshold values for asthma diagnostic tests that give a very high specificity and therefore can be used to 'rule in' asthma, obviating the need for further tests.

Methods Within the Rapid Access Diagnostics in Asthma research clinic (RADicA) adults with symptoms in keeping with asthma but not on inhaled corticosteroids were referred from primary care to undergo a series of tests before and after treatment. Asthma diagnosis (reference standard) was made by a panel of asthma specialists using clinical history, physical examination, spirometry, bronchodilator reversibility (BDR), FeNO, peak expiratory flow variability, bronchial challenge testing, allergy testing, blood eosinophils, and response to 8 weeks inhaled corticosteroid treatment. The threshold value for each test at which asthma could be reliably ruled in (both 95% specificity and 90% specificity) was calculated, using ROC curves.

Results 118 adults [75 female, mean (SD) age 36 (12) y], had a definitive diagnostic outcome from the asthma specialists: 70 (59%) had asthma. The threshold value for BDR at 95% specificity was lower than that used in most guidelines (8.5% vs 12%); a higher sensitivity was seen when BDR was expressed as% of baseline (rather than% predicted) value. For FeNO a threshold value of 72.5ppb was required for a specificity of 95%, and 54.5ppb for a specificity of 90%, which demonstrated higher sensitivity (51.4%). For blood eosinophils, a value >0.33 ($x10^9$ cells/L) had a 95% specificity, but this had a poor sensitivity of 38.2%. For FEV_1/FVC ratio, any value below LLN had a 95% specificity, with a sensitivity of 38.6%.

Conclusion Multiple tests will be needed in an asthma diagnostic algorithm to capture different features of disease. A small change to thresholds however may allow clinicians to 'rule in' asthma with fewer tests. These data could inform the next generation of asthma diagnostic algorithms.

Abstract P232 Table 1 Thresholds of tests at which specificity for asthma is 95% with accompanying sensitivity. Also shown for specificity of 90%

	95% specificity	Sensitivity at 95% specificity	90% specificity	Sensitivity at 90% specificity
BDR1 (% change from baseline)	8.5	62.9%	7.9	62.9%
BDR2 (change in% predicted value)	9.2	45.7%	8.18	57.1%
FeNO (ppb)	72.5	38.6%	54.5	51.4%
Blood eosinophils ($x10^9$ cells/L)	0.33	38.2%	0.26	55.9%
FEV_1/FVC as% of LLN	≤100%	38.6%	≤105%	60%

*LLN = lower limit of normal

P233 CAN WE PREDICT POSITIVE BRONCO-REVERSIBILITY TEST USING BLOOD EOSINOPHILS?

E Taylor, E Dickinson, R Yadavilli. *Royal Bolton Hospital, Bolton, UK*

10.1136/thorax-2024-BTSabstracts.394

Background Eosinophilic airway inflammation and airway remodelling leads to airflow obstruction in patients with

asthma. Blood eosinophils are considered surrogate markers for airway eosinophilia and thereby airway inflammation. These patients may have airway hyper responsiveness and bronco reversibility. Positive bronco reversibility test is defined as an increase of FEV1 (Forced expiratory volume in 1 second) > 12% and 200ml improvement before and after the bronco dilator therapy on spirometry.

Aim We want to study if blood eosinophilia is associated with positive bronco reversibility testing in suspected asthma patients.

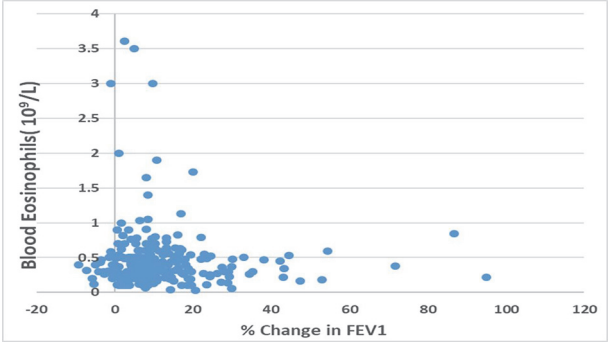
Methods Patients diagnosed as having bronchial asthma by General Practitioners were referred for spirometry test to our lung physiology department. These patients had Spirometry before and after a bronco-dilator treatment and the% change in FEV1 was calculated. We studied their highest blood eosinophil count available on our ICE system and studied for the correlation between these two variables using Pearson correlation co-efficient.

Results Total number of patients studied were 251. Average age was 61.7 yrs, Males were 115 and Females were 136. Average body mass index of the group was 29.92. Average blood eosinophils were 0.44 x 10^9/cells. highest% change of FEV1 noted in the study was 94%.

There was a negative correlation and weak relationship between the variables with R-value of -0.0659 and p value of 0.385.

Further observation of 85 patients within the group with% change in FEV1 > 12% also had negative correlation and weak association with blood eosinophils and has R-value of -0.0328 and p value of 0.771. 47/85 (55%) of these had blood eosinophils >0.3.

Conclusion This study confirms negative correlation and weak association between broncho reversibility testing and blood eosinophil levels. We therefore suggest that patients with suspected asthma should be referred for bronco-reversibility testing irrespective of their blood eosinophil count.



Abstract P233 Figure 1

REFERENCES

1. Hancox RJ, Pavord ID, Sears MR. Associations between blood eosinophils and decline in lung function among adults with and without asthma. *Eur Respir J*. 2018 Apr 19;**51**(4):1702536. doi: 10.1183/13993003.02536-2017. PMID: 29563173.

P234 CLINICAL IMPLICATIONS OF PERSISTENT T2 INFLAMMATION IN PATIENTS WITH SEVERE ASTHMA TREATED WITH TEZEPELUMAB

[1,2]F Haris, [1,2]J Gates, [1]C Roxas, [1]L Thomson, [1]L Green, [1]J Lam, [1]M Fernandes, [1]G d'Ancona, [1]J Dhariwal, [1,2]AM Nanzer, [1,2]DJ Jackson. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK; [2]School of Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.395

Introduction Tezepelumab, a human monoclonal antibody targeting TSLP, inhibits T2 inflammation leading to a fall in both the blood eosinophil count (Eos) and fractional exhaled nitric oxide (FeNO) level in patients with severe asthma. However, due to other important drivers of T2 inflammation and/or possibly the dose of tezepelumab, the suppression of T2 inflammation is incomplete. It remains unclear whether persisting evidence of T2 inflammation is associated with a differential response to tezepelumab in the real-world SA setting.

Methods We conducted a retrospective analysis of T2 biomarkers at 6 months post-initiation of tezepelumab in patients with SA. Patients were divided into six biomarker groups as follows: Eos ≥300 cells/µL, Eos <300 cells/µL, FeNO ≥50ppb, FeNO <50ppb, composite T2-high (eos≥300 AND FeNO≥50) and composite T2-low (eos<150 cells/ul AND FeNO<25ppb). Clinical outcome measures including ACQ-6, annualised exacerbation rate (AER), and FEV1 were analysed and compared across biomarker groups.

Results 96 patients (mean age 47, 54% females, 63% atopic) with complete T2 biomarker levels at baseline and 6 months were included in the analysis. At baseline the median (IQR) Eos was 0.23 (0.01–0.58) and the median (IQR) FeNO was 46 (27–85). At 6 months the Eos remained ≥300 cells/µL in 23% and FeNO remained ≥50ppb in 19%. 18% of patients were composite T2 biomarker low and 6% remained composite T2 high at 6 months. Overall, there were no statistically significant differences between the changes from baseline in AER, ACQ6 or FEV1 according to the different T2 biomarker group at 6 months.

Conclusion In a real-world cohort of SA treated with tezepelumab, a significant proportion of patients continue to have evidence of residual T2 inflammation on tezepelumab. However, T2 biomarker levels on treatment did not relate to the apparent clinical effectiveness of tezepelumab in this cohort. Further research is needed to understand whether residual T2 inflammation may be associated with accelerated lung function decline over the longer term.

P235 THE DIAGNOSTIC JOURNEY OF PATIENTS WITH EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS (EGPA) IN ENGLAND: A RETROSPECTIVE OBSERVATIONAL COHORT STUDY

[1]S Siddiqui, [2]P Dolin, [2]A Shavit, [3]J Rowell, [4]C Edmonds, [2]D Kielar, [5]A Lacetera, [5]P Suárez-Sánchez, [5]C Ariti, [5]B Podmore, [5]A Kitchin Velarde, [6]SY Chen. *[1]National Heart and Lung Institute, NIHR Imperial Biomedical Research Centre, Imperial College London, London, UK; [2]BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [3]Market Access and Pricing, AstraZeneca, Cambridge, UK; [4]Market Access and Pricing, AstraZeneca, Gaithersburg, USA; [5]OXON Epidemiology, Madrid, Spain; [6]BioPharmaceuticals Medical, AstraZeneca, Gaithersburg, USA*

10.1136/thorax-2024-BTSabstracts.396

Introduction and Objectives Eosinophilic granulomatosis with polyangiitis (EGPA) is associated with substantial disease burden, with patients often facing a long and complex journey from symptom onset to diagnosis. We conducted a retrospective observational cohort analysis to characterise the diagnostic journey of patients with EGPA using electronic health record databases in England.

Methods The patient identification period was 01 January 2006 to 28 February 2019, with follow up until 28 February 2020. Primary care data from the Clinical Practice Research Datalink (CPRD) Aurum database were linked to data from the Hospital Episode Statistics (HES), which contains diagnoses, inpatient and outpatient visits, and procedures. Patients diagnosed with EGPA (index date [ID]) during the patient identification period, with ≥1 year of medical records before ID, were identified from CPRD Aurum or HES records. Specialist visits and time from first observed major EGPA symptom (including an asthma diagnosis or nasal polyposis) to ID, were analysed.

Results In total, 486 patients with EGPA were identified. At ID, the mean (standard deviation [SD]) age was 57.9 (15.2) years and most (71.8%) patients were ≥50 years of age; 50.2% were female. In the 12 months prior to ID, 86.6% of patients had ≥1 visit to a specialist, most frequently respiratory medicine (46.9%), rheumatology (24.3%) and ear, nose and throat (23.7%); an increased proportion of patients consulted a rheumatologist in the 12 months post-ID (45.3%; **figure 1**). From 12 months pre-ID to 12 months post-ID, there was an increase in the number of mean (SD) visits per patient among those with ≥1 visit to that specialist, from 3.8 (3.9) to 4.6 (3.7) for respiratory medicine and from 2.8 (3.0) to 5.9 (5.7) for rheumatology, respectively. Based on 85.6% of patients with a major EGPA symptom in the 5 years prior to ID, the median (Q1; Q3) time from first major symptom to EGPA diagnosis was 44.0 (20.0; 56.0) months.

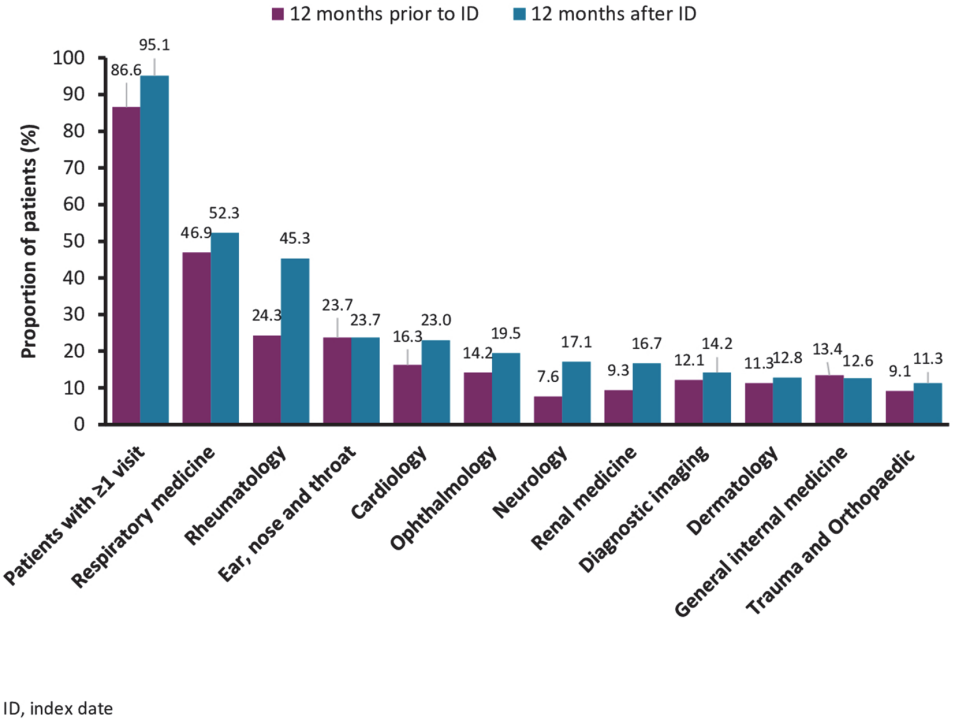
Conclusions In the year prior to EGPA diagnosis, 86.6% of patients had ≥1 visit to a specialist. The median interval from first major EGPA symptom to diagnosis was 44 months, highlighting that greater awareness of EGPA is needed amongst physicians.

P236 PRIMARY CARE TREATMENT PATTERNS AND HEALTHCARE EVENTS PRECEDING IDENTIFICATION OF SEVERE ASTHMA: A RETROSPECTIVE COHORT STUDY IN THE UNITED KINGDOM

BT Blak, TS Morris. *AstraZeneca UK, London, UK*

10.1136/thorax-2024-BTSabstracts.397

Introduction Patients with severe asthma are likely to have high burden and be frequent users of healthcare services. There is limited understanding of treatment patterns and healthcare events in primary care in the period preceding severe asthma identification. This study describes patient characteristics, treatment patterns and healthcare events for UK patients during this period.



Abstract P235 Figure 1 Patients with ≥1 visit to a specialist overall and by type (frequency ≥10%).

Methods Patients aged ≥18 years, with a diagnosis of asthma (index) identified in Clinical Practice Research Datalink (CPRD) between 1/1/2008-31/12/2016 with hospital data linkage. COPD patients were excluded. Severe asthma defined as: continuous high-dose ICS for ≥12 months plus additional reliever therapy (≥2 prescriptions of LABA/LTRA/theophylline) *OR* OCS for ≥50% of previous 12 months. Severe asthma date (SA) was the start of the high-dose ICS or OCS treatment period. Class-level medication patterns (switch, dose titration, add-on, discontinuation), exacerbations (asthma-related A&E attendance/hospitalisation, acute OCS prescription and/or primary care exacerbation code) and specialist referrals were described from index to SA. Healthcare resource utilisation (HCRU) and costs were assessed in the two years before SA.

Results Of 39,731 asthma patients, 2,323 (5.8%) patients met severe asthma definition. Mean (SD) age at SA was 59.8 (16.1) years; 1468 (63.2%) female. Median (IQR) time from index to SA was 9.6 months (1.2–28.8). In the 12 months prior to index, 23.6% had ≥1 exacerbation, 7.8% had ≥2 exacerbations and 14.9% had a specialist referral. In the 12 months prior to SA these proportions increased to 28.3%, 10.7% and 23.3% respectively. 61.6% of patients continued the same treatment between index and SA; most commonly SABA only (26.3%) or ICS/LABA (22.6%). 25.6% of patients had ≥1 class switch with most common first switches being from SABA to ICS monotherapy (13.1%) or ICS/LABA (10.6%). 17.0% had ≥1 dose up-titration, 72.1% had ≥1 add-on and 41.4% had ≥1 discontinuation. Mean asthma-

Abstract P236 Table 1 Healthcare resource utilisation and costs of severe asthma patients in the 2 years preceding severe asthma date

		Asthma Cohort (1st year before severe asthma date) N=2323			Asthma Cohort (2nd year before severe asthma date) N=2252*		
		n	%	N^	n	%	N^
Primary care							
GP care	Asthma-related GP practice visits	576	24.8	774	296	13.1	386
	*Asthma-related GP practice visit total cost**, mean (SD) per patient*	*28,638*	*49.7 (32.9)*		*14,282*	*48.3 (23.5)*	
	All cause GP visits	2,305	99.2	40,958	2,191	97.3	31,972
	All cause GP practice visit total cost), mean (SD) per patient	*1,515,446*	*657.5 (510.4)*		*1,182,964*	*539.9 (446.3)*	
Nurse care	Asthma-related nurse practice visits	834	35.9	1334	459	20.4	720
	Asthma-related nurse practice visit total cost), mean (SD) per patient	*14,474*	*17.4 (12.1)*		*7,812*	*17.0 (11.7)*	
	All cause nurse visits	2074	89.3	11,401	1807	80.2	8,867
	All cause nurse practice visit total cost), mean (SD) per patient	*123,701*	*59.6 (63.8)*		*96,207*	*53.2 (65.5)*	
Secondary care							
Inpatient hospitalisations&	Asthma related admissions (excluding day cases)	95	4.1	118	28	1.2	32
	Asthma related length of stay (days), mean (SD) days per patient	*6.6 (6.8)*			*4.2 (4.0)*		
	Asthma related admissions (excluding day cases) total cost, mean (SD) per patient	*81,953*	*862.7 (594.1)*		*19,653*	*701.9 (375.0)*	
	All cause admissions (excluding day cases)	606	26.1	1182	402	17.9	690
	All cause length of stay (days), mean (SD) days per patient	*13.4 (28.3)*			*10.3 (25.5)*		
	All cause admissions (excluding day cases) total cost), mean (SD) per patient	*1,453,813*	*2395.1 (2964.6)*		*964,408*	*2399.0 (2960.3)*	
Pulmonologist visits	Patients with at least one pulmonologist visit	446	19.2	1058	201	8.9	471
	Pulmonologist visit total cost, mean (SD) per patient	*178,066*	*399.3 (303.2)*		*79,948*	*397.8 (282.7)*	
Emergency department visits	Asthma related visit	60	2.6	76	15	0.7	16
	Asthma related visit total cost, mean (SD) per patient	*12,800*	*213.3 (213.8)*		*2,560*	*170.7 (41.3)*	
	All cause visit	772	33.2	1568	499	22.2	881
	All cause visit total cost, mean (SD) per patient	*242,880*	*314.6 (424.0)*		*136,960*	*274.5 (241.4)*	
Prescription counts	Asthma medications	2181	93.9	22994	1555	69.1	14791
	Mean number of asthma medication prescription (SD) per patient	*10.5 (8.2)*			*9.5 (8.1)*		

*Number of patients who had 2 years of observation time prior to severe asthma date
** Costs are reported in 2018 Great British pound value
^Column headings: n=number of patients,%=of total column, N=number of events
&Hospital admission costs were based on Healthcare Resource Groups (HRG) codes - there were some admissions for which a HRG code was not available and mean cost of all hospital admissions with the same primary diagnosis was used.
GP: General Practitioner SD: Standard Deviation

related HCRU and costs were higher in the year immediately preceding SA versus the previous 12 months (table 1).

Conclusions In the period preceding SA, patients exhibited increases in severity indicators (exacerbations and treatment escalations) and referrals, HCRU and cost, indicating the importance of identifying patients early in their disease pathway and actively optimising management.

P237 COMMUNITY DIAGNOSTIC AND TREATMENT HUBS REDUCE MISDIAGNOSIS AND IMPROVE GUIDELINE DIRECTED PRESCRIBING OF ASTHMA AND COPD

JW Scriven, G Woods, A Scarlett, K Parvin, M Davies, D Menzies. *Betsi Cadwaladr University Health Board, Rhyl, UK*

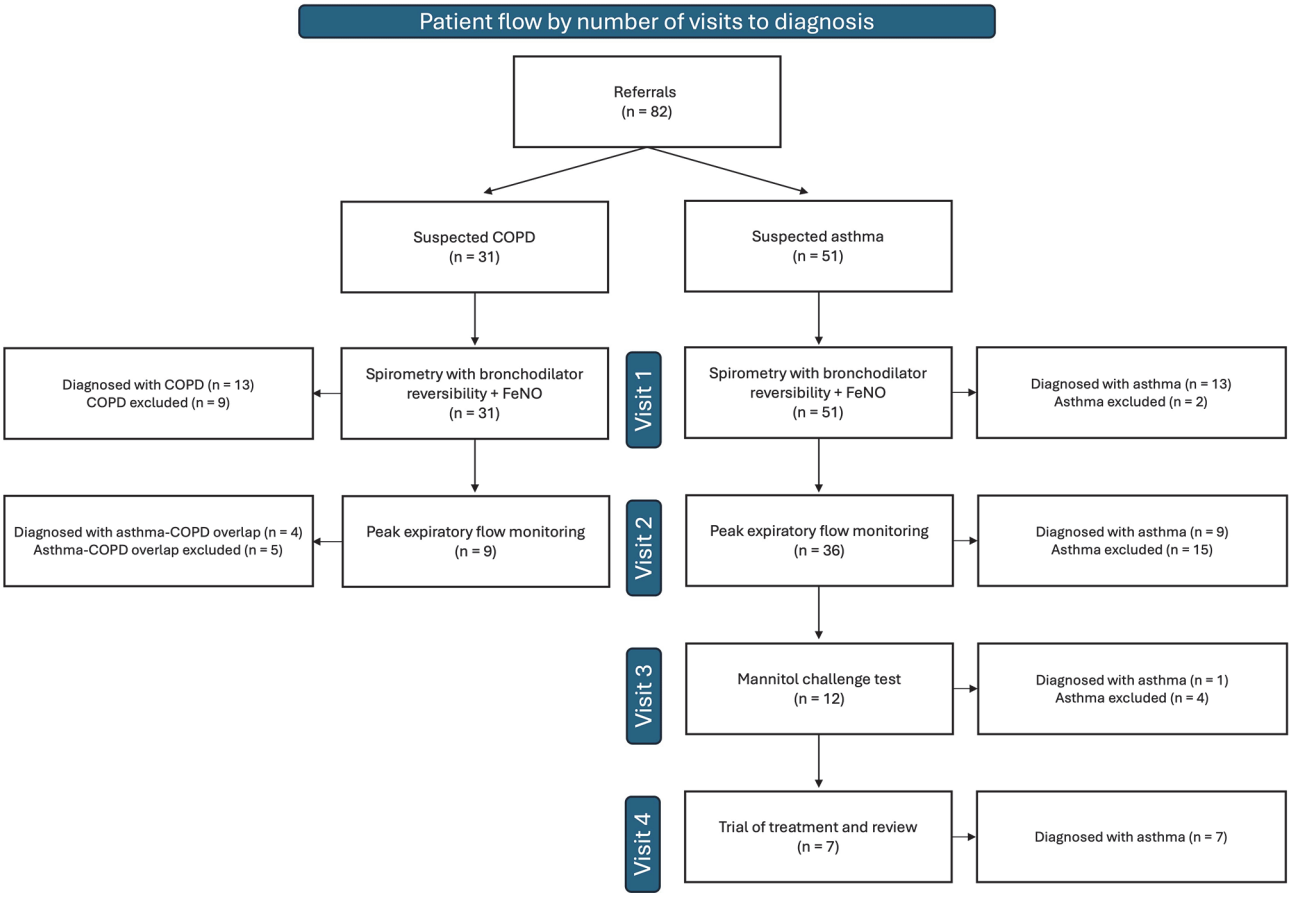
10.1136/thorax-2024-BTSabstracts.398

Making a definitive diagnosis of asthma and COPD remains challenging because of limited access to quality-assured physiology. A large proportion of patients with asthma and COPD do not receive guideline-directed treatment. Incorrect diagnosis and treatment are a significant cost for the NHS and lead to poor outcomes.[1] We evaluated the impact of a primary care Respiratory Diagnostic and Treatment Hub (RDTH) for asthma and COPD in North Wales.

Patients with a clinical diagnosis of asthma or COPD were referred by the primary care team from a single GP cluster (population 41,849) to the RDTH. Patients underwent joint evaluation and diagnostic testing by a Respiratory Physiologist and a Clinical Pharmacist in line with NICE guidance. Patients with a subsequent confirmed diagnosis had treatment prescribed according to the All-Wales Guidelines. Collected data included number of visits required to establish a diagnosis, patient demographics, smoking history, BMI, eosinophil count, spirometry, FeNO, peak expiratory flow, symptom control and patient satisfaction.

Between October 2023 and April 2024, 82 patients were assessed: 51 for suspected asthma and 31 for suspected COPD (figure 1). Of those referred with suspected asthma, 30 (58.8%) had the diagnosis confirmed following assessment (60% female), compared with 13 (41.9%) of those with suspected COPD (35% female). A modal average of two visits was required to establish or refute a diagnosis of asthma, whereas it took one visit for those with suspected COPD. Four (12.9%) patients referred with suspected COPD were diagnosed with asthma-COPD overlap syndrome. Mean age was 54.7 vs 66.8 (p=0.006), BMI 29.6 vs 27 (p=0.357), and pack-year smoking history 6.5 vs 36.3 (p=0.006) for diagnosed asthma vs COPD respectively.

A RDTH significantly reduces the potential misdiagnosis rate for asthma and COPD within primary care and ensures guideline-directed treatment is prescribed in a consistent



Abstract P237 Figure 1 A diagram showing the number of patients assessed by the RDTH, including the diagnostic testing at each stage and the number of visits required to confirm/exclude the diagnosis. A number of patients in the asthma cohort had PEF variability undertaken before referral to the RDTH; however, the number of visits to confirm/exclude the diagnosis is accurate

manner. Asthma diagnosis is more resource-consuming than COPD. More work is required to determine long-term outcomes and the impact on secondary care.

REFERENCE

1. Carter J, Foster J. Saving Your Breath: How Better Lung Health Benefits All of Us in Wales. Asthma and Lung Cymru 2023.

P238 CLINICAL CHARACTERISTICS OF PATIENTS REVIEWED IN A COMMUNITY RESPIRATORY DIAGNOSTIC HUB TO INFORM REFERRAL CRITERIA: AN EXTENDED REPORT

[1]S Khan, [1]J Aigbirior, [2]R Ramachandram, [1]B Cooper, [2]M Cotter, [1]Y Khan, [1]AH Mansur. *[1]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [2]NHS Birmingham and Solihull CCG, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.399

Background Asthma and chronic obstructive pulmonary disease (COPD) are common chronic respiratory diseases. However, lack of access to standardised diagnostics in primary care leads to incorrect or delayed diagnosis. An in-community respiratory diagnostic hub (RDH) may enable earlier more accurate diagnosis, identify those requiring specialist input early, or prevent unnecessary secondary care referrals.

Aim We previously reported results from an early patient cohort reviewed at this RDH. Here, we report extended clinical characteristics of all patients seen at the hub over a 2-year period.

Methods A two-phase collaborative pilot RDH between primary and secondary care established in cosmopolitan Birmingham. A multidisciplinary team of clinicians, nurses, and physiologists conducted and reviewed investigations. National guidelines were applied to establish diagnosis. Referral criteria to the RDH included: lack of confirmed diagnosis of asthma or COPD, new onset symptoms, poor symptom control.

Results There were 251 patients referred to the RDH in phase 1, and 143 in phase 2. Patient demographics are shown in table 1. Majority of patients in phase 1 (92.4%) had one clinic appointment. Whereas 62.2% of patients had at least 1 additional review in phase 2. All patients underwent spirometry with high success rate. Investigations performed and results are shown in table 1. Of those referred for suspected asthma in phase 1 (n=113), diagnosis was confirmed in 42.5% (n=48/113). A further 22 patients initially referred for other reasons (e.g. suspected COPD or other respiratory condition) were also diagnosed with asthma. Of those with suspected COPD (n=88), diagnosis was confirmed in 40 (45.4%). An additional 19 patients were also diagnosed with COPD. In phase 2, 75 patients were referred for suspected asthma, with diagnosis confirmed in 65.3% (n=49/75) of cases, plus an additional 17 patients. Of those with suspected COPD (n=53/143), diagnosis was confirmed in 31 (58.5%) patients, plus an additional 6.

Conclusion In this pilot, patients were representative of inner-city cosmopolitan Birmingham with range of ages and ethnic minorities. Spirometry was successful in most patients, including in phase 2 which ran during the Covid pandemic. Proportion of confirmed diagnoses amongst those with suspected asthma and COPD increased during phase 2.

Abstract P238 Table 1 Clinical characteristics of patients assessed at the community RDH

	Phase 1	Phase 2
Number of patients seen	251	143
Sex (female)	55.8% (n=140)	57.3% (n=82)
Age (mean, range)	50.5 (16–85) years	50.5 (19–85) years
BMI (mean±SD)	30.9±7.8	30.7±6.0
Ethnicity		
Caucasian	56.2% (n=141)	56.6% (n=81)
Asian	35.1% (n=88)	33.6% (n=48)
Afro-Caribbean	4.4% (n=11)	1.4% (n=2)
Other	4% (n=10)	7% (n=10)
Smoking status		
Current or ex-smoker	62.5% (n=157)	62.9% (n=90)
Non-smoker	35.5% (n=89)	36.7% (n=52)
FEV1 (mean±SD)	2.40±0.86L	-
FEV1% predicted (mean ±SD)	80.4±21.6	81.1±19.7
FEV1/FVC ratio (mean ±SD)	74.3±12.3	-
Blood eosinophils (mean ±SD)	0.28±0.21x10^9/L	-
FeNO (mean±SD)	26.7±32.9ppb	22.7±26.4
Number of visits to RDH required		
1	92.4% (n=232)	37.8% (n=54)
2	7.6% (n=19)	41.2% (n=59)
3	0% (n=0)	16.1% (n=23)
4+	0% (n=0)	4.9% (n=7)
Type of appointment		
Face-to-face	-	73.8% (n=200)
Virtual	-	26.2% (n=71)
Investigations performed		
Spirometry	100% (n=251)	100% (n=143)
Proportion successful	91.6% (n=230)	99.3% (n=142)
Reasons for unsuccessful tests	Unable to perform test correctly (n=10) Unable to obtain reproducible results (n=3) Terminated due to symptoms (n=2)	Unable to perform test correctly (n=1)
FeNO	93.6% (n=235)	80.4% (n=115)
Reversibility testing	29.9% (n=75)	-
Pulse oximetry	85.3% (n=214)	-
Gas transfer	30.7% (n=77)	45.4% (n=65)
Blood eosinophil count	90.4% (n=227)	-
Reason for referral and diagnostic outcomes		
GP referral for suspected asthma	45% (n=113)	52.4% (n=75)
Confirmed	42.5% (n=48/113)	65.3% (n=49/75)
Remains suspected	20.4% (n=23/113)	14.7% (n=11/75)
Alternative diagnosis	37.1% (n=42/113)	20% (n=15/75)
Total confirmed asthma diagnosis	70/251	66/143
GP referral for suspected COPD	35.1% (n=88)	37.1% (n=53)
Confirmed	45.4% (n=40/88)	58.5% (n=31)
Remains suspected	8% (n=7/88)	3.8% (n=2)
Alternative diagnosis	46.6% (n=41/88)	37.7% (n=20)
Total confirmed COPD diagnosis	59/251	37/143

P239 QUANTIFICATION OF SMALL AIRWAYS DISEASE IN SEVERE ASTHMA USING A NOVEL, FAST-RESPONSE CAPNOMETER AND INTERPRETABLE MACHINE LEARNING

[1]H Broomfield, [1]RH Lim, [1]L Talker, [1]C Dogan, [1]A Selim, [1]G Lambert, [2]D Neville, [2]L Wiffen, [3]G Hayward, [4]HF Ashdown, [2]T Brown, [2]A Chauhan, [1]AX Patel. *[1]TidalSense Limited, Cambridge, UK; [2]Portsmouth Hospitals University NHS Trust, Portsmouth, UK; [3]NIHR Community Healthcare MedTech and IVD Cooperative, Nuffield Department of Primary Care Health Sciences, Oxford, UK; [4]Nuffield Department of Primary Care Health Sciences, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.400

Rationale Asthma is a major noncommunicable disease characterized by airway inflammation and hyper-responsiveness. It affected an estimated 262 million people in 2019 - causing 455,000 deaths - and amounts to $50 billion annually in direct healthcare costs in the USA alone. Small airways disease is a poorly understood contributory factor to asthma, targeting the non-cartilaginous eighth and higher generation of the tracheobronchial tree. It has been demonstrated to triple the odds of systemic corticosteroid use, and increase the odds of acute exacerbation six-fold. The prevailing measure of small airways obstruction is a low percentage predicted forced expiratory flow rate between 25% and 75% of vital capacity (% predicted FEF 25–75%) as measured during spirometry. This work aims to demonstrate the utility of signal-processing and statistical techniques on capnography data to assess the degree of small airways disease as measured by% predicted FEF 25–75%.

Methods Capnograms were drawn from two longitudinal observational clinical studies (ABRS and GBRS) that recruited 85 participants with asthma from UK primary and secondary care. These capnography signals were denoised, and each capnogram translated into 25 geometric features. XGBoost was trained on the features from the capnograms of 82% of the patients to distinguish% predicted FEF 25–75% $<$ 50% from $\geq$ 50%, and tested on ten capnograms from each of the remaining 18% of patients.

Results The model achieved a micro-average AUROC of 93%, sensitivity of 95.0%, specificity of 76.0%, PPV of 88.8%, and NPV of 88.4%. The average machine learning model prediction probability output per participant was plotted against the average% predicted FEF 25–75% per participant, and the Pearson's product moment correlation coefficient (r) between these two variables was calculated as -0.902.

Conclusion Machine learning (ML) techniques applied to the processed capnography signal were able to accurately detect small airways disease in patients with asthma. The ML model's probability output was purposed as an indicator of small airways obstruction, and was demonstrated to inversely correlate with% predicted FEF 25–75%. The analysis suggests that the N-Tidal™ capnometer could be used as an accurate and rapid point-of-care test to identify small airways disease.

P240 PHENOTYPING INDUCIBLE LARYNGEAL OBSTRUCTION IN A TERTIARY ASTHMA AND AIRWAYS SERVICE

C Slinger, K Prior, B Tidmarsh. *Lancashire Teaching Hospitals NHS Trust, Preston, UK*

10.1136/thorax-2024-BTSabstracts.401

Introduction Inducible laryngeal obstruction (ILO) is an inappropriate adduction of the vocal cords during inspiration leading to breathing difficulties. ILO can occur in isolation or in combination with other conditions i.e. allergy or respiratory disease, such as asthma or COPD.

Recently, clinical teams usefully proposed phenotypes of ILO (Koh, et al., 2014). We welcome this important step and agree with the general classifications of *Classic ILO* (characterised by normal spirometry), *Lung-disease associated ILO* (characterised by co-existent lung disease, e.g COPD or Asthma, with abnormal spirometry), *exercise-induced ILO* (exertional dyspnoea) and *incident-induced ILO* (associated with stressful events such as allergic reaction/anaphylaxis).

Aims and Methods Our aims were to apply the proposed ILO phenotypes in patients referred to our tertiary airways and severe asthma service for assessment of ILO and explore their applicability.

Prospective data were collected data from provocation laryngoscopy clinics across 6 months (January-June 2024). Phenotyping was competed jointly by an assessing speech and language therapist and a respiratory consultant once a positive ILO diagnosis was established and consensus between assessors agreed.

Results ILO was endoscopically confirmed on 24 patients (5 male, 19 female with an age range of 26–81 years). Applying the suggested phenotypes, we identified *Classic ILO* (n=12), Incident associated ILO (n=1).

We suggested further sub-dividing *Lung-associated ILO* into *Severe* and *Non-severe* (figure 1) as defined by ATS and ERS asthma guidelines (Chung, et al., 2014), and severe COPD classified as per GOLD grading. With this, we identified phenotypes of *severe lung-associated ILO* (n=7) and n*on-severe lung-associated* (n=4). We identified no patients with exercise-induced ILO during this time period.

Conclusions ILO phenotyping can be challenging, yet it is an important consideration to better characterise and cluster patients with confirmed ILO and identify associated triggers and cohort patients effectively for future randomised trials.

Observation of patient data from our service highlights importance of further discussion and refinement regarding ILO classification to support identification and timely management of ILO.

We suggest *Lung-associated ILO phenotype* required refinement to describe the type and severity of respiratory disease in our patient group. Future international consensus of ILO phenotypes would be an important step forward.

'The Fellowship of the Fit' – Exercise and rehabilitation

P241 IRON-RELATED BIOMARKERS AND EXERCISE CAPACITY IN HEREDITARY HAEMORRHAGIC TELANGIECTASIA

[1,2]SH Shah, [1,2]S Munshi, [2]CL Shovlin. *[1]Imperial College London School of Medicine, London, UK; [2]Vascular Science, National Heart and Lung Institute, Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.402

Background Patients with hereditary haemorrhagic telangiectasia (HHT) are at an increased risk of pulmonary arteriovenous malformations (PAVMs) and chronic iron loss. We investigated the relationship between iron-related biomarkers and exercise capacity in HHT as this relationship is poorly understood in

HHT and beyond, especially at iron deficiency levels without anaemia (IDWA), which is not included in clinical management guidelines.

Methods A database was created of consecutive and unselected patients from a clinic at a single institution recording sex, iron-related biomarker levels (haemoglobin, transferrin saturation, ferritin levels), the Veterans Specific Activity Questionnaire (VSAQ) score of exercise capacity, and symptoms experienced at maximal physical exertion. VSAQ was transformed into maximal metabolic equivalents (METs) as part of an age adjustment process, where 1 MET=3.5ml O_2/kilogram of body weight/minute. STATA-BE v18 was used for two-way comparisons using the Mann Whitney U test, and after confirming normality, linear regression of METs with iron-related biomarker levels in males and females was performed on patients in the database with confirmed HHT. Multiple linear regression of METs were performed with all available variables. Regression analyses were reconducted on a sub-cohort of all patients with IDWA and HHT.

Results In the 205 HHT patients, METs and iron-related biomarker levels were significantly different between males and females: METs in males ranged from 1.4 to 16.2 mls O_2/kg/minute (median 11.5) and 1.2 to 16.3 mls O_2/kg/minute (median 7.6) in females ($p<0.001$). Haemoglobin levels also differed by sex: 68 to 154 g/L (median: 153) in males and 73 to 186 g/L (median 132) in females, $p<0.001$. Haemoglobin was the only iron-related biomarker significantly associated with METs (coefficient 0.05, 95% CI -2.9 to -0.7, $p<0.001$) and female sex was associated with lower METs (coefficient 0.05, 95% CI -2.9 to -0.7, $p<0.001$). In the IDWA subcohort, haemoglobin showed a negative association with METs (coefficient -0.12, 95% CI 0.21 to 0.03, $p=0.008$). No other iron-related biomarkers were significantly associated with METS (all p values >0.05).

Conclusions Haemoglobin levels are a particularly important indicator of exercise capacity in females, and further examination is required in patients with PAVMs and hypoxaemia where IDWA is present.

P242 MORE FREQUENT EXERCISE AS ADOLESCENTS IS ASSOCIATED WITH BETTER EXERCISE TOLERANCE IN ADULTHOOD FOR PATIENTS WITH PULMONARY ARTERIOVENOUS MALFORMATIONS AND HEREDITARY HAEMORRHAGIC TELANGIECTASIA

[1]H Das, [1]H Ironton, [2]NC Coote, [3]J Cabuntug, [3]J Ranger, [4]A Alsafi, [2]CL Shovlin. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Department of Paediatrics, Imperial College Healthcare NHS Trust, London, UK; [3]Respiratory Medicine, Imperial College Healthcare NHS Trust, London, UK; [4]Department of Imaging, Imperial College Healthcare NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.403

Background Better exercise tolerance is associated with improved mental and physical health, and reduced mortality. Based on patient reports and evidence that physical fitness during childhood augments lung function, we hypothesised that exercise during childhood enhances the capacity to maintain activity in later life when disease-associated challenges develop. We tested in patients with pulmonary arteriovenous malformations (PAVMs) which develop in childhood/adolescence and cause hypoxaemia/low oxygen saturations (SaO_2). PAVMs are often associated with hereditary haemorrhagic telangiectasia (HHT), nosebleeds and iron deficiency anaemia.

Methods Exercise capacity was assessed retrospectively aged 12ys, 18ys and currently, by the Veteran Specific Activity Questionnaire (VSAQ), calculating activity-limiting metabolic equivalents (METs, where 1 MET is the consumption of 3.5mL O_2.kg-1.min-1) using 4.7+(0.97*VSAQ)-(0.06*Age).[1 2] With ethical approval and consent, questions were added to an online questionnaire for activity frequency, types and level, and linked to clinical records for calculation of arterial oxygen content (CaO_2, 1.34*SaO_2*haemoglobin).

Results 278 individuals responded: 212 (76%) females, 269 with HHT, and 135 with PAVMs (including 127 [94%] with HHT). In the first 68 validated PAVM cases with linked data, there was no relationship between presentation SaO_2, haemoglobin or CaO_2 with the frequency of outside-school exercise aged 18, or the highest level of competition reached (Spearman p values>0.8). Exercise capacity declined from childhood to adulthood (figure 1). Across all respondents, by 18–85 (mean 54)ys, 101 (36%) had PAVMs treated (embolization or surgery); 234 (84%) used iron tablets; 110 (40%) were still anaemic despite tablets; 84 (30%) used intravenous iron and 85 (31%) required between 1 and >50 red cell transfusions (median 3). However, across the validation cohort of 68 cases, and across the full cohort of 278 cases, by univariate and multivariate regression adjusting for age, sex and iron treatments, adult METs at limiting exercise were significantly associated with reported exercise frequency aged 18ys.

Conclusions Frequent exercise by 18ys is achievable despite PAVMs/HHT, and associated with better exercise tolerance as adults (mean age 54ys) when major challenges in oxygen delivery are present. Advice given to HHT families can be modified.

REFERENCES

1. Myers, *et al. Am J Cardiol* 1994;**73**:591–6.
2. Gawecki, *et al. QJM* 2019;**112**(5):335–342.

P243 WALKING FOOTBALL FOR CHRONIC BREATHLESSNESS: A PROOF OF CONCEPT STUDY

[1]CPJ Bradford, [1]D Martin, [1]KJ Loughran, [2]N Robertson, [1]SL Harrison. *[1]School of Health and Life Sciences, Teesside University, Middlesbrough, UK; [2]School of Psychology and Vision Sciences, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.404

Introduction and Objectives Evidence supporting pulmonary rehabilitation (PR) for chronic breathlessness is unequivocal, however, benefits accrued often dwindle within 3–6 months of programme completion, as individuals struggle to exercise consistently. With its reduced pace and ubiquity, walking football (WF) could provide the basis for an exercise-maintenance programme, delaying any subsequent decline in health-related outcomes. We aimed to deliver WF for people with chronic breathlessness, examining its potential for exercise-maintenance following PR.

Methods Utilising a mixed-methods single-group study design; patients enrolled in PR services at two NHS trusts were invited to participate in 2-hours of WF once weekly, for 6-weeks, upon PR completion. Recruitment rates, reasons for declining, and adverse events were recorded. Health-

outcomes were assessed at baseline and post-intervention. Intensity-outcomes were measured within a single football session for each participant, prior to an interview to understand peoples' views on the intervention. Descriptive statistics are presented and interviews were analysed using template-thematic analysis.

Results Potential participants (n=160) were approached at 27 PR sessions over 6-months. 36 (23%) expressed an interest in walking football; of these, six (17%) were enrolled (83%-male, mean-age 71_{years}). The primary reason for declining was an inability to travel to the venue (reported at 22/27 (82%) sessions). 5/6 participants (83%) attended ≥4 sessions, and all participants continued to play WF post-study. Pre-post health-outcomes are displayed in table 1. One minor (unrelated) adverse event was recorded. Mean HR throughout a single session was 66% of estimated HRmax, and a mean distance of 3.23km (±1.10) was covered. Participants reported a mean perceived exertion of 11.67 (±3.08) ('*fairly light*') and 3.17 (± 0.41) ('*moderate*') for dyspnoea. Six themes were generated from the interviews, each offering a perceived explanation for the success of WF, the most prominent being that the WF needed to be *exclusive* to people with breathlessness or they would not have considered participating.

Conclusions Walking football appears to be a potential option for exercise-maintenance following PR, with all participants continuing to attend post-study. However, travel posed a significant barrier to uptake. Future interventions should carefully consider location and providing transport options to avoid material inequity in a socially-patterned disease-group.

Abstract P243 Table 1 Pre-post walking football health outcomes

Outcome	Mean (SD)		Difference	MCID*	MCID Change (%)
	Pre	*Post*			
Functional Capacity (6MWT;m)	313.67 (123.34)	347.67 (135.29)	34.00	25	↑4/6 (66.67) ~2/6 (33.33)
Lower Limb Strength (30-STS; no. of reps)	10.83 (2.14)	12.00 (4.52)	1.17	2	↑3/6 (50.00) ↓1/6 (16.67) ~2/6 (33.33)
Balance (Mini-BESTest) (total score)	21.83 (6.49)	23.00 (7.16)	1.17	4	~6/6 (100)
Balance Confidence (ABC Scale; total score)	115.17 (32.26)	117.17 (34.10)	2.00	19	↑1/6 (16.67) ↓1/6 (16.67) ~4/6 (66.67)
HRQoL (EQ-5D-5L) Index score	0.617 (0.252)	0.666 (0.208)	0.049	0.069	↑4/6 (66.67) ↓1/6 (16.67) ~1/6 (16.67)
VAS Score	71.67 (15.71)	71.67 (22.51)	0.00	8	↑2/6 (33.33) ↓1/6 (16.67) ~3/6 (50.00)
Symptom Burden (CAT; total score)	23 (10.86)	23 (10.02)	0.00	2	↑3/6 (50.00) ↓3/6 (50.00)
Anxiety (GAD-7; total score)	10 (8.76)	10 (8.67)	0.00	2	↑2/6 (33.33) ↓1/6 (16.67) ~3/6 (50.00)
Depression (PHQ-9; total score)	10.83 (8.57)	9.67 (9.40)	-1.17	5	↑2/6 (33.33) ↓1/6 (16.67) ~3/6 (50.00)

* Minimal Clinically Important Difference
↑ No. of participants who recorded a MCID in a positive direction
↓ No. of participants who recorded a MCID in a negative direction
~ No. of participants who did not record a MCID in either direction

P244 WHAT DOES PHYSICAL ACTIVITY INTENSITY MEAN TO PEOPLE WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)? A QUALITATIVE PHOTOVOICE STUDY

[1]PHI Lloyd-Evans, [2]D Malcolm, [3]SJ Singh, [4]A Rowlands, [3]E Chaplin, [3]S Ward, [1]MW Orme. *[1]Department of Respiratory Sciences, University of Leicester, Leicester, UK; [2]Alliance for Research in Exercise, Nutrition and Activity (ARENA), UniSA Allied Health and Human Performance, University of South Australia, Adelaide, Australia; [3]Centre for Exercise and Rehabilitation Science (CERS), NIHR Leicester Biomedical Research Centre-Respiratory, University Hospitals of Leicester NHS Trust, Leicester, UK; [4]Assessment of Movement Behaviour Group (AMBer), Leicester Lifestyle and Health Research Group, Diabetes Research Centre, University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.405

Objective This qualitative photovoice study aimed to explore what physical activity intensity means to people with COPD.

Methods Semi-structured interviews, supported by photovoice, were conducted with individuals with COPD to explore how their COPD impacts the intensity of their physical activity and daily activities. Participant-generated images were used to inform photo-elicitation. Reflexive thematic analysis was used to generate themes from the data.

Results 13 interviews were conducted (n=13, 54% male, aged 64±6 years). Two main themes were identified: (1) strategies to cope with the intensity of physical activity and (2) the bi-directional relationship between their physical activity and family/friends (figure-1). Theme 1 highlights what strategies individuals with COPD use to manage physical activity in the context of intensity. One strategy described was stopping to rest when physical activity becomes too intense so that they can recover and then continue with their physical activity. Another strategy was for individuals to pace themselves when doing more intense physical activity, to avoid the need to stop/rest. Some individuals shared doing physical activity without stopping in order to get it done and over with, even if it is an intense activity for them. Theme 2 identifies the impact that family and friends can have on an individual's physical activity, which focused primarily on ensuring they do not 'overdo it'. Conversely, individuals with COPD influence the physical activity of their family and friends, such as family and friends having to slow down or stop when doing physical activity. Equally, family and friends do not always adjust their behaviour to accommodate the needs of people with COPD.

Abstract P244 Figure 1 Diagram illustrating themes and sub-themes, with illustrative quotes: (Theme 1) strategies to manage with the intensity of physical activity and (Theme 2) bi-directional relationship between their physical activity and family/friends

Conclusion Findings from this study can be implemented in pulmonary rehabilitation to enhance the patient experience, providing patients with tailored real-world advice and information on how to personalise strategies to increase participation in meaningful physical activity of higher intensities.

P245 THE RELATIONSHIP OF BREATHLESSNESS WITH SOCIAL ISOLATION AND LONELINESS: A NATIONALLY REPRESENTATIVE PROSPECTIVE COHORT STUDY OF OLDER ADULTS IN ENGLAND

[1]KEJ Philip, [2]F Bu, [1]SC Buttery, [3]MI Polkey, [1]NS Hopkinson, [2]D Fancourt. *[1]Imperial College London, London, UK; [2]UCL, London, UK; [3]Royal Brompton Hospital, London, UK*

10.1136/thorax-2024-BTSabstracts.406

Background Breathlessness is a common and distressing symptom impacting quality of life and limiting activities of daily living. Social isolation and loneliness are associated with increased morbidity and mortality, and there is an increasing appreciation that these are global health priorities. Qualitative research suggests breathlessness could lead to increased social isolation and loneliness due to limiting participation in social activities and impairing the quality of social interaction. However, research is limited on the relationship of breathlessness with social isolation and loneliness, especially on a population scale. Improving understanding could inform intervention development.

Methods Using a nationally representative sample of community dwelling adults aged ≥50years from the English Longitudinal Study of Ageing (N=6260)(44% male), mean(SD) age 70 (10) years. We examined associations of breathlessness (MRC breathlessness scale) at baseline, with loneliness (3-item UCLA loneliness scale) and social isolation measured in three ways 1) low social contact (frequency of contact with friends and family); 2) social disengagement (frequency of participation in community organisations, clubs, societies or cultural activities); and 3) domestic isolation (living alone). Data was collected at baseline, and follow-up at 4 and 8 years later, and analysed using ordinary least squares regression.

Results At baseline, breathlessness was associated with increased loneliness ($p<0.001$, coef 0.143), and social isolation, including low social contact ($p=0.011$, coef 0.084), social disengagement ($p<0.001$, coef 0.152), and living alone ($p=0.019$, OR 1.082). Longitudinally, also adjusting for baseline level of the outcome of interest, breathlessness was associated increasing loneliness at 4 ($p<0.001$, coef 0.111) and 8 ($p<0.001$, coef 0.134) year follow-up, and with reducing social contact at 4 ($p<0.001$, coef 0.126) and 8 ($p<0.001$, coef 0.155) year follow-up. Breathlessness was associated with increasing social disengagement at 8 (0.036, coef 0.075) but not 4 ($p=0.303$) year follow-up. Change in cohabitation status was not found to be related to breathlessness in our analyses. Findings were independent of all identified confounders.

Discussion and Conclusion Breathlessness is related to increasing social isolation and loneliness over time. This may result from breathlessness limiting the amount and quality of social interactions. These findings suggest important psychosocial impacts of breathlessness requiring targeted and holistic management strategies.

P246 EVALUATION OF A NOVEL DIGITAL SELF-MANAGEMENT TOOL (BREATHTEC) TO MANAGE BREATHLESSNESS, PHYSICAL ACTIVITY AND MENTAL HEALTH IN PATIENTS WITH CHRONIC RESPIRATORY DISEASES: AN UPDATED RETROSPECTIVE ANALYSIS

[1]M Armstrong, [2]K Heslop Marshall, [2]G Burns. *[1]Durham University, Durham, UK; [2]Newcastle upon Tyne NHS Foundation Trust, Newcastle upon Tyne, UK*

10.1136/thorax-2024-BTSabstracts.407

Background Pulmonary Rehabilitation (PR) provides clinically meaningful improvements in symptoms, exercise and health-related quality of life. However, PR often fails to translate these improvements into meaningful changes in physical activity and symptoms of anxiety and depression.[1] Therefore, an innovative, patient-centred, digital, self-management tool which provides timely access to resources that enable people with respiratory disease to collectively manage their breathlessness, physical activity and mental health is urgently needed.

Methods BreathTec, a novel digital self-management tool, combines cognitive behavioural therapy, tools to manage breathlessness, improve mental health, and behavioural modification to support physical activity promotion, embedded within five interactive sessions (1 – baseline assessment, 2 – managing breathlessness, 3 – staying active, 4 – mental health & 5 – final assessment). During assessments, patients

are asked to complete two questionnaires (Hospital Anxiety and Depression Scale [HADS] & Short Form 36-item health survey [SF-36]) and provide feedback on various components of BreathTec.

Results To date, 159 patients have enrolled onto BreathTec, with 105 patients (66%) having thus far completed session 3 and 83 patients (52%) having completed all 5 sessions. Overall feedback on completion of BreathTec was excellent, with 84% managing breathlessness better, 60% more active, and 74% seeing improvements in mood. Patients reported that 'pacing' (81%), 'breathing control' (92%), 'step-rest-relax' (91%), 'breathing position' (86%) and 'learn to relax' (84%), were helpful techniques to manage breathlessness. Meanwhile 'thinking differently' (87%), 'balancing days' (85%), 'talking to peers' (85%), 'remaining in the present' (82%) and 'staying connected' (87%) were helpful techniques to improve mood. Following completion of BreathTec, improvements in the physical (+5.6±1.4) and mental (+13.1±2.6) summary of the SF-36 were reported. In those who reported elevated anxiety and/or depression (≥8 HADS), reductions in anxiety (-3.2 ±0.2) and depression (-2.6±0.1) were reported.

Conclusion BreathTec is a promising, digital self-management tool, providing clinically meaningful reductions in anxiety and depression alongside improvements in the SF-36 physical and mental summary. Further research is needed to investigate its clinical and cost-effectiveness.

REFERENCE

1. Armstrong M, Hume E, McNeillie L, Chambers F, Wakenshaw L, Burns G, *et al.* Behavioural modification interventions alongside pulmonary rehabilitation improve COPD patients' experiences of physical activity. *Respir Med*. 2021;**180**:106353.

P247 THE PHYSIOTHERAPY ASSESSMENT OF BREATHING PATTERN IN PATIENTS WITH RESPIRATORY SYMPTOMS: A SYSTEMATIC REVIEW

[1]LJF Grillo, [1]J Kilduff, [2]L Osman, [3]CI Bloom, [3]NS Hopkinson, [4]H Shannon, [5]AM Russell. *[1]Royal Brompton Hospital, Guys and St Thomas, London, UK*; *[2]Guys and St Thomas, London, UK*; *[3]Imperial College London, London, UK*; *[4]Institute of Child Health, University College London, London, UK*; *[5]Birmingham Regional NHS ILD and Occupational Lung Disease Service, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.408

Introduction Breathing pattern disorders are characterised by breathing (or specifically breathing patterns) that deviate from allostasis (respiratory or metabolic requirements) when conscious or unconscious processes override autonomic control. This systematic review appraised the evidence of measurement properties (reliability, validity, and responsiveness) of patient and clinician-reported measures for the evaluation of breathing pattern disorder in people with respiratory symptoms.

Methods Inclusion criteria: adults ≥18 years with a diagnosis or suspicion of a disordered breathing pattern and primary studies evaluating outcome measures published before September 2023. The databases searched were: Embase, PubMed, MEDLINE and PEdro. Further searches of the identified outcome measures and secondary sources of citations in the included studies were undertaken. COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) risk of bias checklist was robustly applied to assess methodological quality in nine separate measurement properties (see table 1). Content validity was additionally evaluated for PROMS as per COSMIN standards. The certainty of evidence was determined using a modified GRADE approach.

Results The results are summarised using narrative synthesis. Eleven studies were included in our final review; three patient reported outcome measures outcome measures: The Nijmegen Questionnaire (NQ), the Self Evaluation of Breathing Questionnaire (SEBQ) and The Rowley Scale of Self Efficacy (ROBE) and one clinician-reported outcome measure; the Breathing Pattern Assessment Tool (BPAT). Content validity was evaluated from the PROMS only, per COSMIN guidance, with the NQ showing the best evidence across the PROMS. Construct validity across all the tools was moderate to low, influenced by a lack of a gold standard to use as a comparator for this measurement property. Overall, there was moderate quality evidence across some of the measurement properties for the NQ and the BPAT (See table 1) suggesting they maybe helpful in clinical evaluation.

Conclusions From the current literature, no clear recommendations of a single outcome measure can be made for the evaluation of this condition due to significant heterogeneities in the study designs and participant characteristics. Further research is needed to develop and validate tools that more accurately reflect the complexity of breathing pattern disorders. PROSPERO registration number: CRD42022297134.

Abstract P247 Table 1 Systematic Review rating and quality of evidence per outcome measure

	Nijemegen Questionniare		Self Evaluation Breathing Questionnaire		Rowley Breathing Self Efficacy Scale		Breathing Pattern Assessment Tool	
	OVERALL RATING	QUALITY OF EVIDENCE	OVERALL RATING	QUALITY OF EVIDENCE	OVERALL RATING	QUALITY OF EVIDENCE	OVERALL RATING	QUALITY OF EVIDENCE
	+/-/?	High, moderate, low, very low	+/-/?	High, moderate, low, very low	+/-/?	High, moderate, low, very low	+/-/?	High, moderate, low, very low
Content validity	-/+	MODERATE	?	VERY LOW	?	VERY LOW		
Relevance	+	MODERATE	?	VERY LOW	?	VERY LOW		
Comprehensiveness	-	LOW	?	VERY LOW	?	VERY LOW		
Comprehensibility	+	HIGH	?	VERY LOW	?	VERY LOW		
Structural validity	?	LOW	?	VERY LOW	N	N	N	N
Internal consistency	+	MODERATE	-	VERY LOW	-	VERY LOW	N	N
Cross-cultural validity	?	LOW	N	N	N	N	N	N
Measurement invariance	+	VERY LOW	N	N	N	N	N	N
Reliability	+	MODERATE	-	VERY LOW	N	N	+	MODERATE
Measurement error	?	VERY LOW	N	N	-	VERY LOW	+	MODERATE
Criterion validity	+	LOW	-	VERY LOW	-	VERY LOW	+	MODERATE
Construct validity	+	MODERATE	+	LOW	+	LOW	-	LOW
Responsiveness	N	N	N	N	N	N	N	N

P248 CHARACTERISATION OF DYSFUNCTIONAL BREATHING USING CARDIOPULMONARY EXERCISE TESTING

[1]SF Mobus, [2]CJ Harding, [3]CL Taylor, [4]KP Sylvester, [5]JP Fuld. *[1]School of Clinical Medicine, University of Cambridge, Cambridge, UK; [2]Lung Function Unit, Cambridge University Hospitals NHSFT, Cambridge, UK; [3]Sports and Exercise Medicine, East Suffolk and North Essex NHSFT, Ipswich, UK; [4]Respiratory Physiology, Royal Papworth Hospital NHSFT, Cambridge, UK; [5]Victor Phillip Dahdaleh Heart and Lung Research Institute, University of Cambridge, Cambridge, UK*

10.1136/thorax-2024-BTSabstracts.409

Introduction and Objectives Dysfunctional breathing is poorly characterised, with no gold standard diagnostic or classification system. Cardiopulmonary exercise testing (CPET) is emerging as a useful tool in the identification of dysfunctional breathing. In this study, we aimed to evaluate the prevalence and functional impact of different patterns of dysfunctional breathing in patients referred for CPET due to unexplained dyspnoea.

Methods We retrospectively analysed data from 630 adult patients referred to a tertiary centre for CPET due to unexplained dyspnoea (August 2019-December 2023). Patients were assigned to four groups following interpretation of their CPET by joint clinical and physiology review: Normal (no pathology identified), isolated breathing pattern disorder (BPD, i.e. erratic tidal volumes and/or breathing frequency), isolated hyperventilation (HV) and combined breathing pattern disorder with hyperventilation (BPDHV). Demographic data and indicators of exercise performance were analysed using non-parametric tests as appropriate.

Results Of 630 patients referred for CPET, 94 (14.9%) patients had normal CPETs and 267 (42.4%) were identified as having dysfunctional breathing. Of those with dysfunctional breathing, 145 (54.3%) had BPD, 41 (15.4%) had HV, and 81 (30.3%) had BPDHV. Demographic data, ventilatory efficiency (VE/VCO_2) and peak VO_2 obtained during CPET are presented in table 1. Patients of all three dysfunctional breathing groups exhibited significantly impaired peak VO_2compared to those with normal CPETs ($P<0.001$). Patients with HV or BPDHV had significantly lower peak VO_2 than patients with isolated BPD ($P<0.001$). When analysed further, VE/VCO_2 was negatively correlated with peak VO_2 within each group ($P<0.01$).

Conclusion Dysfunctional breathing is common in patients referred for CPET due to unexplained dyspnoea, identified as a driver of symptoms in approximately 40%. More than half of these patients had isolated BPD, which requires visual inspection of relevant data plots to make the diagnosis. Those identified with dysfunctional breathing had significantly reduced exercise capacity. VE/VCO_2 may be a useful predictor of exercise impairment in patients with dysfunctional breathing.

P249 EXPLORING THE POTENTIAL OF CARDIOPULMONARY EXERCISE TESTING FOR INDIVIDUALISED PULMONARY REHABILITATION IN PEOPLE WITH INTERSTITIAL LUNG DISEASE: A SYSTEMATIC REVIEW

B Bowhay, CA Williams, T Lacy-Kerr, MA Gibbons, CJ Scotton, OW Tomlinson. *University of Exeter, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.410

Background Pulmonary rehabilitation (PR) is recommended for the management of interstitial lung disease (ILD), although a 'one size fits all' approach may not benefit every patient due to a multitude of unique characteristics, subsets and phenotypes. No ILD-specific personalised PR guidelines exist and exercise programme development is lacking, which has led to wide variation in the success of PR within clinical practice. An approach derived from cardiopulmonary exercise testing (CPET) could enhance individualised PR prescription, further the physiological benefits of exercise for people with ILD (pwILD) and optimise future clinical guidelines. This systematic review aims to identify which CPET-derived variables can be used to personalise PR for pwILD.

Methods Databases (MEDLINE, Embase, CINAHL, SPORTDiscus, Cochrane Database of Systematic Reviews) were searched for studies that utilise CPET variables in PR development for pwILD. Quality assessment was performed using Critical Appraisal Skills Program (CASP) checklists for single cohort studies and randomised controlled studies (RCT). Only full-text studies, reported in the English language, were included. Meta-analysis was deemed inappropriate due to wide heterogeneity.

Results Following a double-screen of 397 eligible abstracts, 12 studies with 378 total participants met the inclusion criteria; sample sizes ranged from 1 to 57. ILD-subtypes included idiopathic pulmonary fibrosis (4/12), sarcoidosis (3/12), mixed-ILD (2/12), lymphangioleiomyomatosis (1/12), fibrosing-ILD (1/12) and dust-related-ILD (1/12). Research designs included five

Abstract P248 Table 1 Comparison of demographic and CPET data between the four study groups. Data are presented as Median (Interquartile range). The P-values of Kruskal-Wallis tests are presented. Significant post-hoc Dwass-Steel-Critchlow-Fligner pairwise comparisons are indicated as follows: [a] Normal vs BPD, [b] Normal vs HV, [C] Normal vs BPDHV, [d] BPD vs HV, [e] BPD vs BPDHV and [f] HV vs BPDHV. Significance was defined as $P<0.05$

	Study Group				
		Dysfunctional breathing			One-way ANOVA
	Normal	BPD	HV	BPDHV	P-value
n	94	145	41	81	
Sex (% Female)	60.60%	54.50%	53.70%	71.60%	
Age	53.0 (40.5-60.0)[b]	49.0 (35.0-59.0)[d]	61.0 (51.0-71.0)[bdf]	53 (43.0-65.0)[f]	<0.001
Weight (kg)	72.5 (61.9-85.2)[a]	82.6 (67.8-95.0)[a]	80.4 (66.7-90.4)	74.7 (66.9-88.2)	0.011
Height (m)	1.69 (1.64-1.74)	1.70 (1.63-1.76)	1.68 (1.61-1.73)	1.66 (1.62-1.74)	0.184
BMI	25.2 (22.0-28.4)[ab]	27.5 (23.9-32.4)[a]	28.4 (25.1-31.7)[b]	27.4 (23.6-29.9)	0.002
VE/VCO_2	28.0 (25.8-30.6)[bc]	29.5 (26.5-32.5)[de]	42.3 (34.7-47.8)[bd]	37.7 (32.3-46.2)[ce]	<0.001
Peak VO_2 (ml/min/kg)	27.2 (21.9-33.0)[abc]	22.1 (17.6-26.7)[ade]	15.8 (12.1-21.0)[bd]	17.3 (14.0-21.8)[ce]	<0.001

single-cohort intervention studies, three comparative interventional studies, two RCT's, one single-blinded controlled trial and one case report. Interventions included aerobic and interval exercise delivered over study periods of 4 weeks to 4.5 years. Several CPET outcomes were utilised for prescription: peak work rate (WR_{peak}, 4/12), heart rate reserve (HRR, 3/12), maximal heart rate (HR_{max}, 3/12), anaerobic threshold and $VO2_{max}$ (1/12). All included studies that measured $VO2_{max}$ found improvements. Statistically significant results in WR_{peak} were reported in 7/12 studies. Peak ventilation values were increased in 8/12 studies. No studies reported any serious adverse events.

Conclusion Promising cardiopulmonary performance improvements were found in pwILD, following a PR approach which utilised CPET. Further investigations are required to determine which aspects of personalised PR via CPET-derived parameters could achieve clinically significant outcomes for pwILD.

P250 VALIDATION OF THE MCROBERTS MOVE MONITOR DIGITAL SENSOR FOR RECORDING THE SIX-MINUTE WALK TEST DISTANCE IN COPD PATIENTS

[1]PJ Williams, [1]KEJ Philip, [1]AM Perkins, [2]SC Buttery, [2]A Tana, [2]L Chan, [1]NS Hopkinson. *[1]NHLI, Imperial College London, London, UK; [2]Respiratory Medicine, Royal Brompton and Harefield Hospitals, London, UK*

10.1136/thorax-2024-BTSabstracts.411

Background The Six-minute walk test (6MWT) is extensively used to assess functional capacity in patients with COPD. The current gold standard for administering and recording the test is a combination of assessor and video recording (1). The use of digital wearable devices has the potential to make recording the distance more accurate, easier and save time. The purpose of this study was to evaluate the validity of the McRoberts Move Monitor (MM) for assessing 6MWTD compared to assessor and video measurement within patients with COPD.

Method We assessed the bias, precision, limits of agreement, and validity estimates using 72 COPD patients who performed the 6MWT on 20m and 30m tracks. The patients performed the test while wearing the MM device attached to their waist by a belt. They were simultaneously assessed by an assessor who counted the number of lengths and a video recording of the whole test.

Results The mean difference between the MM and video was (-3.96m SD 19.76m) and between the video and assessor were (.277m SD 11.08m) The limits of agreement between the MM and video were, upper 34.76m and lower: -42.68m, and video and assessor were, upper 21.99m and lower -21.43m. Pearson correlation and intraclass correlation coefficient (ICC), (95% CI) between MM and video was [(.989, (ICC: .994, 95% CI: .991-.996))], and video and assessor [(0.997, (ICC: .998, 95% CI: .997-.999))].

Conclusion The McRoberts MM monitor provided a valid estimate and good agreement with the gold standard video assessment of 6MWD. We conclude that the McRoberts sensor is a valid digital tool for recording 6MWTD in people with COPD.

REFERENCE

1. Laboratories ACoPSfCPF. ATS statement: guidelines for the six-minute walk test. *Am J Respir Crit Care Med*. 2002;**166**:111–7.

P251 VALIDATION OF GPPAQ USING ACCELEROMETER DATA

R Evans, L Wang, C Brightling, L Wain, C Lawson, T Yates, S Singh, E Daynes, G Mills, A Tziannou, T Plekhanova. *University of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.412

Introduction The majority of patients do not feel fully recovered after an admission with COVID-19 and accurate assessment tools are required to identify rehabilitation need. This study aims to assess the validity of the General Practice Physical Activity Questionnaire (GPPAQ) using objective physical activity data.

Methods Patients post-hospital with COVID-19 were recruited across 36 UK sites and underwent two research visits approximately 6 months and one year after discharge from hospital (PHOSP-COVID study). At visits participants were invited to use a GENEactiv accelerometer for 14 days to monitor daily

Abstract P251 Table 1 Summary of Accelerometer Data by GPPAQ-PAI

GPPAQ-PAI/Activity level (minutes/day)	Inactivity	Light	Moderate	Vigorous	P-value
6 months (n=1452)					
1	721 ± 123	160 ± 77	44 ± 43	0.7 ± 2.2	2e-16
2	690 ± 137	188 ± 91	55 ± 45	0.9 ± 2.6	2e-16
3	696 ± 131	180 ± 85	56 ± 45	1.3 ± 4.4	2e-16
4	680 ± 130	191 ± 83	71 ± 57	2.4 ± 8.4	2e-16
1 year (n=937)					
1	710 ± 129	176 ± 88	43 ± 43	0.4 ± 1.9	2e-16
2	681 ± 137	209 ± 93	58 ± 57	0.7 ± 3.1	2e-16
3	671 ± 135	210 ± 98	57 ± 52	1.3 ± 5.9	2e-16
4	678 ± 137	205 ± 91	70 ± 61	2.1 ± 8.0	2e-16

GPPAQ-PAI stands for General Practice Physical Activity Questionnaire-Physical Activity Index. This tool classifies individual physical activity levels into four categories: 1 represents Inactive, 2 represents Moderately Inactive, 3 represents Moderately Active, and 4 represents Active. The P-value indicates the significance of differences between groups, calculated using Analysis of Variance. The P-value assesses whether the differences in accelerometer data across different activity levels are statistically significant. A P-value less than 0.05 typically indicates significant differences. Our calculations show P=2e-16, indicating highly significant differences.

physical activity (PA) and completed a number of patient reported outcomes including the GPPAQ. To evaluate specificity and sensitivity of the GPPAQ, we analyzed data from the 14-day accelerometer, categorizing participants into those with and without ≥150 minutes of moderate to vigorous physical activity (MVPA) per week based on public health physical activity guidelines.GPPAQ scores of 3 and 4 were deemed 'active', achieving PA guidelines. Spearman correlation coefficients analyzed the relationship between GPPAQ scores and objective data.

Results We analyzed data from 1452 participants (mean age 61.0 years, 36.7% female) at 6 months (mean age 59.6 years, 38.5% female) and 937 at one year with wearable and GPPAQ data. At 6 months, 28% of females and 40% of males were classified as physically active and at one year 27% and 38%, respectively. The correlation coefficients between GPPAQ and wearable data were 0.295 at 6 months and 0.282 at 1 year. These correlations are between the MVPA and GPPAQ-PAI levels. Table 1 shows the summary of accelerometer data by GPPAQ-PAI 1–4. Sensitivity and specificity at six months were 37% and 80% for females, and 48% and 76% for males, and at one year 34% and 85% for females, and 48% and 75% for males.

Conclusions The majority of participants were physically inactive after a hospital admission for COVID-19. The GPPAQ's low sensitivity means it may misclassify some active individuals as inactive, but its high specificity ensures it accurately identifies most inactive individuals. Better screening tools are needed for use in clinical care to identify need for physical activity and rehabilitation interventions.

P252 EVALUATING SMALL AIRWAY DYSFUNCTION IN OBSTRUCTIVE AIRWAY DISEASE USING OSCILLOMETRY: A SYSTEMATIC REVIEW

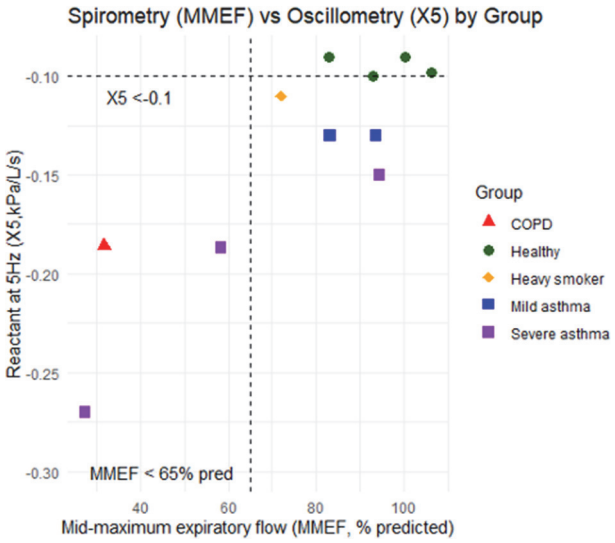
[1]WWE Ee, [1]CM Mwasuku, [2]GG Kaltsakas, [1]RR Russell, [1]MB Bafadhel. *[1]King's College London, London, UK; [2]Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.413

Background In recent years, Impulse Oscillometry (IOS) has garnered attention in research as a lung function test, offering potential for the early detection of functional changes in pulmonary conditions such as asthma and Chronic Obstructive Pulmonary Disease (COPD). The objective of this study is to delineate the threshold for diagnosing abnormal oscillometry parameters associated with small airway disease, underscore the significance of oscillometry indices in contributing to the evaluation and diagnosis of small airway disease.

Method A systematic search was conducted across electronic databases to identify relevant studies that used IOS to identify SAD in asthma and COPD patients. The included studies were limited to those adhering to the revised ERS 2020 technical standards for respiratory oscillometry. This systematic review evaluate oscillometry parameters for SAD, assess the threshold for abnormal results, identify risk factors, and perform a comparative analysis with spirometry parameters.

Results Of the 204 initially identified studies, 9 met the inclusion criteria. Six used R5-R20 to define small airway dysfunction, with a threshold of >0.07kPa/L/s in four. Higher R5–R20 values were observed across asthma severity, including in asymptomatic heavy smokers and correlated with poorly controlled asthma. The mean X5 value was > -0.1kPa/L/s among



Abstract P252 Figure 1

healthy subjects across four studies but showed progressive deterioration in three studies across asthma severity (mild asthma -0.09kPa/L/s vs severe asthma -0.11 to -0.17kPa/L/s). Comparing R5-R20 < 0.07 and mid-maximal expiratory flow rate (MMEF) < 65% predicted, changes in R5-R20 are more sensitive and manifest earlier than changes in MMEF. All cohorts with obstructive lung disease, including the group of heavy smokers, displayed an X5 value <-0.10 (figure 1) with progressive deterioration demonstrated in three studies with increasing asthma severity (mild asthma -0.09kPa/L/s vs severe asthma -0.11 to -0.17kPa/L/s).

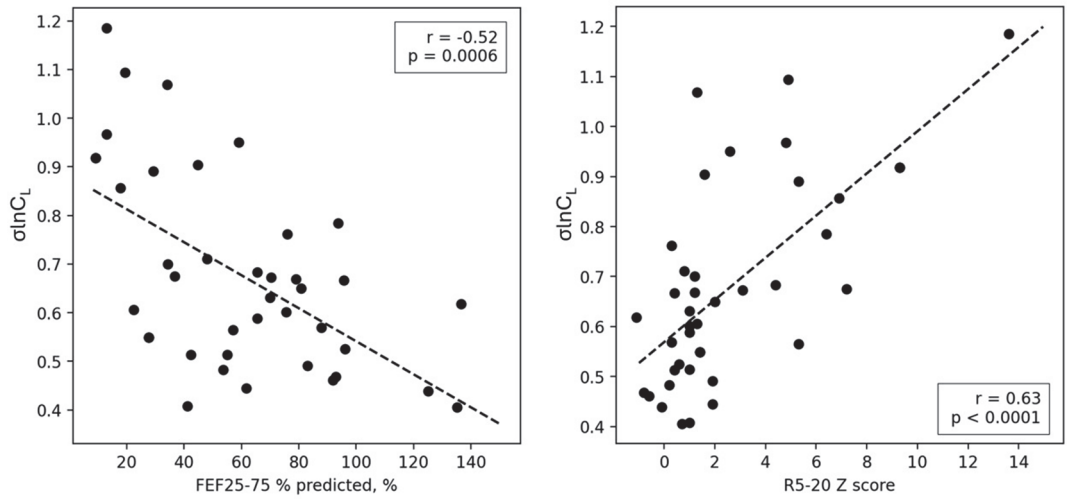
Conclusion This review consistently found elevated R5-R20 levels in small airway disease across all obstructive lung diseases, even with normal spirometry. A mean X5 value of ≤ -0.1kPa/L/s could potentially identify small airway abnormalities, however further research using extensive longitudinal datasets is needed to gain comprehensive insight.

P253 ASSOCIATION BETWEEN A COMPUTED CARDIOPULMONOGRAPHY (CCP) VENTILATION-INHOMOGENEITY INDEX AND CONVENTIONAL MARKERS OF SMALL-AIRWAY FUNCTION

[1,2,3]H Xu, [4]NMJ Smith, [2,5]A Alamoudi, [6]LS Petralia, [4]D Sandhu, [4]G Richmond, [4]GAD Ritchie, [2]NP Talbot, [2]PA Robbins, [1]ID Pavord, [1]N Petousi. *[1]Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Department of Physiology, University of Oxford, Anatomy and Genetics, Oxford, UK; [3]CAMS-Oxford Institute, University of Oxford, Oxford, UK; [4]Department of Chemistry, University of Oxford, Oxford, UK; [5]Department of Respiratory Care, Prince Sultan Military College of Health Sciences, Dhahran, Saudi Arabia; [6]Institute for Breath Research, University of Innsbruck, Innsbruck, Austria*

10.1136/thorax-2024-BTSabstracts.414

Introduction Small airway dysfunction has gained increasing attention for its critical role in pathophysiological changes associated with chronic airway disease. Computed cardiopulmonography (CCP) is novel physiological technique: A bespoke molecular flow sensor measures accurate, highly-time-resolved respired gas composition and flow-rate data during a multiple breath washout test.[2] These data enable the determination of patient-specific parameters describing respiratory physiology using a computational lung model. One such



Abstract P253 Figure 1 Correlation analysis of σlnCL with FEF25–75 % predicted (left) and R5–20 Z score (right)

parameters, σlnC_L, is a sensitive index of ventilation inhomogeneity that reflects the variability in lung inflation/deflation (alveolar compliance) across the lung. We hypothesise that σlnC_L is a sensitive parameter indicating small-airway dysfunction.

Aim To assess the association between σlnCL and conventional markers of small-airway dysfunction obtained using impulse oscillometry (Tremoflo) and spirometry.

Method Forty asthmatic patients participated in this cross-sectional study. The average age was 56 ±15 years (mean ± S. D.) and 22(55%) were male. Patients had varying disease severity: 13(33%) patients were at GINA steps I-III, 18(45%) were at GINA IV-V (not on biologics) and 9 (22%) at GINA V on biologics. Patients were assessed using spirometry, oscillometry and CCP. Forced expiratory flow (FEF) 25–75 % predicted and R5–20 Z score were considered conventional assessments of small airway function. Spearman correlation was used to evaluate associations between each of these parameters and σlnC_L.

Results Figure 1 demonstrates our results. σlnCL is significantly correlated with both FEF25–75 % predicted ($r = -0.52$, $p=0.0006$) and R5–20 Z score ($r = 0.63$, $p<0.0001$).

Conclusion The significant correlation between σlnCL and parameters of small airway dysfunction reveals its potential as a sensitive measure of physiological changes in the smaller airways in asthma.

REFERENCES

1. DOI: 10.1152/japplphysiol.00745.2017.
2. DOI: 10.1126/sciadv.1600560.

'Great Expectorations' – Cystic fibrosis and bronchiectasis

P254 CHRONIC PULMONARY ASPERGILLOSIS IN PATIENTS WITH NON-TUBERCULOUS MYCOBACTERIAL DISEASE

[1]N Smallcombe, [1]L Kabalan, [2]A Malhotra, [1]C Chen, [1]S Joseph, [1]K Boza, [1]R Bamford, [1]S Natarajan, [2]H Kunst. *[1]Department of Respiratory Medicine, Royal London Hospital, Barts Health NHS Trust, London, UK; [2]Queen Mary University of London, London, UK*

10.1136/thorax-2024-BTSabstracts.415

Introduction Chronic pulmonary aspergillosis (CPA) can be a complication of non-tuberculous mycobacteria pulmonary disease (NTM-PD). In this context, CPA is often difficult to diagnose as both CPA and NTM-PD present with similar symptoms and chronic cavitatory changes on cross-sectional imaging. Identification of CPA is however crucial given high rates of morbidity and mortality with concurrent infection.

Methods We conducted a retrospective study of consecutive NTM-PD patients identified at our trust between 2016 and 2024. NTM-PD was defined as per American Thoracic Society guidelines (clinical, radiological and microbiological criteria - two or more positive and consistent sputum isolates, a bronchoalveolar lavage sample or biopsy). Clinical information including aspergillus serology and microbiological data was extracted from patient electronic health records.

Results Eighty-four patients with NTM-PD were identified. Of these, 43 (51%) were female. The median age was 66 years (IQR 23). Thirty-six (43%) patients had a background of bronchiectasis, 27 (32%) patients had COPD, seven (8%) patients had both COPD and bronchiectasis, and 14 (17%) patients had no underlying lung disease. Fourty-eight (57%) patients had *Mycobacterium avium* complex (MAC), 13 *Mycobacterium abscessus*(15%) 13 *Mycobacterium kansasii* (15%). Ten (12%) patients isolated other mycobacterial species including *Mycobacterium Szulgai* and *Mycobacteria Europeam*.

Sixteen (19%) patients had an elevated aspergillus-specific IgG greater than 75mg/L. Ten were not commenced on antifungal treatment, one was considered for treatment but passed away prior to commencement. Of the five that were commenced on treatment all received Triazoles [Itraconazole, Voriconazole, Posaconazole] and two received Amphotericin B. Nine (11%) patients had direct evidence of aspergillus infection on sputum, bronchoalveolar lavage culture or on biopsy.

Conclusion CPA should be considered when NTM-PD patients present with progression of symptoms and/or radiological changes despite appropriate treatment for their NTM-PD. Serial aspergillus serology and fungal cultures aids diagnosis.

P255 VARIABLES LIMITING ANTIBIOTIC CHOICE IN A COHORT OF PATIENTS WITH BRONCHIECTASIS AND PSEUDOMONAS AERUGINOSA COLONISATION

C Dominic, S Drazich-Taylor, MC Pasteur, EK Mishra. *Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK*

10.1136/thorax-2024-BTSabstracts.416

Introduction In patients with bronchiectasis and chronic *Pseudomonas aeruginosa* (PsA) colonisation, clinicians face treatment challenges due to antibiotic resistance and intolerance. We aimed to examine the variables limiting antibiotic choice in our patient cohort.

Methods We utilised laboratory IT system Telepath to retrospectively analyse all positive sputum cultures for PsA in 2023 from one large teaching hospital and affiliated GP practices. From this we focused on adult patients with non-CF bronchiectasis and confirmed PsA colonisation, defined as at least two positive sputum cultures, 3 months apart, within 12 months. Data was collected from electronic clinic letters and ICE (clinical results database). Statistical analysis was done in Rstudio 4.3.3.

Results Of 721 sputum samples with PsA, 219 (30%) were from 65 adults with non-CF bronchiectasis and PsA colonisation (median no. sputum samples per patient 3, IQR 2–4) (table 1). Twenty-six (39%) patients had a factor limiting the choice of antibiotic, of which 12 (18.5%) were PsA antibiotic resistance, 19 (29.2%) were patient allergies/intolerances and 6 (9.2%) were both.

The most recent sample in every case was also the most resistant sample. Of these 65 selected specimens, 12 (18.5%) were resistant to ciprofloxacin, 5 (7.7%) to gentamicin, 5 (7.7%) to ceftazidime, 3 (4.6%) to piperacillin-tazobactam, and 2 (3.1%) to meropenem. Eight (12.3%) patients were resistant to only one antibiotic, and 4 (6.2%) were resistant to 2 or more antibiotics. Three patients without a reported intolerance to colistin failed trial of nebulisers due to bronchospasm.

In addition, 17 (26.2%) were colonised (using the same definition of colonisation) with other species in addition to PsA which may complicate treatment of respiratory exacerbations and lead to additional antibiotic exposure.

Discussion A significant proportion of this cohort exhibits limitations to antibiotic use for PsA exacerbations due to resistance, allergies or intolerance. This highlights the need for further research into novel therapeutic strategies to effectively manage bronchiectasis patients with PsA colonisation which could include new antibiotics or phage therapy.

Abstract P255 Table 1 Characteristics of cohort of patients

Characteristic	Subcategories	Number	Proportion
Sex	Male	22	33.8%
	Female	43	66.3%
	Median	**IQR**	
Age (years)	77	9.5	
FEV1 (% pred.)	67	38	
Hospital Admissions	2	3	
Sputum Samples	3	2	

P256 BEDAQUILINE FOR NONTUBERCULOUS MYCOBACTERIAL DISEASE: INSIGHTS FROM THE LARGEST NATIONAL CASE SERIES IN THE UK

[1,2]K Kumar, [3,4]AM Malhotra, [5,6]S Capocci, [7]B Hulance, [8]M Dedicoat, [4,9]H Kunst, [10]E Bowman, [11]TGD Capstick, [12]J Duckers, [13]C Foster, [14]F Frost, [13]E Whittaker, [15]S Wilson, [16]S Bryant, [17]R Breen, [18,19]CS Haworth, [3,20]MCI Lipman, [1,21]OM Kon. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Host Defence Unit, Department of Respiratory Medicine, Royal Brompton Hospital, Guy's and St Thomas' NHS Foundation Trust, London, UK; [3]UCL Respiratory, Division of Medicine, University College London, London, UK; [4]Department of Respiratory Medicine, Royal London Hospital, Barts Health NHS Trust, London, UK; [5]Department of Respiratory Medicine, University College Hospital, University College London Hospitals NHS Foundation Trust, London, UK; [6]Department of Respiratory Medicine, Whittington Hospital, Whittington Health NHS Trust, London, UK; [7]Heart and Lung Unit, Torbay Hospital, Torbay and South Devon NHS Foundation Trust, Torquay, UK; [8]Department of Infectious Diseases, Heartlands Hospital, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [9]Blizard Institute, Queen Mary University of London, London, UK; [10]Pharmacy Department, Department of Respiratory Medicine, Royal Brompton Hospital, Guy's and St Thomas' NHS Foundation Trust, London, UK; [11]Pharmacy Department, St James's University Hospital, The Leeds Teaching Hospitals NHS Trust, Leeds, UK; [12]All Wales Adult Cystic Fibrosis Centre, University Hospital Llandough, Cardiff and Vale University Health Board, Cardiff, UK; [13]Department of Paediatric Infectious Diseases, St Mary's Hospital, Imperial College Healthcare NHS Trust, London, UK; [14]Department of Respiratory Medicine, Liverpool Heart and Chest Hospital, Liverpool Heart and Chest Hospital NHS Foundation Trust, Liverpool, UK; [15]Department of Respiratory Medicine, Royal Blackburn Teaching Hospital, East Lancashire Hospitals NHS Trust, Blackburn, UK; [16]NTM Network UK, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, UK; [17]Department of Respiratory Medicine, Forth Valley Royal Hospital, NHS Forth Valley, Larbert, UK; [18]Cambridge Centre for Lung Infection, Royal Papworth Hospital, Royal Papworth Hospital NHS Foundation Trust, Cambridge, UK; [19]Department of Medicine, University of Cambridge, Cambridge, UK; [20]Department of Respiratory Medicine, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, UK; [21]Department of Respiratory Medicine, St Mary's Hospital, Imperial College Healthcare NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.417

Introduction First-line antibiotics for disease caused by nontuberculous mycobacteria (NTM) are often poorly effective. Bedaquiline is an attractive therapeutic option. Evidence regarding its clinical efficacy is limited. We report outcomes from the largest UK case series of patients with NTM disease who received bedaquiline.

Methods Clinicians in NTM centres were contacted to ascertain whether they had used bedaquiline to treat NTM disease. Inclusion criteria for cases were microbiological confirmation of NTM infection and treatment for NTM disease with bedaquiline. Retrospective chart review was undertaken to collate demographics, investigations, regimens and outcomes.

Results Seventeen patients (10 female; 7 male; median age decile 45–54 years) across 11 hospitals were identified. The commonest pre-existing lung conditions were bronchiectasis (n=5, 29%) and cystic fibrosis (n=4, 24%). Four individuals (24%) had HIV infection; three of whom had AIDS. Nine (53%) had NTM pulmonary disease, three (18%) single-site extrapulmonary disease and five (29%) disseminated disease. NTM disease occurred most frequently secondary to *Mycobacterium abscessus* (MAB) (n=8, 47%) and *Mycobacterium avium* complex (MAC) (n=6, 35%).

The commonest indication for bedaquiline was NTM treatment failure (n=13, 76%). The BTS MDR TB CAS recommended bedaquiline in seven cases. Bedaquiline was started a median 18.0 (interquartile range (IQR) 4.3–25.5) months after NTM treatment initiation. Median bedaquiline treatment duration was 7.5 (IQR 5.6–12.0) months.

Symptoms completely resolved in five (29%) cases, partially resolved in six (35%) and did not change in two (12%).

Complete radiological resolution was observed in three (18%), partial resolution in four (24%) and no radiological change in five (29%). Persistent culture conversion was achieved in four (24%) individuals (three MAC, one MAB). Four (24%) individuals (three MAB, one MAC) failed to culture convert.

Adverse events associated with bedaquiline included QTc interval prolongation (n=4, 24%), hepatotoxicity (n=3, 18%) and nausea (n=2, 12%). Four individuals (24%) had no bedaquiline-related side effects. Three deaths that occurred while taking bedaquiline were not attributed to the drug by the treating clinicians.

Conclusions Adding bedaquiline to NTM treatment regimens is associated with variable treatment outcomes. Prospective clinical studies evaluating the efficacy of bedaquiline in this context appear warranted.

P257 THE INCIDENCE OF SMOKING AND VAPING RATES AMONGST ADULTS WITH PRIMARY CILIARY DYSKINESIA IN ENGLAND

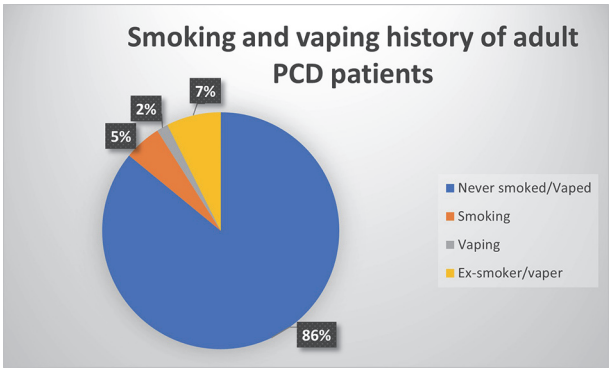
[1]EA Shepherd, [2]S Peake, [3]C Webster, [4]S Lightfoot, [5]N Freitas. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]Royal Brompton and Harefield Hospitals, London, UK; [3]Leeds Teaching Hospitals NHS Trust, Leeds, UK; [4]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK; [5]University Hospitals of Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.418

Primary ciliary dyskinesia (PCD) is a rare autosomal recessive disorder in which the motile cilia are usually static or dyskinetic. The movement of mucus along the mucociliary escalator is impeded by abnormal cilia movement leading to sputum retention, repeated chest infections and ultimately bronchiectasis. Smoking also affects mucociliary clearance (Xavier et al., 2014) and vaping has been shown to decrease ciliary beat frequency Clapp et al., 2018) but to date it is unclear how many adults with PCD in England have a smoking or vaping history. There is also evidence to suggest that vaping rates are higher in adolescents with PCD than cystic fibrosis. This study sought to determine the frequency of smoking and vaping amongst adults with PCD in England.

Adult patients attending clinic at the four specialist adult PCD centres in England between March and May 2024 were asked about their smoking and vaping history by a PCD specialist physiotherapist.

256 patients attending clinic at the four specialist adult PCD centres between March and May 2024 were asked about their smoking/vaping history. 220 patients reported no smoking or vaping history, 13 were current smokers, 4 were currently using vapes and 19 had previously smoked or used vapes.



Abstract P257 Figure 1

Self-reported smoking and vaping rates of a convenience sample of adults with PCD were 5% and 2% respectively. This is lower than the prevalence of smoking (12.7 – 14.9%) or vaping (6.9 – 7.1%) in the UK. However, rates may have been under-reported as self-reports consistently underestimate actual prevalence rates of risky health behaviours. Even at this lower prevalence, smoking and vaping rates remains a cause for concern and these behaviours should be addressed at clinic visits to ensure that patients are aware of the current evidence on the health risks of smoking and vaping and can make informed choices about their health.

P258 PAEDIATRIC BRONCHIECTASIS QUALITY OF LIFE QUESTIONNAIRE: WHAT DOES THE LITERATURE SAY?

H Smith, P Nagakumar, D Yates, P Kenia. *Birmingham Women's Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.419

Introduction Bronchiectasis presents a significant burden for children and young people (CYP), adversely affecting the quality of life (QoL) of both, the patients, and their families (Chang et al, 2021). Employing a health-related quality of life (HRQoL) tool in routine clinical care has the potential to improve outcomes by providing insights into the patient/caregiver disease burden and helping tailor care and interventions. We conducted a scoping review with content assessment to identify self-reported tools for assessing the quality of life in CYP with bronchiectasis.

Methods The search was conducted according to the PRISMA extension for scoping reviews in Embase, CINAHL, Cochrane central register of controlled trials, PsycInfo and PubMed databases using pre-specified key words (QoL, CYP, Bronchiectasis, lung disease, PCD, CF) and their index terms to cover articles published in English from year 2000 onwards. Articles where questionnaires/questions in use to assess QoL without imposing geographical or language restrictions were included for the review. Two authors independently reviewed the appraised manuscripts.

Results Using the above criteria, 731 articles were identified. Further refinement to specific lung diseases including bronchiectasis, Primary ciliary dyskinesia (PCD) and Cystic fibrosis (CF) reduced the number to 373 articles (51%), which were all screened in detail. Of these screened manuscripts, 33 articles (9%) were most relevant to the prespecified criteria and were reviewed in detail. Fifteen HRQoL questionnaires were identified from these articles. However, only five (33%) were specific to bronchiectasis, and these were exclusively validated for adults, but none for the paediatric population.

Conclusion The scoping review did not identify any validated questionnaire for assessing HRQoL in paediatric bronchiectasis. There is an unmet need to develop and validate a comprehensive paediatric specific self-reported tool for assessing HRQoL. This tool will advance our understanding of the impact of bronchiectasis on the lives of CYP and their families and help develop tailored interventions.

REFERENCE

1. Chang A, *et al.* Management of children and adolescents with bronchiectasis: Summary of the ERS clinical practice guideline. 2021: Breathe.

P259 PNEUMOCOCCAL VACCINATION RATES IN BRONCHIECTASIS PATIENTS YOUNGER THAN 65 YEARS IN THE SPECIALIST CLINIC

[1]H Upadhyay, [2]L Marshall, [1]K Hester, [2]J Chalmers, [1]A De Soyza. *[1]Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK; [2]University of Dundee, Dundee, UK*

10.1136/thorax-2024-BTSabstracts.420

Background Community Acquired Pneumonia (CAP) has an annual incidence of 5–10 per 1000 adult population in the UK with hospital admission rate of 10–22%. Bronchiectasis patients are at higher risk of acquiring CAP due to underlying pathophysiology of bronchiectasis. Vaccination is therefore recommended in bronchiectasis guidelines irrespective of age. However, bronchiectasis patients aged <65 years may miss out vaccination due to a lack of national vaccination system that is currently in place for those >65 years. The aim of this project was to identify differences in vaccination rates between the two age groups, whether vaccinated patients with non-protective titers were followed up for vaccination and if vaccination/titer checking exemption was documented in patient records.

Methods A multi-center screening of patients attending the bronchiectasis clinic was conducted between December 2023-June 2024. Patient records were screened to identify pneumococcal vaccination status and previous pneumococcal antibody titers.

Results 315 patients attending the clinics were included in the analysis with 159 patients(50.47%) <65 years. In the <65 years group, 134(84.3%) patients were pneumococcal vaccinated while 150/156(96.2%) patients >65 years were vaccinated. Chi-Sq test showed statistically significant difference in the vaccination rates between the two age groups ($\chi 2=12.68$; df=1;p-value 0.0004).

Overall, 16/315(5.07%) patients had previous vaccination with non-protective antibody titer on follow-up. The mean age of this group was 59.6±3.8 with female preponderance (12, 75%). 8(50%) patients had revaccination in primary care within mean 4±1.7 months of clinic appointment, 4(25%) were not followed up with no primary care documentation citing reasons, while records were not available for 4(25%) patients.

Out of 32 patients who were unvaccinated, 10(31.2%) had documented a reason for being unvaccinated including immunodeficiency(5/10,50%), new diagnosis of bronchiectasis (4/10,40%) and patient declined(1/9,10%). The remaining 23 (71.9%) unvaccinated patients had no documentation.

Conclusions Pneumococcal vaccination is recommended in bronchiectasis guidelines on the premise it is cost-effective intervention to prevent severe infections. Younger patients appear more likely to be missed for pneumococcal vaccination perhaps reflecting national systems focus on those >65 years irrespective of increased pneumonia risk. Systems must be put in place to follow-up patients for revaccination in primary care and revaccinate if necessary.

P260 IS PATIENT CHOICE CONSIDERED WITH AIRWAY CLEARANCE TECHNIQUE PRESCRIPTION? – A REAL-WORLD LIVE SURVEY OF PATIENTS WITH BRONCHIECTASIS FROM THE EUROPEAN LUNG FOUNDATION

[1]P McCallion, [2]J Bradley, [1]A De Soyza. *[1]Newcastle University, Newcastle Upon Tyne, UK; [2]Queens University, Belfast, UK*

10.1136/thorax-2024-BTSabstracts.421

Background Bronchiectasis is a chronic lung disorder. Impaired muco-ciliary clearance and sputum retention are core elements in bronchiectasis pathophysiology. Airway clearance is regarded as the cornerstone of therapy in bronchiectasis. There is currently a lack of evidence supporting the efficacy of one specific airway clearance technique (ACT) over another. Consensus guidelines state patient preference and choice should be considered when recommending ACTs.

Aims

- To determine if patients were offered a choice of ACTs.
- To determine at what time point patients were offered a choice of ACTs.
- To determine at what time point patients would like to be offered a choice of ACTs.

Methods A short survey was developed and presented at the European Lung Foundation's Bronchiectasis Patient conference. The poll was delivered online via Mentimeter. The survey was completed by patients with bronchiectasis, their carers, healthcare professionals or members of the public. Results were collated automatically by Mentimeter software.

Abstract P260 Table 1

Have you been taught and ACT	66 (80%)	15 (19%)	1 (1%)		
Have you ever been offered a choice of ACTs?	39 (43%)	51 (56%)	1 (1%)		
	1 week	**2 weeks**	**1 month**	**3 months**	**> 3 months**
How long did it take for you to decide if the Airway Clearance Technique you were first taught was working or not working for you?	21 (27%)	11 (14%)	19 (24%)		28 (35%)
	First Appointment	**When my first ACT did not work**	**When I asked for it to be changed**	**Other**	**I was not offered more than one choice of ACT**
If you were offered more than one choice of Airway Clearance Technique, when was this offered to you?	5 (6%)	7 (9%)	13 (16%)	24 (30%)	32 (39%)
	At first appointment	**At a follow up appointment**	**At the patients request**	**Other**	
When do you think it would be best to offer a patient a choice of ACTs?	36 (37%)	51 (53%)	7 (7%)	3 (3%)	

Results 457 people attended the presentation. Not all questions were answered by every person. Questions were answered by an average of 72 people. Thirty-nine people (43%) were offered a choice of ACTs (table 1). Only five people (6%) were offered a choice of ACT at their initial physiotherapy appointment. Just over half of people (53%) felt that it would be best to offer patients a choice of ACT at a follow up appointment.

Conclusions More than half of people in this survey perceived they were not offered a choice of ACT. This survey offers a snapshot of real-world experiences on how often patient choice is considered with ACT prescription, and recommendations on what time point (first appointment or future follow up appointment) may be best to offer patients with bronchiectasis a choice of ACTs. The survey relied on long term recall and may not be representative of UK practice. This may limit the validity of any recommendations made from this survey. A more detailed UK patient survey should be considered to explore how to incorporate patient choice in ACT prescription in the NHS.

P261 PRESENTATION AND RECOVERY FROM PULMONARY EXACERBATIONS IN CYSTIC FIBROSIS AND COMPARISON OF THOSE WITH AND WITHOUT CFTR MODULATORS

[1]H Siy-Yap, [1]V Musgrave, [1]E Looi, [1]LE Wadsworth, [1]PJ Barry, [2]AM Jones, [2]A Horsley. *[1]Wythenshawe Hospital, Wythenshawe, UK; [2]University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.422

Objectives Recent falls in CF admissions have been attributed to reduced exacerbations (PEx) in patients on CFTR modulators. We aimed to understand how these have affected the presentation and course of PEx.

Methods Admission data were collected over 9m from July 2023 to April 2024, where CF PEx was the primary issue. Admissions lasting <7d were excluded from analysis. For multiple admissions by the same patient, we only included the first admission.

Baseline FEV1 was defined as best in preceding 12m. Endpoints were%fall in FEV1 from baseline at admission;%recovery of FEV1 on discharge compared to admission; admission CRP; admission BMI; duration of symptoms before admission; and duration of admission. Comparison was between patients taking modulators (MOD group) and those taking none (NO-MOD group).

Abstract P261 Table 1 Key comparisons between MOD vs NO-MODS groups

	MODS	NO-MODS	p
Age	32 (28-40)	26 (21-34)	0.03
Duration of symptoms (d)	20 (7-37)	14 (12-28)	0.9
Admission CRP (mg/L)	7 (2-49)	16 (7-67)	0.2
Admission BMI (SD) (kg/m²)	21.6 (3.7)	19.2 (2.4)	0.007
Chronic Pseudomonas (%)	25 (43)	11 (73)	0.036
Baseline FEV_1 (% pred)	54.0 (36.8-77.3)	52 (38.0-87.0)	0.9
% Fall in FEV_1 from baseline at admission	13.4 (4.4-20.7)	16.3 (10.2-27.4)	0.14
Duration of admission (days)	14 (11-15)	14 (13.5-20)	0.01
FEV_1 on discharge (% of baseline)	94.3 (89.4-100.0)	92.8 (84.2-102.9)	0.6
Recovery in FEV_1 (% change from admission)	9.5 (0.5-17.7)	10.8 (6.2-25.2)	0.3

Results Of 73 unique admissions, 58 were allocated to the MOD group (32xE/T/I, 2xT/I and 2xI) and 15 (21%) to the NO-MOD group. Key comparisons between these groups are shown in table 1. The NO-MOD group was younger, had lower BMI, and tended to have longer admissions, otherwise there were no significant differences between groups. By discharge, FEV1 remained less than 90% of baseline for 26% of MOD and 35% of NO-MOD.

Conclusions PEx remain important in CF. There is a disproportionate representation of admissions in NO-MOD group (20%) compared with our unit population (9%) (p-value = 0.0006). Though less frequent, presentation of PEx has not been significantly altered by modulators. Regardless of modulator status, a significant proportion of patients fail to recover baseline FEV1 by discharge.

P262 LONGITUDE-QOL: AN OBSERVATIONAL STUDY OF THE LONG-TERM IMPACT OF ELEXACAFTOR/TEZACAFTOR/IVACAFTOR ON THE QUALITY OF LIFE IN PEOPLE AGED ≥12 YEARS WITH CYSTIC FIBROSIS USING DATA FROM THE UNITED KINGDOM CYSTIC FIBROSIS REGISTRY

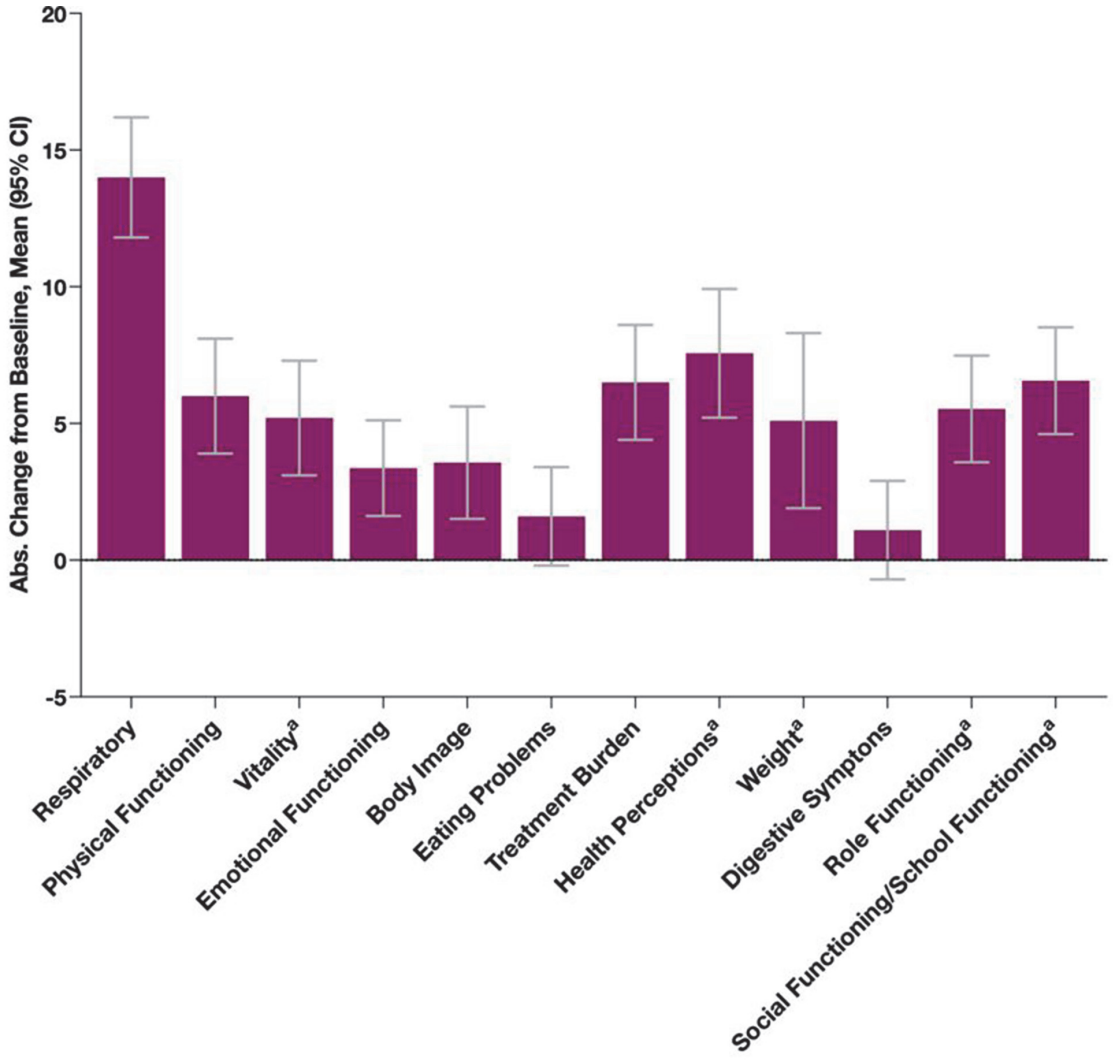
[1]CA Baxter, [1]G Vega-Hernandez, [1]C Bost, [1]H Wöhling, [2]S Sokhi, [2]SL Clarke, [2]SC Charman, [3,4]SB Carr. *[1]Vertex Pharmaceuticals Incorporated, Boston, USA; [2]Cystic Fibrosis Trust, London, UK; [3]Royal Brompton Hospital, London, UK; [4]NHLI, Imperial College, London, UK*

10.1136/thorax-2024-BTSabstracts.423

Objectives In phase 3 clinical trials elexacaftor/tezacaftor/ivacaftor (ELX/TEZ/IVA) assessment using the Cystic Fibrosis Questionnaire-Revised (CFQ-R) instrument showed higher scores in all 12 domains (Respiratory, Physical Functioning, Role Functioning, Vitality, Health Perceptions, Emotional Functioning, Social Functioning, Body Image, Eating Problems, Treatment Burden, Weight, and Digestive Symptoms). This registry-based cohort study using UK CF Registry data evaluated CFQ-R changes and estimated the health utilities under ELX/TEZ/IVA.

Methods PwCF who initiated ELX/TEZ/IVA on or after 19 August 2019, aged ≥12 years, had ≥1 *F508del* allele, and had at least one baseline and follow-up CFQ-R measurement within the study period were included. Two CFQ-R instrument versions were used, and results were combined: children aged 12–13 and adolescents/adults aged ≥14 years. Baseline characteristics, $ppFEV_1$, and CFQ-R values were obtained from the most recent record in the 18 months prior to ELX/TEZ/IVA initiation, and follow-up CFQ-R measures calculated as a mean of all scores in the 18-month follow-up period. For the health utilities analysis, the CFQ-R-8D score was derived from the CFQ-R ≥14 years version for both baseline and follow-up periods, and adjusted for $ppFEV_1$ at baseline. Follow-up ended 31 December 2023.

Results A total of 336 people were included. Baseline characteristics were consistent with the general ELX/TEZ/IVA-treated population, mean (SD) age was 28.6 (11.3) years; 56.5% were male; 55.1% had prior CFTRm treatment; mean (SD) $ppFEV_1$ was 68.6 (23.4). Absolute change from baseline to follow-up in all 12 CFQ-R domains demonstrated higher scores across all QoL domains (**figure 1**), consistent with Phase 3 studies. Improvements in CFQ-R-8D utility scores after initiation of ELX/TEZ/IVA were observed overall (n=145; 0.062; 95% CI: 0.044, 0.081) and by baseline $ppFEV_1$: <40 (0.079; 95% CI: 0.023, 0.134), ≥40 to ≤70 (0.095; 95% CI: 0.066, 0.124), >70 (0.030; 95% CI: 0.006, 0.054).



[a] Values for role/school functioning, weight, vitality and health perception are only reported for patients ≥14 years old.

Abstract P262 Figure 1 Absolute change from baseline in CFQ-R domain scores for people aged ≥12 years with CF treated with ELX/TEZ/IVA.

Conclusion Amongst pwCF in the UK aged ≥12 years who initiated ELX/TEZ/IVA, improvements in QoL and health utilities were observed, consistent with clinical trials. These real-world data further demonstrate that ELX/TEZ/IVA improves a range of CF-specific symptoms and general functioning and well-being.

P263 EVOLUTION OF CHRONIC PSEUDOMONAS AERUGINOSA STATUS IN PEOPLE WITH CYSTIC FIBROSIS TREATED WITH ETI

S Shameem, A Azam, PJ Barry, AM Jones, HD Green. *Manchester University NHS Foundation Trust, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.424

Introduction The triple combination CFTR modulator ETI has resulted in large clinical benefits for people with CF (pwCF). Many patients report a dramatic decrease in sputum expectoration post therapy. Registry data has suggested a reduction in the prevalence of some pathogens, but it is unclear whether this may relate to the frequency and quality of sputum samples.

Methods We conducted a retrospective analysis of adult patients with CF treated with CFTR modulators who had previously been determined to have chronic *Pseudomonas aeruginosa* (PsA) colonization in sputum. We analyzed all respiratory microbiology samples provided from these individuals between April 2023-April 2024.

Results In total 234 individuals were treated with CFTR modulators and had been previously diagnosed with chronic *PsA* colonization in sputum. No respiratory culture samples were received from 21 (9%) patients. 58 (25%) provided one respiratory culture sample, 64 (27%) provided two, 52 (22%) provided three samples and 39 (17%) provided 4 or more samples. *PsA* was isolated in 138 (64.8%) individuals who provided at least one sample in the preceding 12 months. In those providing at least one sample *PsA* was isolated in 296/

518 (57%) samples processed. On a per patient basis *PsA* was isolated in 55% of samples. 61% of patients in whom PsA had not been isolated in the 12 months continued inhaled antipseudomonal antibiotics.

Conclusions Recommended quarterly sampling of sputum was achieved in only 17% (39/234) of patients. 61% provided <3 samples, so even if all were PsA positive they would be unable to fulfill the current UK Registry criteria for chronic infection. Over a third of pwCF with known chronic *PsA* infection did not have a respiratory culture which was positive for this pathogen in a 12-month period. This was related to sampling below the standard recommendations and a low yield in provided samples. As this pathogen is unlikely to have been eradicated, this may have major implications for infection control, decisions regarding long term inhaled antibiotics and future methods for obtaining respiratory cultures for pwCF treated with ETI.

P264 TOLERABILITY OF NEBULISED MEDICATIONS IN NON-CF BRONCHIECTASIS PATIENTS

[1]MS Wood, [2]R Lord, [2]R Bright-Thomas, [2]AM Jones, [1]HC Ellis. *[1]Wythenshawe Hospital, Manchester, UK; [2]University of Manchester, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.425

Introduction Nebulised mucolytics (hypertonic saline) and antibiotics are important therapies in the management of patients with non-CF bronchiectasis. These therapies are not without complications and an important screen includes a supervised challenge dose to assess tolerance. There is a lack of consensus concerning failure of nebuliser challenges driven by a shortage of data on patient outcome. This raises the possibility that patients may fail the challenge inappropriately.

Method We undertook a single centre retrospective cohort analysis examining patients undergoing nebuliser challenges between February 2018-February 2022. Both hypertonic saline and antibiotics were included and clinical data including pre and post challenge spirometry, observations and respiratory comorbidities were collected. Challenge failure was defined as either a drop in spirometry of >15% from baseline or patient reported adverse symptoms.

Results 193 patients were included in the study (133 females vs 60 males). There was no significant difference in ages between challenge success and failure groups (mean ages = 64.3 vs 67.2 respectively, *p-value* = 0.3). Pre-challenge FEV1 was significantly greater in the challenge success than failure group (1.75L and 1.15L respectively, $p=$ 0.00003). Pre-challenge FEV1%predicted was significantly greater in the challenge success than failure group (71.4 and 49.6 respectively, $p=$ 0.0001). The mean bronchiectasis severity index (BSI) was significantly higher in the failure group (13.4 vs 9.7, $p=$ 0.0007). Receiver operator characteristic (ROC) predicting challenge success showed an AUC of 0.68, 0.76 and 0.78 for BSI, FEV1 and FEV1%predicted. The odds ratios of nebuliser challenge success declined in accordance with FEV1% predicted. The odds ratio decreased considerably when FEV1≤30% (OR = 0.03, 95%CI: 0.006 – 0.09).

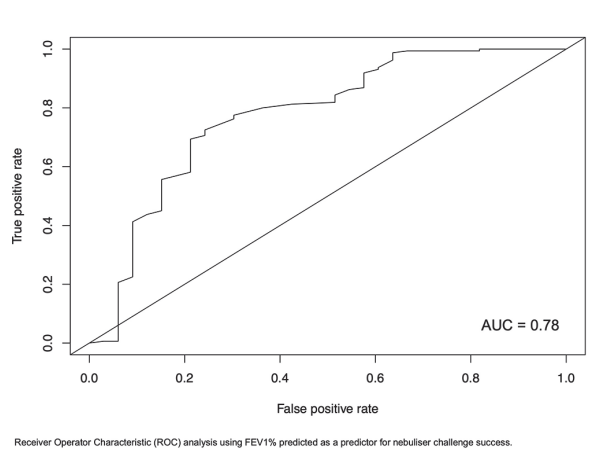
Conclusion Patients with more severe disease and FEV1<30% predicted are most likely to fail nebuliser challenges. Protocols assessing nebuliser tolerability should highlight at risk individuals and these patients should be optimised with bronchodilators before trial. Patients who develop side-effects such as cough or tight chest in the absence of an objective fall in spirometry need further assessment and consideration of repeat challenge.

P265 IMPAIRED EXERCISE CAPACITY AND FUNCTIONAL PERFORMANCE IN YOUTH WITH CYSTIC FIBROSIS: A COMPARATIVE ANALYSIS

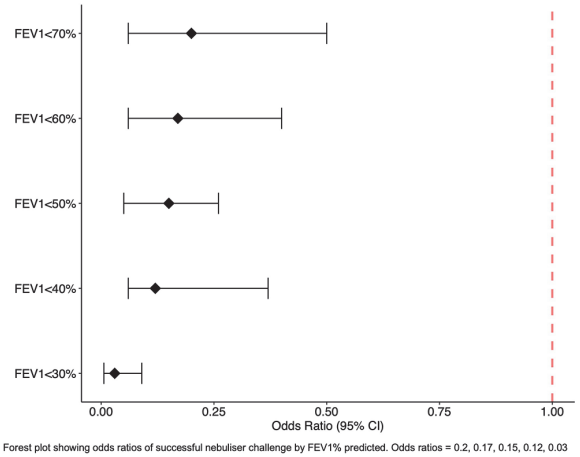
[1]M Kinaupenne, [1]M De Craemer, [2]S Van Biervliet, [3]K Van Hoorenbeeck, [2]H Schaballie, [4]I Coomans, [4]K Vandekerckhove, [1,5]H Demeyer. *[1]Department of Rehabilitation Sciences, Ghent University, Ghent, Belgium; [2]Department of Pediatrics, Center for Cystic Fibrosis, Ghent University Hospital, Ghent, Belgium; [3]Department of Pediatrics, Antwerp University Hospital, Edegem, Belgium; [4]Department of Pediatric Cardiology, Ghent University Hospital, Ghent, Belgium; [5]Department of rehabilitation sciences, KU Leuven, Leuven, Belgium*

10.1136/thorax-2024-BTSabstracts.426

Introduction and Objectives Regular cardiopulmonary exercise testing (CPET) is the gold standard to measure maximal exercise capacity and recommended in the follow up of people with Cystic Fibrosis (CF) due to its prognostic value. Contrarily, functional tests and peripheral muscle function tests are less utilized in the follow up of these patients. Such tests can be performed in settings where time, space, equipment and cost are barriers. Currently, there is limited research on the

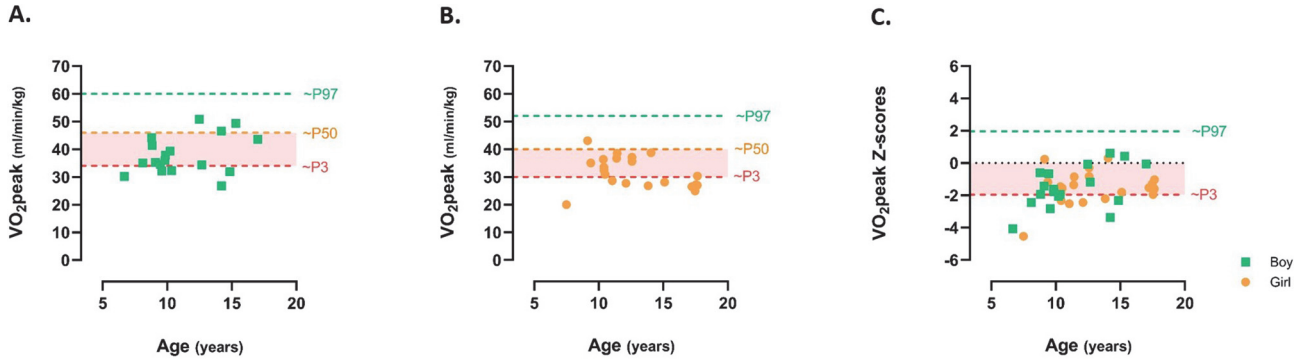


Receiver Operator Characteristic (ROC) analysis using FEV1% predicted as a predictor for nebuliser challenge success.



Forest plot showing odds ratios of successful nebuliser challenge by FEV1% predicted. Odds ratios = 0.2, 0.17, 0.15, 0.12, 0.03

Abstract P264 Figure 1



Abstract P265 Figure 1 Maximal exercise capacity in youth with Cystic Fibrosis. **Panel A**. Relative VO_2 peak in girls. **Panel B**. Relative VO_2 peak in boys. **Panel C**. VO_2 peak Z-scores in boys and girls

impairment in functional performance and peripheral muscle strength in youth with CF (YwCF). Therefore, we aimed to compare the maximal exercise capacity and functional performance of YwCF to existing reference values and healthy controls (HC) respectively.

Methods YwCF between 6 and 17 year and sex- and age-matched HC were recruited. In YwCF, maximal exercise capacity was measured by a CPET on a cyclo-ergometer, expressed relative to body weight (ml/min/kg body weight) and compared to the reference values of Takken et al., 2017. Furthermore, VO_{2peak} Z-scores were calculated based on the equations of Gavotto et al., corrected for sex, age and BMI. In both groups maximal isometric Quadriceps (Qc) strength (Newton) was assessed with a hand held dynamometer and functional performance was measured with the 30-second sit-to-stand test (STS) and horizontal standing long jump (SLJ).

Results In total, 49 YwCF (56% female, 11.4±3.3y; 90.2 ±14.9 $ppFEV_1$) and 49 HC (52% female, 11.9±3.5y) were included in the analyses. YwCF, both boys and girls, have lower relative VO_{2peak}compared to reference values with nearly all YwCF scoring below percentile 50. Additionally, 28% of YwCF have a z-score below -1.96 with an equal distribution between sexes (**figure 1).** To continue, YwCF have similar Qc strength compared to HC (p=0.50), but there is a trend towards fewer repetitions on the STS (p=0.08) and lower scores on the SLJ (p=0.02).

Conclusions Our YwCF cohort, both boys and girls have a lower VO_2 peak compared to reference values. While they have a comparable Qc strength, they tend to have lower functional performance relative to matched healthy controls.

P266 NOURISHING YOUNG LUNGS: INVESTIGATING THE ROLE OF NUTRITION IN CHILDHOOD CHRONIC SUPPURATIVE LUNG DISEASE

[1]D Moore, [2]S Unger, [1]A Lyles, [3]K Unger. *[1]Queen Margaret University, Edinburgh, UK; [2]University of Edinburgh, Edinburgh, UK; [3]NHS Lothian, Edinburgh, UK*

10.1136/thorax-2024-BTSabstracts.427

Introduction Chronic suppurative lung disease (CSLD), encompassing conditions such as primary ciliary dyskinesia (PCD) and bronchiectasis, significantly impact quality of life. Longitudinal data on the relationship between nutritional status and both lung function and number of exacerbations is scarce in this group. As such, there is currently a lack of established guidelines or pathways for nutrition management, particularly for children in the United Kingdom. To address this gap, research was conducted within a tertiary UK teaching hospital. This study aimed to investigate the distribution of, and association between nutritional status (measured by body mass index (BMI) and negative changes in BMI trajectory) and both the number of exacerbations and lung function z-scores.

Methods This retrospective longitudinal study included 44 children with a confirmed diagnosis of bronchiectasis and/or primary ciliary dyskinesia from 05/02/2024 to 22/04/2024 seen at a tertiary respiratory clinic. Clinical outcomes included exacerbation frequency and lung function tests at various age points. BMIZ scores were calculated and compared against the World Health Organisation/national standards for nutritional status classification, while the forced expiratory volume-one second z-scores (FEV1Z) and forced vital capacity z-scores (FVCZ) were derived from Global Lung Function Initiative spirometry equations.

Results Significant differences in BMIZ were observed across age groups ($p < 0.001$), with the majority of children (≥80%) classified as having a healthy BMI (between the 2nd and 91st percentiles). A notable percentage of children deviated negatively from their BMI growth trajectory by at least 1 centile, particularly at ages 4–5 years (59%) and 6–7 years (44%). Similarly, the highest percentage of 3 or more exacerbations occurred at ages 2–3 years (21%) and 4–5 years (17%). BMIZ at age 5 showed a significant positive association with FEV1Z ($r = 0.643$, $p < 0.001$) and FVCZ ($r = 0.593$, $p < 0.001$) at age 15.

Conclusion Lower BMI in early childhood in children with CSLD may be associated with compromised lung development in adolescence emphasising the need for tailored interventions and continued research in larger patient populations to enhance clinical management strategies.

P267 SPIROMETRY QUALITY IN ADULTS WITH CYSTIC FIBROSIS: A FOUR-YEAR REVIEW ON HOME SPIROMETRY IN A LARGE CF CENTRE

A Azam, P Barry, A Jones. *Manchester Adult Cystic Fibrosis Centre, Wythenshawe Hospital, Manchester, UK*

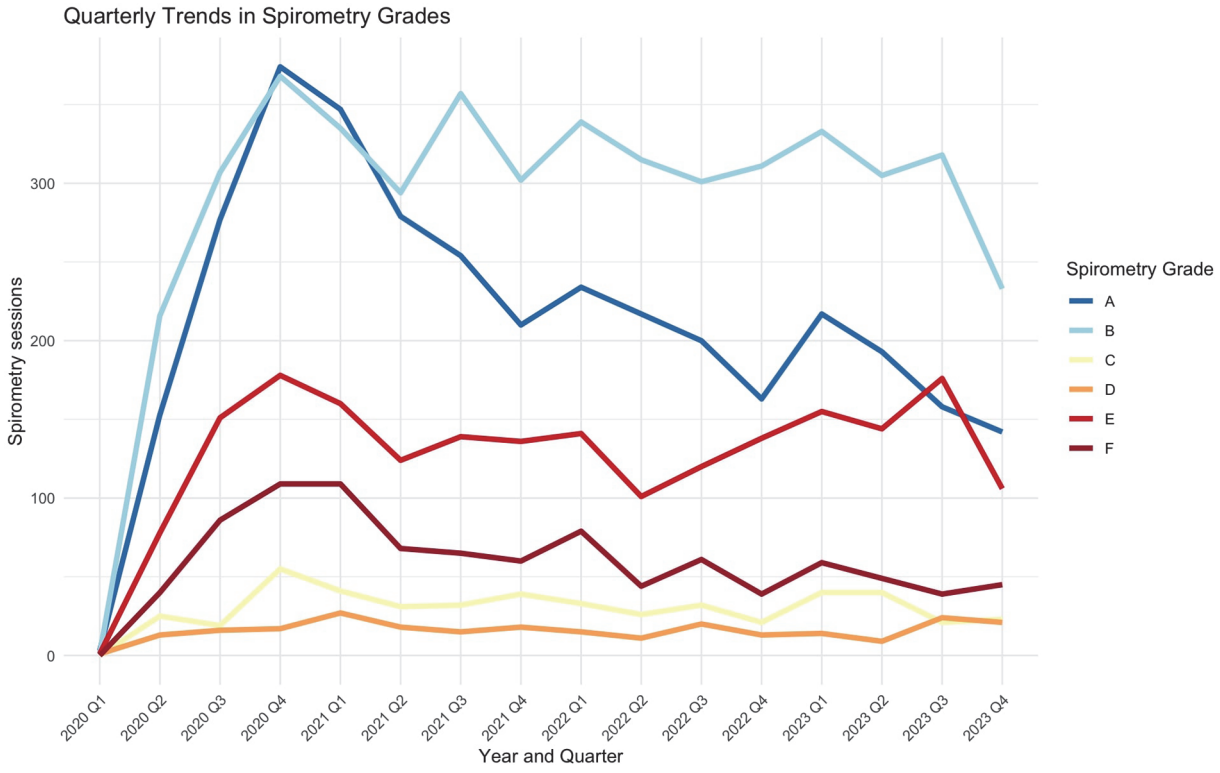
10.1136/thorax-2024-BTSabstracts.428

Introduction All adult patients with CF at our large adult CF centre are provided with an AirNext device (NuvoAir) for home spirometry. This study aims to investigate the longitudinal patterns of home spirometry in people with cystic fibrosis (pwCF), with a particular emphasis on spirometry grading as an indicator of spirometry quality.

Methods We analysed spirometry readings logged onto the NuvoAir online platform from March 2020 to November 2023. A spirometry test is defined as a single spirometry attempt, while a spirometry session is defined as a collection of tests performed in a single sitting. Grades A and B were classified as 'good quality,' while Grades C, D, E, and F were classified as 'poor quality.'

Results Spirometry data from 473 patients were analysed, comprising 34,400 spirometry tests and 11,786 spirometry sessions. The distribution of spirometry grades by ATS criteria were: Grade A 3,421 (29.1%), Grade B 4,635 (39.3%), Grade C 478 (4.1%), Grade D 252 (2.1%), Grade E 2,048 (17.4%), and Grade F 952 (8.1%). Longitudinal analysis (see figure 1) revealed a decline in in the total number of spirometry sessions and in Grade A spirometry over time. There were 10,980 total spirometry errors made. The most common error during spirometry tests were time-to-peak (44.4%) and premature cessation of airflow (44.5%). The median number of spirometry tests per session was 3 [IQR 2–4]. On a patient-to-patient basis, 8,056 patient (68.4%) achieved good quality spirometry grading and 3,730 (31.6%) achieved poor quality spirometry grading. A higher number of spirometry sessions was associated with better quality results ($p<0.01$), with a positive association between the number of spirometry sessions done (per patient) and the predicted probability of achieving a good quality spirometry grade.

Conclusion Despite most pwCF achieving good quality spirometry grades, there has been a noticeable decline in the number of Grade A results. Time-to-peak and cessation of airflow are the two most common errors encountered by patients, suggesting that efforts should focus on reducing these errors during spirometry sessions. Furthermore, the study demonstrates that frequent spirometry testing is positively associated with achieving higher quality spirometry grades.



Abstract P267 Figure 1

'Into Thin Air' – From primary care to biologics

M1 BREATHING EASY AT 80: THE POWER OF BIOLOGICS IN ELDERLY ASTHMA PATIENTS

[1]A Howell, [2]I Mechie, [1]G Lavoie, [2]A Chadwick. *[1]Respiratory Medicine Unit, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.429

Introduction Despite advancements in severe asthma management, elderly patients may encounter challenges in accessing biologic therapies. Age-related biases, misconceptions surrounding treatment tolerability, and reduced geriatric representation in clinical trials may contribute to biologics underutilisation in this demographic. This paper summarises the efficacy and tolerability of asthma biologics initiated in patients ≥80-years at the specialist asthma centre in Oxford.

Methods Routinely collected clinical data were analysed to identify patients aged 80 years or older at the initiation of asthma biologics. Patient and disease characteristics, documented at baseline and 1-year follow-up, were retrieved from the Electronic Patient Record.

Results Twenty-one patients were identified: 16 Mepolizumab, 4 Benralizumab and 1 Omalizumab. The mean age was 82 years and 57% were male. 95% had comorbidities, including CVD (81%), other respiratory diagnoses (62%), diabetes (19%), or rheumatological conditions (10%). 57% were ex-smokers and 33% never smoked. The majority (86%) had asthma diagnosed in adulthood. 67% had at least one other atopic condition and 24% had nasal polyps. Geometric mean baseline blood eosinophil count was 0.74×10^9/L.

Some data was missing due to pandemic-related shifts to remote follow-up. Mean baseline ACQ was 2.6, reduced on average by 1.4 after ~1 year of biologic treatment. Mean pre-biologic predicted% FEV1 was 59%. FEV1 improved by an average of 160mL at follow-up. See table 1.

The annualised exacerbation rate was reduced from 6.0 per patient in the year before biologics initiation to 0.56 per patient in the year after. 57% of patients were exacerbation-free at one year follow-up. Respiratory-related admissions reduced from a mean 0.5 to 0.1 per patient per year. At data collection 19 of 21 patients were alive, with 89% remaining on biologic therapy and all transitioned to homecare delivery. Patient-reported efficacy was highly positive.

Conclusions The efficacy and tolerability of biologics in the elderly are comparable to those observed in younger age groups, leading to improved subjective and objective asthma outcomes. These benefits persist despite higher comorbidities and increased frailty within geriatric populations. It is crucial to raise awareness of biologics use in the elderly to ensure their equitable access to these advanced therapies.

Abstract M1 Table 1 Statistical analysis of clinical changes at one year after asthma biologic initiation compared to baseline

	Mean difference	Standard Deviation	p-value (Wilcoxon Signed-Rank Test)
Change in annualised exacerbation rate	-5.44	2.01	<0.001
Change in ACQ	-1.4	0.97	0.001
Change in FEV1 [mL]	160	170	0.01

M2 REAL WORLD EFFECTIVENESS OF TEZEPELUMAB FOR ADOLESCENTS AND YOUNG ADULTS WITH SEVERE ASTHMA

[1]L Thomson, [1]L Green, [1]C Roxas, [1]M Fernandes, [1]J Lam, [1]F Haris, [1]J Gates, [1]G D'Ancona, [2]A Gupta, [1]J Dhariwal, [1,3]DJ Jackson, [1,3]AM Nanzer. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK; [2]Paediatric Respiratory Department, King's College Hospital, London, UK; [3]School of Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.430

Background Despite advances in therapies, no significant improvements in asthma morbidity or mortality has been achieved in adolescents and young adults (AYA) with severe asthma. The percentage of adolescents missing out on education due to severe asthma has remained high for decades. Tezepelumab is a human monoclonal antibody that blocks the effects of the epithelial cytokine thymic stromal lymphopotein (TSLP), and is licensed for the treatment of severe asthma in people aged 12 years or over. However, there is no real-world data on the effectiveness of tezepelumab in AYA with severe asthma.

Methods We performed a retrospective analysis of all adolescents aged 16–25 who commenced tezepelumab at our tertiary referral centre between December 2022 and December 2023. Baseline characteristics were recorded, and clinical outcome measures and biomarkers were assessed at 6 and 12 months.

Results 18 adolescents (72% male; mean age 21 ± 2.6) who completed at least 6 months were included in the analysis. 17% were biologic naïve (2/18 were previously on mepolizumab, 7/18 on benralizumab, 6/18 on omalizumab). Tezepelumab significantly improved the annualised exacerbation rate (AER) from 3.1±1.5 to 0.6±1.4 (p <0.0001). The ACQ6 score improved from 3.1±1.6 to 1.2±1.1 (p=0.03) and FeNO from 72.4±52 to 35.3±29 (p=0.03). Blood eosinophils (0.4±0.3 to 0.2± 0.2) and FEV1% (77%±18 to 82%±24) remained stable. 28% (5/18) of AYA were taking maintenance oral corticosteroids (mOCS) prior to starting treatment at a daily median dose of 7.5 mg (5–15), which reduced to 0 mg (0–3.75) after 1 year.

Conclusion This first real-world report on the effectiveness of tezepelumab in AYA demonstrates significant improvements in clinical and patient reported outcomes. Early initiation of biologics gives young people with severe asthma the chance to thrive, reduces long-term morbidity, prevents lung function decline and allows AYA to enjoy the same educational opportunities and career prospects as their peers.

M3 THE SYMPTOMATIC BENEFIT FROM ASTHMA BIOLOGICS IS NOT SUSTAINED THROUGHOUT THE DOSING SCHEDULE

[1]R Mittal, [2]M Pantaleon, [2]C Eames, [2]S Kerley, [2]C Whitfield, [2]J Mccreery, [2]P Cook, [1]A Freeman, [1]HM Haitchi, [1]RJ Kurukulaaratchy, [2]P Dennison, [2]H Rupani. *[1]University of Southampton, Southampton, UK; [2]University Hospital Southampton NHS Foundation Trust, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.431

Background Biologic treatments for severe asthma (SA) reduce asthma exacerbations and improve asthma control. Many patients report a decrease in the symptomatic benefit of their biologic near the end of the dosing schedule.

Methods Using an anonymised online questionnaire, we investigated the frequency of this phenomenon, its management and if it varied by biologic. The study was approved by the university ethics committee (ERGO 86122).

Results 625 patients on SA biologics were contacted, 269 (43%) responded: 127 benralizumab, 100 mepolizumab, 31 omalizumab, 11 dupilumab. 23% (62/269) were on maintenance oral corticosteroids (mOCS). 68% (183/269) reported increased symptoms pre-dose; these included increased breathlessness in 70%, tiredness in 54% and increased wheeze in 51%. This was most likely to occur a week before their next dose but 29% reported symptoms for 2 weeks. However, 42% (113/269) reported that it did not occur prior to each dose-in some patients it only occurred in the summer or winter months.

While increased symptoms were reported with all biologics, it was significant for benralizumab (77% vs 23%, p<0.001), dupilumab (82% vs 18%, p=0.03) and 4-weekly omalizumab (79% vs 21%, p=0.004); but not mepolizumab (53% vs 47%). The duration that a patient had been on the biologic did not correlate with this phenomenon. When comparing the eosinophil-targeting biologics, more patients on benralizumab reported pre-dose symptoms compared to mepolizumab, p=0.001. Increased symptoms pre-dose was not more or less common in patients on mOCS.

29% (53/183) reported needing oral steroids to alleviate symptoms- this did not differ by biologic type.

Conclusion Over two thirds of patients who responded to our survey reported a decrease in the symptomatic benefit of their biologic prior to the next dose; almost 30% reporting needing a course of steroids to manage these symptoms. More patients on benralizumab experienced increased symptoms compared to mepolizumab, this may be related to the longer dosing schedule of benralizumab. Future work should focus on biomarker and lung function assessment pre-dose to investigate if the reported symptoms are due to waning of the biological effect.

M4 DISTRIBUTION OF TYPE-2 BIOMARKERS OF ASTHMA IN A HEALTHY ADULT POPULATION – A CROSS-SECTIONAL STUDY

[1]CGO Doyle, [2,3,4]H Xu, [2]D Fleming-Brown, [2]B Langford, [2]I Pavord, [5,6]H Ashdown, [2]N Petousi. *[1]Medical Sciences Division, University of Oxford, Oxford, UK; [2]Nuffield Department of Medicine, University of Oxford, Oxford, UK; [3]Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, UK; [4]CAMS-Oxford Institute, University of Oxford, Oxford, UK; [5]Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK; [6]NIHR HealthTech Research Centre in Community Health Care, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.432

Introduction and Objectives Asthma is characterised by distinct inflammatory phenotypes, with 50–70% of severe cases involving type-2 (eosinophilic) inflammation. This can be evaluated using fractional exhaled nitric oxide (FeNO) and blood eosinophil count (BEC), aiding in diagnosis and treatment. Investigating the distribution of these biomarkers and the prevalence of type-2 inflammation in healthy adults may facilitate early asthma recognition. This study presents provisional results on the distribution of type-2 inflammation biomarkers among healthy young adults.

Abstract M4 Table 1 Distribution of type-2 biomarkers in healthy population (n (% of total))

	FeNO<25ppb	25ppb≤FeNO<50ppb	FeNO≥50ppb	Total
BEC < 0.3 x 10^9/L	41 (47%)	12 (14%)	3 (3%)	56 (64%)
0.15 x 10^9/L ≤ BEC < 0.3 x 10^9/L	9 (10%)	9 (10%)	1 (1%)	19 (22%)
BEC ≥ 0.3 x 10^9/L	5 (5%)	5 (5%)	2 (2%)	12 (14%)
Total	55 (63%)	26 (30%)	6 (7%)	87 (100%)

Number of patients indicated in each box, with percentage of total in brackets. Orange shaded those with at least one high type-2 biomarker.

Methods This cross-sectional study included participants aged 18–50 without respiratory disease or immunosuppressive medication use. They underwent FeNO testing and point-of-care BEC measurement. Participants were stratified by type-2 biomarker levels: low (FeNO < 25 ppb or BEC ≤ 0.15x10^9/L), moderate (FeNO 25–49 ppb or BEC 0.15–0.29 x10^9/L), and high (FeNO ≥ 50 ppb or BEC ≥ 0.3 x10^9/L). Mann-Whitney U tests compared groups, and Spearman correlation assessed the relationship between BEC and FeNO.

Results Data from 87 participants are reported. Mean age was 30.3 (± 9.1) years; 28 (32%) were male, and 11 (13%) were current or ex-smokers. Sixteen participants (18.4%) belonged to the high-biomarker group (FeNO ≥ 50 ppb or BEC ≥ 0.3 x 10^9/L). Median FeNO was 18 ppb (12 – 32 ppb, interquartile range, same as follows) and median BEC was 0.1 x 10^9/L (0.1 - 0.2 x 10^9/L). There was a positive correlation between FeNO and BEC (Spearman p = 0.277, p = 0.009). Males had a higher median FeNO than females (29 vs. 16 ppb; p < 0.001), but there was no significant difference between the sexes for BEC. Higher BEC (≥ 0.3 x 10^9/L) was associated with increased atopy; 92% of those with BEC ≥ 0.3 x10^9/L experience allergic symptoms compared to 34.7% of those with BEC < 0.3 x10^9/L (p = 0.002).

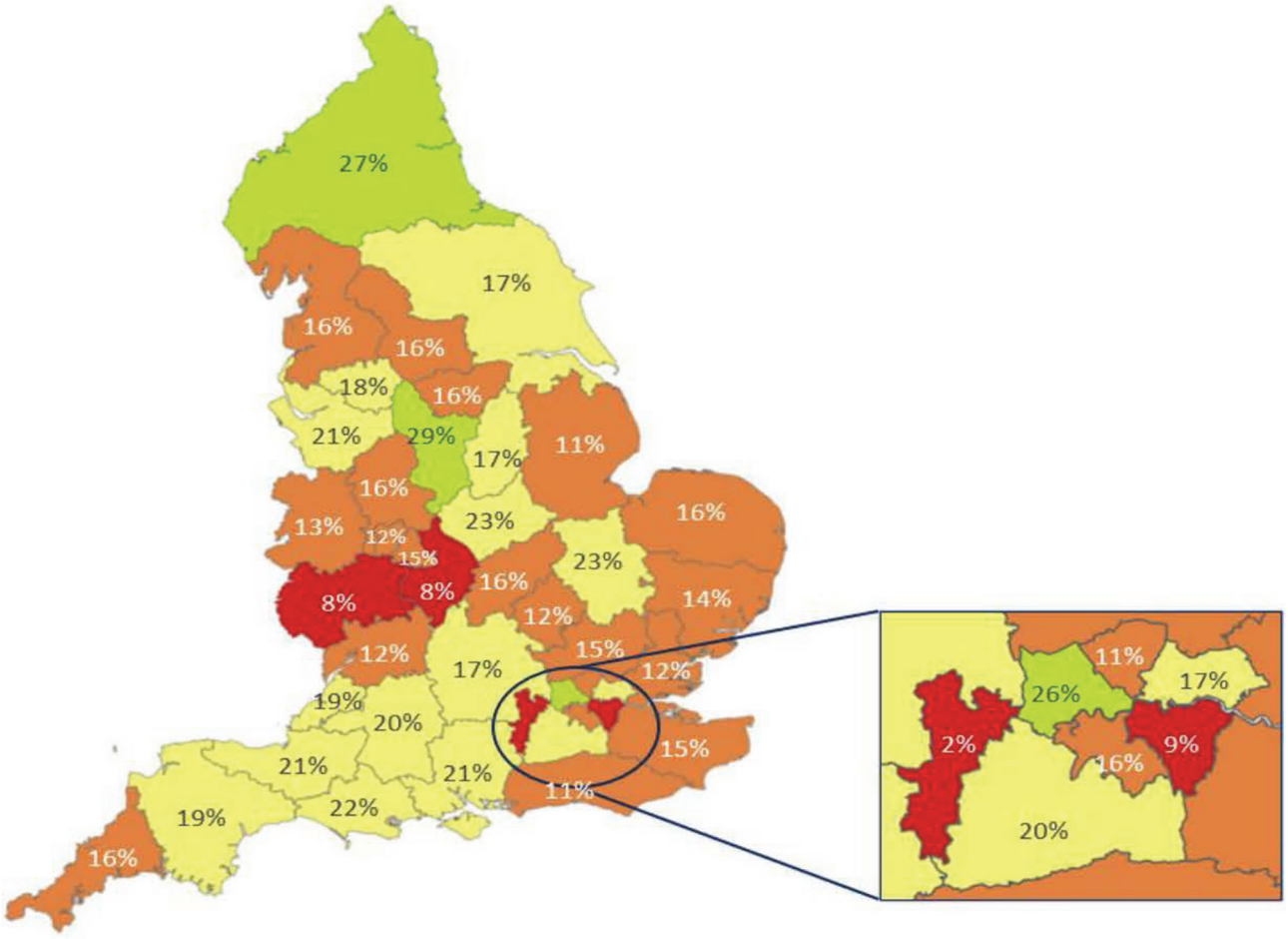
Conclusion Our study found that 18.4% of healthy young adults have at least one biomarker of eosinophilic airways disease. This was associated with atopy, suggesting pre-symptomatic or subclinical airways disease. Long-term evaluation is required to explore their future airways disease risk and whether pre-symptomatic treatment to reduce inflammation could alter their disease trajectory.

M5 SEVERE ASTHMA BIOLOGICS: A NEED TO INCREASE USE AND REDUCE INEQUITY IN ENGLAND

[1]H Rupani, [2]D Subramanian, [3]S Walker, [4]B Bostock. *[1]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]University Hospitals of Derby and Burton, Derby, UK; [3]Asthma + Lung UK, London, UK; [4]Association of Respiratory Nurses, Lichfield, UK*

10.1136/thorax-2024-BTSabstracts.433

Background Severe asthma (SA) affects ~5% of people with asthma. It is often debilitating, disruptive and life-limiting and is associated with corticosteroid-related comorbidity. Asthma biologics can be transformative for patients with SA, reducing oral steroid reliance and improving quality of life. In England, patients are referred to and undergo systematic assessment in a specialist centre prior to biologic initiation.



Abstract M5 Figure 1 National use of biologics (percentages) for treatment of severe asthma in England. Areas in England with Integrated Care Board rates of use of biologics stratified as <10%; ≥10%-17%; >17% -< 25% and >25%.[3]

Aim Evaluate the degree of regional variation in biologic prescribing across England to assess the need for interventions to improve access.

Method Data (BlueTeq: national recording system) on the initiation of biologic treatments in eligible patients (based on regional asthma prevalence) in England between 2016 and 2023 were obtained for all 42 Integrated Care Boards (ICBs). Future use based on current initiation rates was calculated using an arbitrary target of 50% of biologic-eligible patients actually receiving biologics.

Results SA biologic prescribing in England varied widely by ICB. The median of all eligible patients who received biologics was 16% (range 2% to 29%). Nationally, there was up to a 15-fold difference in biologic prescribing between ICBs (figure 1). Based on current initiation rates (lowest of 2%), modelling indicates that it will take 37 years (until December 2061) for 50% of eligible patients to be on biologic therapy.

Conclusion In England, biologics are under-used among eligible patients with SA, with considerable regional variability and inequity. It has been shown that proactive identification of patients with SA using primary care search tools led to a 3-fold increase in biologic initiation in one region.[1] At the other end of the patient journey, accelerating transfer to home care in appropriate patients can increase capacity to initiate biologics and reduce time to start biologics.[2] Additionally, integrating care between specialist centres and primary care can support more timely and higher rates of initiation. System-wide, nationally driven policy change and implementation are needed to reduce variation in care and ensure appropriate patients receive this treatment in a timely manner.

REFERENCES

1. Damery, *et al. npj Primary Care Respiratory Medicine*. 2024.
2. Whitfield, *et al. BTS* 2023;P38.
3. NHS England www.england.nhs.uk/integratedcare/integrated-care-in-your-area. Accessed 25 February 2024.

M6 UNDERSTANDING PATIENT PERCEPTION OF ASTHMA BIOLOGIC TREATMENT RESPONSE

S Khan, E Lyng, M Sheego, S Gilbey, L White, J Sullivan, AH Mansur, A Pillai. *University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.434

Background Patient perception of asthma treatment is rarely captured, and no specific tools exist to measure it. We developed an inhouse severe asthma patient feedback questionnaire (SAPFQ) using visual analogue scales to measure patient perception of biologic treatment.

Aim To investigate if patient perception through feedback responses differs from clinically measured response outcomes amongst severe asthma patients on biological treatment.

Abstract M6 Table 1 Severe asthma patient feedback questionnaire (SAPFQ)

	Question	Scoring
1.	How much has injection improved asthma symptoms?	0–10
2.	How much has having injection reduced your hospital admissions/ ambulance callouts?	0–10
3.	How much has having regular contact with asthma nurses helped your asthma management?	0–10
4.	How much do you feel this injection has improved your quality-of-life?	0–10
5.	Has this injection allowed you to reduce/stop use of oral steroids?	0–10
6.	Are you keen to continue taking the injection?	Y/N

Methods Patients who commenced biologic treatment between 1st June 2022 and 1st June 2023 had their demographics and clinical outcomes captured, and completed the SAPFQ after a 12-month treatment trial. SAPFQ comprised 6 items as showed in table 1. Agreement between SAPFQ scores and clinical outcomes including Asthma Control Questionnaire (ACQ-6) were assessed using standard descriptive statistics.

Results Of 58 patients who started biologics during this period, SAPFQ scores were available for 43: 74.4% (n=32) female, mean age 54.5±13.0 years, 51.2% (n=22) Caucasian, 25.6% (n=11) Asian, 20.9% (n=9) unknown, 2.3% (n=1) Afro-Caribbean. There were 20 (46.5%) patients on benralizumab, 14 (32.6%) on mepolizumab, 7 (16.3%) on dupilumab, and 2 (4.6%) on omalizumab. Mean baseline FeNO was 49.5 ±31.7, which reduced to 36.3±23.9 after 12-months. Mean eosinophil count reduced from 0.61±0.38x10^9/L to 0.55 ±2.52x10^9/L. Median exacerbation frequency reduced from 6.0 (IQR 4,7) at baseline to 1.0 (IQR 0,2). Median baseline ACQ reduced from 4.0 (IQR 3.5,4.8) to 2.7 (IQR 1.7,3.7). Positive treatment response (50% reduction in exacerbations and/or maintenance oral corticosteroids) was seen in 38 (88.4%): 16 benralizumab, 14 mepolizumab, 7 dupilumab, 1 omalizumab. A significant correlation was observed between SAPFQ and ACQ (r=-0.4775, p=0.0012). Correlation was slightly stronger between SAPFQ reported improvement in symptoms and ACQ (r=-0.5191, p=0.0004), and between SAPFQ reported satisfaction with asthma clinical team support and ACQ (r=-0.5026, p=0.0006). Correlation between ACQ and patients wanting to continue treatment long-term as reported on the SAPFQ was weaker (r=-0.2117, p=0.1730).

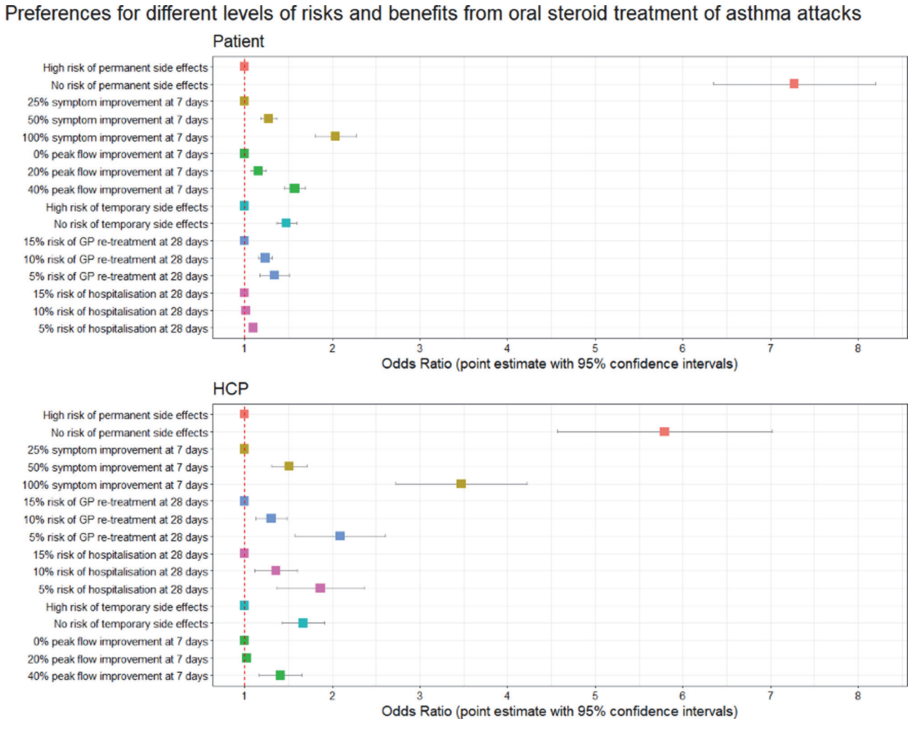
Conclusion Exceptional biologic response was seen in this cohort. Correlation between SAPFQ and ACQ suggests patient perception agreed with clinical measures. Understanding patient perception aids shared decision-making, but standardised tools are needed to capture it. A larger study with more treatment non-responders is required to analyse these findings further.

M7 WHAT DO PATIENTS REALLY THINK OF ORAL STEROIDS FOR ASTHMA ATTACKS? A DISCRETE CHOICE EXPERIMENT

[1]I Howell, [2]J Noble, [3]C Morgan, [1]A Howell, [4]J Logan, [5]S Miller, [4]R Chaudhuri, [6]R Russell, [6]M Bafadhel, [2]R Beasley, [1]I Pavord, [7]J Buckell. *[1]Respiratory Medicine Unit, Nuffield Department of Medicine, University of Oxford, Oxford, UK; [2]Medical Research Institute of New Zealand, Wellington, New Zealand; [3]North Bristol NHS Trust, Bristol, UK; [4]Gartnaval General Hospital, Glasgow, UK; [5]Patient representative, NA, UK; [6]King's Centre for Lung Health, School of Immunology and Microbial Sciences, King's College London, London, UK; [7]Nuffield Department of Population Health, University of Oxford, Oxford, UK*

10.1136/thorax-2024-BTSabstracts.435

Introduction Oral corticosteroids (OCS) are guideline treatment for all asthma attacks based on trials showing reduced relapse and hospitalisation rates and faster symptom



Abstract M7 Figure 1

resolution. These trials may overestimate treatment effect of mild attacks as they pre-date widespread inhaled corticosteroid use. Cumulative OCS exposure is associated with side effects including diabetes, osteoporosis, and cardiovascular disease.

Aims To define patients' and healthcare professionals' (HCPs) preferences for clinical outcomes and side effects of OCS treatment for asthma attacks.

Methods A discrete choice experiment (DCE) on patients and HCPs in the UK and New Zealand. Participants chose from 12 hypothetical pairs comprising OCS treatment benefits and risks. The DCE design was informed by the clinical literature, a focus group, and pilot testing. Choice models analysed preferences of the sample.

Results 824 patients and 171 HCPs completed the DCE. The strongest preference of patients and HCPs was to avoid side effects of OCS. (Figure 1). Patients with poorly controlled asthma accepted more side effects in exchange for less relapse.

Conclusions Patients and HCPs strongly value treatment of asthma attacks that avoids OCS side effects. In return, they are willing to trade-off substantial treatment benefits. Our data supports the concept of biomarker-directed trials of asthma attack treatment to minimise OCS exposure.

M8 MACHINE LEARNING TO PREDICT SYMPTOMATIC ASTHMA: INSIGHT FROM ZOE APP

WWE Ee, M Antonelli, R Russell, M Bafadhel. *King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.436

Introduction and Objectives Symptomatic asthma, indicative of airway hyperresponsiveness, not only predisposes individuals to progressive asthma and accelerated lung function decline, but also correlates with asthma severity and exacerbation risks.[1] The aim of this study is to analyse socio-demographic indicators from the Zoe App Study to identify demographic factors linked to symptomatic asthma, with the objective of refining personalised prevention and treatment strategies through predictive modelling.

Method Zoe App users with a pre-existing asthma diagnosis who reported respiratory symptoms at least 2 weeks before a positive COVID-19 test were identified as symptomatic asthma. Demographic data was selected and correlation with symptomatic asthma were calculated using odds ratios (OR). These demographic factors were then used as inputs in a logistic regression model to predict the likelihood of symptom presence or absence in asthma individuals.

Results Of the total Zoe App population, 11% (1285 of 11535 asthma-diagnosed users) were identified as exhibiting symptomatic asthma. The highest OR of symtomatic asthma was observed in females under 60 years, OR 1.72 (1.61 - 1.84, p<0.001), followed by current smokers (OR 1.37, 1.07 - 1.66, p=0.043). Individuals with hay fever had an OR 1.23 (1.11, 1.35, p=0.01) while obese individuals had an OR 1.21 (1.06, 1.36, p=0.012). Notably, older individuals of both genders had lower OR. Specifically, females over 60 years old had an OR 0.74 (0.60, 0.88, p<0.001), while males over 60 years old had an OR 0.63 (0.45, 0.80, p<0.001). Most variables remained significant in a multivariate regression model except for smoking status. Logistic regression for predictive modelling was employed with demographic data, yielding a precision of 0.90 for asymptomatic asthma and 0.14 for symptomatic asthma. The overall accuracy was 0.56, indicating a 56% correct prediction rate for symptomatic asthma.

Conclusion Although the model demonstrated potential in predicting the asymptomatic cohort, demographic data alone is not sufficient. Model accuracy may be enhanced by including biomarker and physiological measures into future studies.

REFERENCE

1. Bradding P, Porsbjerg C, Côté A, Dahlén SE, Hallstrand TS, Brightling CE. Airway hyperresponsiveness in asthma: the role of the epithelium. *Journal of Allergy and Clinical Immunology*. 2024 May;**153**(5):1181–93.

M9 THE IMPACT OF AN ASTHMATIC MATERNAL ENVIRONMENT IN PREGNANCY (MEP) ON MEDIATORS PREDISPOSING TO DEVELOPMENT OF EARLY-LIFE ASTHMA

[1]R Abadalkareem, [2]F Walbridge, [1]M Corcoles Fernandez, [2]L Lau, [3]N Vaughan-Spickers, [1]C Brown, [1]R Hampton, [1]K Raney, [1]J Forbes, [1]A Kermack, [1]MA Coleman, [2,4,5]HM Haitchi. *[1]Maternal Medicine, Princess Anne Hospital, University Hospital Southampton, Southampton, UK; [2]Allergy & Respiratory Research Group, School of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK; [3]Clinical Informatics Research Unit (CIRU), University of Southampton, Southampton, UK; [4]National Institute for Health and Care Research (NIHR) Southampton Biomedical Research Centre, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [5]Institute for Life Sciences, University of Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.437

Background Asthma is the most common chronic disease in children. Maternal asthma/allergy are risk factors for developing childhood asthma suggesting a genetic and environmental contribution. The mechanisms of how the maternal environment influences susceptibility to asthma remain unclear.

Aims To study effects of the MEP in female patients with asthma on associated mediators that may predispose to asthma in early life.

Methods 10 female patients with asthma (AS of n=81) and 7 healthy controls (HC of n=92) were randomly selected from our total MEP study population of 173. All patients were prospectively recruited prior to elective Caesarean birth. In this pilot study clinical data, maternal plasma (MP), amniotic fluid (AF), and cord plasma (CP) were analysed for a panel of inflammatory cytokines by Luminex assays. SPSS®/GraphPad software was used for statistical analysis; $p<0.05$.

Results AS and HC mothers were of similar age with a significantly higher BMI in AS. MP levels of IL-4, -5, granzyme B, leptin, CCL4 (MIP1ß) and chitinase 3 and CP levels of CCL11 (Eotaxin) & IL-8 were higher in AS mothers. IL-4, -6, -8, CCL4 were significantly higher and IL-5, Periostin, Leptin, CCL11 were lower in AF compared to MP or CP. There was no apparent effect of AS or BMI on the birthweight and no apparent effect of the new-born gender on cytokine levels.

Conclusion Multiple asthma-associated cytokine levels showed a trend or significant increase in MP and CP in AS mothers. This suggests asthma cytokines may be conferred from mothers to babies explaining their increased childhood asthma risk. These findings need to be confirmed in our ongoing MEP study cohort.

M10 THE COST-EFFECTIVENESS AND COST-UTILITY OF USING THE CONNECTED INHALER SYSTEM (CIS) FOR PREVENTING ASTHMA EXACERBATIONS AMONG ADULT SEVERE ASTHMA PATIENTS: PAYER PERSPECTIVE

[1]M Almutairi, [1]J Marriott, [1]Z Jalal, [1]J Okon, [2]LG Heaney, [3]S Gilbey, [1]A Mansur. *[1]University of Birmingham, Birmingham, UK; [2]Queen's University, Belfast, UK; [3]Heartlands Hospital, Birmingham, UK*

10.1136/thorax-2024-BTSabstracts.438

Background The Connected Inhaler System (CIS) records inhaler usage via electronic monitoring devices (EMDs) and exchanges data between patients and healthcare professionals (1). Although CIS was associated with a lower risk of exacerbations, the costs need to be considered (2).

Objective To evaluate the cost-effectiveness and cost-utility of the CIS compared to standard care for preventing exacerbations of adult severe asthma patients from a payer perspective using the decision tree model.

Methods Adult severe asthma patients put on CIS and control patients who received standard care (without EMD feedback) were included in the study. The model had two decision arms: CIS and standard care. The CIS consisted of EMD with four visits with an asthma nurse compared to the standard care with only four visits. Each may result in ICS adherence or nonadherence status; each status will result in patients with 1ï,[3] exacerbation (uncontrolled asthma) or free exacerbations (controlled asthma) over 12 months. The probabilities are shown in the decision tree (figure 1).

Results The model included 101 patients per CIS and standard care (figure 1). The CIS costs £288 less than the standard care per year, with a 50% lower chance of patients with 1ï,[3] exacerbation. Consequently, £13 is saved on CIS per averted exacerbation per year. The sensitivity analysis demonstrated the CIS cost from £395 to £191 less compared to standard care, with a saving of £17 to £8 per averted exacerbation per year. The CIS costs £288 less than the standard care per year and gains 0.03 quality-adjusted life year (QALY). Therefore, £9,600 is saved on CIS compared to standard care per gained QALY. The best/worst scenario highlights that CIS costs from £395 to £191 less than the standard care and gains 0.07 to 0.01 QALY. That means payers can save up to £19,100 on CIS for each QALY gained.

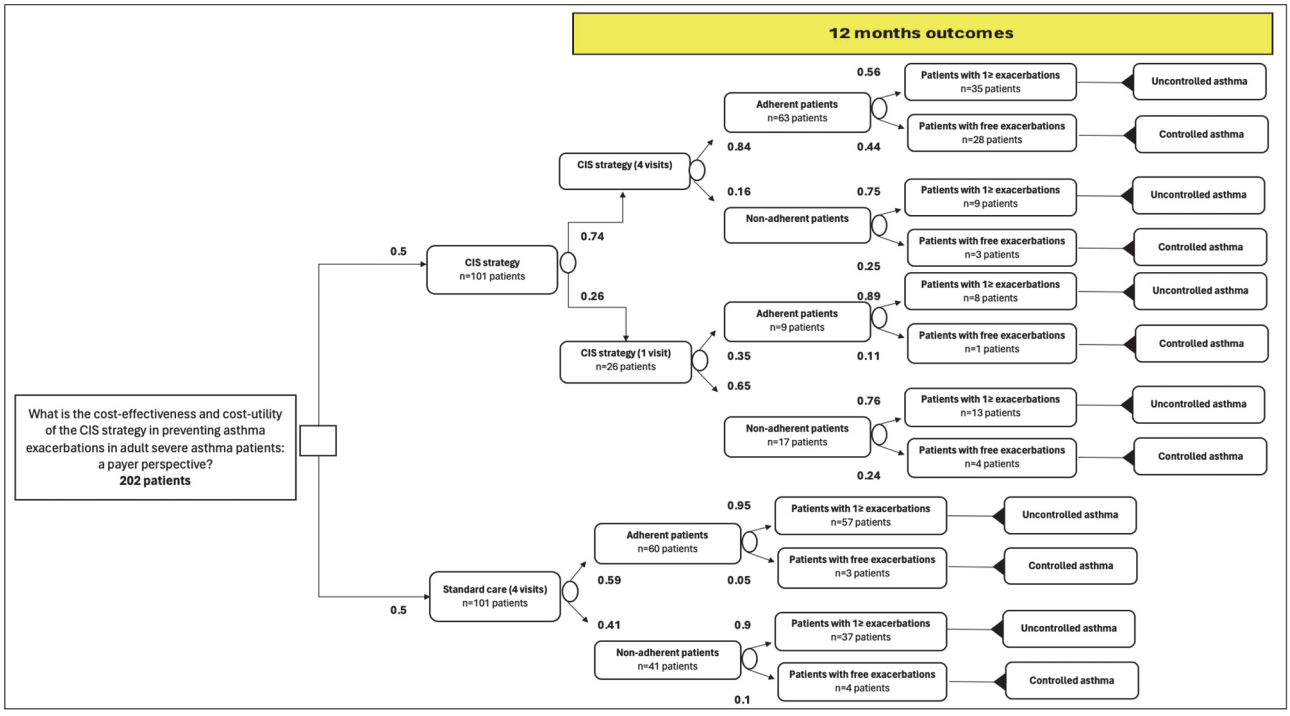
Conclusion This study shows that the CIS is cost-effective in preventing exacerbations and improving the quality of life among adults with severe asthma. Further research is needed to assess its impact on different levels of asthma severity, considering the frequency and severity of exacerbations.

M11 EVALUATION OF THE QUALITY OF MAINTENANCE AND RELIEVER THERAPY (MART) PRESCRIBING IN A LARGE UK PRIMARY CARE ASTHMA COHORT

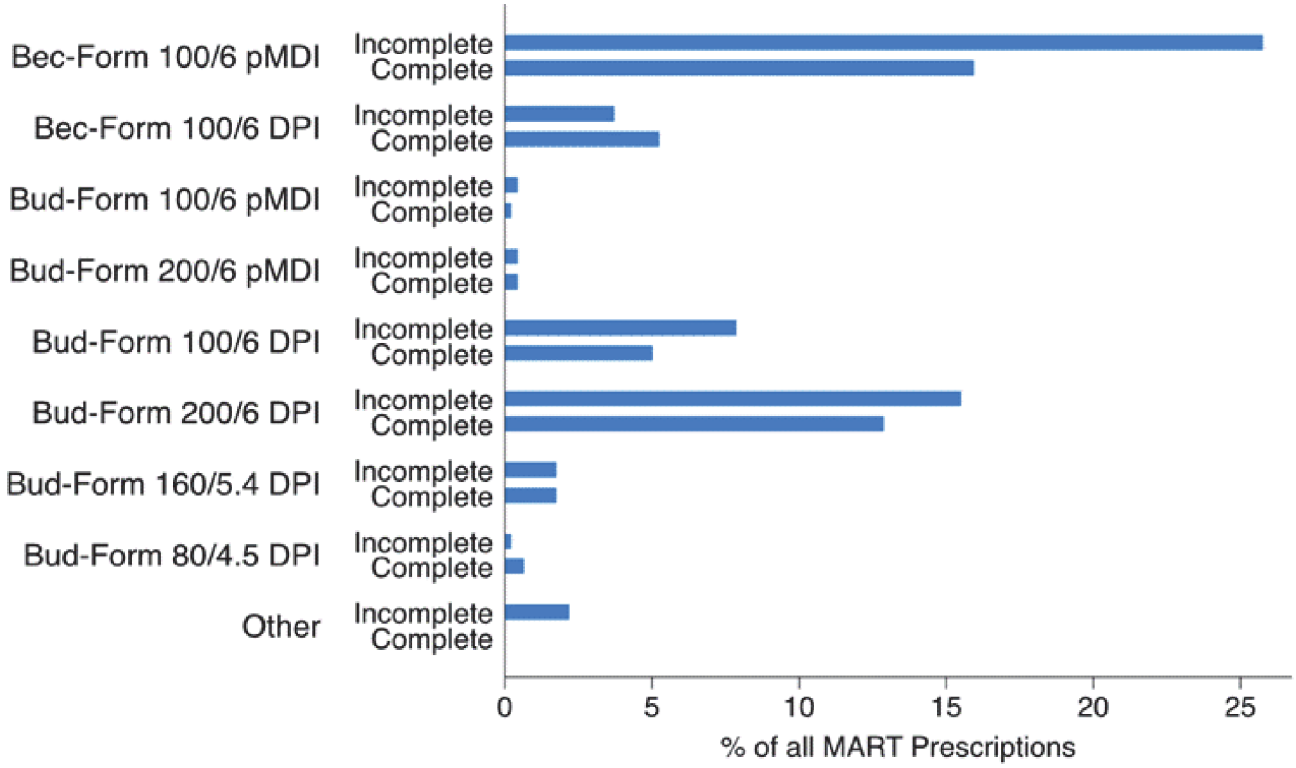
[1]MG Crooks, [1]L Pitel, [1]C Huang, [2]H Cummings, [1]J Cohen, [1]J Turgoose, [2]S Faruqi. *[1]Hull York Medical School, University of Hull, Cottingham, UK; [2]Hull University Teaching Hospitals NHS Trust, Hull, UK*

10.1136/thorax-2024-BTSabstracts.439

Introduction and Objectives The Global Initiative for Asthma (GINA) endorse combination inhalers containing an inhaled corticosteroid (ICS) and a fast and long-acting beta-2 agonist (formoterol) as the preferred reliever in asthma. ICS-formoterol used only as required in mild asthma has only been approved in the UK since 2023. However, ICS-formoterol has been approved for maintenance and reliever therapy (MART) since 2014 but clinicians' confidence prescribing MART is unknown. We investigate the quality of MART prescribing in a UK primary care setting.



Abstract M10 Figure 1 Decision tree model for the cost-effectiveness and cost-utility of the connected inhaler system (CIS strategy) compared to standard care for preventing asthma exacerbations of adult severe asthma patients: Payer perspective



Abstract M11 Figure 1 Proportion of complete and incomplete MART prescriptions by prescribed inhaler preparation and dose

Methods Electronic health records from 3 primary care networks (PCNs) within two sub-ICB locations were searched and data extracted for all asthma patients aged >18 years that had received at least 1 inhaled asthma treatment prescription within the past year. Prescription dosing instructions for ICS-LABA combination inhalers were reviewed to identify MART prescriptions. Prescription quality was assessed based on inclusion of adequate information to enable correct use. To be considered 'complete', prescription dosing instructions needed to include: i) instruction on regular daily dosing, ii) accurate instruction on reliever dosing, and iii) accurate instruction on maximum daily dosing.

Results Data were extracted for 3,980 adult asthma patients across 4 general practices within 3 PCNs. 458 distinct dosing instructions were consistent with MART. 232 (51%) dosing instructions were for beclomethasone-formoterol and 216 (47%) were for budesonide-formoterol at licensed MART doses. 10 (2%) dosing instructions were for inhaler combinations/strengths that do not have a MART license. Only 42% (n=194) MART prescription dosing instructions met all 3 criteria and were considered to reflect a 'complete' prescription. Regular dosing instructions were absent or incorrect in 6% (n=26), reliever dosing instructions were absent or incorrect in 47% (n=214), and maximum daily dosing instructions were absent or incorrect in 34% (n=155). The proportion of complete and incomplete prescription dosing instructions by inhaler preparation are presented in a figure 1.

Conclusions MART prescribing quality in UK primary care is variable and frequently does not include adequate dosing information to enable correct use. Healthcare professional education, electronic prescribing systems and MART specific asthma action plans represent potential solutions to support correct MART prescribing and use.

M12 MANAGEMENT OF ASTHMA ON A VIRTUAL WARD MAY PROVIDE SUSTAINED IMPROVEMENT IN ASTHMA CONTROL THROUGH RATIONALISING PRESCRIBING AND IMPROVING ADHERENCE TO INHALED CORTICOSTEROIDS

[1]J Priestley, [1]KL Jackson, [1,2]O Umerah, [1,2,3]AC Murphy, [1,2]RH Green. *[1]University Hospitals of Leicester NHS Trust, Leicester, UK; [2]Institute for Lung Health, NIHR Biomedical Research Centre, University Hospitals of Leicester, Leicester, UK; [3]DeMontfort University, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.440

Introduction We present data on the impact of a multidisciplinary asthma virtual ward (VW) providing clinical monitoring and treatment optimisation for patients with exacerbations of asthma.

Methods We collected medicine adherence data over the previous year for consecutive patients admitted onto the asthma VW. The medication possession ratio (MPR) for preventer medication, number prescribed short-acting β2-agonist (SABA) inhalers and oral corticosteroids (OCS) were recorded. Individual treatment plans were delivered by the VW clinicians. MPR pre-VW admission and 6-months post were compared.

Results 75 patients (mean age 48.2 years [range 18–95]) were admitted onto the asthma VW between November 2022-July 2023.

31 (41%) patients had a new diagnosis of asthma. All were ICS-naïve, however 13 (41.9%) had previously been prescribed Salbutamol; some on repeat. 6 patients (19.4%) had also previously been prescribed OCS.

There were 44 patients with an existing asthma diagnosis, 2 of whom were on MART. For the 42 patients on separate ICS and SABA, mean SABA issue rate was 5.6 per year (SD 6.5). For all patients with pre-existing asthma, mean daily equivalent BDP (beclometasone diproprionate) dose was 860

Abstract M12 Table 1 Medication data in patients with known asthma before and after asthma VW

	12 months prior to VW	6 months post VW	P value
Mean daily dose of prednisolone in mg (SD)	1.44 (1.9)	0.74 (1.7)	p=0.08
Mean ICS MPR (SD)	0.77 (SD 0.5)	0.88 (SD 0.38)	p=0.05*
Number and percentage with good ICS adherence (MPR> 0.75)	19 (43%)	27 (61%)	p=0.03*

micrograms, with an average of 2 acute OCS courses in the preceding 12 months. In patients with a pre-existing asthma diagnosis evaluated 6 months after VW intervention there was a significantly higher proportion of patients demonstrating optimal ICS adherence, a significantly higher mean MPR and a trend to reduced OCS use compared to baseline (table 1). For the total cohort of 75 VW patients, at six months post-VW discharge the mean SABA issue rate was 2.65, with a mean daily OCS dose 0.58mg (SD 1.6) and mean ICS MPR of 0.87 (SD 0.38).

Conclusion A significant proportion of patients admitted with acute new asthma have previously been prescribed SABA and/or OCS, suggesting missed opportunities to initiate ICS. In those with pre-existing asthma, sub-optimal ICS adherence was common. At six-months following VW intervention, there was a significant improvement in ICS adherence, with a trend towards reduced OCS exposure. Managing patients with acute asthma through a VW is feasible and may improve asthma control by improving medication adherence.

M13 DISEASE BURDEN IN PATIENTS WITH EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS (EGPA) IN ENGLAND: A RETROSPECTIVE COHORT STUDY

[1]S Siddiqui, [2]P Dolin, [2]A Shavit, [3]J Rowell, [4]C Edmonds, [2]D Kielar, [5]A Lacetera, [5]P Suárez-Sánchez, [5]C Ariti, [5]B Podmore, [5]A Kitchin Velarde, [6]SY Chen. *[1]National Heart and Lung Institute, NIHR Imperial Biomedical Research Centre, Imperial College London, London, UK; [2]BioPharmaceuticals Medical, AstraZeneca, Cambridge, UK; [3]Market Access and Pricing, AstraZeneca, Cambridge, UK; [4]Market Access and Pricing, AstraZeneca, Gaithersburg, USA; [5]OXON Epidemiology, Madrid, Spain; [6]BioPharmaceuticals Medical, AstraZeneca, Gaithersburg, USA*

10.1136/thorax-2024-BTSabstracts.441

Introduction and Objectives EGPA is a rare and chronic multisystem disorder, associated with substantial disease burden. This retrospective observational cohort analysis characterised the disease burden of EGPA for patients in England.

Methods The patient identification period was 01 January 2006–28 February 2019, with follow up until 28 February 2020. Primary care data from the Clinical Practice Research Datalink (CPRD) Aurum database were linked to outpatient and emergency services data from the Hospital Episode Statistics (HES) in England. Patients with an EGPA diagnosis (SCTID: 82275008 or ICD-10 M30.1) were identified from CPRD Aurum or HES records. Patients were required to have ≥1 year of medical records before EGPA diagnosis (index date [ID]). Prognosis (five factor score [FFS] at diagnosis), comorbidities (at ID) and the development of EGPA manifestations (during follow-up) were assessed.

Abstract M13 Table 1 Comorbidities at index date

	(N=486)
Obstructive airway disease	396 (81.5)
Asthma	370 (76.1)
Bronchiectasis	58 (11.9)
Chronic obstructive pulmonary disease	63 (13.0)
Malignancies and myeloproliferative diseases	74 (15.2)
Autoimmune disorders	53 (10.9)
Rheumatoid arthritis	22 (4.5)
Inflammatory bowel disease (Crohn's disease & ulcerative colitis)	9 (1.9)
Psoriasis or psoriatic arthritis	7 (1.4)
Idiopathic thrombocytopenic purpura	5 (1.0)
Other	10 (2.1)
Nasal polyposis	92 (18.9)
Throat and chest pain	136 (28.0)
Back pain (dorsalgia)	90 (18.5)
Allergic rhinitis	83 (17.1)
Ischaemic heart disease	59 (12.1)

All data are presented as n (%).

Results 486 patients with EGPA were identified. The mean (standard deviation [SD]) age at ID was 57.9 (15.2) years; 50.2% were women, and 33.3% were from quintile 4 or 5 (most deprived) of socioeconomic deprivation. The mean (SD) follow-up period was 5.4 (3.7) years. At ID, 79.8% had a history of asthma, 18.9% had a history of nasal polyps, and 17.1% had a history of allergic rhinitis. Overall, 11.3% of patients had comorbid autoimmunity including inflammatory bowel disease, idiopathic thrombocytopenic purpura and rheumatoid arthritis (**table 1**). More patients had an FFS of 1 and 2 when using the 2009 score system (44.7% and 29.2%, respectively; p<0.001) versus the 1996 system (20.4% and 3.3%, respectively). This shift to higher scores was largely driven by the older age component. At 6 months after ID, 26.1% of patients developed one or more EGPA manifestations; 9.7% with a major vasculitic event, including mononeuritis multiplex (2.7%), congestive heart failure (1.6%) and cardiomyopathy (1.2%). Additional new events included the development of asthma (1.2%), stage II/III CKD (2.5%), nasal polyps (1.9%) and hypertension (2.7%).

Conclusions Many patients had a comorbidity related to EGPA at ID, including asthma and nasal polyposis. Around one quarter of patients experienced a new EGPA symptom during follow up, and had high FFS scores, highlighting the high disease burden in these patients.

M14 ASSESSMENT OF PRIMARY CARE CODING ACCURACY FOR EGPA IN THE UK

[1,2]F Haris, [1]M Fernandes, [1]L Green, [1]L Thomson, [1]C Roxas, [1]J Lam, [1]G d'Ancona, [1,2]J Gates, [1]J Dhariwal, [1,2]AM Nanzer, [1,2]DJ Jackson. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK; [2]School of Immunology and Microbial Sciences, King's College London, London, UK*

10.1136/thorax-2024-BTSabstracts.442

Introduction Eosinophilic Granulomatosis with Polyangiitis (EGPA) is a multisystem ANCA-associated vasculitis, characterised by asthma and eosinophilia. EGPA is associated with considerable morbidity from both disease manifestations as well as high levels of corticosteroids routinely used to treat it.

Recently, the anti-IL5/5R biologic therapies mepolizumab and benralizumab have been shown to be highly effective steroid-sparing therapies in the management of EGPA making the accurate identification of patients with this condition an important priority.

According to National databases using SNOWMED coding, EGPA prevalence in the UK is currently reported to be 45.6 cases per 1 000 000 with an incidence of 4.0 per 1 000 000 person-years.[1] However, it is unknown whether a failure to code cases accurately in primary care may lead to an underestimation of cases. This may impact modelling used by NICE in any future technology appraisal for EGPA.

Methods We conducted a review of the summary care records of 100 patients with EGPA under our tertiary EGPA service to establish the proportion who had appropriate SNOWMED coding of either EGPA or its previous nomenclature, Churg-Strauss Syndrome.

Results Of the 100 patient records assessed, 16% were coded under the current terminology of EGPA and 65% were coded with the older term of Churg-Strauss Syndrome (CSS). The remaining 19% had neither an EGPA nor a CSS code in their primary care records.

Conclusion Based on a sample cohort of 100 patients, current rates of EGPA in the UK population based on primary care databases such as CPRD are likely to be underestimating the prevalence by approximately 20%. Additional research is required to investigate the rate of misdiagnosis in patients currently coded as having EGPA/CSS.

REFERENCE

1. Hwee J, Harper L, Fu Q, Nirantharakumar K, Mu G, Jakes RW. Prevalence, incidence and healthcare burden of eosinophilic granulomatosis with polyangiitis in the UK. *ERJ Open Res.* 2024 May 13;**10**(3):00430–2023.

'Through the Looking Glass' – Airway disease therapies in the real world

M15 POOR ADHERENCE TO INHALED CORTICOSTEROIDS ASSOCIATED WITH ASTHMA-RELATED INTENSIVE CARE ADMISSIONS

N Khine, P Dennison, H Rupani. *University Hospital Southampton, Southampton, UK*

10.1136/thorax-2024-BTSabstracts.443

Background Inhaled corticosteroids (ICS) are the cornerstone of asthma management. Poor adherence to ICS is a known risk factor for asthma exacerbations. Younger age, depression and excessive use of short-acting bronchodilators are associated with increased risk of asthma-related intensive care unit (ICU) admission.[1] We reviewed the relationship between ICS adherence and acute severe asthma (ASA) necessitating ICU admission.

Methods Clinical details of all adult asthma patients admitted to the ICU over a 24-month period at a tertiary care hospital were retrospectively reviewed. ICS adherence was evaluated using Medication Possession Ratio (MPR) in the 12 months prior to ICU admission, with MPR $\geq$75% indicating adherence.

Results Over 24 months, 29 patients were admitted to the ICU coded as ASA. 5 were excluded due to unavailable prescription data. Of 24 patients, 10 (42%) were known to secondary care, 11 (45%) were male, mean age 44.5 years (SD 15.03). The mean ICU stay was 3.5 days (SD 3.56).

When admitted to ICU, the median blood eosinophil count was 400 cells/uL (IQR 200–750).18 patients (75%) were on an ICS-containing inhaler. 6 patients (25%) were ICS-naïve (but were prescribed salbutamol), 2 of these were newly diagnosed with asthma when admitted to ICU. 20 (83%) had experienced at least one OCS-treated exacerbation in the year before admission.

12/18 patients (67%) were non-adherent to ICS, with an average MPR of 50%. 10 patients (42%) had no ICS prescribed in the month prior to ICU admission. 6 patients (25%) required mechanical ventilation, of these, 4 patients had not collected an ICS prescription in the month prior to admission. Regression analysis showed a significant negative relationship between MPR and mechanical ventilation. For remaining 18 patients,10 required non-invasive ventilation/high flow nasal oxygen, and 8 were admitted for close observation and intravenous bronchodilators.

Conclusion Our results show that most patients admitted to the ICU due to ASA were non-adherent to ICS prior to admission with one in six patients not prescribed regular ICS therapy. Ensuring all asthma patients are prescribed an ICS-containing inhaler and supporting adherence is essential for improving asthma outcomes.

REFERENCE

1. Simms-Williams, *et al. BMJ Open Resp Res* 2023.

M16 REAL-WORLD OUTCOMES FROM USE OF ENERZAIR INHALERS WITH PROPELLER MONITOR CONNECTED INHALER SYSTEM IN A REGIONAL SEVERE ASTHMA ADHERENCE CLINIC

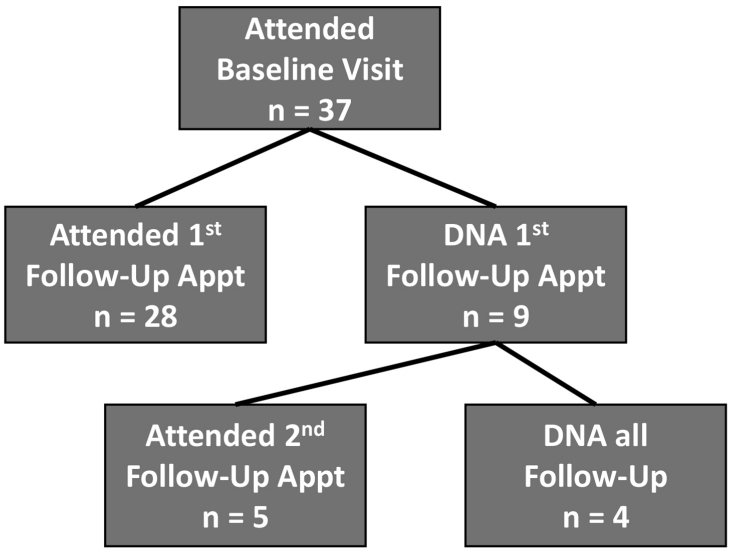
A Dewshi, C Chen, J Tay, FR Ali, S Quantrill, PE Pfeffer. *Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.444

Background Adherence to inhaled corticosteroids is a major issue requiring assessment prior to decision on initiating biologics in patients with severe asthma. Use of FeNO suppression testing with a digital connected inhaler system is increasingly viewed as gold-standard for assessing adherence. Some digital connected inhaler systems come with patient smartphone App and clinician dashboard, and others with only patient App through which to review inhaler usage. As poor medication adherence and poor appointment attendance are associated, there are potential advantages to review through a clinician dashboard.

Aim To review adherence assessment outcomes at a regional severe asthma service for patients using an Enerzair inhaler with Propeller monitor connected inhaler system, reviewable only through the patient's smartphone.

Methods Outcomes for all patients commenced on the Enerzair connected inhaler system for adherence monitoring from Nov'22- Feb'24 were reviewed. Baseline medication possession ratio (MPR) for their preventer inhaler, attendance at adherence follow-up clinics, results of FeNO suppression testing, and systemic assessment decisions at end of adherence monitoring were assessed. Positive FeNO suppression was defined as a baseline FeNO $\geq$45ppb that decreased by $\geq$42% with monitored inhaler usage.



		Management Decision: Active monitoring	Started on biologic	Further assessment		
FeNO Suppression	FeNO low baseline	10	2	2	total	14
	FeNO not suppressed	4	3	2	total	9
	FeNO suppressed	7	1	0	total	8
	Unable to do FeNO	2	0	0	total	2
		total 23	total 6	total 4		33

Abstract M16 Figure 1 Adherence clinic outcomes

Results Over this time-period 37 patients agreed to adherence monitoring and FeNO suppression tests with the Enerzair connected inhaler system (figure 1).

28 patients (average baseline MPR 65%) attended their first follow-up adherence clinic visit at 1–3 months after baseline visit, 5 (average MPR 57%) did not attend first follow-up adherence clinic but attended a re-scheduled appointment. 4 (MPR 50%) patients did not attend any adherence follow-up.

Of 9 patients whose FeNO did not suppress with adherence monitoring, 3 (33%) started on a biologic, 4 started active monitoring and 2 required other assessments before final decision. Of the 8 patients whose FeNO did suppress with adherence monitoring only 1 (13%) started on a biologic.

Discussion In patients who agree to FeNO suppression testing, attendance at follow-up visits was high and lack of a clinician dashboard to remotely review adherence was not a major limitation to the service. Adherence remains only one aspect of multi-disciplinary assessment in severe asthma prior to initiating biologics.

M17 EFFECTIVENESS OF BIOLOGIC AGENTS IN SEVERE ASTHMA PATIENTS: RETROSPECTIVE STUDY OF 275 CASES IN TIER 3 CENTRE

A Attia, M Shan, A Cooper, E Idris. *Royal Stoke University Hospital, Newcastle Under Lyme, UK*

10.1136/thorax-2024-BTSabstracts.445

Background Severe asthma poses significant challenges both for patients and healthcare providers. Novel biologic therapies have shown better treatment outcomes for the patients. We analyse remission in a cohort of patients who were treated with biologic agents.

Methods List of patients on the trial with different biologic agents were compiled. Patients had a pre-biologics baseline assessment. Factors considered were smoking status; IgE level, Specific IgE, Lung function tests. Our objective to evaluate biologic use and associated exacerbation outcomes in Tier 3 centre. The primary outcome 50% reduction in oral corticosteroid use and weaning or stopping maintenance steroids.

Abstract M17 Table 1

Biologic agent	No. of patients	Success	Fail	Switch	Success Rate (%)	Remarks
Xolair	34	23	11	5	67.65%	
Dupilumab	12	9	2	1	81.82%	1 decline
Mepolizumab	97	52	40	18	56.52%	2 decline, 3 not attend
Benralizumab	124	72	34	14	67.92%	5 decline, 6 not attend, 7 new.
Tezepelumab	8	-	-	-	Unable to analyse	2 died with other disease, 6 new

Results A total of 275 patients were analysed. Among the patients treated with Xolair (omalizumab), 67.65% (23 out of 34) achieved successful treatment outcome. Dupilumab 81.82% (9 out of12). Mepolizumab 52 out of 92 patients on Mepolizumab resulted in 56.52% success. Benralizumab had a success rate of 67.92% (72 out of 106). Tezepelumab data was inconclusive due to limited treatment duration and unrelated patient deaths. As expected, there was a high prevalence of comorbidities, including obesity, obstructive sleep apnoea, sinus and nasal polyp disease, COPD, gastroesophageal reflux, anxiety, and depression, all of which can contribute to worse disease control.

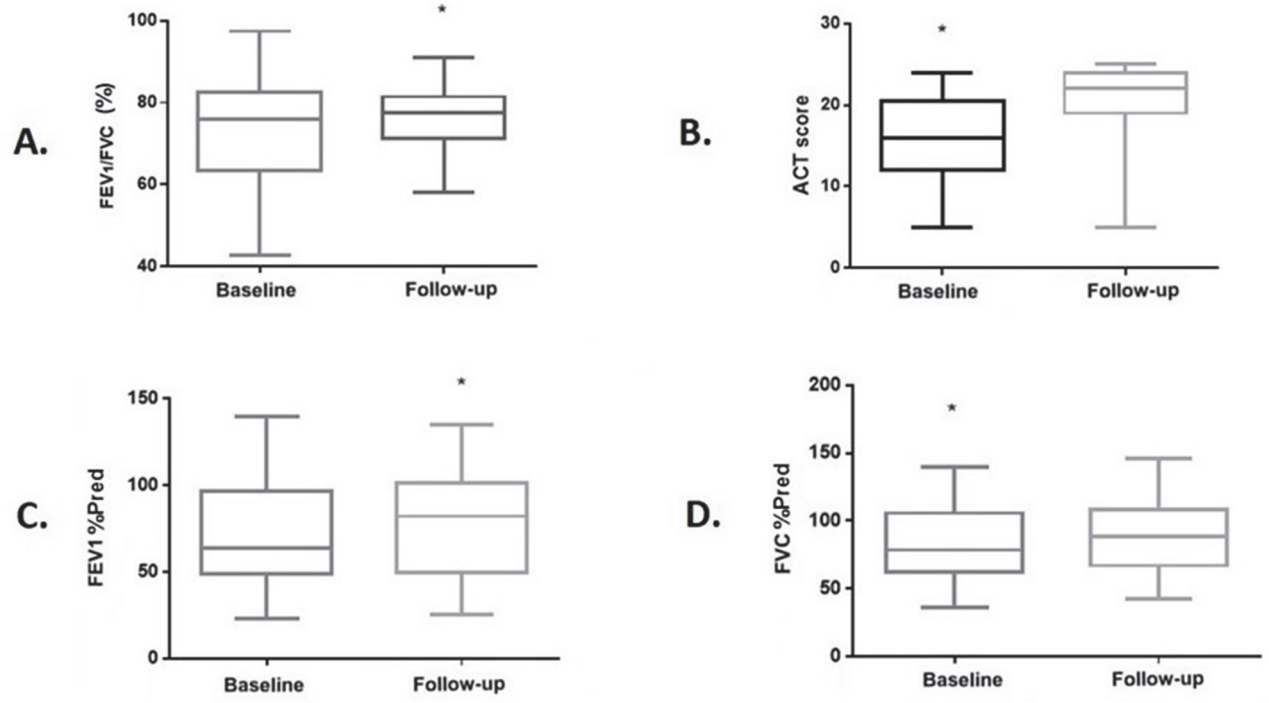
Conclusion This retrospective analysis indicates that biologic agents offer substantial benefits in managing severe asthma. Switching of biologic therapies for severe asthma patients were associated with meaningful reductions in exacerbations. With increasing biologic options available, individualized approaches to therapy may improve patient outcomes.

M18 THE CRETAN REAL-LIFE EXPERIENCE OF THE USE OF BIOLOGICS IN THE MANAGEMENT OF RESPIRATORY DISEASES

[1]N Bizymi, [1]AM Matthaiou, [1]A Trachalaki, [1]S Vizirianaki, [2]G Liva, [1]E Vasarmidi, [1]E Bibaki, [2]A Karatzanis, [1]N Tzanakis, [1]KM Antoniou. *[1]Laboratory of Molecular and Cellular Pneumonology, School of Medicine, University of Crete and Department of Respiratory Medicine, University Hospital of Heraklion, Heraklion, Greece; [2]Department of Otorhinolaryngology, University Hospital of Heraklion, Heraklion, Greece*

10.1136/thorax-2024-BTSabstracts.446

Introduction and Objectives Monoclonal antibodies targeting specific inflammatory pathways have been proven to play an important role in the management of patients with respiratory diseases. Mepolizumab targets interleukin (IL) 5 and is used for the treatment of severe eosinophilic asthma (SEA), chronic rhinosinusitis with nasal polyposis (CRwNP), and eosinophilic granulomatosis with polyangiitis (EGPA), while benralizumab blocks the alpha subunit of the IL-5 receptor and is used for the treatment of SEA. Tezepelumab inhibits thymic stromal lymphopoietin and has recently been introduced in the management of asthma. This study aimed to record all patients with respiratory diseases on biologic therapy that are followed-up at the University Hospital of Heraklion, which is



Abstract M18 Figure 1 Distribution of (A) FEV1/FVC ratio (%) in the group of asthma patients at baseline prior to mepolizumab initiation and at follow-up after mepolizumab initiation, (B) the ACT scores in the group of asthma patients at baseline prior to benralizumab initiation and at follow-up after benralizumab initiation, (C) the percentage of predicted FEV1 in the group of asthma patients at baseline prior to benralizumab initiation and at follow-up after benralizumab initiation, and (D) the percentage of predicted FVC in the group of asthma patients in the baseline prior to benralizumab initiation and at follow-up after benralizumab initiation. The box plots show the median (horizontal line) and the 25% and 75%

the referral centre in Crete, and to assess the real-life efficacy and safety of the drugs in this cohort.

Methods In this observational single-centre study, all patients on treatment with mepolizumab, benralizumab, and tezepelumab were recorded, and their clinical and laboratory features were collected.

Results Regarding mepolizumab, 120 patients with lone SEA (46.6%), combined SEA/CRwNP (42.5%), lone CRwNP (6.7%), and EGPA (4.2%) were recorded. In the SEA patients with measurements available at baseline and follow-up, the improvement in FEV_1/FVC was statistically significant (Wilcoxon, p=0.0253). Regarding benralizumab, 46 SEA patients were included. A significant improvement in Asthma Control Test score (Wilcoxon, p=0.0005) and pulmonary function parameters (Wilcoxon, p=0.0045 for percentage of predicted FEV_1, p=0.0016 for percentage of predicted FVC) was observed at follow-up compared to baseline. Tezepelumab was initiated in a total of six SEA patients, three being naive to biologics and three previously receiving either mepolizumab or benralizumab with unsatisfactory response; treatment was discontinued in one of them due to sustained sore throat. The majority of the patients demonstrated improvement of their chronic symptoms after initiation of biologic therapy and no severe adverse events related to the use of none of the drugs were reported.

Conclusions The real-life experience of the use of biologics in this cohort confirms and emphasises the satisfactory efficacy and safety of these drugs in asthma and beyond.

M19 REAL WORLD EFFECTIVENESS OF TEZEPELUMAB IN SEVERE ASTHMA WITH FUNGAL SENSITISATION

[1]C Roxas, [1,2]F Haris, [1,2]J Gates, [1]M Fernandes, [1]L Green, [1]L Thomson, [1]J Lams, [1]G d'Ancona, [1,2]AM Nanzer, [1,2]DJ Jackson, [1]J Dhariwal. *[1]Guy's Severe Asthma Centre, Guy's and St Thomas' NHS Trust, London, UK; [2]School of Immunology and Microbial Sciences, King's College London, UK*

10.1136/thorax-2024-BTSabstracts.447

Introduction Tezepelumab targets the epithelial derived alarmin thymic stromal lymphopoietin (TSLP) resulting in downregulation of multiple downstream T2 inflammatory pathways. Severe asthma with fungal sensitisation (SAFS) is a complex clinical phenotype associated with poorly-controlled T2 inflammation and significant morbidity. There is limited data on the effectiveness of tezepelumab therapy in this patient group.

Methods We performed a retrospective analysis of a cohort of patients with SAFS treated with tezepelumab at our centre. SAFS was defined as presence of positive specific IgE to $\geq$ 1 fungal aeroallergen. ABPA was defined as a positive specific IgE to *aspergillus fumigatus*, raised peripheral blood eosinophil count and total IgE of $\geq$ 1000 IU/L. Baseline clinical characteristics and clinical outcomes at 24-weeks were evaluated.

Results 16 patients (38% female; mean age 51±19) treated with tezepelumab who had complete clinical data at 24-weeks were included in the analysis. All 16 patients (100%) were sensitised to *aspergillus fumigatus* and 4/16 patients (25%) met diagnostic criteria for ABPA. 5/16 patients (31%) were on maintenance oral corticosteroids (mOCS) prior to initiation of treatment with tezepelumab. There was a significant reduction in annualised exacerbation frequency at 6 months compared to the year prior to initiation of tezepelumab from 2.5±1.3 to 0.6±1.1 (p<0.001). No significant change was observed in ACQ-6 (2.3±1.2 to 2.0±1.3) or FEV1 (L) (2.17±1.14 to 2.17±1.03). Compared to baseline there was a significant reduction in FeNO at 24-weeks (38ppb [35–78] vs 27ppb [19–60]; p=0.012) and a trend towards reduction in total IgE (2529 IU/L [857–6508] vs 1432 IU/L [468–3314]; p=0.064). There was no change in blood eosinophil count (0.3±0.3 to 0.2±0.1). The median mOCS dose reduced from 10mg (3.75–10) to 3mg (1.5–5) at 24-weeks.

Discussion We have demonstrated that treatment with tezepelumab is associated with a reduction in exacerbation frequency and improvement in T2 biomarkers in a real-world cohort of patients with SAFS including a subgroup of patients with ABPA.

M20 EFFECTIVENESS OF TEZEPELUMAB IN PATIENTS WITH DIFFICULT-TO-TREAT SEVERE ASTHMA: EARLY INSIGHTS FROM THE TEZEPELUMAB PATIENT ACCESS PROGRAMME

[1]P Patel, [2]H Rupani, [3]P Pfeffer, [4]A Mansur, [5]J Lipworth, [5]C Lupton, [5]M Watt, [6]C Clewes, [6]T Bailey, [6]O Rajkovic-Hooley, [7]H Burhan. *[1]Royal Brompton Hospital, London, UK; [2]University Hospital Southampton NHS Foundation Trust, Southampton, UK; [3]Barts Health NHS Trust, London, UK; [4]Birmingham Heartlands Hospital, Birmingham, UK; [5]AstraZeneca UK, London, UK; [6]Adelphi Real World, Bollington, UK; [7]Royal Liverpool University Hospital, Liverpool, UK*

10.1136/thorax-2024-BTSabstracts.448

Introduction and Objectives Tezepelumab is indicated in people $\geq$12 years with severe asthma (SA) inadequately controlled despite high dose inhaled corticosteroids plus another maintenance treatment. Clinical trials demonstrated favourable efficacy and safety among patients with SA, irrespective of biomarkers. Real-world evidence for tezepelumab is necessary to demonstrate effectiveness outside of trials. The Tezepelumab Patient Access Programme (TPAP) study aims to evaluate characteristics, treatment patterns and outcomes of adult patients with SA in the real-world.

Methods A retrospective, observational, multi-centre chart review is ongoing in six UK SA centres. Patients with SA who participated in the patient access programme with an index date (first dose of tezepelumab) between 1stJanuary 2023 and 19th July 2023 were included. Data were extracted from patients' medical records. This interim analysis (n=46) describes patient's characteristics and annualised asthma exacerbation rates (AAER) in the baseline (12 months prior to index), at index, and in the 12 months post-index.

Results Baseline demographics and clinical characteristics are described in table 1. Median (interquartile range [IQR]) FeNO closest to index was 15.5 (12.0–21.0) ppb, eosinophil count was 100.0 (0.0–200.0) cells/µL. 32.6% (15/46) had failed another biologic in the preceding 12 months. At index, 69.6% (32/46) were on maintenance oral corticosteroid (mOCS), median (IQR) daily dose 11.8 (8.8, 20.0) mg. In these patients (n=32), median (IQR) mOCS dose had reduced to 6.5 (3.0–17.5) mg at 12 months post-index. Overall 52.2% (24/46) had ongoing mOCS. Mean (SD) AAER was 4.0 (2.4) during baseline, and 2.2 (3.3) in the 12 months post-index (45% relative rate reduction). 59.1% (26/44) had $\geq$50% reduction in AAER or mOCS dose. 86.7% (39/45) remained on tezepelumab.

Conclusions This early interim analysis demonstrates that the initial cohort of UK patients who commenced on tezepelumab were a difficult to treat, biomarker low cohort with high

Abstract M20 Table 1 Baseline demographics and clinical characteristics

Age at index, mean (SD)	52.1 years (13.5)
Female, n (%)	36/46 (78.3%)
Body mass index ≥ 30 kg/m^2, n (%)	23/43 (53.5%)
Ethnicity	
White, n (%)	42/46 (91.3%)
Black, African or Caribbean, n (%)	2/46 (4.3%)
Other, n (%)	2/46 (4.3%)
Ex-smoker at index, n (%)	25/46 (54.3%)
Comorbidities, n (%)	
Obesity	25/46 (54.3%)
Diabetes without chronic complications	9/46 (19.6%)
At least 1 comorbidity	46/46 (100%)
Obstructive sleep apnoea	9/46 (19.6%)
Gastro-oesophageal reflux	9/46 (19.6%)
Allergies	8/46 (17.4%)
Cardiovascular diseases	8/46 (17.4%)
Breathing pattern disorder	6/46 (13.0%)
Osteoporosis	6/46 (13.0%)
Chronic rhinitis	6/46 (13.0%)
Respiratory infections	5/46 (10.9%)
Most recent predicted FEV_1 post-bronchodilator in baseline period (median%)	59.0% (IQR 52.0, 86.4)

burden of mOCS and comorbidities, often ineligible for other biological therapies. Despite this, 59.1% had ≥50% reduction in AAER or mOCS dose, and a 45% reduction in AAER was observed. A limitation here is the low sample size; the final analysis will include >180 patients from 8 centres.

M21 THE EFFECT OF DUPILUMAB ON ASTHMA EXACERBATION FREQUENCY INCLUDING PATIENTS ON MAINTENANCE ORAL STEROIDS

[1]S Case, [1]A Pugh, [2]L Partridge, [1]K Pink. *[1]Cardiff and Vale University Health Board, Cardiff, UK; [2]Hywel Dda University Health Board, Carmarthen, UK*

10.1136/thorax-2024-BTSabstracts.449

Introduction and Objectives NICE recommends dupilumab in severe type 2 inflammation driven asthma with eosinophils ≥150cells/μL, FeNO ≥25ppb and ≥4 exacerbations annually.[1] Although high-cost therapies in Wales are not regulated through the Blueteq system, the South Wales MDT aims to follow its guidance. This excludes patients taking maintenance oral steroids from dupilumab treatment. However, as dupilumab's Blueteq content was unconfirmed when it became available in Wales, some patients taking oral steroids were treated, with a primary aim of exacerbation reduction. Clinical trials of dupilumab in glucocorticoid-dependent asthma used a higher dose than that approved by NICE.[2]

Methods Retrospective 12-month analysis from an initial patient cohort commenced on 200mg dupilumab fortnightly.

Results 34 patients were identified. Five were excluded: 2 stopped treatment early due to side effects, one moved out of area and 2 did not attend annual review. Of the 29 remaining patients, 15 (52%) were taking maintenance prednisone.

Table 1 details changes in exacerbation frequency and steroid dosing following 12 months of treatment.

Abstract M21 Table 1 Exacerbation frequency and steroid dosing following 12 months of dupilumab treatment

	Whole Cohort N = 29	Baseline Prednisolone N = 15	No Baseline Prednisolone N = 14
Average exacerbation frequency			
Baseline (range)	6 (4-12)	6 (4-12)	5 (4-10)
12 months (range)	2 (0-6)	3 (0-6)	1 (0-5)
Average difference at 12 months (%)	-4 (-62%)	-3 (-47%)	-4 (-78%)
Patients with ≥50% reduction in exacerbation frequency (%)	22 (76%)	8 (53%)	14 (100%)
Average prednisolone dose			
Baseline (range)		19mg (5-40)	
12 months (range)		7mg (0-20)	
Average difference at 12 months (%)		-12mg (-56%)	
Patients who had stopped prednisone at 12 months (%)		2 (13%)	

Of the 15 patients on baseline steroids, 6 (40%) experienced a ≥50% reduction in both exacerbation frequency and steroid dose. A further 2 (13%) experienced a ≥50% reduction in exacerbation frequency alone, 4 (27%) ≥50% reduction in steroid dose alone and 3 (20%) experienced neither.

Conclusions A 200mg dose of dupilumab fortnightly enabled meaningful steroid reduction in addition to exacerbation prevention this small cohort of patients.

REFERENCES

1. NICE TA751 Dupilumab for treating severe asthma with type 2 inflammation, 2021.
2. Rabe KF, *et al. N Engl J Med*. 2018;**383**:35–48.

M22 COPD: CAN WE USE THE BLOOD EOSINOPHIL COUNTS TO PREDICT THE RISK AND SEVERITY OF EXACERBATION

M Nayyar, S Lanka. *Calderdale and Huddersfield NHS Foundation Trust, Huddersfield, UK*

10.1136/thorax-2024-BTSabstracts.450

Introduction GOLD recommends measuring blood eosinophil counts to guide the use of ICS in patients with COPD. Studies looking at the role of blood eosinophil counts in predicting the future risk of COPD exacerbation have produced inconsistent results.[1] Most patients admitted to hospital with a COPD exacerbation have undergone a full blood count in the year leading up to the admission. This provides an easy opportunity to intervene early to reduce the risk and severity of exacerbation.

Methods We retrospectively reviewed the case notes of patients admitted over one month to our hospital with an exacerbation of COPD. Those with a FBC recorded in the last 12 months were identified. Data including the highest blood eosinophil count over this period was collected for each patient. Outcomes such as acute hypercapnic respiratory failure, length of stay and re-admission within 30 days were studied.

Results 98 patients were admitted with COPD exacerbation. 83 (84.7%) patients had an eosinophil count recorded in the preceding 12 months. The average age was 72 years. 33 (39.8%) were male and 50 (60.2%) female.

In patients with eosinophil count of ≥300 cells/μL, 7 (23.3%) had acute hypercapnic respiratory failure and 5 (16.7%) required NIV. The average hospital stay was 5.7 days. 12 (40%) were re-admitted within 30 days of discharge.

In those with eosinophil count of <300 cells/μL, 8 (15.1%) had acute hypercapnic respiratory failure and 4 (7.5%) required NIV. The average hospital stay was 4.8 days. 11 (20.8%) were re-admitted.

In the group with consolidation on chest x-ray, 12 (81.3%) were on ICS compared to 56 (83.6%) in those with no consolidation.

Conclusion A blood eosinophil count of ≥300 cells/μL is associated with a higher risk of acute hypercapnic respiratory failure, longer stay in hospital, and greater risk of re-admission. Use of ICS is not associated with an increased risk of consolidation on chest x-ray. High eosinophil counts in patients with COPD should prompt early intervention to improve outcomes.

REFERENCE

1. Global initiative for chronic obstructive lung disease. Pocket guide to COPD diagnosis, management and prevention: A guide for health care professionals. 2024 edition. URL: https://goldcopd.org/2024-gold-report/

M23 IDENTIFICATION OF ASTHMA-COPD OVERLAP USING A NOVEL HAND-HELD CAPNOMETER AND INTERPRETABLE MACHINE LEARNING

[1]T Leeran, [1]C Dogan, [1]RH Lim, [1]H Broomfield, [2]D Neville, [2]L Wiffen, [1]G Lambert, [1]A Selim, [3]G Hayward, [4]HF Ashdown, [2]T Brown, [5]E Vijaykumar, [2]A Chauhan, [1]AX Patel. *[1]TidalSense Limited, Cambridge, UK; [2]Portsmouth Hospitals University NHS Trust, Portsmouth, UK; [3]NIHR Community Healthcare MedTech and IVD Cooperative, Nuffield department of Primary Care Health Sciences, Oxford, UK; [4]Nuffield Department of Primary Care Health Sciences, Oxford, UK; [5]Modality GP Partnership, UK*

10.1136/thorax-2024-BTSabstracts.451

Rationale It is estimated that 27% of asthma patients and 30% of COPD patients have Asthma-COPD Overlap Syndrome (ACOS). Patients with ACOS experience more frequent exacerbations, quicker deterioration and higher mortality than patients with only asthma or COPD.

According to the Dutch Hypothesis, asthma and airway hyper-responsiveness predispose patients to COPD. This has been supported by research showing asthmatics have a 10x higher risk of developing chronic bronchitis and a 17x higher risk of developing emphysema than non-asthmatics.

Spirometry is the current gold-standard for diagnosing ACOS but is technique-dependent, non-specific, and requires administration by a highly-skilled healthcare professional. This, along with a lack of precise clinical criteria for ACOS, results in significant under and misdiagnosis. There is therefore a need for a simple, reliable, and precise diagnostic test to identify when asthmatics have progressed to ACOS.

The objective of this study was to accurately differentiate ACOS from Asthma by applying machine learning techniques to a tidal breathing CO_2 capnogram captured using TidalSense's N-Tidal™ handheld capnometer.

Methods Capnograms were collected from five longitudinal observational clinics that recruited Asthma and ACOS patients from primary and secondary care. A logistic regression model was trained on 80 features derived from these capnograms and performance was measured on an unseen test set of 52 Asthma, and 15 ACOS participants. Varying levels of obstruction were present, with% predicted FEV1 in both cohorts ranging from 19 to 101.

Results The classification model yielded AUROC of 0.96, sensitivity 92%, specificity 87%, positive predictive value (PPV) 87% and negative predictive value (NPV) of 92%. A likely clinical use case involves ruling-in or ruling-out a diagnosis in patients classified with high confidence. Evaluating performance on the 71% of capnograms classified with >80% confidence yielded PPV 0.96 and NPV 0.99.

Waveform features driving classification were related to the alpha angle region, which represents the transition of alveolar gas to larger airways. These features correlated with FEV1/FVC, supporting their hypothesized role as markers of obstruction.

Conclusion The N-Tidal™ device could be used alongside interpretable machine learning as an accurate, rapid, point-of-care test to identify asthmatics' progression to COPD.

M24 A GLOBAL SYSTEMATIC LITERATURE REVIEW TO INVESTIGATE THE HUMANISTIC AND ECONOMIC BURDEN OF SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

[1]I Vlachaki, [1]S Donhauser, [2]RK Hyderboini, [3]J Nabi, [1]A Madoni. *[1]Chiesi Farmaceutici Spa, Parma, Italy; [2]IQVIA, Gurgaon, India; [3]IQVIA, Gurugram, India*

10.1136/thorax-2024-BTSabstracts.452

Understanding humanistic and economic factors influencing COPD outcomes is important for guiding effective management strategies. The objective of this study was to identify and descriptively summarise published evidence on the humanistic and economic burden of severe COPD.

A systematic literature review (SLR) was conducted according to the Cochrane Handbook for Systematic Reviews of Interventions and PRISMA guidelines. Embase® and MEDLINE® were searched via OvidSP® for the period November 2021 to November 2023, supplemented by hand-searching of relevant conferences and literature.

A total of 2,276 database records were identified; 44 studies were included following full-text screening, and additional six studies from hand-searches; 50 studies were included in total. The SLR revealed a substantial impairment in health-related quality of life (HRQoL), both physical and psychological, in severe COPD with a consistent decline as the disease progresses. Pulmonary rehabilitation was found effective, leading to significant improvements in HRQoL. Health state utility values decrease with exacerbations, while adherence to treatment, particularly inhaler medications, improved outcomes. The economic burden of COPD was substantial, with direct healthcare costs increasing significantly with disease severity. For example, a cross-sectional Spanish study demonstrated an increase in mean annual direct medical costs per patient (2015 Euros) from € 1,246 in stage I to € 5,669 in stage IV ($p<0.05$). The same study showed no differences in mean annual per patient direct non-medical costs (including costs caused by nutrition, transportation, and professional and informal care) at early stages, however these costs were significantly higher in stage IV (€ 7,691) versus stage III (€ 3,507; $p<0.05$). Similar trends were observed in a retrospective study in the UK. Hospitalisations and exacerbations were significant contributors to direct costs regardless of disease severity levels. Indirect costs also increased with increasing disease severity, with more sick days and premature retirement associated with very severe/severe versus mild COPD.

In conclusion, our findings underscore the substantial impairment in HRQoL among severe COPD patients, and the need for interventions and treatment adherence to improve patient QoL and disease control. The economic burden of COPD is substantial, with direct costs and resource use increasing with disease severity.

M25 PREDICTION OF LUNG HYPERINFLATION IN ADVANCED COPD FROM SPIROMETRY AND DEMOGRAPHICS

[1]EF Alharbi, [2]M Steiner, [3]S Corkill, [2]N Greening, [2]T Ward. *[1]University of Leicester, Leicester, UK; [2]NIHR Leicester Biomedical Research Centre (Respiratory, Leicester, UK); [3]Glenfield Hospital, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.453

Background Lung hyperinflation is a key selection criterion for lung volume reduction (LVR) eligibility. Lung hyperinflation is assessed using body plethysmography which is time consuming and is not available in all healthcare settings. An ability to predict hyperinflation from routinely collected measures would allow early identification of potential LVR candidates.
Objectives To predict lung hyperinflation using spirometry and demographic measures.
Study Design Retrospective analysis of 209 COPD individuals with advanced COPD, and full pulmonary function test data. Age, gender, height, weight, FEV1, and FVC were used to create a logistic regression. ROC analysis using RV/TLC of 55% was used to assess the model's performance.
Results Among the study participants, 56% were male. Mean age of 66 (39.4) years and BMI mean of 25.7 (6.7) kg and the FEV1% predicted mean of 34.78 (12.97). FEV1 and demographics explained 47% of the variability in RV/TLC. ROC analysis using the predicted values of the logistic regression of RV/TLC indicated a good accuracy with the area under the curve of 0.85. Positive predictive value was 91.4% and negative predictive value was 72.14%.
Conclusion Lung hyperinflation can be estimated using spirometry and demographic data. This could help identify COPD individuals who may be candidates for LVR.

M26 TARGETED LUNG HEALTH CHECK – A MISSED OPPORTUNITY TO CONFIRM COPD DIAGNOSES?

N Smallcombe, S Uys, R Singh, K Patel. *Department of Respiratory Medicine, Royal London Hospital, Barts Health NHS Trust, London, UK*

10.1136/thorax-2024-BTSabstracts.454

Chronic Obstructive Pulmonary disease [COPD] is a major cause of health inequality and morbidity in the UK. There is a focus on ensuring early detection and accurate diagnosis of patients with COPD. The Targeted Lung Health Check [TLHC] Programme is a screening programme to aid in early identification of lung cancer but frequently identifies emphysema. Here we aim to establish the population characteristics of patients diagnosed with severe emphysema via the TLHC programme with a view to understanding how we could provide earlier diagnosis.

This is a retrospective observational study evaluating those identified with severe emphysema on their TLHC scans from August 2022 to May 2024.

176 patients were identified with severe emphysema on CT scan, 122 had GP records available and therefore were included. The median age of patients reviewed was 66 [IQR 7.75] and 73% were male. Of these patients, 47% were current smokers, 80% were on the COPD register, however, spirometry was only performed on 48% of which, only 51% of patients had a recorded FEV1% predicted available for review with the mean FEV1% predicted recorded as 64% [SD 23.17].

On review of high value interventions for COPD, 54% had been offered Pulmonary Rehabilitation, 59% had been offered smoking cessation referral and 91% had been offered the influenza vaccine. Considering inhaled therapies, 46% were receiving triple therapy [ICS/LABA/LAMA], 13% were on a LABA-LAMA inhaler and 4% a LABA-ICS inhaler, 7% were on LAMA inhaler only and 30% were on no therapy.

In conclusion, most patients reviewed had no spirometric evaluation, despite detection of emphysema on CT scan and smoking history. Patients identified as at risk of lung cancer are equally at risk of COPD. In the current climate of reduced spirometry provisions within GP practices to accurately diagnose COPD, TLHC should be considered as a possible catalyst to ignite COPD case finding services. Future TLHC programmes should consider referring those without a spirometry confirmed diagnosis of COPD to community based respiratory diagnostic hubs in order to ensure correct diagnosis and management of COPD without over burdening secondary care.

M27 PROVIDERS PERCEPTIONS AND USE OF BEHAVIOUR CHANGE INTERVENTIONS FOR PHYSICAL ACTIVITY IN PEOPLE WITH CHRONIC RESPIRATORY DISEASE: A SURVEY

[1]C Hanrahan, [1]JG McVeigh, [2]TM O'Connor, [3]T Troosters, [4]J Broderick. *[1]University College Cork, Cork, Ireland; [2]Mercy University Hospital/University College Cork, Cork, Ireland; [3]KU Leuven, Leuven, Belgium; [4]Trinity College Dublin, Dublin, Ireland*

10.1136/thorax-2024-BTSabstracts.455

Background Behaviour change interventions may influence physical activity in chronic respiratory disease. The aim of this study was to explore perceptions and use of behaviour change interventions in relation to physical activity programmes for people with chronic respiratory disease in the Republic of Ireland, as well as providers own physical activity uptake and use of monitoring devices.
Methods A cross-sectional, anonymous, online survey was distributed to providers (n=150) of physical activity programmes in the Republic of Ireland via relevant gatekeepers and social media in November 2023-April 2024. Descriptive statistics including frequencies, percentages, means and medians were used to summarise findings. Relationships between variables were investigated using Chi-squared (p=0.05).
Results One hundred and seven surveys were completed (n=107/150, a 71.33% response rate). The majority of respondents (n=93/106, 87.74%) reported that they incorporate behaviour change interventions into physical activity programmes for chronic respiratory disease. Encouragement (n=81/84, 96.43%), education (n=80/84, 95.24%) and goal setting (79/84, 94.05%) were perceived to be the most effective behaviour change interventions (i.e. very effective or somewhat effective), with incentivisation perceived to be least effective (n=35/84, 41.66%). A large majority of respondents

reported that they engaged in regular exercise themselves (n=81/84, 96.42%), mostly between 3–5 days/week (n=61/81, 75.30%). There was no statistically significant relationship between those respondents who use physical activity monitoring devices (pedometers, accelerometers, smartwatch applications) to track their own physical activity and those who use monitoring devices in programmes for chronic respiratory disease (n=19/81, 23.46%%) (p= 0.226).

Conclusion This survey highlights that providers of physical activity programmes for people with chronic respiratory disease in the Republic of Ireland perceive behaviour change interventions such as encouragement, education and goal setting as effectively influencing physical activity behaviour. A high proportion of providers report that they are physically active. Future research could investigate the relationship between physically active providers and the influence of their own physical activity behaviour on their clinical practice in chronic respiratory disease.

M28 HOW COMMON IS ASPERGILLUS SENSITISATION IN COPD AND IS IT RELATED TO FREQUENT EXACERBATIONS?

S Bartlett-Pestell, F Baraldi, MA MacLeod, A Braddy-Green, JSY Mah, R Lopez, ANJ Marrion, LA Moreira, H Shahbakhti, JP Allinson, JA Wedzicha, LJ Finney. *Imperial College London, London, UK*

10.1136/thorax-2024-BTSabstracts.456

Background Chronic obstructive pulmonary disease (COPD) is characterised for many patients by periods of disease stability interspersed with periods of exacerbation. Biologics are emerging as a potential treatment for COPD patients with frequent exacerbations. Aspergillus sensitisation (AS) Is common in asthma however is often overlooked in COPD. We aim to investigate the prevalence of AS in a well described COPD cohort and its relationship to exacerbation frequency.

Methods We conducted a cross-sectional analysis of clinical data with longitudinal exacerbation data from the London COPD cohort. We collected data from research visits conducted during disease stability between September 2023 and May 2024. Participants with a previous diagnosis of fungal pulmonary disease, or other active significant pulmonary disease were excluded. Blood samples were taken, COPD Assessment Test (CAT) scores were recorded and clinic spirometry was performed. We defined AS by aspergillus IgE $\geq$0.35 kUA/L and total IgE <500 kUA/L, and serological allergic bronchopulmonary aspergillosis (sABPA) as aspergillus IgE $\geq$0.35 kU/L and total IgE $\geq$500 kU/L. Continuous variables between groups were compared with the Mann-Whitney U test and proportions of discrete variables were compared with the Pearson's chi-squared test.

Results There were 66 patients included (45 (68%) male, mean age 75 years (SD +/- 7) and 18% current smokers). Mean FEV1% predicted was 56 (SD +/- 21). In total 9 (13.6%) patients had AS and of those, 44% had $\geq$3 exacerbations in the preceding 12 months vs 14% in the non-AS group (p = 0.08). The mean CAT score was higher in the AS group (20 vs 17) although this was not statistically significant. Mean FEV1% predicted was similar in both groups. Two participants met criteria for sABPA. Eight participants had a blood eosinophil count $\geq$300 cells/μL (1 patient in the AS group vs 4 in the non-AS group). There was no correlation between eosinophil count and AS.

Conclusion In our cohort AS is common and not related to eosinophil count, although numbers are small. AS may lead to more frequent COPD exacerbations and consideration should be given to screening for fungal disease in this group.

'The Importance of Breathing Earnest' – Clinical COPD

M29 OVERCOMING THE CHALLENGE OF RECRUITING ACUTELY HOSPITALISED PATIENTS WITH AECOPD: LESSONS FROM SCREENING IN A SINGLE CENTRE DOUBLE BLIND PLACEBO CONTROLLED RCT IN LEICESTER, UK

[1,2]CA Flynn, [1,2]HJC McAuley, [1,2]O Elneima, [2]S Parish, [2]M Bourne, [1,2]CE Brightling, [1,2]N Greening. *[1]The Institute for Lung Health, NIHR Biomedical Research Centre, University of Leicester, Leicester, UK; [2]University Hospitals Leicester NHS Trust, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.457

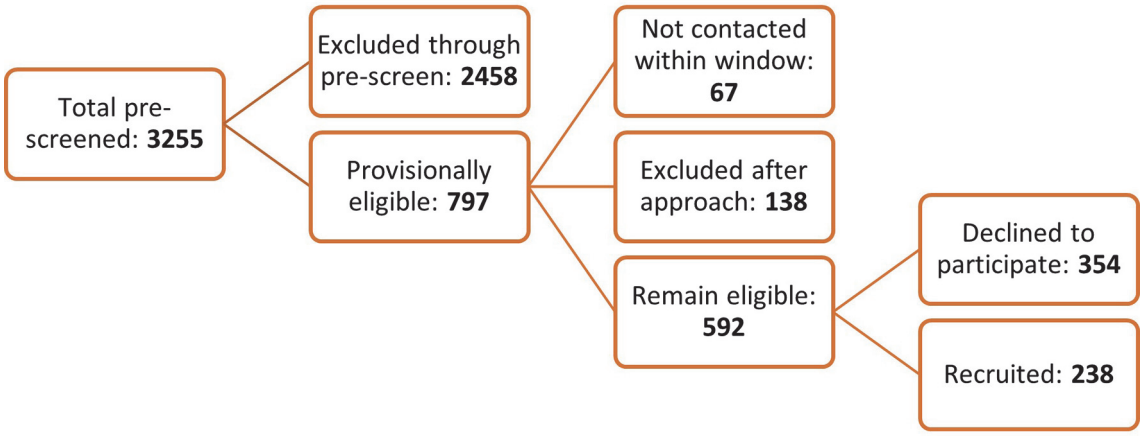
Introduction Hospital admission for an acute exacerbation of COPD (AECOPD) is a major event associated with increased morbidity and mortality, as well as 43% risk of readmission within 90 days.[1] Targeting acutely admitted patients for interventional studies has been a particular challenge for those with chronic conditions such as COPD. However, acute COVID-19 intervention platform studies such as the RECOVERY Trial offer examples of the dramatic potential benefits and improved recruitment by using systematic approaches.[2]

Objectives To demonstrate that embedding a screening system for research studies within a clinical service can significantly reduce the barriers to successful recruitment among acutely hospitalised patients with AECOPD.

Methods We implemented a daily screening system of all acute admissions to a specialist respiratory hospital for a single-centre, randomised, double-blinded, placebo-controlled study recruiting patients with phenotypically eosinophilic COPD at Glenfield Hospital, Leicester, UK. Potential participants were pre-screened electronically for likely eligibility based on the trial specific inclusion criteria including a confirmed diagnosis of AECOPD, history of blood eosinophilia >300 cells/mL and being established on an inhaled corticosteroid, with only those deemed likely to be eligible being approached. Other key inclusion/exclusion criteria such as smoking history was confirmed upon approaching the potential participants.

Results During three years of recruitment, 3255 admissions to hospital with suspected AECOPD were pre-screened remotely using electronic patient records, resulting in 75% being excluded prior to being approached (figure 1). Of 797 patient contacts, 592 were deemed eligible with 238 participants ultimately enrolled into the study. The primary reason for exclusion on pre-screening was the lack of raised blood eosinophils in the preceding 12 months. For contacts that were deemed eligible but did not participate, 173 were recorded as 'not interested' or gave no reason for demurring and 181 were 'unable to commit' to the study or had another specific reason to decline, such as needle phobia or mobility issues.

Conclusion Embedding a routine 'pre-screening' system of acute admissions can facilitate better case identification and successful recruitment to interventional clinical trials even among acutely unwell patients.



Abstract M29 Figure 1

REFERENCES

1. Hurst, *et al*. *NACAP* 2020.
2. Haynes, *et al*. *Future Healthc J* 2021.

M30 SPIROMETRY THRESHOLDS FOR THE PREDICTION OF CHRONIC AIRFLOW OBSTRUCTION: A LONGITUDINAL ANALYSIS

[1]SA Alhajri, [1]AHS Lam, [1,2]B Knox-Brown, [1,3]AFS Amaral. *[1]National Heart and Lung Institute, Imperial College London, London, UK; [2]Cambridge Respiratory Physiology, Royal Papworth and Cambridge University Hospitals NHS FT, Cambridge, UK; [3]NIHR Imperial Biomedical Research Centre, London, UK*

10.1136/thorax-2024-BTSabstracts.458

Background Chronic Obstructive Pulmonary Disease (COPD) is a common respiratory condition, characterised by chronic airflow obstruction (CAO) and a cause of significant morbidity and mortality. Early identification of individuals at risk of developing CAO is essential for timely interventions and improved outcomes. The aim of this study was to identify the optimal thresholds of FEV_1/FVC and $FEF_{25–75}$ to discriminate CAO and assess its risk COPD based on the new thresholds.

Methods We used data from 3,057 adults, aged 40 years and over, from the multinational Burden of Obstructive Lung Disease (BOLD) cohort, who had provided lung function measurements, were free of CAO at baseline and were followed up for a median of 8.4 years. We identified the optimal FEV_1/FVC and $FEF_{25–75}$ thresholds using the Youden Index and the Area Under the Receiver Operating Characteristic Curve. We then analysed the association between being below the optimal threshold at baseline and developing CAO at follow-up using multilevel logistic regression models. We also examined whether results were different between smokers and never smokers.

Results The mean age of the participants included in this study was 51 years (standard deviation = 9) at baseline, and 57% were females. Of these, 131 (4%) developed CAO later in life. The optimal z-score thresholds were -1.336 for the pre-bronchodilator FEV_1/FVC, which corresponds to the 9th percentile, and -1.069 for the post-bronchodilator $FEF_{25–75}$, which corresponds to the 14th percentile. Individuals below the optimal threshold for pre-bronchodilator FEV_1/FVC were about five times (95% confidence interval: 2.32 to 9.33) more likely to develop CAO. The absolute risk of developing CAO for people below the optimal threshold was greater among current smokers as well as among never smokers particularly if they were males. We found similar results for the post-bronchodilator $FEF_{25–75}$ threshold.

Conclusion A pre-bronchodilator FEV_1/FVC z-score of -1.336 (9th percentile), particularly among current smokers, and a post-bronchodilator $FEF_{25–75}$ z-score of -1.069 (14th percentile) may be used for early detection of COPD.

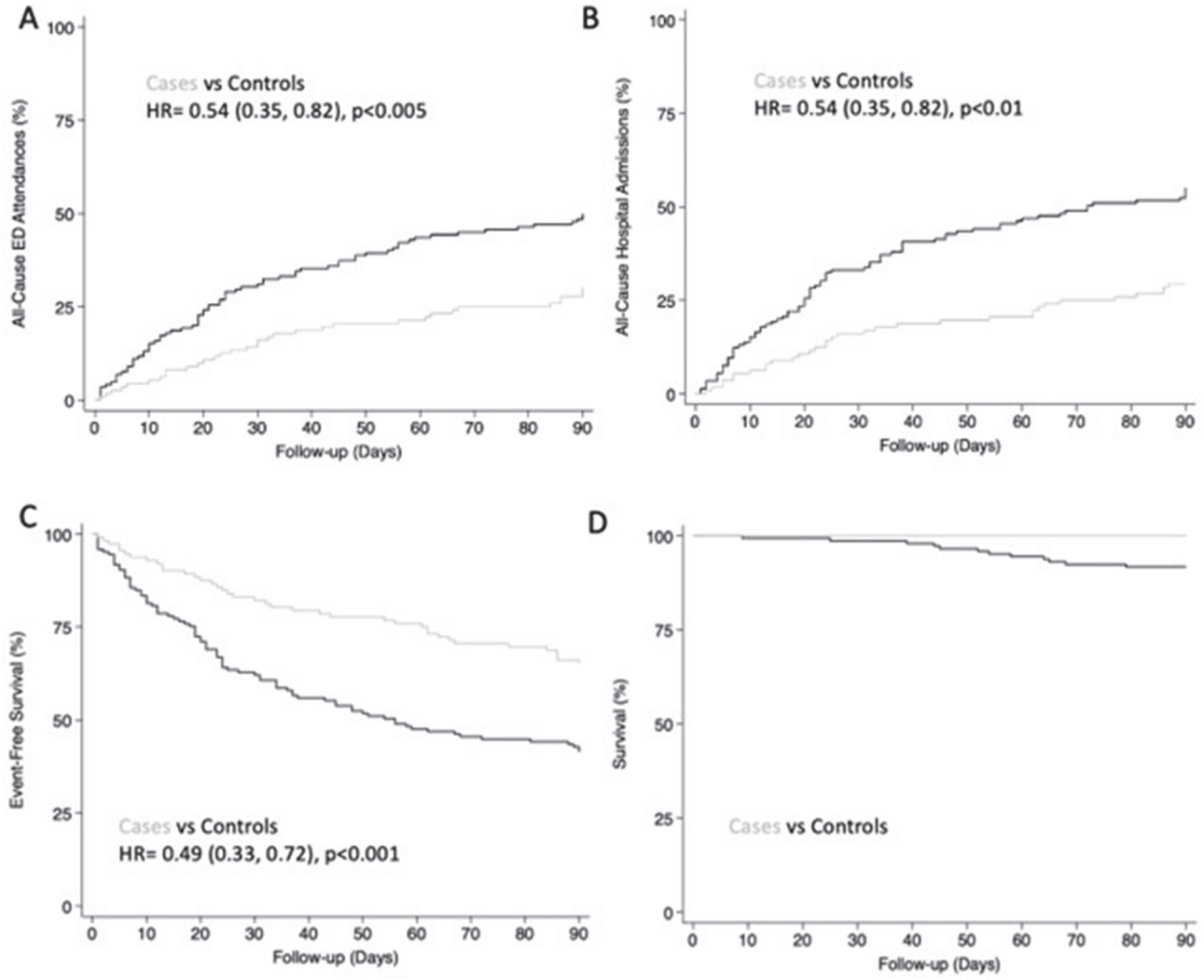
M31 ASSESSING THE IMPACT OF A DIGITAL SELF-MANAGEMENT SERVICE FOLLOWING SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) EXACERBATION: 3-MONTH INTERIM RESULTS VS A CONTROL COHORT

[1]A Cushing, [2]J Thompson, [2]A Pickering, [2]T Hodgkins, [3]MG Crooks. *[1]Lenus Health, Edinburgh, UK; [2]Hull University Teaching Hospitals NHS Trust, Hull, UK; [3]Hull York Medical School, University of Hull, Cottingham, UK*

10.1136/thorax-2024-BTSabstracts.459

Introduction The NHS is increasingly looking to technologies to improve COPD management within the community to avoid hospitalisations. The Lenus COPD support service has been successfully adopted in Scotland, with the RECEIVER study[1] showing improved clinical outcomes amongst service users. Following adoption in Hull, the DYNAMIC-ROSE study is investigating how onboarding patients to the service immediately after a severe exacerbation affects subsequent Emergency Department (ED) attendance and hospitalisation rates.

Methods This interim analysis compares clinical outcomes during 3-months follow-up among Lenus COPD support service users (cases) and matched historic controls receiving standard care alone. Cases (n=111) were onboarded onto the service after discharge following a severe exacerbation between March and September 2023. Controls (n=145) were discharged from the same hospital trust following a severe exacerbation in the same period in 2022. Demographic, hospital admission, ED attendance, and mortality data were collated from electronic health records for the 3-months following discharge from the index severe exacerbation event. ED attendances and hospital admissions were compared between cohorts at 30-days and 3-months post-discharge. The impact of service usage on outcomes was further explored through time-to-event and logistic regression analyses.



Abstract M31 Figure 1 Kaplan-Meier survival and cumulative incidence plots comparing time to event for different endpoints amongst cases and historical controls over 3-months follow-up. Cumulative ED attendance (A) and hospital admission rates (B), and event-free survival (ED attendance, hospital admission, or death) (C) and survival (D) rates are shown. Age, sex, and index of multiple deprivation decile adjusted cox proportional hazard ratios comparing time to event between the cohorts are also shown where this could be calculated (HR)

Results Fewer cases than controls had an ED attendance or hospital admission during the first 30-days following discharge (ED attendance: 16% (n=18) versus 32% (n=46) respectively, p<0.01; hospital admission: 16% (n=18) versus 33% (n=48) respectively, p<0.01). This effect was sustained at 3-months (ED attendance: 31% (n=34) versus 50% (n=72) respectively, p<0.01; hospital admission: 30% (n=33) versus 55% (n=80) respectively, p<0.001). Time to ED attendance, hospital admission, or death was significantly increased for cases (adjusted for age, sex, and index of multiple deprivation (IMD) decile; figure 1). The likelihood of all-cause ED attendance and hospital admission within 3-months was significantly lower in cases than controls (adjusted for age, sex, IMD, and month of discharge).

Conclusions This interim analysis suggests that supplementing standard care with the Lenus COPD support service following a severe COPD exacerbation is associated with reduced likelihood of ED attendance and hospital admission during 3-months follow-up.

REFERENCE

1. Taylor, *et al. Int J Chron Obstruct Pulmon Dis*. 2023;**13**:1289–1296. doi: https://doi.org/10.2147/COPD.S409116

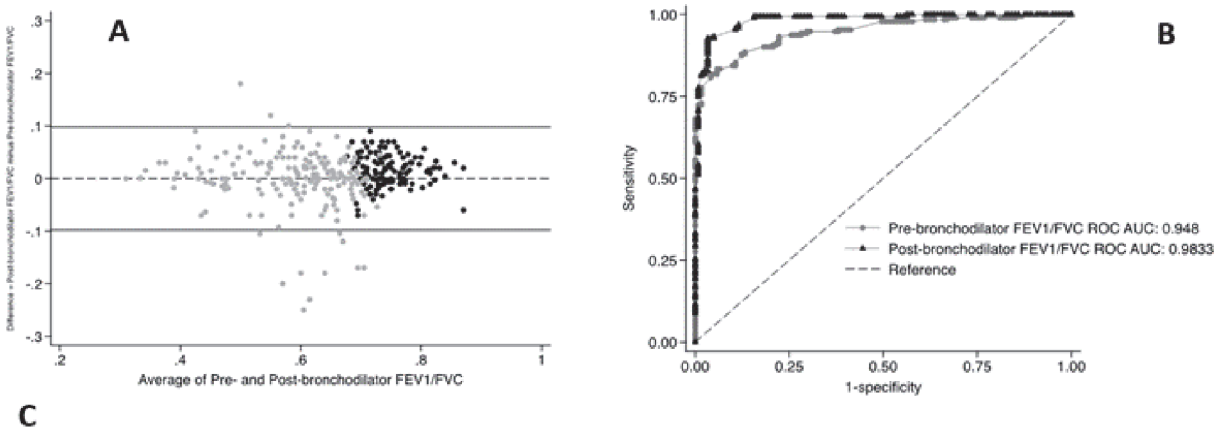
M32 FINDING THE HIDDEN MILLIONS: IDENTIFYING UNDIAGNOSED COPD AMONG SYMPTOMATIC LUNG HEALTH CHECK PARTICIPANTS. IS PRE-BRONCHODILATOR SPIROMETRY ENOUGH?

[1]MG Crooks, [2]K Brindle, [2]K Watkins, [2]L Gregory, [2]J Shyamalee, [2]J Thompson, [2]S Faruqi, [3]J Gilroy-Cheetham, [3]C Maxted, [3]S Niazi-Ali. *[1]Hull York Medical School, University of Hull, Cottingham, UK; [2]Hull University Teaching Hospitals NHS Trust, Hull, UK; [3]Chiesi Ltd, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.460

Introduction Lung Health Checks (LHC) aim to identify early-stage lung cancers and provide opportunity to identify other lung diseases. Undiagnosed COPD is common but most LHC programmes no longer include or only undertake pre-bronchodilator spirometry. We report interim findings relating to undiagnosed COPD among Hull LHC participants who did not have LHC spirometry due to the pandemic and consented to the Hull Lung Health Study (HLHS).

Methods Eligible HLHS participants reported symptoms and/or had emphysema on LHC low-dose CT (LDCT) and attended a one-stop, nurse-led diagnostic clinic between September '23



C

Criteria	Sensitivity	Specificity	PPV	NPV
Pre-bronchodilator airflow limitation	96%	79%	88%	93%
Post-bronchodilator airflow limitation	99%	91%	95%	99%
Pre-bronchodilator airflow limitation + Emphysema	87%	81%	88%	79%
Post-bronchodilator airflow limitation + Emphysema	90%	92%	95%	86%

Abstract M32 Figure 1 *Panel A*: Bland-Altman Analysis comparing Post-bronchodilator and Pre-bronchodilator FEV-1/FVC. The dashed line represents 0 and solid lines represent 1.96 * SD. Mean difference is +0.004 (95%CI -0.0018 to 0.009) (participants with newly diagnosed COPD are depicted in light-grey and those with no COPD in black). *Panel B*: ROC Curve comparing Pre- and Post-bronchodilator FEV1/FVC for COPD diagnosis (p<0.01). *Panel C*: Table detailing the performance characteristics of different criteria based on pre- and post-bronchodilator spirometry with or without LDCT evidence of emphysema for COPD diagnosis among high risk LHC participants. Airflow limitation was defined as FEV1/FVC < 0.7 and/or FEV1/SVC < 0.7. **Key:** AUC: area under the curve; FEV1: forced expiratory volume in 1-second; FVC: forced vital capacity; NPV: negative predictive value; PPV: positive predictive value; ROC: receiver operating characteristic

and April '24. All completed clinical assessment, patient reported outcomes (PROs), and pre- and post-bronchodilator spirometry. COPD diagnosis was made by experienced clinicians based-on clinical and physiological assessment. We report participant's characteristics, PROs and spirometry, and explore performance of pre- and post-bronchodilator airflow limitation, with/or without considering LDCT emphysema, to differentiate those with COPD from those without.

Results 352 people attended a clinic and 220/63% were diagnosed with COPD. Compared to those without COPD, participants diagnosed with COPD were older (mean [SD] 65.8 [8.8] vs 62.1 [10.2] years; p<0.001), had lower BMI (26.9 [5.8] versus 28.7 [5.7] kg/m^2; p <0.01), lower post-bronchodilator FEV1 and FEV1/FVC ratio (2.20 [0.66] versus 2.85 [0.77] litres and 0.59 [0.09] versus 0.75 [0.05] respectively; p<0.001) and higher symptom burden (CAT: 18 [9.2] versus 15.2 [8.4], p<0.01; mMRC 1.6 [1.2] versus 1.3 [1.1], p=0.01).

315 participants had both pre- and post-bronchodilator spirometry. Using clinician diagnosed COPD as gold standard, post-bronchodilator spirometry was superior to pre-bronchodilator spirometry for differentiating those with and without COPD (post-bronchodilator ROC AUC 0.98 95%CI 0.97–0.99; pre-bronchodilator: 0.95 95%CI 0.93–0.97, p<0.01). Performance of criteria based on pre-and post-bronchodilator spirometry +/- consideration of LDCT emphysema are presented in a (figure 1). 22 (7%) participants had pre-bronchodilator airflow limitation that resolved post-bronchodilator. 10 (3%) participants had post-bronchodilator airflow limitation that was not observed pre-bronchodilator (7 were diagnosed with COPD).

Conclusions LHC participants with symptoms and/or LDCT evidence of emphysema frequently have undiagnosed COPD. Post-bronchodilator spirometry improves differentiation of those with COPD from those without and should be considered an integral part of non-cancer LHC clinical pathways.

M33 COPD TREATMENT PATHWAYS IN PATIENTS INITIATING DUAL BRONCHODILATORS OR TRIPLE INHALED THERAPIES IN A REAL-WORLD SETTING

[1]A Papi, [2]D Mannino, [3]F Wen, [4]D Stolz, [5]J Wedzicha, [6]W Henley, [7]J Soriano, [7]D Skinner, [8]A Piraino, [8]E Nudo, [8]S Vezzoli, [8]C Sanchez, [9]A Gayle, [10]D Galkin, [8]U Argentina, [7]V Carter, [7]D Price. *[1]University of Ferrara, Ferrara, Italy; [2]University of Kentucky, Lexington, USA; [3]West China Hospital, Chengdu, China; [4]University Hospital Basel, Basel, Switzerland; [5]Imperial College London, London, UK; [6]University of Exeter Medical School, Exeter, UK; [7]Observational and Pragmatic Research Institute, Singapore, Singapore; [8]Chiesi Farmaceutici SpA, Parma, Italy; [9]Chiesi Farmaceutici SpA, Manchester, UK; [10]Chiesi Farmaceutici SpA, Cary, USA*

10.1136/thorax-2024-BTSabstracts.461

Introduction COPD treatment algorithms recommend a progressive, stepwise increase of inhaled therapies according to disease severity and with periodic assessment of clinical response. Understanding prescription patterns in real-world setting is necessary to correlate guideline recommendations and treatment pathways prior to initiation of newer maintenance therapies like dual bronchodilators and triple inhaled combinations.

Study Aim To describe treatment pathways 5 years prior to initiation of dual bronchodilator therapy (LABA+LAMA) or on triple inhaled therapy (ICS+LABA+LAMA), in single or separate inhalers, in patients with COPD who did not use these therapies in the year prior to the index date.

Methods We explored electronic medical record data from the Optimum Patient Care Research Database (OPCRD) of general practices in the UK from 2012 to 2023 for patients with established COPD diagnosis and 5 years of data available prior to initiation of treatment, using standard descriptive statistics and alluvial diagrams.

Results A total of 62,252 COPD patients who initiated dual or triple therapy were identified. Of these, 53% were male, with a mean±SD age of 70.0±10.5 years, 41% were current- and 59% were former-smokers. 28,293 were initiated on LABA+LAMA and 33,959 on ICS+LABA+LAMA. Of these, 59% and 41% respectively were not receiving any respiratory prescription five years previously, with 18% and 3% in the one year prior to initiation. Further, 47% initiating LABA +LAMA were on LAMA only in the year prior, whereas 40% initiating ICS+LABA+LAMA were on ICS+LABA in the year prior to initiation. Within the subsequent years, transitions in drug prescriptions were highly variable and even inconsistent within each group.

Conclusions In the year prior to initiating ICS+LABA+LAMA for patients with COPD, ICS+LABA remains the most frequently used combination while majority of patients who initiated LABA + LAMA were previously receiving LAMA only. We can hypothesize the consolidated experience and confidence with ICS/LABA prescription, as well as the known inflammatory component of COPD disease, might explain these results. Our data confirms that physicians base decisions about step-up therapy in COPD on prior use of ICS-containing therapy. These real-world findings emphasize the need for education and adherence to the latest COPD guidelines.

Abstract M33 Table 1

FIXED & FREE LABA/LAMA (N = 28,293)	5 YEAR PRIOR	4 YEAR PRIOR	3 YEAR PRIOR	2 YEAR PRIOR	1 YEAR PRIOR
NONE	59%	52%	44%	36%	18%
SABA|SAMA	15%	16%	17%	18%	24%
ICS	2%	2%	2%	2%	1%
LABA	2%	3%	4%	4%	6%
LAMA	13%	19%	25%	33%	47%
LABA|ICS	4%	3%	3%	3%	2%
LABA|LAMA	0%	1%	1%	1%	0%
LAMA|ICS	1%	1%	1%	1%	1%
LABA|LAMA|ICS	3%	4%	3%	3%	0%

Abstract M33 Table 2

FIXED & FREE ICS/ LABA/LAMA (N = 33,959)	5 YEAR PRIOR	4 YEAR PRIOR	3 YEAR PRIOR	2 YEAR PRIOR	1 YEAR PRIOR
NONE	41%	34%	25%	16%	3%
SABA|SAMA	12%	11%	10%	8%	3%
ICS	6%	6%	5%	5%	4%
LABA	2%	2%	2%	1%	0%
LAMA	10%	11%	13%	13%	14%
LABA|ICS	20%	23%	27%	31%	40%
LABA|LAMA	5%	8%	13%	20%	31%
LAMA|ICS	2%	2%	3%	3%	4%
LABA|LAMA|ICS	2%	2%	3%	3%	0%

M34 PHARMACOKINETICS, SAFETY AND TOLERABILITY OF TANIMILAST FOLLOWING SINGLE ADMINISTRATIONS IN SUBJECTS WITH MILD, MODERATE AND SEVERE HEPATIC IMPAIRMENT

[1]A Emirova, [1]PM Gloria, [1]R Elisa, [2]N Rangwani, [1]B Pooja, [1]P Annalisa, [1]R Chiara, [3]A Rabbab. *[1]Global Clinical Development, Chiesi Farmaceutici SpA, Parma, Italy; [2]Medical Department, Chiesi Ltd, Manchester, UK; [3]Global Clinical Development, Chiesi S.A.S., Bois Colombes, France*

10.1136/thorax-2024-BTSabstracts.462

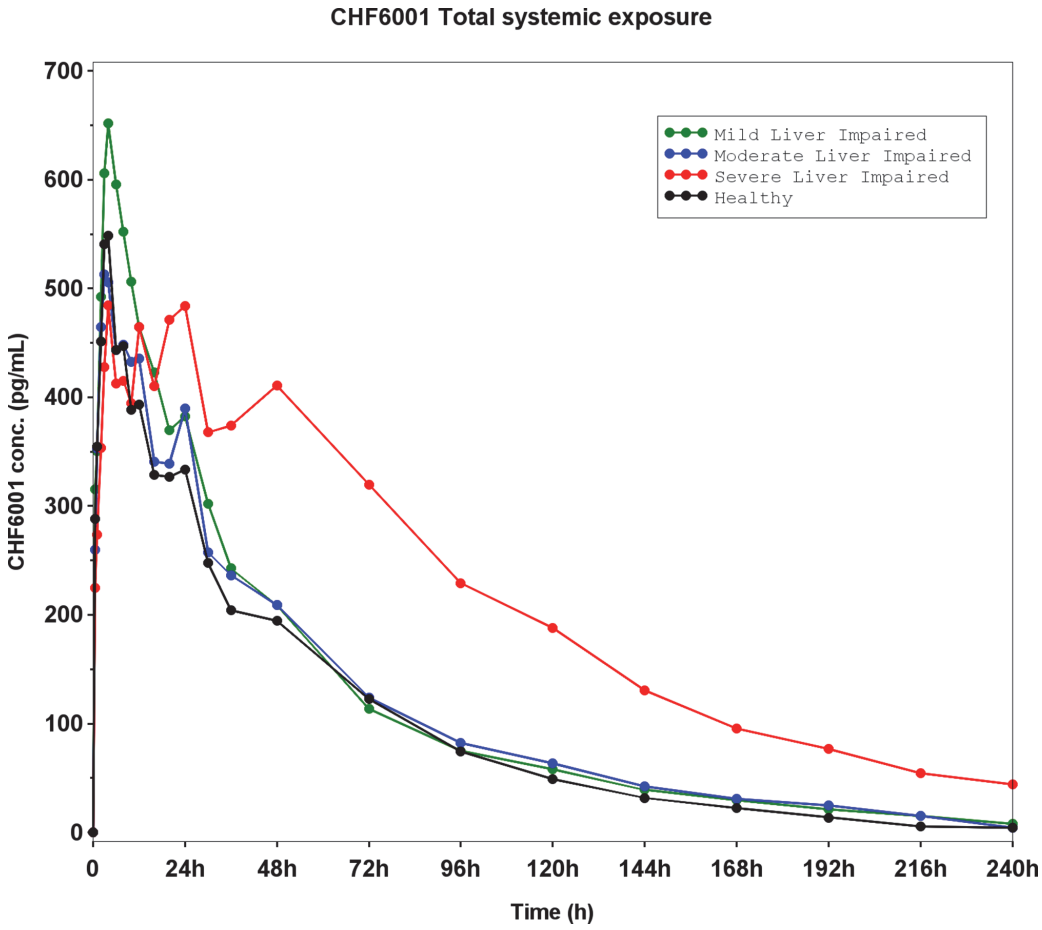
Background Tanimilast is an inhaled PDE4 inhibitor currently in Phase 3 clinical development for the treatment of patients with COPD. The main objectives of this trial were to determine systemic exposure and safety of tanimilast in subjects with mild, moderate and severe hepatic impairment (HI) after single-dose administration.

Methods Twenty-four subjects with HI (8 subjects per severity group) and 20 healthy volunteers (HV) matched for each HI subject by age, gender, race and body weight were enrolled. All HI subjects had documented chronic, stable liver disease based on the Child-Pugh score. All subjects received a single inhalation of tanimilast 800µg by NEXThaler® (dry powder inhaler (DPI)), blood sampling occurred within 30 minutes pre-dose, and in the 0–240 hours interval after dosing for pharmacokinetic (PK) and at 2-, 24- and 240-hours for safety assessments (electrocardiography and blood pressure).

Results The systemic exposure (area under curve, AUC_{0-t}, and peak concentration, C_{max}) of tanimilast was comparable in mild and moderate HI subjects and matched HV (figure 1). The 90% CIs all contained 100%. For subjects with severe HI vs HV, we observed a 20% increase in C_{max}, a 2.0-fold increase in AUC_{0-t}, a 52% decrease in CL/F (apparent systemic clearance), and a 9.02 h delay in tmax (time to reach the maximum plasma concentration). Terminal elimination half-life (t1/2) was comparable.

Tanimilast 800 µg DPI was safe and well tolerated in subjects with mild, moderate, and severe HI in comparison to matching HVs. Overall, 1 (12.5%) subject with mild HI, 1 (12.5%) subject with moderate HI, 1 (12.5%) subject with severe HI, and none of the HVs reported an AE after tanimilast inhalation. The only AE reported was headache. It was moderate in intensity and considered to be not treatment related by the investigator in all 3 subjects.

Conclusion The absorption phase was comparable in the cohort of HI subjects and HV and independent from severity. Mild and moderate HI subjects showed similar PK properties to HVs. A 2-fold increase in systemic exposure was observed in subjects with severe HI. Overall, adverse event AE rate was low and similar between HI groups and HV.



Abstract M34 Figure 1 Total systemic exposure of CHF6001 (tanimilast) in healthy volunteers and subjects with mild, moderate and severe hepatic impairment

M35 PHARMACOKINETICS, SAFETY AND TOLERABILITY OF TANIMILAST FOLLOWING SINGLE ADMINISTRATION IN SUBJECTS WITH MILD, MODERATE AND SEVERE RENAL IMPAIRMENT

[1]E Aida, [2]B Deborah, [2]R Elisa, [3]N Rangwani, [2]B Pooja, [2]R Chiara, [2]P Annalisa. *[1]Global Clinical Development, Chiesi S.A.S., Bois Colombes, France; [2]Global Clinical Development, Chiesi Farmaceutici SpA, Parma, Italy; [3]Medical Department, Chiesi Ltd, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.463

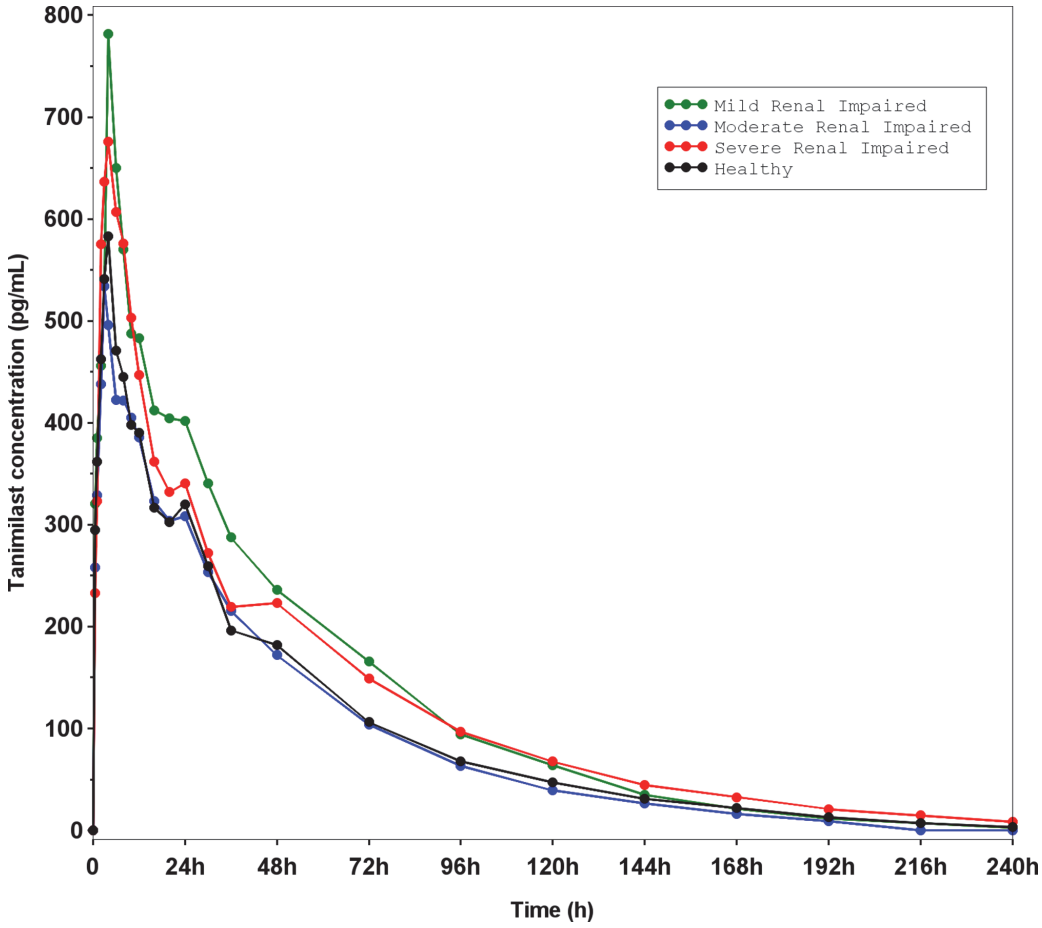
Background There is an unmet need for medications to treat patients with COPD who continue to exacerbate despite receiving single-inhaler combination therapies. Tanimilast is a new inhaled PDE4 inhibitor currently in Phase 3 clinical development. The objectives of this trial were to determine systemic exposure and safety in subjects with mild, moderate, and severe renal impairment (RI) after single-dose administration of tanimilast.

Methods Twenty-four subjects with RI (8 subjects per severity group) and 20 healthy volunteers (HV) matched for each RI subject by age, gender, race and body weight were enrolled. All RI subjects had documented chronic, stable renal disease based on the Modification of Diet in Renal Disease (MDRD) equation. All subjects received a single inhalation of tanimilast 800µg via NEXThaler® (dry powder inhaler (DPI)), blood sampling occurred within 30 minutes pre-dose, and in the 0 to 240-hours interval after dosing for pharmacokinetic (PK) and at 2-, 24-and 240-hours for safety assessments (electrocardiography and blood pressure).

Results The primary PK parameters for tanimilast (area under curve, $AUC_{0\text{-}t}$ and peak concentration, C_{max}), were comparable between all RI groups and their respective matched HV group. There was no clear trend of increased systemic exposure with increasing RI severity (systemic exposure increased by 28% in mild RI subjects versus HVs, decreased by 34% in moderate RI versus HVs, and increased by 29% in severely impaired versus HVs – figure 1). The 90% confidential intervals (CIs) were wide and contained 100%.

Overall, 1 (12.5%) subject with mild RI, 1 (12.5%) subject with severe RI, and 1 (5.0%) HV reported an adverse event (AE) after tanimilast inhalation. Diarrhea, syncope, and hypotension were reported in 1 subject with mild RI and headache was reported in 2 subjects (1 in severe RI and 1 HV). All TEAEs were mild or moderate in intensity. None of the AEs were considered to be treatment-related by the investigator.

Conclusion The systemic exposure of tanimilast was comparable in subjects with mild, moderate, and severe RI and matched HVs. Tanimilast 800 µg DPI was safe and well tolerated in subjects across all stages of RI in comparison to matching HVs.



Abstract M35 Figure 1 Total systemic exposure of tanimilast in healthy volunteers and subjects with mild, moderate and severe renal impairment

M36 **DIGITAL MONITORING AND INTERVENTION STRATEGIES FOR MAINTENANCE INHALER ADHERENCE IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): A SYSTEMATIC REVIEW AND META-ANALYSIS**

H Aung, R Tan, C Flynn, P Divall, A Wright, A Murphy, D Shaw, T Ward, N Greening. *Institute for Lung Health, NIHR Respiratory Biomedical Research Centre, University Hospitals of Leicester, Leicester, UK*

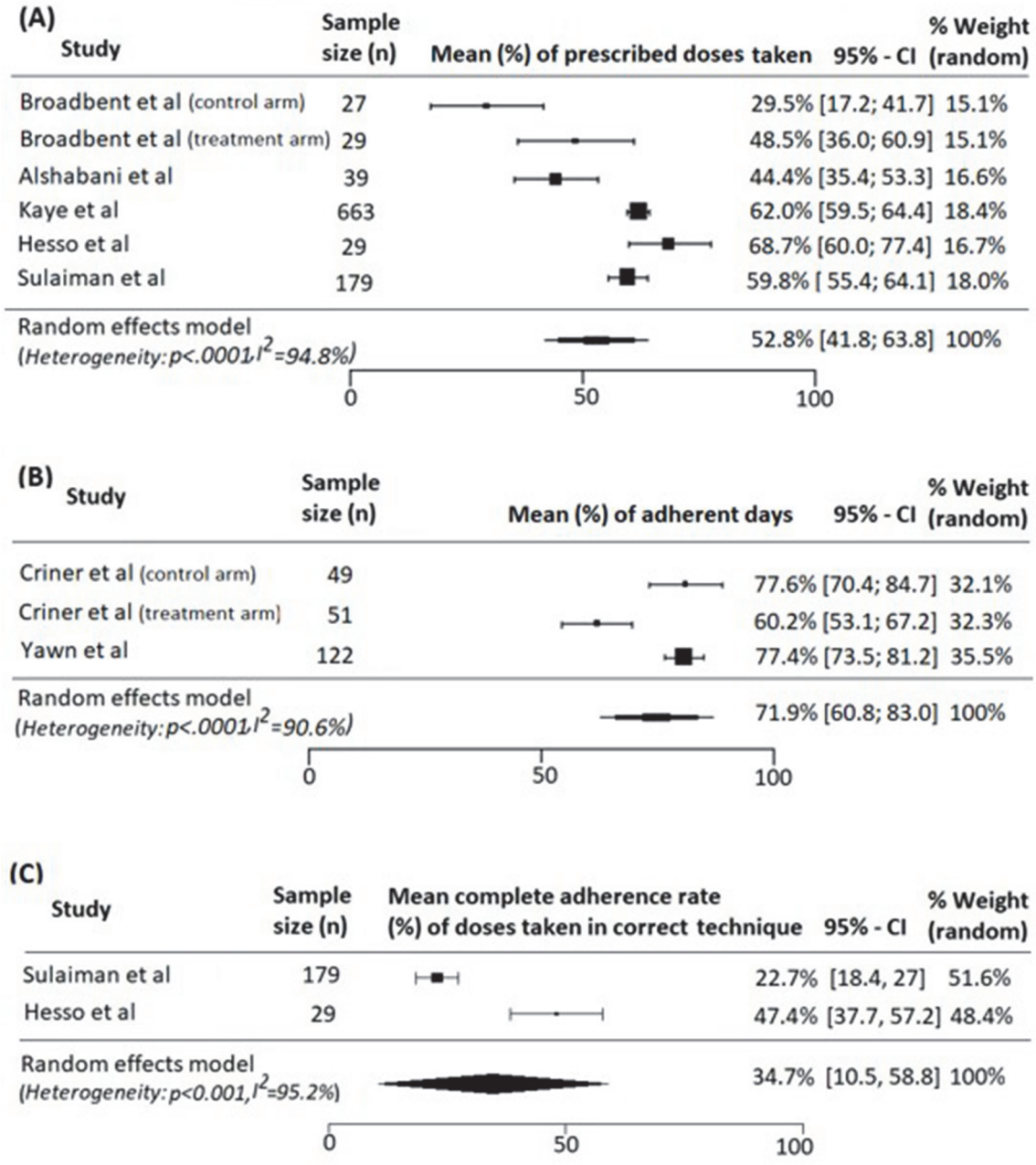
10.1136/thorax-2024-BTSabstracts.464

Introduction Sub-optimal inhaler adherence undermines the efficacy of pharmacotherapy in COPD. Digitalised care pathways are increasingly used to improve inhaler-use behaviour. This review investigated the feasibility and impact of electronic inhaler adherence monitoring (EIM) and intervention platforms on clinical outcomes in COPD.

Methods A literature search was conducted and studies investigating maintenance inhaler use among people with COPD using digital technology were selected. Pairwise and proportional meta-analyses were employed with heterogeneity assessed using I^2 statistics. When meta-analysis was not feasible, a narrative synthesis of outcomes was conducted.

Results We included 10 studies including 1432 people with COPD whose maintenance inhaler usage was supported by digital inhalers, and apps featuring audio-visual reminders, and educational content with or without engagement with healthcare providers (HCPs). EIM uncovered a suboptimal mean inhaler adherence rate (AR) with 53% (95%CI; 42–64) of prescribed doses taken and 72% (95%CI; 61–83) adherent days among people with COPD. Only 35% (95%CI; 11–59) of inhaled doses were taken in the correct intervals and techniques. HCP-led adherence interventions alongside EIM improved mean AR by 18% (95%CI; 9–27) versus passive EIM only. Enhanced AR may reduce COPD-related healthcare utilisation with little impact on the health-related quality of life and exacerbation rate. Telemedicine-based programs employing repeated inhaler training demonstrated a favourable improvement in inhaler technique. Despite encountering technical issues among 14% (95%CI; 5–23%) of participants, 85% (95%CI; 76–94%) found digital platforms convenient to use while 91% (95%CI; 79–100%) perceived inhaler reminders as helpful.

Conclusion While digitalised adherence interventions show promise in enhancing maintenance inhalers among people with COPD, the overall impact on clinical outcomes remains unclear. Future clinical trials focusing on digital platforms should improve the simplification of user interfaces while considering multi-dimensional perspectives from patients, clinicians, and underlying biological mechanisms.



Abstract M36 Figure 1 Maintenance inhaler adherence rate (AR) among people with COPD using EIM as per different calculation methods. Panel (A): mean (%) of prescribed inhaled doses taken during the study period, Panel (B): mean (%) of adherent days (i.e., days with correct sets of inhalations), Panel (C): mean complete AR [(%) of inhaled doses taken in proper timing, interval, and technique assessed by area under curve metric]

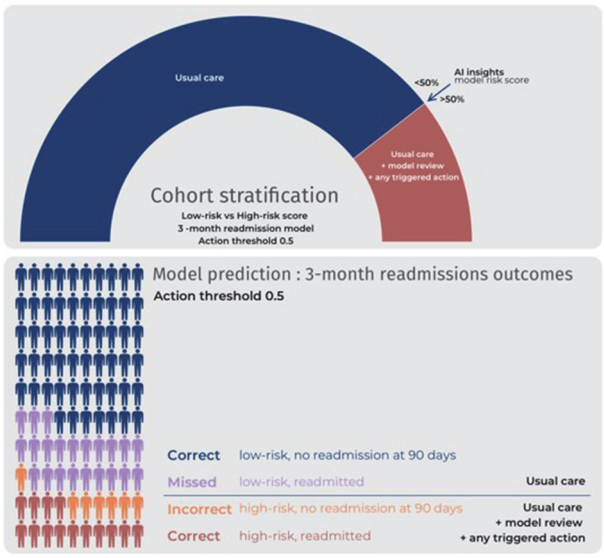
M37 DEPLOYING LIVE AI-BASED RISK PREDICTION MODELS FOR USE IN A COPD MDT: ACCEPTABILITY, FEASIBILITY AND UTILITY DATA FROM THE DYNAMIC-AI CLINICAL TRIAL

[1]A Taylor, [1]L Hickey, [1]E Walker, [2]N Fernando, [2]K Goldsmith, [2]A Cushing, [2]S Burns, [3]DJ Lowe, [1]C Carlin. *[1]NHS Greater Glasgow and Clyde, Glasgow, UK; [2]Lenus Health, Edinburgh, UK; [3]University of Glasgow, Glasgow, UK*

10.1136/thorax-2024-BTSabstracts.465

Introduction We have developed performant, fair, explainable and actionable AI-based risk prediction models to enhance COPD care. The DYNAMIC-AI observational cohort clinical investigation (NCT05914220) is evaluating the patient acceptability, technical feasibility, safety and utility of deploying our published 12-month mortality and 3-month readmission model risk scores and features to clinicians using the Lenus Stratify 'AI insights' app.

Methods Participants were recruited between April 2023 – January 2024 through the established COPD digital support service, with patient information and consent flow within the service patient app. Model risk score thresholds that stratify the cohort into low and high-risk are determined collaboratively by clinician and data science team, and these are adaptable depending on clinical team capacity, nature of intervention(s) that may be triggered, and relative weighting of sensitivity and specificity (figure 1). Acceptability has been



Abstract M37 Figure 1 Visualisation showing adaptable utility of a machine-learning based COPD-readmission risk prediction model

measured by recruitment numbers. Feasibility is measured by the number of model scores provided for review to the COPD MDT.

Results 130 patients consented to participate, with 14 people declining consent. 12-month mortality model inferencing was successful on 121 of 130 participants, with non-accessible electronic healthcare data preventing inferencing for 9 participants. 60 12-month mortality and 44 3-month readmission model pairs of inference scores and follow-up clinical events are available to date, with high concordance between model validation and prospective outcomes. There have been no adverse events or device deficiencies. MDT experience in DYNAMIC-AI has noted direct actionable utility of high-risk scores, with emerging respiratory failure and prescribing model features as insights that could prompt proactive clinical interventions.

Conclusions Providing AI insights to a COPD MDT is acceptable to patients and technically feasible. Early experience in live clinical use suggests considerable potential for reorientation of COPD care. In addition to the opportunity realised by proactively highlighting high-risk patients with addressable unseen care-quality gaps, these risk prediction models can be used in population management and other transformation initiatives and calibrated to optimise the use of limited clinician resource (see figure 1). Secondary objectives including prospective model performance and clinical experience will continue to be captured during the 12-month follow up phase of the DYNAMIC-AI clinical trial.

M38 RESPiRE: (RESPIRATORY EDUCATION, SELF-MANAGEMENT AND PULMONARY REHABILITATION) EVALUATING THE IMPACT OF GROUP EDUCATION FOR COPD MANAGEMENT IN A PRIMARY CARE NETWORK (PCN)

[1]R Horsley, [1]G Hinson, [1]M Mansoor, [2]H Crocker, [2]H McBain, [2]M Jorgensen, [2]M Humphries. *[1]North Ferriby, UK; [2]Health Innovation South West, Exeter, UK*

10.1136/thorax-2024-BTSabstracts.466

Background The RESPiRE program, is a multidisciplinary group-based education and self-management intervention for patients with Chronic Obstructive Pulmonary Disease (COPD). Designed to support patients to wait well and prepare for winter. The program evaluated the impact of group education, demographic characteristics, address barriers to pulmonary rehabilitation and impact on healthcare utilisation, clinical outcomes and healthcare resource utilisation in a primary care network in England.

Methods Twenty-one patients participated in one of two group sessions. Each session had a 60% attendance rate. Sociodemographic data, comorbid conditions, and MRC (Medical Research Council) Dyspnoea Scale scores were collected. Post-session changes in healthcare utilisation, including exacerbations, GP appointments, and hospital admissions, referrals to pulmonary rehabilitation (PR) were analysed compared to the same period the previous year.

Results Attendees had a mean age of 69 years, with 57.1% male. A majority (71.4%) scored 3 on the MRC Dyspnoea Scale. Referrals post-session included PR (57% n=12), mental health services (19%,n=4), and physiotherapy (10%, n=2). There was a 74% reduction in the number of exacerbations (mean difference -1.67, $p<0.001$), a 59% reduction in all-cause GP appointments mean difference -1.95, $p<0.001$), and a 74% reduction in respiratory-related hospital admissions mean difference -0.67, $p=0.001$) in the period following participation compared to the same time in the previous year.

Patients valued the collaborative effort, comprehensive information and peer support provided during the sessions. Suggestions for improvement included more convenient locations, different timings (evening and weekends), and enhanced amenities.

Conclusion COPD group-based multidisciplinary education and self-management support is associated with a significant reduction in COPD exacerbations, hospital admissions and GP attendance and high patient satisfaction. Group education for patients with COPD, is a potentially high-impact impact intervention. Further research including a control cohort should be considered to strengthen the evidence through larger scale studies.

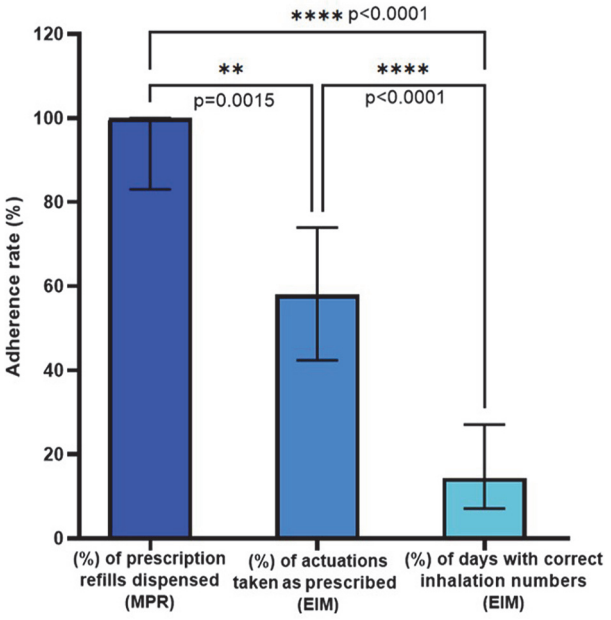
M39 EXPLORING INHALER ADHERENCE IN COPD: DISCREPANT OUTCOMES ACROSS MEASUREMENT MODELS

H Aung, P Novotny, K Balasundaram, H Evans, P Ashley, S Parker, S Edwards, M Bourne, S Sharda, M Iqbal, M Steiner, R Evans, C Brightling, A Wright, N Greening. *Institute for Lung Health, NIHR Respiratory Biomedical Research Centre, University Hospitals of Leicester, Leicester, UK*

10.1136/thorax-2024-BTSabstracts.467

Introduction Inhaled therapy remains the mainstay of pharmacological treatment in COPD. Sub-optimal inhaler adherence leads to poorer clinical outcomes and unnecessary escalation of treatment. There is wide variation in the adherence rate (AR) reported, in part due to heterogeneity in the reporting methods. We aimed to evaluate rates of inhaler adherence in a cohort of patients using various AR assessments.

Methods We investigated the patterns of maintenance and reliever inhaler use in patients with COPD as part of an ongoing prospective observational study (NCT05814484). Direct electronic inhaler adherence monitoring (EIM) tracked inhaler use via clip-on sensors (FindAir Smart device)



Abstract M39 Figure 1 Maintenance Inhaler Adherence comparing prescription refills via medication possession ratio (MPR), different calculation methods of electronic inhaler adherence monitoring (EIM)

connected to the study mobile apps for 3 months. These were compared against adherence assessed by medication possession ratio (MPR) metrics (i.e.,% of medication dispensed) in the 6 months before recruitment, as well as an 8-item questionnaire on self-reported inhaler use.

Results Sixty-seven subjects (Age 67±9yrs, 50% (n=34) female, FEV_1 1.04±0.43L, 68% (n=46) ex-smokers with 46 ±36 pack years) were included in the analysis. Median maintenance inhaler AR was significantly different between measurement techniques (p<0.0001). EIM-derived adherent days (% of days with a correct number of inhalations taken) was 18% [IQR; 3–56], EIM-derived % of prescribed inhalations taken (% of prescribed doses taken over the study period) was 59% [IQR; 26–84], while prescription refill records demonstrated 100% [54–116] MPR and self-reported adherence of 80% (figure 1). Overuse of maintenance inhaler use was noted on 11.2% of days. Median reliever use was 2.7 [IQR; 1–4.6] actuations per day, and only 50.1% (± 30.5) reliever-free days were seen among study participants. Reliever use was correlated with maintenance inhaler use (r=0.48, p=0.0001). Participants demonstrated a mean inhaler technique error of 1.89 (±1.3) for each and only 10% demonstrated no errors in the technique of use.

Conclusion Direct monitoring of inhaler use using EIM demonstrates sub-optimal adherence in patients with COPD, with MPR and self-reports overestimating inhaler use. Novel monitoring and intervention approaches are needed to accurately measure and improve inhaled treatment.

M40 'I KNOW THIS IS ON MY CHEST, LET'S ACT': A QUALITATIVE STUDY EXPLORING THE (SELF) MANAGEMENT OF ACUTE EXACERBATIONS IN COPD USING A SPUTUM COLOUR CHART TO REDUCE UNNECESSARY ANTIBIOTIC USE

[1]RL Adams, [1]M McKenna, [2]K Allsopp, [2]S Saleem, [1]N Le Mesurier, [3,4]ND Baker, [1]AM Turner, [1]NK Gale. *[1]University of Birmingham, Birmingham, UK; [2]Independent patient/public co-analyst, Birmingham, UK; [3]Northern Care Alliance, Salford, UK; [4]Manchester Metropolitan University, Manchester, UK*

10.1136/thorax-2024-BTSabstracts.468

Introduction Reducing antimicrobial resistance is a recognised NHS and global sustainability priority. We report findings from a qualitative study exploring the acceptability of a sputum colour chart and self-management plan (SMP) to guide patient use of antibiotics and steroids in acute exacerbations of chronic obstructive pulmonary disease (AECOPD).

Methods Qualitative interviews were conducted with healthcare professionals (HCPs) and patients from the Colour COPD trial – a randomised controlled trial of usual care versus usual care plus the use of a sputum colour chart to manage AECOPD. Participants were from different parts of England, sampled to promote maximum variation of socio-demographic characteristics, trial arm and frequency of AECOPD. Some patients were invited to participate in follow up interviews. Interviews were audio-recorded, transcribed clean verbatim, then analysed thematically, using an adapted Framework approach. To help keep the patient voice central to our research, expert patients contributed to the patient data analysis.

Results 14 HCPs and 39 patients were interviewed between July 2022 – Nov 2023, 8 of the HCPs and 20 patients were recruited from primary care. 4 patients were interviewed twice. Three overarching themes were identified related to the acceptability of the intervention: (1) handling tensions: the inherent tension between stewardship of antimicrobials and the need to reduce the risk of serious infection and illness in COPD required active negotiation by HCPs and patients (2) clinical and embodied legacies: introduction of the colour chart was broadly accepted as necessary by stakeholders, but disrupted the legacy of efforts to address the risk of exacerbations – for the patients, these efforts were focused around their experiential understandings of their condition, and for healthcare professionals, these efforts were focused around early intervention for AECOPD (3) changing self-management practices: opportunities for changing practices though negotiating change between HCP and patient.

Conclusion Assessment of sputum colour was acceptable to participants, however the colour chart was more likely to be effective in patients new to AECOPD self-management. The legacy of strategies aimed at prescribing antibiotics early to reduce individual risk inhibited the intervention's effectiveness in others, regular reiteration within clinical interactions could maximise the effectiveness of the intervention.

M41 REDUCING THE 30-DAY READMISSION OF PATIENTS WITH COPD EXACERBATION THROUGH THE VIRTUAL WARD

UO Agboje, R Carter. *New Cross Hospital, Wolverhampton, UK*

10.1136/thorax-2024-BTSabstracts.469

Background COPD is a chronic respiratory disease which is progressive, with episodes of exacerbation which may lead to hospital admission. In the UK, virtual wards (VW) are increasingly being used to avoid in-patient admission or for early supported discharge, in keeping with both patient preferences, but also to optimize resource use. However, patients may require in-patient admission from the virtual ward and the current study explores this. While validated scoring systems such as BODE and DECAF scores assess the risk of exacerbation, this study focuses on readmission from virtual ward.

Aim To evaluate the reasons for hospital readmission from COPD virtual ward within 30 days of hospital discharge for exacerbation.

Methods A retrospective review of patients admitted with COPD exacerbation from February 2022-January 2023. A sample size of 26 was randomly selected from the caseload of patients re-admitted from COPD virtual ward within 30 days of hospital discharge, and data obtained from electronic medical records.

Results A total of 887 admissions for COPD exacerbation, 104 (11.7%) were referred to VW. 30-day readmission rate was lower among the virtual ward referrals (41.3% vs 48.9%). The sample population had 14 males, 12 females with mean age 67.7 years. All patients had direct phone numbers and contact details for the virtual ward team. Majority (73%) of the re-admissions were self-referrals. 76.9% of patients were hypoxic with SpO2 range 67%-87%; requiring oxygen to maintain SpO2 at 88–92%. 42.3% had elevated CRP (range 42–167) and received IV antibiotics. IV furosemide was required for fluid overload in 15.4%. 3.8% received antivirals for COVID. All patients required nebulized salbutamol and ipratropium with chest physiotherapy.

Conclusion The COPD virtual ward could potentially reduce 30-day readmission rates. Hypoxia requiring oxygen, severe infection requiring IV antibiotics and fluid overload requiring IV diuretics remain important reasons for hospital readmission from virtual ward. Strategies to reduce the need for self referral are being explored.

REFERENCE

1. NHS England. Rapid evaluation report: chronic obstructive pulmonary disease virtual ward enabled by technology – South and West Hertfordshire Health and Care Partnership.

M42 RAMADAN FASTING FOR PATIENTS WITH CHRONIC RESPIRATORY DISEASES: A SYSTEMATIC REVIEW AND CONSENSUS RECOMMENDATIONS FOR HEALTHCARE PROFESSIONALS

[1]F Khan, [1]S Toor, [2]R Abdulqawi, [3]H Adamali, [4]J Chalmers, [5]N Chaudhuri, [6]N Ghouri, [7]RG Jenkins, [1]A Murphy, [8]N Rahman, [9]R Rashid, [10]I Satia, [7]S Siddiqui, [11]S Waqar. *[1]University Hospitals of Leicester NHS Trust, Leicester, UK; [2]King Faisal Specialist Hospital and Research Centre and College of Medicine, Riyadh, Saudi Arabia; [3]Bristol Interstitial Lung Disease (BILD) Service, Bristol, UK; [4]Division of Molecular and Clinical Medicine, University of Dundee, Dundee, UK; [5]Ulster University, School of Medicine, Belfast, UK; [6]School of Medicine, University of Glasgow and Queen Elizabeth University Hospital, Glasgow, UK; [7]National Heart and Lung Institute, Imperial College London, London, UK; [8]University of Oxford and Oxford Centre for Respiratory Medicine, Oxford, Oxford, UK; [9]Al-Balagh Academy, Nottingham, UK; [10]Department of Medicine, McMaster University and Firestone Institute for Respiratory Health, St Joseph's Hospital, Hamilton, Canada; [11]Department of Primary Care and Public Health, Imperial College London, London, UK*

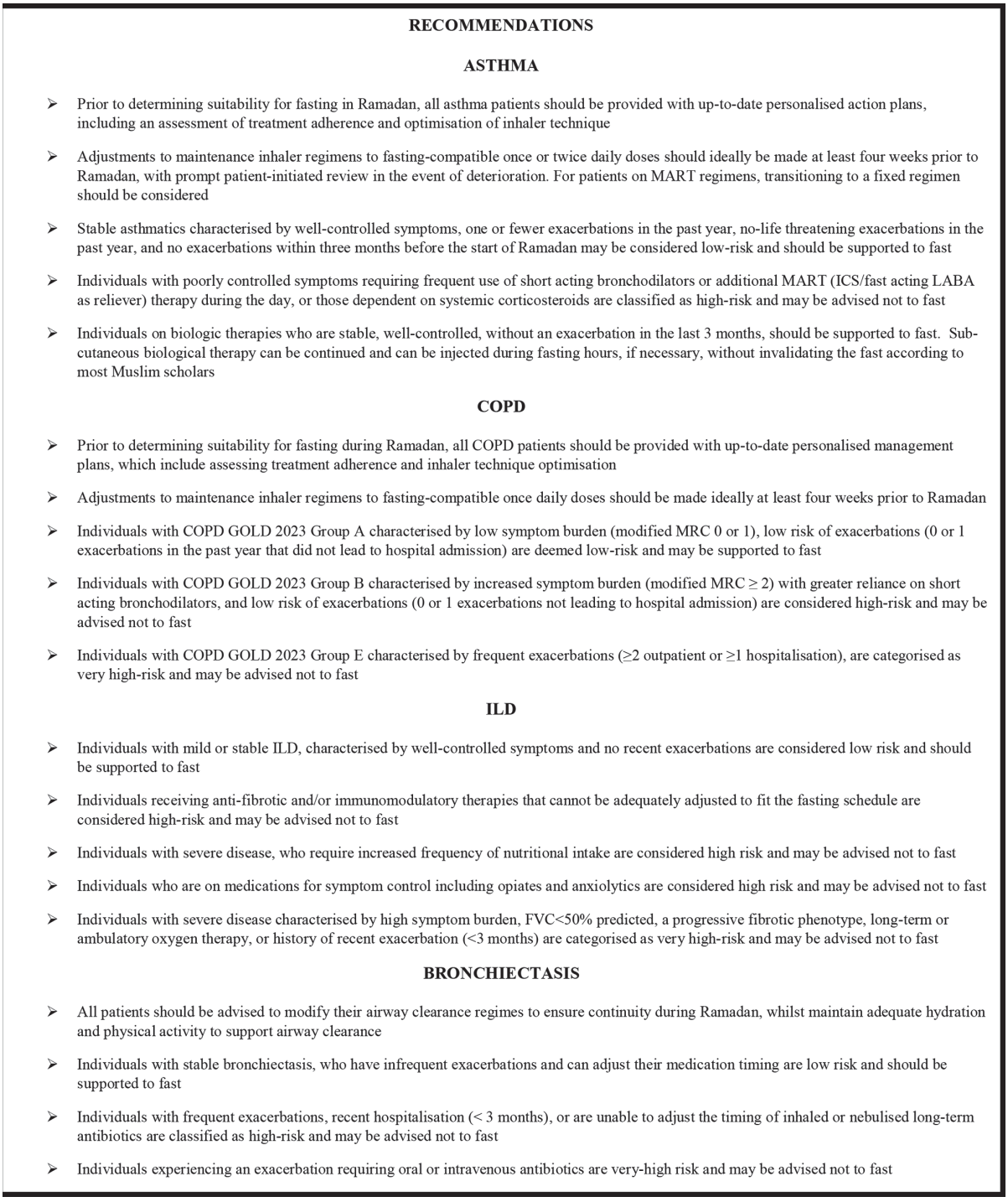
10.1136/thorax-2024-BTSabstracts.470

Background Ramadan, observed by nearly two billion Muslims worldwide, involves fasting from dawn to sunset, presenting challenges for individuals with chronic respiratory diseases due to potential risks from altered medication regimens and oral intake restrictions. This study aimed to synthesise the current evidence to develop consensus recommendations for managing patients with asthma, chronic obstructive pulmonary disease (COPD), interstitial lung disease (ILD), and bronchiectasis during Ramadan.

Methods A comprehensive search of electronic databases was conducted including MEDLINE, EMBASE and Google Scholar, according to a pre-specified protocol (PROSPERO CRD42024532759) to identify studies on the outcomes of Ramadan fasting in individuals with chronic respiratory diseases. The findings informed consensus recommendations stratified by the risk of adverse outcomes using the IDF-DAR risk assessment criteria. An international expert group including both medical and religious experts, was convened to refine these guidelines, achieving consensus approval from all authors.

Results 11 studies met the inclusion criteria, primarily addressing asthma and COPD, with no relevant studies found on ILD or bronchiectasis. The studies revealed that fasting did not significantly impact hospitalisation rates or lung function tests in individuals with stable asthma and COPD. However, the studies were limited by small sample sizes and methodological limitations, limiting the generalisability of findings.

To develop the consensus recommendations, a multinational panel of 12 reviewers was assembled, comprising both muslim and non-muslim experts. The panel included



Abstract M42 Figure 1 This figure summarises the consensus recommendations developed by a multinational panel of experts for managing patients with asthma, chronic obstructive pulmonary disease (COPD), interstitial lung disease (ILD), and bronchiectasis during Ramadan

respiratory physicians, general practitioners, and religious scholars, ensuring recommendations were both religiously sensitive and medically robust. 19 recommendations were developed to support patients considering fasting, emphasising pre-Ramadan consultations, individualised risk assessments, and adjustments to medication regimens to accommodate fasting hours.

Conclusion This systematic review highlights the need for larger, well-designed, studies to better understand the implications of Ramadan fasting across chronic respiratory diseases, particularly ILD and bronchiectasis. The developed recommendations offer a structured approach to assess the risks associated with fasting, ensuring healthcare providers can offer informed and safe guidance during Ramadan. These recommendations should be applied with consideration of individual clinical judgement and patient preferences. Future research should aim to fill the gaps identified, supporting evidence-based guidelines that reconcile medical and religious considerations.

Winter Meeting 2024 Declarations of interest

T1 EXPLORING THE TUMOUR STROMA IN PLEURAL MESOTHELIOMA USING SINGLE-CELL AND SINGLE-NUCLEUS TRANSCRIPTOMICS

Funding provided by Asthma+Lung UK.

T2 SARS-COV-2 INFECTION OF NASAL EPITHELIAL CELLS FROM CHILDREN RESULTS IN GREATER NEUTROPHIL TRANS-EPITHELIAL MIGRATION, BUT A MORE ACTIVATED NEUTROPHIL PHENOTYPE EMERGES IN OLDER ADULTS

UKRI, NIHR GOSH BRC, GOSH Charity.

T3 IMMUNOMODULATORY EFFECTS OF THE DIPEPTIDYL PEPTIDASE-1 INHIBITOR BRENSOCATIB IN PATIENTS WITH BRONCHIECTASIS: DATA FROM THE PHASE 2 WILLOW TRIAL

The Willow trial was funded by Insmed Incorporated. Post hoc analyses from WILLOW were funded through a Research Collaboration Agreement with Insmed Incorporated.

T4 INTEGRATED PLASMA PROTEOMICS IDENTIFIES TUBERCULOSIS-SPECIFIC BIOMARKERS

HS, DGB, and PE are cited as coinventors on a patent ('Biomarker and uses thereof' UK 2306925.5), which lists some of the markers identified within this study as potential new diagnostic markers for tuberculosis.

T5 GENOMICS OF DRY COUGH UNRAVELS NEUROLOGICAL PATHWAYS

Sources of funding: Medical Research Council, Wellcome Trust, National Institute for Health and Care Research, Orion Pharma.

Conflicts of interest: CJ, RP, LVW and MDT report funding from Orion Pharma within the scope of the submitted work. LVW has held research grants from GlaxoSmithKline (as principal investigator) unrelated to current work, and reports consultancy for Galapagos. WH and MM are salaried employees of Orion Pharma. MDT has research collaborations with GlaxoSmithKline unrelated to the current work. CE has received unrestricted research grants from Novo Nordisk and Abbott Diagnostics; no personal fees.

T6 EXHALED NITRIC OXIDE (FENO) PREDICTS CLINICAL AND ANTI-INFLAMMATORY RESPONSE TO PREDNISOLONE FOR BREAKTHROUGH ATTACKS IN ANTI-IL5/IL5R TREATED ASTHMA

Funded through NIHR Biomedical Research Centre grant.

S1 POSTURAL POSITION OF PULMONARY FUNCTION TESTING AND RELATIONSHIP WITH OXYGEN ENHANCED MRI IN CYSTIC FIBROSIS

Professor Jane C Davies has undertaken Clinical trial leadership and/ or Advisory Board and speaking roles for Vertex Pharmaceuticals, Boehringer-Ingelheim, Eloxx, Algipharma, AbbVie, Arcturus, Enterprise Therapeutics, Recode, LifeArc, Genentech and Tavan.

S2 EVALUATION OF LUNG TRANSPLANT FUNCTION AND DETECTION OF CLAD USING 129XE-MRI AND LCI

Funding provided by JP Moulton Charitable Foundation.

S3 PREDICTING LONGITUDINAL DECLINE IN GAS EXCHANGE IN ASTHMA AND/OR COPD USING XENON-129 MRI AND EXPLAINABLE MACHINE LEARNING TECHNIQUES

Funded by AstraZeneca and the Medical Research Council (MR/M008894/1).

S6 ROBOTIC ASSISTED BRONCHOSCOPY IMPLEMENTATION WITHIN A UK TERTIARY REFERRAL CENTRE

Robotic programme sponsored by North Central London Cancer Alliance.

S13 INCREASED VARIABILITY OF PEAK FLOW REFLECT T2 INFLAMMATION MORE THAN ACT OR CHANGE IN FEV1

Funding: This study is funded by Royal College of Surgeons in Ireland (RCSI) through the StAR MD research programme. Conflict of Interest: Richard Costello has patents on the use of acoustics to assess inhaler errors and adherence, a method to quantify adherence, predict exacerbations, has received grants from Aerogen and GlaxoSmithKline; and speaker fees for Aerogen, AstraZeneca and GlaxoSmithKline.

S14 LOSS OF MEMBRANE IL-5 RECEPTOR IS A MARKER FOR EOSINOPHIL ACTIVATION

NIHR Oxford Biomedical Research Centre.

S17 THE DIAGNOSTIC ACCURACY OF CHEST X-RAY FOR THE DIAGNOSIS OF SILICOSIS AND HOW THIS RELATES TO SILICA EXPOSURE

Patrick Howlett is supported by the MRC Clinical Research Training Fellowship.

S22 THE ROLE OF ERECTOR SPINAE PLANE BLOCKS IN MEDICAL THORACOSCOPY: A SAFE AND EFFECTIVE WAY OF PROVIDING ANALGESIA

This abstract was presented at UK Pleural Society Conference 2024.

S25 LOCAL ANAESTHETIC USE IN PLEURAL PROCEDURES: TIME TO RECONSIDER THE GUIDELINES?

This abstract was presented at UK Pleural Society Conference (July 2024).

S34 REDUCED MUCUS PLUGGING WITH TEZEPELUMAB IS SPATIALLY ASSOCIATED WITH REDUCED AIR TRAPPING IN A BROAD POPULATION OF PATIENTS WITH MODERATE TO SEVERE ASTHMA

Funding: This study was funded by AstraZeneca and Amgen Inc. Acknowledgments: Medical writing support was provided by Aaron Borg, PhD, of PharmaGenesis London, London, UK, with funding provided by AstraZeneca and Amgen Inc. Disclosures: Christopher E Brightling has received grants and consultancy fees from 4D Pharma, AstraZeneca, Chiesi, Genentech, GSK, Mologic, Novartis, Regeneron Pharmaceuticals, Roche and Sanofi. Åsa Hellqvist, Javier Moreno Sepena, Ayman Megally and Lars H Nordenmark, are employees of AstraZeneca and may own stock or stock options in AstraZeneca. Sarah Diver has received consultancy fees from AstraZeneca. Celeste Porsbjerg has received grants and consultancy fees from ALK-Abelló, AstraZeneca, Chiesi, GSK, Novartis, Sanofi and Teva Pharmaceuticals. Elliot Israel has received consultancy and personal fees from 4D Pharma, AB Science, Amgen, AstraZeneca, Avillion, Biometry, Cowen, Equillium, Genentech, GSK, Merck, Novartis, Pneuma Respiratory, PPS Health, Regeneron Pharmaceuticals, Sanofi, Sienna Biopharmaceuticals and Teva Pharmaceuticals; has received nonfinancial support from Circassia, Teva Pharmaceuticals and Vorso Corp; and has received clinical research grants from AstraZeneca, Avillion, Genentech, Gossamer Bio, Novartis and Sanofi. John D Newell Jr is a VIDA medical advisor and owns stock and stock options in VIDA; has received publishing royalties from Elsevier; is a volunteer radiology faculty member at the University of Washington, Seattle, WA, USA; is a visiting Professor of Radiology and Biomedical Engineering at the University of Iowa, Iowa City, IA, USA, and is paid from National Institute of Health grants through the University of Iowa, Iowa City, IA, USA. Samuel Peterson is an employee of VIDA and owns stock or stock options in VIDA. Andrew W Lindsley is an employee of Amgen and owns stock in Amgen.

S35 DUPILUMAB EFFECT ON EXACERBATIONS AND LUNG FUNCTION DESPITE WITHDRAWAL OF INHALED CORTICOSTEROIDS/LONG-ACTING BETA AGONISTS

Acknowledgments and funding sources

Data included in this abstract were originally presented at the European Academy of Allergy & Clinical Immunology (EAACI) Congress; Valencia, Spain; May 31–June 03, 2024. Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifiers: NCT01312961 and NCT03387852. Medical writing/editorial assistance was provided by Michael Machczynski, PhD, of Excerpta Medica, and was funded by Sanofi and Regeneron Pharmaceuticals, Inc., according to the Good Publication Practice guidelines. Editorial assistance for this abstract was provided by Khushboo Singhal, M. Pharm, of Sanofi.

Disclosures

Wechsler ME: is an employee of National Jewish Health and has received consultancy, advisory or speaking fees from Amgen, AstraZeneca, Ayala Therapeutics, Boehringer Ingelheim, Cerecor, Cohero Health, Cytoreason, Eli Lilly, Equillium, GlaxoSmithKline, Incyte, Kinaset Therapeutics, Novartis, Pylaxis, Pulmatrix, Rapt Therapeutics, Regeneron Pharmaceuticals Inc., resTORbio, Roche/Genentech, Sanofi/Genzyme, Sentien, Sound Biologics, Teva Pharmaceuticals and Upstream Bio.

Pfeffer P: AstraZeneca, GlaxoSmithKline and Sanofi – advisory boards; AstraZeneca, Chiesi and GlaxoSmithKline – lectures at meetings/webinars, with/without honoraria; AstraZeneca – attended international conferences; AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi – taken part in clinical trials; GlaxoSmithKline – conducting research for which his institution receives remuneration and quality improvement activity at his institution supported by AstraZeneca.

Jackson DJ: reports advisory board and speaker fees from AstraZeneca, GSK and Sanofi and research grants from AstraZeneca.

Rabe KF: reports grants from Boehringer Ingelheim and AstraZeneca, as well as personal fees from Boehringer Ingelheim, AstraZeneca, Novartis, Roche, Chiesi Pharmaceuticals, Regeneron Pharmaceuticals Inc., Sanofi and Berlin-Chemie.

Pavord ID: reports speaker's honoraria for sponsored meetings from AstraZeneca, Boehringer Ingelheim, Aerocrine, Almirall, Novartis, Teva, Chiesi, Sanofi/Regeneron, and GSK; payments for organizing educational events from AstraZeneca, GSK, Sanofi/Regeneron, and Teva; honoraria for attending advisory panels with Genentech, Sanofi/Regeneron, AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Teva, Merck, Circassia, Chiesi, and Knopp; payments to support US Food and Drug Administration approval meetings from GSK; sponsorship to attend international scientific meetings from Boehringer Ingelheim, GSK, AstraZeneca, Teva, and Chiesi; a grant from Chiesi to support a Phase II clinical trial in Oxford. He is co-patent holder of the rights to the Leicester Cough Questionnaire and has received payments for its use in clinical trials from Merck, Bayer, and Insmed.

Virchow JC: reports consulting fees and payment or honoraria for lectures, presentations, speakers' bureaus, manuscript writing or educational events from Novatis, Chiesi, GlaxoSmithKline, AstraZeneca, TEVA, Menarini, Berlin-Chemie, Sanofi and Boehringer Ingelheim, support for attending meetings and/or travel from Sanofi and Boehringer Ingelheim, and participation on a data safety monitoring board or advisory board for Chiesi, all outside the submitted work.

Katial R: AstraZeneca – speaker fees, consultant; Pharming – speaker fees; GlaxoSmithKline, Sanofi, Regeneron Pharmaceuticals Inc. – consulting.

Israel E: has served as a consultant to and received personal fees from 4D Pharma, AB Science, Amgen, AstraZeneca, Avillion, Biometry, Cowen, Equillium, Genentech, GlaxoSmithKline, Merck, Novartis, Pneuma Respiratory, PPS Health, Regeneron Pharmaceuticals Inc., Sanofi, Sienna Biopharmaceuticals and Teva Pharmaceuticals; has received non-financial

support from Circassia, Teva Pharmaceuticals and Vorso Corp; and has received clinical research grants from AstraZeneca, Avillion, Genentech, Gossamer Bio, Novartis and Sanofi.

Pandit-Abid N, Jacob-Nara JA, Rowe PJ: Sanofi – employees, may hold stock and/or stock options in the company. **Xia C, Soliman M, Deniz Y:** Regeneron Pharmaceuticals Inc. – employees and shareholders. **Sacks H:** Regeneron Pharmaceuticals Inc. – employee; Optinose – shareholder.

S38 NEW ONSET EGPA IN PATIENTS ON BIOLOGICS FOR SEVERE ASTHMA- A MULTI-CENTRE CASE SERIES

This abstract was presented at European Respiratory Society 2024.

S40 RADIOLOGICAL BRONCHIECTASIS VS OUTCOMES IN ALPHA-1 ANTITRYPSIN DEFICIENCY

This research is funded by the National Institute for Health and Care Research (NIHR) Midlands Patient Safety Research Collaboration (PSRC). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health.

This abstract was presented at the 2024 ATS Conference.

S41 INVESTIGATION OF NOVEL BIOMARKERS OF IMMUNE DYSREGULATION FOR THE IMPROVEMENT OF ENDOTYPING IN BRONCHIECTASIS

AMM & NB contributed equally.

S42 PSEUDOMONAS AERUGINOSA GENETIC VARIANTS ASSOCIATED WITH INCREASED EXACERBATIONS IN BRONCHIECTASIS

Supported by the Wellcome Trust through a collaborative award. Supported by The European Respiratory Society through the EMBARC3 consortium which includes partners Armata, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, Glaxosmithkline, Grifols, Insmed, Janssen, Lifearc, and Zambon.

S43 THE LUNG MYCOBIOME IN NONTUBERCULOUS MYCOBACTERIAL PULMONARY DISEASE

KK was supported by the National Institute for Health and Care Research (NIHR) Imperial Biomedical Research Centre (BRC). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. KK was also supported by the Lee Family endowment to the Faculty of Medicine at Imperial College London. KK has previously received additional support from the Gavin Donaldson Memorial Fund and the Phillip Ind Endowment Fund at the National Heart and Lung Institute, Imperial College London. HCE was supported by a grant from the Welton Foundation.

S44 OUTCOMES AND CHARACTERISTICS OF PATIENTS TREATED WITH NEBULISED AMIKACIN LIPOSOME INHALATION SUSPENSION (ARIKAYCE®): REPORT FROM A TERTIARY CENTRE

Georgie Housley reports receiving consultancy fees from Insmed Incorporated. Michael R Loebinger reports receiving consultancy fees from 30T, AN2 Therapeutics, Armata, Boehringer Ingelheim, Chiesi, Electromed, Insmed Incorporated, Parion Sciences, Recode Therapeutics, Cepheid, Mannkind, Zambon, Galapagos and Ethris within the past 24 months.

S52 EXTRA-MESO FEASIBILITY - A RANDOMISED FEASIBILITY STUDY OF EXERCISE THERAPY IN MESOTHELIOMA

This study is funded by a research grant provided by Mesothelioma UK.

S59 THE ROLE AND IMPACT OF AN INTERSTITIAL LUNG DISEASE SPECIALIST NURSE IN THE SECONDARY CARE SETTING

This service evaluation is part of a Collaborative Working Partnership between Royal Papworth Hospital NHS Foundation Trust, East Suffolk and North Essex NHS Foundation Trust (Colchester Hospital) and Boehringer Ingelheim Ltd. This abstract has been co-developed with the Hospital Trusts and Boehringer Ingelheim Ltd. Boehringer Ingelheim Ltd is providing project management and funding to the Collaborative Working Partnership; Royal Papworth and Colchester Hospitals are providing funding and resource to carry out the project.

S61 FREQUENT PRODUCTIVE COUGH ASSOCIATES WITH AN INCREASED RISK OF CARDIOPULMONARY OUTCOMES IN A REAL-LIFE COHORT OF PATIENTS WITH COPD (NOVELTY STUDY)

Funded by AstraZeneca;

E Rapsomaniki - Employee of AstraZeneca

H Müllerová - Employee and shareholder of AstraZeneca

R Hughes - Employee and holds stocks in AstraZeneca

J Marshall - Employee and shareholder of AstraZeneca

A Papi - Received research grants from AstraZeneca; Boehringer Ingelheim, Chiesi, GSK, Pfizer, Sanofi and Teva Pharmaceuticals

Consulting fees from AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, IQVIA, Novartis and Sanofi; Payment or honoraria from AstraZeneca, Avillion, Boehringer Ingelheim, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, IQVIA, Menarini, MSD, Mundipharma, Novartis, Sanofi, Teva Pharmaceuticals and Zambon

H Reddel - Participated in advisory boards for AstraZeneca; Chiesi, GSK, and Sanofi-Genzyme;

Received honoraria from Alkem, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, Hetz, GSK, Sanofi and Teva Pharmaceuticals for independent medical educational presentations;

Received independent research funding from AstraZeneca, Chiesi, GSK, and Sanofi-Genzyme;

Consulting fees from AstraZeneca, Chiesi and Novartis; Chair of the Global Institute for Asthma Science Committee and a member of the Australian National Asthma Council Guidelines Committee.

M Patel - Employee and shareholder of AstraZeneca.

This abstract was presented at the ERS 2023; Milan, Italy; 9-13 September 2023.

S72 PROTEOMIC EVALUATION OF A HUMAN LUNG MODEL OF FIBROSIS FOR NOVEL THERAPEUTIC TARGET SELECTION

This abstract was presented at the Extracellular Matrix Pharmacology Congress - Copenhagen June 2024.

S79 BAL LYMPHOCYTOSIS IS ASSOCIATED WITH A HIGHER PREDICTED FVC IN PATIENTS WITH PERSISTENT RESIDUAL LUNG ABNORMALITIES AFTER COVID-19

This study was funded by UKRI.

S80 THE POST-COVID LUNG MICROBIOME RESEMBLES THAT OF HEALTHY VOLUNTEERS. INSIGHTS FROM THE POST COVID-19 INTERSTITIAL LUNG DISEASE (POSTCODE) STUDY

This study was funded by the UKRI.

S82 PERSISTENTLY RAISED SERUM AMYLOID A IN NEVER-HOSPITALISED LONG-COVID PATIENTS WITHOUT ASSOCIATION WITH LUNG OR COAGULATION ABNORMALITIES: THE EXPLAIN STUDY (HYPERPOLARISED XENON MAGNETIC RESONANCE PULMONARY IMAGING IN PATIENTS WITH LONG-COVID)

The study was funded by NIHR.

S83 AN ONLINE BREATHING AND WELLBEING PROGRAMME (ENO BREATHE) FOR PEOPLE WITH LONG COVID BREATHLESSNESS: RESULTS FROM 1433 PARTICIPANTS

SM, TP, KB, HB, JM, SZ, THH, and ALa work for ENO who developed and deliver ENO Breathe, however they were not involved in data analysis.

S84 POST-HOSPITAL COVID-19 REHABILITATION (PHOSP-R): A RANDOMISED CONTROLLED TRIAL

This is a summary of independent research funded by UKRI/NIHR and carried out at the National Institute for Health and Care Research (NIHR) Leicester Biomedical Research Centre (BRC). The views expressed are those of the author(s) and not necessarily those of UKRI/NIHR, the NIHR or the Department of Health and Social Care.

This abstract was presented at the 2024 ERS Congress.

S87 CONTACTLESS AND AUTOMATED MONITORING TO STUDY CHANGES IN NOCTURNAL PARAMETERS BEFORE AND AFTER ASTHMA ATTACKS IN CHILDREN

This report is independent research funded by the National Institute for Health Research (Artificial Intelligence, Prediction and prevention of Asthma attacks in Children, AI_A-WARD02005) and NHSX. The views expressed in this publication are those of the author(s) and not necessarily those of the National Institute for Health Research, NHSX or the Department of Health and Social Care.

S88 PARS STUDY: PAEDIATRIC ADVANCED RESPIRATORY SERVICE STUDY- AN OBSERVATIONAL DIAGNOSTIC FEASIBILITY STUDY OF NOVEL ACCELEROMETER-BASED RESPIRATORY SENSOR FOR SLEEP DIAGNOSTICS

This project has been funded by InnovateUK grant.

S90 FRONTIER-3: A RANDOMIZED, PHASE 2A STUDY TO EVALUATE THE EFFICACY AND SAFETY OF TOZORAKIMAB (AN ANTI-INTERLEUKIN-33 MONOCLONAL ANTIBODY) IN EARLY-ONSET ASTHMA

Conflicts of interest: JC has received grants and personal fees from AstraZeneca, Genentech and Vectura, and has received grants from Optinose, Sanofi and Teva Pharmaceuticals. FR, RM, EJ, MWS, MR, DM, DB, EL, CK, AP, MB and HP are employees of AstraZeneca and may hold stock or stock options. AW is a former employee of AstraZeneca and may hold stock or stock options. Funding: This study was funded by AstraZeneca. Acknowledgments: Medical writing support was provided by Laura Drought of PharmaGenesis London, London, UK, with funding provided by AstraZeneca.

S91 TOZORAKIMAB (ANTI-IL-33 MAB) REDUCES MUCUS PLUGGING IN COPD: AN IMAGING SUB-STUDY IN THE FRONTIER-4 PHASE 2A COPD TRIAL

Funding: This study was funded by AstraZeneca. Acknowledgements: Medical writing support was provided by Sinéad Flannery, PhD, of PharmaGenesis London, London, UK, with funding from AstraZeneca. Disclosures: LHN, PG, FR, SD, US, IP, RM, RS, JK, CK, MGB and HCP are employees of AstraZeneca and may hold stock or stock options. DS has received personal fees from Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo Pharmaceuticals, Genentech, Glenmark Pharmaceuticals, Gossamer Bio, GSK, Kinaset Therapeutics, Menarini Group, Novartis, PULMATRiX, Sanofi, Synairgen, Teva Pharmaceuticals, Theravance Biopharma and Verona Pharma.

S92 FRONTIER-4: A PHASE 2A STUDY TO INVESTIGATE TOZORAKIMAB (ANTI-IL-33 MAB) IN COPD

Funding: This study was funded by AstraZeneca. Acknowledgements: Medical writing support was provided by Sinéad Flannery, PhD, of PharmaGenesis London, London, UK, with funding from AstraZeneca. Disclosures:HCP, PG, FR, SD, US, IP, RM, RS, JK, EJ, DB, AK, MWS, CK and MGB are employees of AstraZeneca and may hold stock or stock options in AstraZeneca. DS has received personal fees from Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo Pharmaceuticals, Genentech, Glenmark Pharmaceuticals, Gossamer Bio, GSK, Kinaset Therapeutics, Menarini Group, Novartis, PULMATRiX, Sanofi, Synairgen, Teva Pharmaceuticals, Theravance Biopharma and Verona Pharma.

S93 PHASE 3 NOTUS TRIAL: DUPILUMAB EFFICACY AND SAFETY IN PATIENTS WITH MODERATE-TO-SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND TYPE 2 INFLAMMATION

Bhatt SP: NIH – grant support; Apreo, Boehringer Ingelheim, Chiesi, Genentech, GSK, Merck, Sanofi-Regeneron Pharmaceuticals Inc.– consultant; Horizon CME, Integrity CE, Medscape – honoraria. Rabe KF: AstraZeneca, Boehringer Ingelheim, Chiesi, Gilead, GSK, Medscape, Novartis, Pearl Pharmaceuticals, Sanofi, Teva – consultant, speaker fees, and advisory board member; co-founder of RNATICS, Germany. Hanania NA: Amgen, Astra Zeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi, Teva – honoraria for serving as a consultant or advisor; AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Sanofi – grant support to institution. Vogelmeier CF: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, GSK, Grifols, Insmed, Menarini, Novartis, Nuvaira, Roche, Sanofi – presentations at symposia and/or served on scientific advisory boards. Bafadhel M: AstraZeneca, Roche – grant funding to institution; AstraZeneca, Chiesi, GSK – consultancy and speaker honoraria; Albus Health, ProAxsis – scientific advisor. Christenson SA: Merck, NIH – grant support; AstraZeneca, GSK, Glenmark Pharmaceuticals – consulting fees; AstraZeneca, Sanofi-Regeneron Pharmaceuticals Inc., Genentech, Sunovion – payment and honoraria; AstraZeneca, Glenmark Pharmaceuticals, GSK, Sanofi-Regeneron Pharmaceuticals Inc. – participation in advisory boards or Data and Safety Monitoring Boards. Papi A: AstraZeneca, Chiesi, GSK, Sanofi – payments to institution; AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, Iqvia, Novartis, Sanofi – consultancy fees; AstraZeneca, Avillion, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, IQVIA, Menarini, MSD, Mundipharma, Sanofi, Zambon – payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events. Singh D: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo Pharmaceuticals, Genentech, GSK, Glenmark, Gossamer Bio, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Teva, Theravance Biopharma, Verona Pharma – consultancy fees and honoraria. Laws E, Lu X, Bauer D, Abdulai RM, Robinson LB: Sanofi – employees, may hold stock and/or stock options in the company. Dakin P, Maloney J, Bansal A: Regeneron Pharmaceuticals Inc. – employees and shareholders.

Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc.

S94 DUPILUMAB IMPROVES QUALITY OF LIFE IN PATIENTS WITH MODERATE-TO-SEVERE COPD AND TYPE 2 INFLAMMATION IN PHASE 3 BOREAS TRIAL

Acknowledgments and funding sources

Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifier: NCT03930732. Medical writing/editorial assistance was provided by Laura McEntee, PhD, of Excerpta Medica, and was funded by Sanofi and Regeneron Pharmaceuticals Inc., according to the Good Publication Practice guideline.

Disclosures

Papi A: AstraZeneca, Chiesi, GSK, Sanofi – payments to institution; AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, IQVIA, Novartis, Sanofi – consultancy fees; AstraZeneca, Avillion, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, IQVIA, Menarini, MSD, Mundipharma, Sanofi, Zambon – payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events. Bhatt SP: NIH – grant support; Boehringer Ingelheim, Regeneron Pharmaceutical, Inc., Sanofi, GSK, Apreo – consultant; IntegrityCE, Medscape – Honorarium. Rabe KF: AstraZeneca, Boehringer Ingelheim, Chiesi, Gilead, GSK, Novartis, Pearl, Sanofi, Teva – consultant, speaker fees and advisory board member; co-founder of rnatics, Germany. Hanania NA: Amgen, AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi, Teva – honoraria for serving as a consultant or advisor; AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Sanofi – grant support to institution. Vogelmeier CF: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, Grifols, GSK, Insmed, Menarini, Novartis, Nuvaira, Roche, Sanofi – symposia presentations and/or scientific advisory boards. Bafadhel M: AstraZeneca, Roche – grant funding to institution; AstraZeneca, Chiesi, GSK – consultancy and speaker honoraria; ProAxsis,AlbusHealth – scientific advisor. Christenson SA: Grant support: NIH; consulting/advisory board: Sanofi, Regeneron, AstraZeneca, Glenmark, Verona; speaking (non-branded): Sanofi, Regeneron, GlaxoSmithKline, AstraZeneca. Singh D: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo Pharmaceuticals, Genentech, Glenmark, Gossamer Bio, GSK, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Teva, Theravance Biopharma, Verona Pharma – consultancy fees and honoraria. Laws E, Lu X, Bauer D, Robinson LB, Abdulai RM: Sanofi – employees, may hold stock and/or stock options in the company. Maloney J, Bansal A: Regeneron Pharmaceuticals Inc. – employees and shareholders.

S95 EFFECT OF DUPILUMAB TREATMENT ON MUCUS PLUGGING AND MUCUS VOLUME IN TYPE 2 ASTHMA: THE PHASE 4 VESTIGE TRIAL

Funding source: Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifier: NCT04400318 (VESTIGE). Disclosures: Porsbjerg C: ALK, AstraZeneca, Chiesi, GSK, Novartis, Sanofi, Teva – grants, consultant, speaker fees; ALK, AstraZeneca, Novartis, Sanofi, Teva –advisory board member. Dunican EM: Aer Therapeutics, Sanofi –advisory board member. Lugogo NL: Amgen, AstraZeneca, Avillion, Genentech, Gossamer Bio, GSK, Regeneron Pharmaceuticals Inc., Sanofi, Teva – research support paid to

institution; Amgen, AstraZeneca, Genentech, GSK, Novartis, Regeneron Pharmaceuticals Inc., Sanofi, Teva – advisory board member, consultant; AstraZeneca – travel support; AstraZeneca, GSK – honoraria for non-speakers bureau presentations. Castro M: American Lung Association, AstraZeneca, Gala Therapeutics, Genentech, GSK, NIH, Novartis, PCORI, Pulmatrix, sanofi-aventis, Shionogi, Theravance Biopharma – research support; Allakos, Amgen, Arrowhead Pharmaceuticals, Genentech, GSK, Merck, Novartis, OM Pharma, Pfizer, Pioneering Medicines, sanofi-aventis, Teva – consultant; Amgen, AstraZeneca, Genentech, Regeneron Pharmaceuticals Inc., Sanofi, Teva – speaker fees; Aer Therapeutics – royalties. Papi A: AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Mundipharma, Teva – grants, personal fees, non-financial support, other; Menarini, Novartis, Zambon – personal fees, non-financial support; Sanofi – grants (all outside the submitted work). Backer V: ALK-Abelló, Birk, Chiesi, GSK, MSD, Novartis, Sanofi– grants; AstraZeneca, Pharmaxis, Regeneron Pharmaceuticals Inc., Teva – other. Brightling CE: AstraZeneca, Chiesi, Genentech, GSK, Novartis, Regeneron Pharmaceuticals Inc., Roche, Sanofi – grants and consultancy paid to Institution. Bourdin A: GSK – non-financial support during the conduct of the study; Acceleron Pharma, Actelion, Galapagos, MSD, Nuvaira, Pulmonx, United Therapeutics, Vertex Pharmaceuticals – other; Boehringer Ingelheim – grants, personal fees; AstraZeneca, Chiesi, GSK, Regeneron Pharmaceuticals Inc., Sanofi – personal fees. Virchow C: AstraZeneca, Avontec, Bayer, Bencard Allergie, Bionorica, Boehringer Ingelheim, Chiesi, Essex/Schering-Plough, GSK, Janssen-Cilag, Leti Pharma, Meda Pharmaceuticals, Merck, MSD, Mundipharma, Novartis, Nycomed/Altana, Pfizer, Revotar, Sandoz-Hexal, Stallergenes Greer, Teva Pharmaceuticals, UCB/Schwarz Pharma, Zydus/Cadila – lectures, honoraria; Avontec, Boehringer Ingelheim, Chiesi, Essex/Schering-Plough, GSK, Janssen-Cilag, Meda, MSD, Mundipharma, Novartis, Regeneron Pharmaceuticals Inc., Revotar, Roche, sanofi-aventis, Sandoz-Hexal, Teva Pharmaceuticals, UCB/Schwarz Pharma – advisory board member; Deutsche Forschungsgesellschaft, GSK, Land Mecklenburg-Vorpommern, MSD – research grants. Zhang M, Rowe PJ, de Prado Gómez L, Jacob-Nara JA: Sanofi – employees, may hold stock and/or stock options in the company. Soler X, Deniz Y: Regeneron Pharmaceuticals Inc. – employees and shareholders. Sacks H: Regeneron Pharmaceuticals Inc. – employee; Optinose – shareholder.

Data included in this abstract were originally presented at the American Thoracic Society (ATS) 2024; San Diego, United States; May 17–22, 2024.

S96 CIRCULATING NEUTROPHILS IN IDIOPATHIC PULMONARY FIBROSIS HAVE A DISTINCT BIOMECHANICAL PHENOTYPE OF SYSTEMIC ACTIVATION THAT CORRELATES WITH DISEASE SEVERITY

Funded by NIHR Imperial Biomedical Research Centre.

S101 ABSTRACT WITHDRAWN

S102 EFFECT OF DUPILUMAB ON AIRWAY OSCILLOMETRY, VENTILATION/PERFUSION, AND MUCUS PLUGGING IN MODERATE-TO-SEVERE ASTHMA: THE VESTIGE TRIAL

Acknowledgements and funding source

Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifiers: NCT04400318 (VESTIGE). Data included in this presentation was originally presented at the American Thoracic Society (ATS) 2024; San Diego, United States; May 17–22, 2024. Medical writing/editorial assistance was provided by Michael Machczynski, PhD, of Excerpta Medica, and was funded by Sanofi and Regeneron Pharmaceuticals Inc., according to the Good Publication Practice guidelines. Editorial assistance for this abstract was provided by Ranjit Katkar of Sanofi.

Author disclosures

Washko GR: Boehringer Ingelheim, Department of Defense (DoD), National Institutes of Health (NIH) – grants; Intellia Therapeutics – consulting; Sanofi, Regeneron Pharmaceuticals Inc. – consulting, travel fees; Vertex Pharmaceuticals – consulting; Pieris Therapeutics – advisory board. Dr. Washko is a co-founder and equity share holder in Quantitative Imaging Solutions, a company that provides consulting services for image and data analytics. Dr Washko's wife is employed by Biogen.

Lipworth BJ: AstraZeneca – grants, personal fees (consulting, advisory board); Sanofi, Regeneron Pharmaceuticals Inc. – personal fees, congress travel fees; Circassia – personal fees (consulting); Teva – grant recipient, personal fees (consulting), congress fees; Chiesi – grants, personal fees (consulting, advisory board), congress fees; Lupin – personal fees (consulting); Glenmark – personal fees (consulting); Dr. Reddy – personal fees (consulting); Sandoz – personal fees (consulting); Boehringer Ingelheim – grant recipient, personal fees (consulting, advisory board), congress fees; Mylan – grant recipient and personal fees (consulting); son employed by AstraZeneca

Saralaya D: Chiesi – speaker fees; AstraZeneca – congress fees, advisory board, and grant applicant

Zhang M, Rowe PJ, de Prado Gómez L, Jacob-Nara JA: Sanofi – employees, may hold stock and/or stock options in the company.

Soler X, Deniz Y: Regeneron Pharmaceuticals Inc. – employees and shareholders.

Sacks H: Regeneron Pharmaceuticals Inc. – employee; Optinose – shareholder.

S104 STUDY OF ASTHMA EXACERBATIONS IN PATIENTS ON THE IL-5 RECEPTOR BLOCKER, BENRALIZUMAB – THE BENREX STUDY

Acknowledgements: AstraZeneca [BenRex funder], BenRex TSC, RASP-UK, Vitalograph Ltd [UK], BOSCH [Germany] and

the Innovative Medicines Initiative 2 Joint Undertaking (JU) under grant agreement No. 831434 (3TR) [support to J Logan].

This abstract was presented at the 2024 ERS Congress.

S107 **MOLGRAMOSTIM IMPROVES PULMONARY GAS EXCHANGE IN PATIENTS WITH AUTOIMMUNE PULMONARY ALVEOLAR PROTEINOSIS (APAP): RESULTS FROM THE IMPALA-2 PHASE 3 CLINICAL TRIAL**

Sponsored by Savara Inc.

S110 **THE EFFECT OF PCV13 AND PPV23 ON NASOPHARYNGEAL COLONISATION FOLLOWING HUMAN PNEUMOCOCCAL CHALLENGE WITH SEROTYPE 3 AND SEROTYPE 6B: THE PNEUMO 2 STUDY**

AM Collins and DM Ferreira are joint last authors.

PNEUMO 2 study group:

Liverpool Vaccine Group, Liverpool School of Tropical Medicine, Liverpool, UK. - Emma Ambrose, Pauline Ambrose, Amy Bettam, Jaye Brunning, Lynn Bradley, Ciara Callanan, Emma Carter, Stephanie Chan, Amy Collins, Kelly Convey, James Court, Dorothy Culpa, Gregory Duncan, Fiona Douglas, Filora Elterish, Jayne Evans, Patricia Gonzalez-Dias, Jonathan Gonzalez Sanchez, Josh Hamilton, Oliver Hamilton, Phoebe Hazenberg, Lisa Hitchins, Emilie Horn, Raqib Huq, Joanne Keating, Lauren Kerruish, Samuel Latham, Maria Moore, Ben Morton, Rebecca Moss, Annabel Murphy, Nicola Murphy, Elissavet Nikolaou, Charlotte Orme, Sherin Pojar, Thomas Peters, Valerie Price, Victoria Simpson, Hannah Fleet, Fred Fyles

Respiratory Research Group, Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK - Hassan Burhan

Clinical Research Network (CRN) North West Coast, UK - Fiona Douglas, Jayne Evans, Joanne Keating

Oxford Vaccine Group, Department of Paediatrics, Oxford - Patricia Gonzalez-Dias

Conflict of interest statement

Competing interests: The study has received funding from Pfizer, which manufactures PCV13. Collaborators from Pfizer had direct input in the study design. ML, JC, EB, IK, CT, and BDG are employees of Pfizer, and may own Pfizer stock.

S111 **EFFECTIVENESS AND COST EFFECTIVENESS OF LOW DOSE ORAL MODIFIED RELEASE MORPHINE VERSUS PLACEBO ON PATIENT-REPORTED WORST BREATHLESSNESS IN PEOPLE WITH CHRONIC BREATHLESSNESS: A MULTI-SITE, PARALLEL GROUP, DOUBLE-BLIND, RANDOMISED, PLACEBO-CONTROLLED TRIAL (MABEL)**

Funding: This study is funded by the NIHR [HTA Project: 17/34/01]. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

S112 **CT FEATURES ASSOCIATED WITH CONTRALATERAL RECURRENCE OF SPONTANEOUS PNEUMOTHORAX.**

Cambridge Biomedical Research Centre (BRC-1215-20014); British Lung Foundation (BLF), Asthma+Lung UK (ALUK), Royal Papworth Hospital, and the Victor Philip Dahdaleh Foundation, Myrovlytis Trust (MT21_1 and MT22_15).

S114 **PRELIMINARY RESULT OF A DUTCH MULTICENTER STUDY SHOWS HIGH PREVALENCE OF BHD IN SP PATIENTS. TIME TO CHANGE PNEUMOTHORAX GUIDELINES..**

No conflict of interest. Source of funding: 'Stichting Fonds Oncologie Holland'

S115 **ASSOCIATION OF POLYGENIC RISK SCORE FOR HEIGHT**

WITH PNEUMOTHORAX RISK

C John and J Chen contributed equally as first authors.

S117 **CT GUIDED BIOPSY - A REVIEW OF A LARGE INTERVENTIONAL SERVICE REGARDING PNEUMOTHORAX RATES**

This abstract was presented at ERS 2024.

S121 **SPUTUM BACTERIAL PATHOGENS AND ANTIBIOTIC RESISTANCE PATTERNS AMONG ASTHMA PATIENTS IN OXFORDSHIRE: A 27-YEAR LONGITUDINAL STUDY**

Wellcome Trust Fellowship (211050/Z/18/z).

S122 **DOES THE ASTHMA BEST PRACTICE TARIFF AFFECT 30- AND 90-DAY READMISSION?**

Funding for this study was provided by HQIP. AA performs the data analysis for NRAP. JD is the Clinical Lead for Adult Asthma for NRAP. TW is the senior clinical lead for NRAP. JKQ is the analysis lead for NRAP.

S123 **WILL YOU REGRET DUMPING YOUR X? SEX AS A BIOLOGICAL VARIABLE IN ASTHMA GENOMICS**

Funded by Excel In Science Internship Programme, University of Nottingham.

S124 **SINGLE-CELL TRANSCRIPTOMICS IDENTIFIES UNIQUE PATHWAYS REGULATING AIRWAY HYPERRESPONSIVENESS VIA CIRCADIAN REGULATOR REV-ERBA IN AIRWAY EPITHELIUM.**

EF50 (AHR data) presented in ERS 2023.

S126 **TESTING ANTI-ADAM33 OLIGONUCLEOTIDES IN COMPLEX MOUSE AND HUMAN LUNG TISSUE AS A NOVEL DISEASE-MODIFYING ASTHMA THERAPY**

This work has been supported by a Medical Research Council – Developmental Pathway Funding Scheme (MRC-DPFS) grant (MR/X013960/1), Terence Bowley Fund, UK, 'TargetLung' research team and NIHR Southampton Biomedical Research Centre

S128 **ELUCIDATING TRANSCRIPTOMIC AND FUNCTIONAL DIFFERENCES BETWEEN BASAL CELLS WITH A LOW AND HIGH MUTATIONAL BURDEN FROM TOBACCO SMOKE EXPOSURE IN THE NORMAL HUMAN AIRWAY EPITHELIUM**

This abstract was presented at AACR 2022.

S130 **SPACE FOR COPD SELF-MANAGEMENT PROGRAMME DELIVERED AS A MAINTENANCE PROGRAMME ON PULMONARY REHABILITATION DISCHARGE: A RANDOMISED CONTROLLED TRIAL**

This project was funded by the National Institute for Health and Care Research (NIHR) under its Research for Patient Benefit (RfPB) Programme (Grant Reference Number PB-PG-0317-20032) and supported by the NIHR Leicester Biomedical Research Centre. The views expressed are those of the author (s) and not necessarily those of the NIHR or the Department of Health and Social Care.

This abstract was presented at American Thoracic Society Conference in San Diego, May 2024.

S132 **LOWER LIMB SENSORIMOTOR FUNCTION EXPLAINS A GREATER PROPORTION OF BALANCE IMPAIRMENT IN PEOPLE WITH COPD COMPARED TO PEOPLE WITHOUT COPD**

S.L. Harrison is supported by an NIHR Advanced Fellowship (NIHR300856). D. Martin, E. Kaner and T. Rapley are supported by the NIHR Applied Research Collaboration (ARC) North East and North Cumbria (NENC) (NIHR200173).

S133 **THE EFFECT OF PULMONARY REHABILITATION DESIGN ON OUTCOMES IN COPD: A SYSTEMATIC REVIEW AND COMPONENT NETWORK META-ANALYSIS**

NIHR ARC East Midlands funding received for this work.

S135 **COMPARING CHANGES IN SOLID COMPONENT DIAMETER AND MASS FOR DETECTING INVASIVE ADENOCARCINOMA IN SUB-SOLID PULMONARY NODULES (SSNS): THE SUMMIT STUDY**

The SUMMIT study is funded by GRAIL through a research grant awarded to SMJ as principal investigator.

S136 **PREVALENCE OF FRAILTY AND COMORBIDITY AND ITS ASSOCIATION WITH LCS INVITATION RESPONSE AND LDCT UPTAKE**

P.A.J. Crosbie reports stock options from Everest Detection, and lecture honoraria from Bayer, outside the submitted work. R.J. Beeken reports fellowship and grant funding from Yorkshire Cancer Research and grant funding from Roy Castle Lung Cancer Foundation, outside the submitted work. A. Clegg has received consultancy fees from the Geras Centre for Aging Research, received meeting/travel support from the Australian and New Zealand Society of Geriatric Medicine, and is a chair of the global Ageing Research Trialists collaborative. This work was funded by Yorkshire Cancer Research (award reference L403).

S139 **FRAILTY, COMORBIDITY, AND SURVIVAL DIFFERENCES BETWEEN THE USPSTF 2021 RISK CRITERIA AND PLCOM2012 AND LLPV2 RISK MODELS**

P.A.J. Crosbie reports stock options from Everest Detection, and lecture honoraria from Bayer, outside the submitted work. R.J. Beeken reports fellowship and grant funding from Yorkshire Cancer Research and grant funding from Roy Castle Lung Cancer Foundation, outside the submitted work. A. Clegg has received consultancy fees from the Geras Centre for Aging Research, received meeting/travel support from the Australian and New Zealand Society of Geriatric Medicine, and is a chair of the global Ageing Research Trialists collaborative. This work was funded by Yorkshire Cancer Research (award reference L403).

S140 **ADHERENCE IN A COMMUNITY-BASED LUNG CANCER SCREENING PROGRAMME – RESULTS FROM THE YORKSHIRE LUNG SCREENING TRIAL**

The poster for this abstract was shown at ERS Congress 2024.

S144 **VIRAL INFECTION MODULATES BRONCHIAL EPITHELIAL CELL METABOLISM IN COPD**

This work was funded by an NHLI Foundation Clinical Lectureship for Dr Lydia Finney.

S147 **UNDERSTANDING THE ROLE OF ENDOTHELIAL SENESCENCE AND ENDOTHELIAL TO MESENCHYMAL TRANSITION IN DEVELOPMENT OF ATHEROSCLEROSIS IN PATIENTS WITH CHRONIC LUNG DISEASE.**

This project was supported by a BHF project grant (PG/19/75/34686), National Institute for Health Research (NIHR) Biomedical Research Centre and NHLI funding.

S148 **DIFFERENTIAL EFFECTS OF TSLP, IL-33 AND IL-25 ALONE OR IN COMBINATION ON MURINE AIRWAY SMOOTH MUSCLE (ASM) RESPONSIVENESS**

YA is now an employee of AstraZeneca and may or may not own stock options.

S154 **THE IMPACT OF THE IPF-ASSOCIATED VARIANT RS62025270 ON AKAP13-MEDIATED SIGNALLING AND EPITHELIAL CELL DYSFUNCTION IN IDIOPATHIC PULMONARY FIBROSIS**

BL is funded by the Action for pulmonary fibrosis Mike Bray fellowship.

P4 **ABSTRACT WITHDRAWN**

P5 **ABSTRACT WITHDRAWN**

P9 **THE PRESENTATION AND OUTCOME OF COMMUNITY ACQUIRED PNEUMONIA REQUIRING HOSPITALISATION IN PATIENTS OF SOUTH ASIAN ETHNICITY**

The National Health Service employer of Dr Chakrabarti was reimbursed for the time spent performing clinical advisor roles for the Advancing Quality Pneumonia Programme.

P15 **HOW FAR CAN WE TRUST THE SOURCE? REAL WORLD MAINTENANCE OCS REDUCTION OUTCOMES IN COMPLEX SEVERE ASTHMATICS ON TEZEPELUMAB**

PHP has attended advisory boards for AstraZeneca, Celltrion Healthcare, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, GlaxoSmithKline, Novartis and Sanofi/Regeneron; has attended international conferences with AstraZeneca and Chiesi; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi.

P17 **REAL-WORLD EFFECTIVENESS OF DUPILUMAB 200MG DOSE IN ORAL CORTICOSTEROID REDUCTION AND EXACERBATION IN PATIENTS WITH SEVERE ASTHMA: FINDINGS FROM THE EU-ADVANTAGE STUDY**

Hitasha Rupani: Received advisory board and speaker fees from GSK, Chiesi, AstraZeneca, Sanofi and Boehringer Ingelheim; conference support from AZ and Sanofi; and grant funding to her institution from AZ and GSK. Paul Pfeffer: Attended advisory boards for AstraZeneca, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, Chiesi and GlaxoSmithKline; has attended international conferences with AstraZeneca; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline, Novartis, Regeneron Pharmaceuticals, Inc., and Sanofi; is conducting research funded by GlaxoSmithKline for which his institution receives remuneration and quality improvement activity at his institution supported by AstraZeneca. Arnaud Bourdin: Consultant to AstraZeneca-MedImmune, Boehringer Ingelheim, Cephalon/Teva, GSK, Novartis, Sanofi and Regeneron Pharmaceuticals, Inc., Med-in-Cell, Actelion, Merck, Roche and Chiesi; received research grant from AstraZeneca-MedImmune, Boehringer Ingelheim, Cephalon/Teva, GSK, Novartis, and Sanofi and Regeneron Pharmaceuticals, Inc. Giorgio Walter Canonica: Received research grant/served as lecturer/received advisory board fees from A. Menarini, Allergy Therapeutics, AstraZeneca, Chiesi, Faes, Firma, Genentech, GSK, Hal Allergy, Innovacaremd, Novartis, OM Pharma, RedMaple, Sanofi and Aventis, Sanofi and Genzyme, Stallergenes Greer and Uriach Pharma. Johann Christian Virchow: Received research grant from Deutsche Forschungsgesellschaft, Land Mecklenburg-Vorpommern, GSK and MSD; advisory committee member for Avontec, Boehringer Ingelheim, Cypla, Chiesi, Essex/Schering-Plough, Genzyme, GSK, Janssen-Cilag, MEDA, MSD, Mundipharma, Novartis, Regeneron Pharmaceuticals, Inc., Revotar, Roche, Sanofi-Aventis, Sandoz-Hexal, TEVA, UCB/Schwarz-Pharma and others; provided independent lectures for and received honoraria from AstraZeneca, Avontec, Bayer, Bencard, Bionorica, Boehringer Ingelheim, Chiesi, Cypla, German Remedies, Essex/Schering-Plough, Genzyme, GSK, Janssen-Cilag, Leti, MEDA, Merck, MSD, Mundipharma, Noramed, Novartis, Nycomed/Altana, Pfizer, Providens, Regeneron Pharmaceuticals, Inc., Revotar, Sandoz-Hexal, Sanofi-Aventis, Stallergenes Greer, TEVA, UCB/Schwarz-Pharma, Zydus/Cadila, and others. Juby Jacob-Nara, Olivier Ledanois, and Wei-Han Cheng: Employees of Sanofi; may hold stocks and/or stock options in the company. Kinga Borsos: Employee of Sanofi at the time of study execution. Richard H Stanford: Paid consultant to Sanofi. Zhixiao Wang and Mena Soliman: Employees of Regeneron Pharmaceuticals, Inc.; may hold stocks and/or stock options in the company. Lynn Huynh and Mei Sheng Duh: Employees of Analysis Group, Inc.; Analysis Group, Inc. received research funds from Sanofi. Sarah Kalia: This work was prepared while Sarah Kalia was employed at Analysis Group, Inc. The opinions expressed in this article are the author's own and do not reflect the view of the National Institutes of Health, the Department of Health and Human Services, or the United States government. FUNDING: The study was sponsored by Sanofi and Regeneron Pharmaceuticals, Inc.

P18 **REAL-WORLD EXPERIENCE OF DUPILUMAB FOR THE TREATMENT OF SEVERE ASTHMA IN THE UNITED KINGDOM: A RETROSPECTIVE STUDY**

Research sponsored by Sanofi DUPIAZA [NCT06064526]. Pfeffer PE: AstraZeneca, GSK, Sanofi – advisory boards; AstraZeneca, Chiesi, GSK – lectures at meetings/webinars, with/without honoraria; AstraZeneca – international conference attendance; AstraZeneca, GSK, Novartis, Regeneron

Pharmaceuticals Inc., Sanofi – clinical trials; GSK – research (with remuneration to institution); AstraZeneca – support for quality improvement activity at institution. Patel PH: AstraZeneca, Celltrion Healthcare, GSK, Sanofi – advisory boards; AstraZeneca, GSK, Novartis, Sanofi/Regeneron Pharmaceuticals Inc. – lectures at meetings/webinars, with/without honoraria; AstraZeneca, Chiesi – international conference attendance; AstraZeneca, GSK, Novartis, Regeneron Pharmaceuticals Inc., Sanofi – clinical trials. Jackson DJ: AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi, Teva Pharmaceuticals – advisory board fees. Heaney LG: Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Evelo Biosciences, GSK, Hoffmann la Roche, GSK, Novartis, Sanofi, Teva Pharmaceuticals, Theravance – received grant funding, participated in advisory boards and gave lectures at meetings; Aerocrine, Amgen, AstraZeneca, Genentech/Hoffman la Roche, GSK, MedImmune, Novartis UK, Roche/Genentech Inc., Vitalograph – received grants; AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Napp Pharmaceuticals – sponsorship for attending international scientific meetings; AstraZeneca, Boehringer Ingelheim, GSK, Hoffmann la Roche – taken part in asthma clinical trials,for which his institution received remuneration; Medical Research Council Stratified Medicine UK Consortium in Severe Asthma – Academic Lead, which involves industrial partnerships with a number of pharmaceutical companies including Amgen, AstraZeneca, Boehringer Ingelheim, GSK, Hoffmann la Roche, Janssen. Burhan H: AstraZeneca, Chiesi, GSK, Sanofi, Teva Pharmaceuticals – received speaker/advisory board fees; AstraZeneca, Chiesi, the Health Foundation, NHSE (AAC) – received grant funding. Pavord ID: Aerocrine, Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, Teva Pharmaceuticals – speaker fees; AstraZeneca, Teva Pharmaceuticals – payments for organizing educational events; Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Dey Pharma, Genentech, GSK, Knopp Biosciences, Merck, Merck Sharp & Dohme, Napp Pharmaceuticals, Novartis, Regeneron Pharmaceuticals Inc., RespiVert, Sanofi, Schering-Plough, Teva Pharmaceuticals – consultant fees; AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Napp Pharmaceuticals, Teva Pharmaceuticals – international scientific meeting sponsorship; Chiesi – research grant. Sehgal N: Sanofi – attendance at national conference sponsored by the company. Gore R: AstraZeneca, GSK, Novartis, Sanofi – fees for talks and sponsorships for attending conferences. Mansur AH: AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi – fees for talks, advisory board meetings, and sponsorships for attending conferences and educational institutions grants. Thomas R: Sanofi- employee, may hold stock and/or share options.

P19 5-YEAR OUTCOMES OF ASTHMA PATIENTS ON MONOCLONAL ANTIBODIES

The research was supported by the National Institute for Health Research (NIHR) Oxford Biomedical Research Centre (BRC). The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health.

TSCH is supported by a Wellcome Trust Fellowship (211050/Z/18/z).

In the last 5 years IDP has received speaker's honoraria for speaking at sponsored meetings from Astra Zeneca, Aerocrine, Almirall, Sanofi/Regeneron, Menarini and GSK and payments for organizing educational events from AZ, GSK and Sanofi/Regeneron. He has received honoraria for attending advisory panels with Sanofi/Regeneron, Astra Zeneca, GSK, Merck, Circassia, Chiesi and Areteia. He has received sponsorship to attend international scientific meetings from GSK, Astra Zeneca and Sanofi/Regeneron.

All other authors have no other funding or conflicts of interests to declare.

P20 EFFECTIVENESS OF BENRALIZUMAB IN PATIENTS WITH SEVERE ASTHMA PREVIOUSLY TREATED WITH MEPOLIZUMAB IN THE UNITED KINGDOM; A BPAP STUDY POST-HOC ANALYSIS

This study was funded by AstraZeneca, including support provided by OPEN Health.

DJJ has received advisory board fees and speaker fees from AstraZeneca, GSK, Sanofi Regeneron, Chiesi, Teva, and Boehringer Ingelheim, and research grants from AstraZeneca and GSK.

HB has received speaker fees from AstraZeneca, Chiesi, GSK, TEVA; has received advisory board fees from Astrazeneca, Chiesi, GlaxoSmithKline; has received travel support / hospitality from AstraZeneca and Chiesi; has received grant funding from AstraZeneca, Chiesi, The Health Foundation, NHSE (AAC).

HR has received speaker fees and research grants from AstraZeneca and GSK.

PEP has attended advisory boards for AstraZeneca, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, Chiesi and GlaxoSmithKline; has attended international conferences with AstraZeneca; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi; is conducting research funded by GlaxoSmithKline for which his institution receives remuneration and quality improvement activity at his institution supported by AstraZeneca.

IJC has received speaker fees from GlaxoSmithKline and honorarium from AstraZeneca and Glaxosmithkline.

SF has received speaker fees from AstraZeneca, GlaxoSmithKline, Chiesi and Novartis

JD has received support to attend medical conferences from Sanofi Regeneron.

AMN has received speaker fees and conference support from AstraZeneca, Teva and Chiesi.

MW, CL and TM are employees of AstraZeneca UK.

P22 BIOMARKERS AND PHENOTYPING: A HOLISTIC APPROACH TO ASTHMA TREATMENT WITH TEZEPELUMAB

Funding: This study was funded by AstraZeneca and Amgen Inc. Acknowledgements: Medical writing support was provided by Richa Tripathi, PhD, of PharmaGenesis London, London, UK, with funding from AstraZeneca and Amgen Inc. David J Jackson has received consultancy fees and speaker fees from AstraZeneca, GSK, Novartis, Sanofi and Teva Pharmaceuticals. Guy Brusselle has received fees for advisory boards and/or speaker fees from Amgen, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, MSD, Novartis and Sanofi. Michael E Wechsler is an employee of National Jewish Health and has received consultancy fees from AstraZeneca, Equillium, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, resTORbio, Sanofi and Teva Pharmaceuticals. Simon Couillard is supported by the Fonds de recherche du Québec and the Association Pulmonaire du Québec; has received non-restricted research grants from AstraZeneca, BioMérieux, The Fondation Québécoise en Santé Respiratoire, The National Institute for Health and Care Research Oxford Biomedical Research Centre, The Quebec Respiratory Health Research Network and Sanofi-Genzyme-Regeneron; is the chair of the Association Pulmonaire du Québec's Research in respiratory medicine; has received speaker fees from AstraZeneca, GSK, Sanofi-Regeneron and Valeo Pharma; has received consultancy fees from AstraZeneca, FirstThought, GSK and Sanofi-Regeneron; has received sponsorship to attend/speak at international scientific meetings by/for AstraZeneca and Sanofi-Regeneron; and is an advisory board member and has stock options for Biometry Inc., a company that is developing a FeNO device (myBiometry). J Christian Virchow has received grants for research or clinical trials from DFG, GSK and MSD; has received consultancy fees from Avontec, Boehringer Ingelheim, Chiesi, Essex Schering-Plough, GSK, Janssen-Cilag, MEDA, MSD, Mundipharma, Novartis, Regeneron Pharmaceuticals, Revotar, Roche, Sandoz-Hexal, Sanofi-Aventis, Teva Pharmaceuticals and UCB Schwarz-Pharma; has received fees for lectures from AstraZeneca, Avontec, Bayer, Bencard, Bionorica, Boehringer Ingelheim, Chiesi, Essex Schering-Plough, GSK, Janssen-Cilag, Leti, MEDA, Merck, MSD, Mundipharma, Novartis, Nycomed Altana, Pfizer, Revotar, Sandoz-Hexal, Stallergenes Greer, Teva Pharmaceuticals, UCB Schwarz-Pharma and Zydus Cadila; has received fees for data safety-monitoring board participation from Chiesi and has received travel support from Boehringer Ingelheim and Sanofi. Jean-Pierre Llanos is an employee of Amgen and owns stock in Amgen. Gillian Hunter, Stephanie L Roseti and Neil Martin are employees of AstraZeneca and may own stock or stock options in AstraZeneca. Ian D Pavord has received speaker fees from Aerocrine AB, Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi and Teva Pharmaceuticals; has received payments for organization of educational events from AstraZeneca, GSK, Regeneron Pharmaceuticals, Sanofi and Teva Pharmaceuticals; has received consultancy fees from Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, Circassia, Dey Pharma, Genentech, GSK, Knopp Biosciences, Merck, MSD, Napp Pharmaceuticals, Novartis, Regeneron Pharmaceuticals, RespiVert, Sanofi, Schering-Plough and Teva Pharmaceuticals; has received international scientific meeting sponsorship from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Napp Pharmaceuticals, Regeneron Pharmaceuticals, Sanofi and Teva Pharmaceuticals; and has received a research grant from Chiesi.

This abstract was presented at European Respiratory Society (ERS) Congress, 7–11 September 2024, Vienna, Austria.

P23 ASTHMA EXACERBATION RATES AS A FUNCTION OF BIOMARKER LEVELS 4 WEEKS AFTER INITIATION OF TEZEPELUMAB TREATMENT: AN ANALYSIS OF THE NAVIGATOR STUDY

Funding: This study was funded by AstraZeneca and Amgen Inc. Acknowledgments: Medical writing support was provided by Elizabeth Gandhi, PhD, of PharmaGenesis Cambridge, Cambridge, UK, with funding from AstraZeneca and Amgen Inc. Disclosures: Elliot Israel has served as a consultant to and received personal fees from 4D Pharma, AB Science, Amgen, AstraZeneca, Avillion, Biometry, Cowen, Equillium, Genentech, GSK, Merck, Novartis, Pneuma Respiratory, PPS Health, Regeneron Pharmaceuticals, Sanofi, Sienna Biopharmaceuticals and Teva Pharmaceuticals; has received non-financial support from Circassia, Teva Pharmaceuticals and Vorso Corp; and has received clinical research grants from AstraZeneca, Avillion, Genentech, Gossamer Bio, Novartis and Sanofi. Geoffrey Chupp has received speaker and consultancy fees from Amgen, AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi Genzyme and Teva Pharmaceuticals. Njira Lugogo has received consultancy fees for participation in advisory boards from Amgen, AstraZeneca, Genentech, GSK, Novartis, Regeneron Pharmaceuticals, Sanofi and Teva Pharmaceuticals; has received fees for non-speaker bureau presentations from AstraZeneca and GSK; has received travel support from AstraZeneca; and her institution has received research support from Amgen, AstraZeneca, Avillion, Genentech, Gossamer Bio, GSK, Regeneron Pharmaceuticals, Sanofi and Teva Pharmaceuticals. Jean-Pierre Llanos is an employee of Amgen and owns stock in Amgen. Nicole Martin, Neil Martin and Christopher S Ambrose are employees of AstraZeneca and may own stock or stock options in AstraZeneca. David J Jackson has received consultancy fees and speaker fees from AstraZeneca, GSK, Novartis, Sanofi and Teva Pharmaceuticals.

This abstract was previously presented at the American Thoracic Society (ATS) International Conference, May 17–22, 2024, San Diego, CA, USA.

P26 THE INFLUENCE OF ADHERENCE TO INHALED CORTICOSTEROIDS (ICS) ON TREATMENT RESPONSE TO MEPOLIZUMAB TREATMENT IN SEVERE EOSINOPHILIC ASTHMA

Funding for this study was provided by GSK [NCT05241769, Study ID:214026]. GSK was provided the opportunity to review a preliminary version of this publication for factual accuracy, but the authors are solely responsible for the final content and interpretation.

This study was conducted according to ethical principles and was consistent with the Declaration of Helsinki, ICH GCPs, GPP, and the applicable legislation on observational studies. The final protocol of the study, including the final version of the informed consent form, was approved by the

Ethics Committee/Institutional Review Board (IRB)/Independent Ethics Committee (IEC) IRAS project ID 290858, Clinical-Trials.gov Identifier: NCT05241769.

Ethics approval IRAS number: 290858

Clinical trials.gov registration: RRK7437

P38 **DECONGESTANTS IN OBSTRUCTIVE SLEEP APNOEA (DOSA): RANDOMISED CONTROLLED TRIAL OF NASAL DECONGESTANTS VERSUS PLACEBO TO PROLONG TREATMENT-FREE PERIODS FROM CONTINUOUS POSITIVE AIRWAY PRESSURE THERAPY IN MILD TO MODERATE OBSTRUCTIVE SLEEP APNOEA**

The DOSA trial was funded by a NIHR Research for Public Benefit grant.

P43 **GREENHOUSE GAS EMISSIONS ASSOCIATED WITH SEVERE ASTHMA ALONG THE CARE PATHWAY IN THE UNITED KINGDOM**

This abstract is funded by AstraZeneca.

This abstract was presented at the 2024 ATS Conference.

P46 **IN VITRO PERFORMANCE OF A COMBINATION BECLOMETHASONE DIPROPIONATE/SALBUTAMOL SULPHATE PRESSURISED METERED DOSE INHALER FORMULATED WITH A LOW GLOBAL WARMING POTENTIAL PROPELLANT**

The study was sponsored by Senari Pharma Ltd.

P47 **INHALER DEVICE USE AND CARBON FOOTPRINT DISPARITIES IN NORDIC COUNTRIES AND THE UK**

The study was funded by Orion Corporation.

This abstract was presented at Nordic Lung Congress 2024, 5-7.6.2024 Helsinki, Finland.

P48 **PAY TO PUFF GREEN: CAN NHS INCENTIVES CHANGE THE PRESCRIBING PRACTICES?**

NIHR-funded.

P49 **DIGITAL MONITORING OF INHALER USE IS ASSOCIATED WITH REDUCED SHORT-ACTING BETA-AGONIST USE IN AIRWAYS DISEASE**

The National Health Service employer of Dr Chakrabarti was reimbursed for the time spent performing clinical advisor roles for the Advancing Quality Pneumonia Programme.

P51 **PEAK INSPIRATORY FLOW VIA EASYHALER DRY POWDER INHALER IN ADULTS BEFORE METHACHOLINE CHALLENGE TEST AND DURING BRONCHOCONSTRICTION**

Orion Corporation funded this study.

This abstract was presented at ERS congress 2024, 7-11 Sep 2024.

P54 **EXACERBATION REDUCTION AND IMPROVED QUALITY OF LIFE IN ASTHMA WITH EXTRAFINE FORMULATION SINGLE-INHALER TRIPLE THERAPY (EFSITT): SIX-MONTH RESULTS OF THE TRIMAXIMIZE STUDY**

FT, RR, CSU, WP, VP, AB and CG have received fees for conducting the study. VB, DN, CF are employees of Chiesi GmbH during the planning, implementation or evaluation of the study.

This abstract was presented at the 2023 ERS Congress.

P57 **PERSPECTIVES ON SCREENING AND EARLY TREATMENT FOR PULMONARY FIBROSIS**

This abstract was presented at ATS May 2024.

P58 **PREVENTION OF PROGRESSION IN EARLY FIBROSING INTERSTITIAL LUNG DISEASE PATIENTS: USING ECONOMIC MODELLING TO INFORM EVIDENCE GENERATION**

Mike Baldwin and Eric S. White are employees of Boehringer Ingelheim. Luke Hubbert, Antony Wright, and Sue Langham are employees of Maverex, which received funding from Boehringer Ingelheim to conduct this study. Pilar Rivera-Ortega received speaker and consultations fees from Boehringer Ingelheim, The Limbic, Chiesi, Cipla, Tecnofarma and Hoffmann La Roche; received fees for research projects from Boehringer Ingelheim, Hoffmann La Roche, CSL Behring, FibroGen, Vicore Pharma AB, Gilead Sciences, Galecto and Chiesi and is a member of Qureight's IPF scientific advisory board.

This abstract was presented at the 2024 ERS Congress.

P61 **TIME TO DIAGNOSIS AND IMPACT OF EARLY DIAGNOSIS ON INITIATION OF ANTIFIBROTIC TREATMENT IN PATIENTS WITH IDIOPATHIC FIBROSIS IN THE US: A RETROSPECTIVE COHORT STUDY**

Ajit A. Londhe is an employee of Boehringer Ingelheim. He is also a former employee of Amgen and Johnson & Johnson and currently holds stock in Amgen and Johnson & Johnson.

Maria Cristina Penaloza Ramos is an employee of Boehringer Ingelheim. She is also a former employee of Janssen.

Sue Langham and Andrew H. Limper have received consultancy fees from Boehringer Ingelheim.

Jennifer Quint has received research grants from Boehringer Ingelheim and AstraZeneca, and personal fees for advisory

board participation, consultancy or speaking fees from GlaxoSmithKline, Evidera, Chiesi and AstraZeneca.

Pratik Pimple, Martin Lavallee, Yanni Fan and Tom Cork are employees of Boehringer Ingelheim.

This abstract was presented at CHEST 2024.

P73 **VIDEO DIRECTLY OBSERVED THERAPY (V-DOT) FOR ACHIEVING AND SUSTAINING MASTERY OF INHALER AND NASAL SPRAY TECHNIQUE IN CHILDREN AND YOUNG PEOPLE: A RANDOMISED PILOT STUDY.**

This work is funded by Asthma + Lung UK as part of AUKCAR and RBHSC charitable funds.

This abstract was presented at the 2024 ERS Congress.

P77 **SHORT-TERM IMPACTS OF AIRBORNE PARTICULATE METALS ON COGNITIVE AND SENSORIMOTOR FUNCTION IN PRIMARY SCHOOL-AGED CHILDREN.**

Trial registration: ClinicalTrials.gov NCT04695093 (05/01/2021)

Funding: NIHR Public Health Research (Ref 16/139/09), Barts Charity (Ref MGU0582).

P88 **SURVIVAL OUTCOMES OF VERY ELDERLY LUNG CANCER PATIENTS: A COMPARISON BETWEEN STANDARD TREATMENT AND HOSPICE CARE**

This work was supported by a research grant from the VHS Medical Center, Republic of Korea. (grant number: VHSMC24011).

P100 **INVESTIGATING THE IMPACT OF LONDON'S ULTRA LOW EMISSION ZONE (ULEZ) ON CHILDREN'S HEALTH: THE CHILDREN'S HEALTH IN LONDON AND LUTON (CHILL) PROSPECTIVE PARALLEL COHORT STUDY**

Trial registration: ClinicalTrials.gov NCT04695093 (05/01/2021) Funding: NIHR Public Health Research (Ref 16/139/09), NIHR CLAHRC North Thames, NIHR ARC North Thames, the Mayor of London.

AUKCAR Annual Scientific Meeting, Reading UK, April 2024.

P102 **DOES THE PRESENCE OF PAEDIATRIC RESPIRATORY VIRTUAL WARDS IMPACT THE RISK OF HOSPITAL READMISSION FOR ASTHMA IN CHILDREN AND YOUNG PEOPLE (CYP)?**

Source of funding: Healthcare Quality Improvement Partnership (HQIP), A Gawlik-Lipinski paid honoraria from Chiesi and AstraZeneca for lectures.

P105 **THE FEASIBILITY AND ACCEPTABILITY OF VIDEO DIRECTLY OBSERVED THERAPY (V-DOT) FOR ACHIEVING MASTERY OF INHALER AND NASAL SPRAY TECHNIQUE: A QUALITATIVE EXPLORATION.**

This work is funded by Asthma + Lung UK as part of AUKCAR and RBHSC charitable funds.

This abstract was presented at the 2024 ERS Congress.

P106 **FEASIBILITY OF A NOVEL ACCELEROMETER-BASED RESPIRATORY SENSOR IN NEONATAL RESPIRATORY MONITORING**

This project has been funded by InnovateUK grant.

P107 **VASCULAR ENDOTHELIAL GROWTH FACTOR AND ACUTE RESPIRATORY DISTRESS SYNDROME: A MENDELIAN RANDOMISATION STUDY**

Funding: Wellcome Trust (221680/Z/20/Z), Instituto de Salud Carlos III (PI20/00876 and PI23/00980), co-financed by the European Regional Development Funds, 'A way of making Europe' from the EU; ITER agreement (OA23/043); Gobierno de Canarias, Social European Fund 'Canarias Avanza con Europa' (TESIS2022010042, TESIS2021010046), Social European Fund Plus (EST2023010007), and FIISC (PIFIISC23/05). Conflicts of interest: LVW reports research funding from GlaxoSmithKline (GSK), Genentech and Orion Pharma, and consultancy for Galapagos, and GSK. MT reports research funding from GSK and Orion Pharma

This abstract was presented at European Human Genetics Conference 2024, June 1-4 2024.

P109 **ONE-LUNG VENTILATION DURING OESOPHAGECTOMY PROMOTES UPREGULATION OF PROINFLAMMATORY MEDIATORS CYCLOPHILIN A AND SOLUBLE CD147**

This work was funded by a project grant from the British Journal of Anaesthesia / Royal College of Anaesthetists. JRS is recipient of an MRC Clinical Research Training Fellowship.

P110 **A MODIFICATION OF A DOMICILIARY VENTILATOR WHICH REDUCES OXYGEN CONSUMPTION IN MECHANICALLY VENTILATED PATIENTS; IN VIVO ASSESSMENT**

MIP is a paid consultant for Philips Respironics; however Philips had no role in this study. TOJ, PG, TMS, YM declare no conflicts of interest.

P113 **'INSPIRING CHANGE' IN ACUTE NIV CARE: A QUALITY IMPROVEMENT PROJECT**

This abstract was presented at ERS Respiratory Failure and Mechanical Ventilation Conference, Berlin 2024.

P123 RESPONDER ANALYSIS OF LEICESTER COUGH QUESTIONNAIRE DOMAINS FROM PHASE 3 TRIALS OF GEFAPIXANT (COUGH-1/COUGH-2)

SSB has received advisory board/consultancy fees from Bayer, Bellus Health, Merck & Co., Inc., NeRRe, Shionogi, and Trevi; and grant support from Merck & Co., Inc. PD has received advisory board/consultancy fees from Bayer, Bellus, Chiesi, MSD, and Shionogi. LM has received grants from Bayer, Bellus Health, Chiesi, MSD, and Shionogi; and personal fees from Applied Clinical Intelligence, AstraZeneca, Bayer, Bellus Health, Chiesi, Genentech, GSK, MSD, Nocion, Reckitt Benckiser, Shionogi, and WCG Clinical. AHM has received consultancy fees from Bayer, Bellus Health, Boehringer Ingelheim, MSD, Pfizer, Procter & Gamble, and Shionogi; payment or honoraria for lectures, presentations, or speakers bureaus from AstraZeneca, Boehringer Ingelheim, and MSD; grant support from Afferent, Infirst, MSD, and Procter & Gamble; and served as chair of the Hull University Teaching Hospitals Drug and Therapeutics Committee. JAS has received personal fees from Bayer, Bellus Health, Boehringer Ingelheim, GSK, Menlo, NeRRe, and Shionogi; nonfinancial support from Vitalograph; grant support and personal fees related to the submitted work from Afferent Pharmaceuticals/Merck & Co., Inc.; and grant support from Bayer, Bellus Health, GSK, Menlo, and NeRRe. The VitaloJAK algorithm is owned by Manchester University NHS Foundation Trust (MFT) and licensed to Vitalograph Ltd; royalties from Vitalograph to MFT may be shared with the department in which JAS works. JAS is also funded by the NIHR Manchester Biomedical Research Centre and a Wellcome Investigator Award and is an NIHR Senior Investigator. QL, CLR, and AMN are employees of Merck Sharp & Dohme LLC, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA, and may hold stock or stock options in Merck & Co., Inc., Rahway, NJ, USA.

Data included in this abstract have been previously presented in full at the European Respiratory Society; September 7-11, 2024; Vienna, Austria.

P137 EARLY REDUCTION IN RESPIRATORY READMISSIONS FOLLOWING IMPLEMENTATION OF A HOSPITAL-BASED STOP SMOKING SERVICE

Yorkshire Cancer Research has provided funding for the stop smoking service.

P145 CHARACTERISING ANTIFIBROTIC TREATMENT PATTERNS IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS IN THE US: A RETROSPECTIVE COHORT STUDY

Maria Cristina Penaloza Ramos is an employee of Boehringer Ingelheim and a former employee of Janssen.

Ajit A. Londhe is an employee of Boehringer Ingelheim. He is also a former employee of Amgen and Johnson & Johnson and currently holds stock in Amgen and Johnson & Johnson.

Sue Langham and Andrew H. Limper have received consultancy fees from Boehringer Ingelheim.

Jennifer Quint has received research grants from Boehringer Ingelheim and AstraZeneca, and personal fees for advisory board participation, consultancy or speaking fees from GlaxoSmithKline, Evidera, Chiesi and AstraZeneca.

Pratik Pimple, Martin Lavallee, Yanni Fan and Tom Cork are employees of Boehringer Ingelheim.

This abstract was presented at CHEST 2024

P147 BPF-GILD STUDY: AN OBSERVATIONAL COHORT STUDY OF UK PIGEON FANCIERS

The BPF GILD project was designed in collaboration with the British Pigeon Fanciers Medical Research Trust (BPFMRT) (charity SC013181), the Scottish Homing Union (SHU), and the RPRA. Funding to support the project was provided by Asthma and Lung UK, the BPFMRT, NHS Forth Valley and NHS Tayside. The project was sponsored NHS Forth Valley and subsequently by NHS Tayside (ongoing).

P153 INSIGHTS INTO THE BIOLOGICAL MECHANISMS OF SIGNALS FROM A GENOME-WIDE ASSOCIATION STUDY OF SUSCEPTIBILITY TO IDIOPATHIC PULMONARY FIBROSIS USING ALTERNATIVE GENETIC MODELS

AS, MN, XRS and BLY are full-time employees of Genentech and hold stock options in Roche. JMO reports personal fees from Boehringer Ingelheim, Genentech, United Therapeutics, AmMax Bio and Lupin Pharmaceuticals outside of the submitted work. DAS is the founder and chief scientific officer of Eleven P15, a company focused on the early detection and treatment of pulmonary fibrosis. RGJ reports honoraria from Chiesi, Roche, PatientMPower, AstraZeneca, GSK, Boehringer Ingelheim, and consulting fees from Bristol MyersSquibb, Daewoong, Veracyte, Resolution Therapeutics, RedX, Pliant, Chiesi. LVW reports research funding from GlaxoSmithKline, Roche and Orion Pharma, and consultancy for GlaxoSmithKline and Galapagos, outside of the submitted work. The other authors declare no competing interests.

This abstract was presented at the 22nd International Colloquium on Lung and Airway Fibrosis, ICLAF 2024.

P157 MAXIMISING THE OPPORTUNITIES IN LUNG CANCER SCREENING: UPTAKE OF CONSENT TO CONTACT FOR RESEARCH

First author Tanya Patrick receives funding for employment from AstraZeneca.

P161 RECRUITMENT FROM LUNG CANCER SCREENING TO A COPD CLINICAL TRIAL

First author Tanya Patrick receives funding for current employment from AstraZeneca.

P166 THREE-MONTH FOLLOW-UP FOR CONSOLIDATION IDENTIFIED IN LUNG CANCER SCREENING

SB Naidu is supported by an NIHR Doctoral Fellowship (NIHR303686) and Ruth Strauss Foundation.

P168 OUTCOMES FOR INDIVIDUALS WITH AORTIC VALVE CALCIFICATION INCIDENTALLY IDENTIFIED DURING LUNG CANCER SCREENING

SB Naidu is supported by an NIHR Doctoral Fellowship (NIHR303686) and Ruth Strauss Foundation.

P171 THE ASSOCIATION BETWEEN 7-DAY HOSPITAL WORKING AND DELIVERY OF BEST PRACTICE IN ADULT ASTHMA CARE.

Funding for this study was provided by HQIP. AA performs the data analysis for NRAP. JD is the Clinical Lead for Adult Asthma for NRAP. TW is the senior clinical lead for NRAP. JKQ is the analysis lead for NRAP.

P172 VIDEO SUPPORTED SPIROMETRY IN SEVERE ASTHMA – ARE HIGH QUALITY REMOTE SESSIONS POSSIBLE?

Acknowledgements: AstraZeneca [BenRex funder], BenRex TSC, RASP-UK, Vitalograph Ltd [UK] and the Innovative Medicines Initiative 2 Joint Undertaking (JU) under grant agreement No. 831434 (3TR) [support to J Logan].

This abstract was presented at the 2024 ERS Congress.

P174 A SERVICE EVALUATION OF DIGITAL ASSESSMENT OF LUNG FUNCTION AND ICS/LABA TREATMENT AMONG IRISH SEVERE ASTHMA CENTRES

Richard Costello has patents on the use of acoustics to assess inhaler errors and adherence, a method to quantify adherence, predict exacerbations, has received grants from Aerogen and GlaxoSmithKline; and speaker fees for Aerogen, AstraZeneca and GlaxoSmithKline. Founder of a campus company Phyxiom a clinical decision platform for uncontrolled asthma

P175 SEVERE ASTHMA HEALTHCARE RESOURCE UTILISATION (HRU) IN THE UK AND ITALY - REALITI-A AT 2 YEARS

Funding: GSK (204710). Conflicts of interest statements: Conflicts of interest statements:

Jessica Weir, Ben Egan and Peter Howarth are employees of GSK and hold GSK shares.

Rekha Chaudhuri has been an advisory board member for GSK, AstraZeneca and Celltrion; received speaker fees from GSK, AstraZeneca, Teva, Chiesi and Sanofi, received grants for investigator-led projects from AstraZeneca; received conference travel funding from Chiesi, Sanofi and GSK.

Paul Pfeffer is the lead of the North Central and East London Severe Asthma Network and a member of the UK and International Severe Asthma Registry steering groups; has received research funding from NIHR and GSK; has participated in paid speaker and advisory board activities for AstraZeneca, Chiesi, GSK and Sanofi.

Ian Clifton has been an advisory board member for GSK and Infex Therapeutics; received speaker/lecture fees from AstraZeneca and GSK received conference travel funding from Chiesi; involved in clinical trials for AstraZeneca and GSK.

Andrew Smith has been an advisory board member for AstraZeneca; received speaker/lecture fees from GSK, AstraZeneca, Chiesi; received conference travel funding from GSK and Sanofi; involved in clinical trials for AstraZeneca, GSK, Chiesi, Sanofi, Boehringer Ingelheim

P176 AFTER WEIGHT LOSS: TWO-YEAR OUTCOMES FOLLOWING A WEIGHT MANAGEMENT PROGRAMME IN DIFFICULT-TO-TREAT ASTHMA AND OBESITY

Funded by NHS endowment fund.

P178 A GLOBAL SYSTEMATIC LITERATURE REVIEW TO INVESTIGATE THE IMPACT OF ENVIRONMENTAL FACTORS ON THE PREVALENCE, CONTROL AND SEVERITY OF SEVERE OR DIFFICULT-TO-TREAT ASTHMA

This study was funded by Chiesi Farmaceutici Spa.

P181 BACTERICIDAL/ PERMEABILITY-INCREASING PROTEIN IS PRESENT IN PLASMA OF STABLE AND EXACERBATING COPD PATIENTS

Funded by King's College London.

P182 COPD AND HEART FAILURE INSIGHTS IN A REAL-WORLD POPULATION INITIATING TRIPLE THERAPY FROM THE UNITED STATES

This study was funded by AstraZeneca.

P184 DEFINING TRAJECTORIES IN HEALTH STATUS WITH CHRONIC AIRWAYS ASSESSMENT TEST (CAAT) IN A REAL-LIFE COHORT OF PATIENTS WITH ASTHMA AND/ OR COPD (NOVELTY)

Funded by AstraZeneca;

A Ritchie - Employee and Shareholder of AstraZeneca

S Franzen - Employee and Shareholder of AstraZeneca

A Agusti - Received payments in his role as a member of the scientific committee of NOVELTY; received research grants from AstraZeneca, Chiesi, GSK, Menarini, MSD and Zambon; Consulting fees from AstraZeneca, Chiesi, GSK, Menarini, MSD and Zambon; and Payments or honoraria from AstraZeneca, Chiesi, GSK, Menarini, MSD and Zambon

R Beasley - Received research grants from AstraZeneca, Cure Kids (NZ), Genentech, GSK, and HRS (NZ). Consulting fees from AstraZeneca, Cipla, and Asthma and Respiratory Foundation (NZ) Support for attending meetings from AstraZeneca and Theravance. Is the Chair of the adult asthma guidelines group for the Asthma and Respiratory Foundation of New Zealand.

R Hughes - Employee and holds stock in AstraZeneca

C Janson - Received honoraria from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Novartis and Orion for lectures

B Make - Received CME personal fees from American College of Chest Physicians, Eastern Pulmonary Society, Integritas Communications, MedScape, National Jewish Health, Novartis, Mt Sinai, Projects in Knowledge, Web MD; Royalties from Wolters Kluwer Health

Medical Advisory board fees from AstraZeneca, Boehringer, Ingelheim, GSK, Mylan, Novartis, Phillips, Third Pole and Verona; Personal fees for data safety and monitoring board from Quintiles and Spiration; Grants from American Lung Association, AstraZeneca, GSK and US Department of Defence; Personal Fees from AstraZeneca, GSK, Optimum Patient Care Global Limited, Spiration, Third Pole; Funding from NHLBI for the COPDGene study

A Papi - Received research grants from AstraZeneca, Boehringer Ingelheim, Chiesi, GSK, Pfizer, Sanofi and Teva Pharmaceuticals;

Consulting fees from AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, IQVIA, Novartis and Sanofi. Payment or honoraria from AstraZeneca; Avillion, Boehringer Ingelheim, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, IQVIA, Menarini, MSD, Mundipharma, Novartis, Sanofi, Teva Pharmaceuticals and Zambon.

H Müllerová - Employee and Shareholder of AstraZeneca

H Reddel - Participated in advisory boards for AstraZeneca, Chiesi, GSK and Sanofi-Genzyme

Received honoraria from Alkem, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, Getz, GSK, Sanofi and Teva Pharmaceuticals for independent medical educational presentations;

Received independent research funding from AstraZeneca, Chiesi and Novartis;

Chair of the Global Institute for Asthma Science Committee and a member of the Australian National Asthma Council Guidelines Committee

This abstract was presented at ATS 2024 - San Diego, USA - 17- 24 May 2024.

P185 PROMPTLY ESCALATING TO BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FROM DUAL THERAPY REDUCES EXACERBATIONS AND CARDIOPULMONARY EVENTS IN PATIENTS WITH COPD (MITOS EROS + CARDIOPULMONARY STUDY)

This study was funded by AstraZeneca.

Submitted for consideration for presentation at the 2024 European Respiratory Society Meeting (7–11 September).

P186 PROMPT INITIATION OF BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL REDUCES EXACERBATIONS AND CARDIOPULMONARY EVENTS IN PATIENTS WITH COPD (MITOS EROS + CARDIOPULMONARY STUDY)

Submitted for consideration for presentation at the 2024 European Respiratory Society Meeting (7–11 September).

P187 LUNG EXPOSURE BIOEQUIVALENCE WITH BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FUMARATE DIHYDRATE WITH THE NEXT GENERATION PROPELLANT HYDROFLUOROOLEFIN-1234ZE VERSUS HYDROFLUOROALKANE-134A IN HEALTHY ADULTS: A CHARCOAL BLOCK STUDY

This study was funded by AstraZeneca.

This abstract was presented at the 2024 American Thoracic Society Meeting (17–22 May).

P188 SYSTEMIC EXPOSURE BIOEQUIVALENCE OF BUDESONIDE/GLYCOPYRRONIUM/FORMOTEROL FUMARATE DIHYDRATE WITH THE POTENTIAL NEXT GENERATION PROPELLANT HYDROFLUOROOLEFIN-1234ZE VERSUS HYDROFLUOROALKANE-134A IN HEALTHY ADULTS

This study was funded by AstraZeneca.

This abstract was presented at the 2024 American Thoracic Society Meeting (17–22 May).

P189 DUPILUMAB REDUCES EXACERBATIONS AND IMPROVES LUNG FUNCTION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND EMPHYSEMA

Acknowledgments and funding sources: Data first presented at the American College of Chest Physicians (CHEST): October 6 – 9, 2024; Boston, MA, USA. Research was sponsored by Sanofi and Regeneron Pharmaceuticals Inc. ClinicalTrials.gov Identifier: NCT03930732. Medical writing/editorial assistance was provided by Karl Harber, of Excerpta Medica, and was funded by Sanofi and Regeneron Pharmaceuticals Inc., according to the Good Publication Practice guidelines.

Disclosures:

Bhatt SP: NIH – grant support; Apreo, Boehringer Ingelheim, Chiesi, Genentech, GSK, Regeneron Pharmaceuticals Inc., Sanofi – consultant; Horizon CME, Integrity CE, Medscape – honoraria. Rabe KF: AstraZeneca, Boehringer Ingelheim, Chiesi, Gilead, GSK, Novartis, Pearl, Sanofi, Teva – consultant, speaker fees and advisory board member; rnatics, Germany – co-founder. Hanania NA: Amgen, AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi, Teva, – honoraria for serving as a consultant or advisor; AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Sanofi – grant support to institution. Vogelmeier CF: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, Grifols, GSK, Insmed, Menarini, Novartis, Nuvaira, Roche, Sanofi – symposia presentations and/or served on scientific advisory boards. Bafadhel M: AstraZeneca, Roche – grant funding to institution; AstraZeneca, Chiesi, GSK – consultancy and speaker honoraria; AlbusHealth, ProAxsis – scientific advisor. Christenson SA: Merck, NIH – grant support; AstraZeneca, Glenmark Pharmaceuticals, GSK – consulting fees; AstraZeneca, Genentech, Sanofi-Regeneron Pharmaceuticals Inc., Sunovion –

payment and honoraria; AstraZeneca, Glenmark Pharmaceuticals, GSK, Sanofi-Regeneron Pharmaceuticals Inc.– participation in advisory boards/ data and safety monitoring boards. Papi A: AstraZeneca, Chiesi, GSK, Sanofi – payments to institution; AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, Iqvia, Novartis, Sanofi – consultancy fees; AstraZeneca, Avillion, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, Iqvia, Menarini, MSD, Mundipharma, Sanofi, Zambon – payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events. Singh D: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo, Genentech, Glenmark, Gossamer Bio, GSK, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Teva, Theravance Biopharma, Verona Pharma – consultancy fees and honoraria. Laws E, Lu X, Bauer D, Robinson LB, Abdulai RM: Sanofi – employees, may hold stock and/or stock options in the company. Dakin P, Maloney J, Bansal A: Regeneron Pharmaceuticals Inc. – employees and shareholders.

P190 DUPILUMAB IMPROVES PATIENT-REPORTED RESPIRATORY SYMPTOMS IN NON-EXACERBATORS WITH MODERATE-TO-SEVERE COPD AND TYPE 2 INFLAMMATION: PHASE 3 BOREAS TRIAL

Research sponsored by Sanofi and Regeneron Pharmaceuticals Inc. Rabe KF: AstraZeneca, Boehringer Ingelheim, Chiesi, Gilead, GSK, Novartis, Pearl, Sanofi, Teva – consultant, speaker fees and advisory board member; co-founder of rnatics, Germany. Vogelmeier CF: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, CSL Behring, Grifols, GSK, Insmed, Menarini, Novartis, Nuvaira, Roche, Sanofi – symposia presentations and/or scientific advisory boards. Bhatt SP: NIH – grant support; Boehringer Ingelheim, Regeneron Pharmaceutical, Inc., Sanofi, GSK, Apreo – consultant; IntegrityCE, Medscape – Honorarium. Hanania NA: Amgen, AstraZeneca, Boehringer Ingelheim, GSK, Novartis, Sanofi, Teva – honoraria for serving as a consultant or advisor; AstraZeneca, Boehringer Ingelheim, Genentech, GSK, Novartis, Sanofi – grant support to institution. Bafadhel M: AstraZeneca, Roche – grant funding to institution; AstraZeneca, Chiesi, GSK – consultancy and speaker honoraria; ProAxsis, AlbusHealth – scientific advisor. Christenson SA: NIH; consulting/advisory board: Sanofi, Regeneron, AstraZeneca, Glenmark, Verona; speaking (non-branded): Sanofi, Regeneron, GlaxoSmithKline, AstraZeneca. Papi A: AstraZeneca, Chiesi, GSK, Sanofi – payments to institution; AstraZeneca, Avillion, Chiesi, Elpen Pharmaceuticals, GSK, IQVIA, Novartis, Sanofi – consultancy fees; AstraZeneca, Avillion, Chiesi, Edmond Pharma, Elpen Pharmaceuticals, GSK, IQVIA, Menarini, MSD, Mundipharma, Sanofi, Zambon – payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events. Singh D: Aerogen, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, CSL Behring, EpiEndo Pharmaceuticals, Genentech, Glenmark, Gossamer Bio, GSK, Kinaset Therapeutics, Menarini, Novartis, Orion, Pulmatrix, Sanofi, Teva, Theravance Biopharma, Verona Pharma – consultancy fees and honoraria. Laws E, Lu X, Bauer D, Robinson LB, Abdulai RM: Sanofi – employees, may hold stock and/or stock options in the company. Maloney J, Bansal A: Regeneron Pharmaceuticals Inc. – employees and shareholders.

P192 FROM DEVELOPMENT TO DEPLOYMENT: ACTIONABLE AI MODELS THAT ACCURATELY PREDICT ADMISSIONS AND EXACERBATIONS IN PATIENTS WITH COPD

Model development funded by NHSX AI health and care award as part of the DYNAMIC-AI clinical investigation.

P210 FEDERATED LEARNING FOR DIFFERENTIATION OF RARE CAUSES OF PNEUMOTHORAX: BIRT-HOGG-DUBÉ SYNDROME (BHD) AND LYMPHANGIOLEIOMYOMATOSIS (LAM)

Myrovlytis Trust funded project.

P216 UNRAVELLING PAIN IN MALIGNANT PLEURAL MESOTHELIOMA: A LONGITUDINAL STUDY

Funding for this study was received from Asthma and Lung UK.

P229 PREVALENCE AND IMPACT OF INCIDENTAL FINDINGS ON RESEARCH PET-CT SCANS AMONG RECENT TB CONTACTS PARTICIPATING IN A PROSPECTIVE OBSERVATIONAL STUDY.

The study was funded by Wellcome Investigator award to A. O'Garra (215628_Z_19_Z).

P230 ISONIAZID MONO-RESISTANT PULMONARY TUBERCULOSIS AND ITS CLINICAL OUTCOMES: A PROSPECTIVE MULTICENTER COHORT STUDY IN KOREA

This work was supported by the Research Program funded by the Korea National Institute of Health (grant number 2022E200100).

P235 THE DIAGNOSTIC JOURNEY OF PATIENTS WITH EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS (EGPA) IN ENGLAND: A RETROSPECTIVE OBSERVATIONAL COHORT STUDY

SS has received speaker fees from GSK, AstraZeneca, Chiesi, Boehringer Ingelheim, and Novartis; participates on advisory boards for GSK, AstraZeneca, Chiesi, Boehringer Ingelheim, Novartis, Knopp Biotech, Munipharma, ERT Medical, and Owlstone Medical; is a member of the European Respiratory Society Science Council and the UK Medical Research Council; and is a cofounder of Eupnoos Ltd. PD, AS, JR, CE, DK and SYC are employees of AstraZeneca and may own stock/ stock options. AL, PS, CA, BP and AKV are employees of OXON Epidemiology, which received funding from AstraZeneca to conduct the study. Graziella Greco and Helen Brereton of inScience Communications, Springer Healthcare Ltd, UK, provided medical writing support, which was funded by AstraZeneca in accordance with Good Publication Practice 2022 guidelines.

P239 **QUANTIFICATION OF SMALL AIRWAYS DISEASE IN SEVERE ASTHMA USING A NOVEL, FAST-RESPONSE CAPNOMETER AND INTERPRETABLE MACHINE LEARNING**

The ABRS study was supported by the National Institute for Health Research Invention for Innovation (NIHR i4i) Programme (Grant Reference Number: II-LA-1117-20002), the GBRS study was supported by Innovate UK (Grant Reference Number: 102977), the CBRS study was supported by SBRI Healthcare, the CBRS2 study was supported by Pfizer Open-Air and the CARES study was supported by Innovate UK through two grants (Grant Reference Numbers: 133879 and 74355). The authors had sole responsibility for the study design, data collection, data analysis, data interpretation and report writing.

This abstract was presented at the 2024 ATS Conference.

P242 **MORE FREQUENT EXERCISE AS ADOLESCENTS IS ASSOCIATED WITH BETTER EXERCISE TOLERANCE IN ADULTHOOD FOR PATIENTS WITH PULMONARY ARTERIOVENOUS MALFORMATIONS AND HEREDITARY HAEMORRHAGIC TELANGIECTASIA**

H Das and H Ironton contributed equally to this study as first authors.

P244 **WHAT DOES PHYSICAL ACTIVITY INTENSITY MEAN TO PEOPLE WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)? A QUALITATIVE PHOTOVOICE STUDY**

PhD is funded by the University of Leicester (Future 100)

P262 **LONGITUDE-QOL: AN OBSERVATIONAL STUDY OF THE LONG-TERM IMPACT OF ELEXACAFTOR/TEZACAFTOR/IVACAFTOR ON THE QUALITY OF LIFE IN PEOPLE AGED ≥12 YEARS WITH CYSTIC FIBROSIS USING DATA FROM THE UNITED KINGDOM CYSTIC FIBROSIS REGISTRY**

Funding Source: Vertex Pharmaceuticals Incorporated.

P265 **IMPAIRED EXERCISE CAPACITY AND FUNCTIONAL PERFORMANCE IN YOUTH WITH CYSTIC FIBROSIS: A COMPARATIVE ANALYSIS**

Heleen Demeyer reports financial support was provided by Research Foundation Flanders.

M3 **THE SYMPTOMATIC BENEFIT FROM ASTHMA BIOLOGICS IS NOT SUSTAINED THROUGHOUT THE DOSING SCHEDULE.**

This abstract was presented at European Respiratory Society (ERS) Congress 2024.

M5 **SEVERE ASTHMA BIOLOGICS: A NEED TO INCREASE USE AND REDUCE INEQUITY IN ENGLAND**

This abstract is funded by AstraZeneca.

This abstract was accepted by the ERS for their 2024 annual congress in September 2024.

M7 **WHAT DO PATIENTS REALLY THINK OF ORAL STEROIDS FOR ASTHMA ATTACKS? A DISCRETE CHOICE EXPERIMENT**

Funded through NIHR Biomedical Research Centre grant

This abstract was presented at the ERS Congress 2024.

M9 **THE IMPACT OF AN ASTHMATIC MATERNAL ENVIRONMENT IN PREGNANCY (MEP) ON MEDIATORS PREDISPOSING TO DEVELOPMENT OF EARLY-LIFE ASTHMA.**

This work has been supported by The Medical Research Foundation & Asthma UK (MRFAUK-2015-322), BMA Foundation for Medical Research: The James Trust for research into asthma, Terence Bowley Fund, UK and NIHR Southampton Biomedical Research Centre.

The abstract will be presented on 7th to 11th September at ERS congress.

M13 **DISEASE BURDEN IN PATIENTS WITH EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS (EGPA) IN ENGLAND: A RETROSPECTIVE COHORT STUDY**

SS has received speaker fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, and Novartis; participates on advisory boards for AstraZeneca, Boehringer Ingelheim, Chiesi, ERT Medical, GlaxoSmithKline,Knopp Biotech, Munipharma, Novartis, and Owlstone Medical; is a member of the European Respiratory Society Science Council and the UK Medical Research Council; and is a cofounder of Eupnoos Ltd. PD, AS, JR, CE, DK and SYC are employees of AstraZeneca and may own stock/stock options. AL, PS, CA, BP and AKV are employees of OXON Epidemiology, which received funding from AstraZeneca to conduct the study. Caroline Ridley and Helen Brereton of inScience Communications, Springer Healthcare, UK, provided medical writing support, which was funded by AstraZeneca in accordance with Good Publication Practice 2022 guidelines.

M16 **REAL-WORLD OUTCOMES FROM USE OF ENERZAIR INHALERS WITH PROPELLER MONITOR CONNECTED INHALER SYSTEM IN A REGIONAL SEVERE ASTHMA ADHERENCE CLINIC**

This abstract was not externally funded.

PEP has attended advisory boards for AstraZeneca, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, Chiesi and GlaxoSmithKline; has attended international conferences with AstraZeneca; has taken part in clinical trials sponsored by

AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi; is conducting research funded by GlaxoSmithKline for which his institution receives remuneration and quality improvement activity at his institution supported by AstraZeneca. None of these relate to the work presented in this abstract. The remaining authors report no conflicts of interest.

M18 THE CRETAN REAL-LIFE EXPERIENCE OF THE USE OF BIOLOGICS IN THE MANAGEMENT OF RESPIRATORY DISEASES

NB and AMM contributed equally.

M20 EFFECTIVENESS OF TEZEPELUMAB IN PATIENTS WITH DIFFICULT-TO-TREAT SEVERE ASTHMA: EARLY INSIGHTS FROM THE TEZEPELUMAB PATIENT ACCESS PROGRAMME

This study was sponsored and funded by AstraZeneca, with medical writing support from Adelphi. P Patel has attended advisory boards for AstraZeneca, Celltrion Healthcare, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, GlaxoSmithKline, Novartis and Sanofi/Regeneron; has attended international conferences with AstraZeneca and Chiesi; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi.

H Rupani has received advisory board and speaker fees from GSK, Chiesi, AstraZeneca, Sanofi and Boehringer Ingelheim; conference support from AZ and Sanofi and grant funding to her institution from AZ and GSK.

P Pfeffer has attended advisory boards for AstraZeneca, GlaxoSmithKline and Sanofi; has given lectures at meetings/webinars, with/without honoraria, supported by AstraZeneca, Chiesi and GlaxoSmithKline; has attended international conferences with AstraZeneca; has taken part in clinical trials sponsored by AstraZeneca, GlaxoSmithKline, Novartis, Regeneron and Sanofi; is conducting research funded by GlaxoSmithKline for which his institution receives remuneration and quality improvement activity at his institution supported by AstraZeneca.

Adel Mansur received personal and to institution funds for talks, advisory group meeting or grants and sponsorships to attend conferences from AZ, GSK, Sanofi, BI, Chiesi.

Michael Watt, Charlotte Lupton, and Joe Lipworth are employed by, and may hold stock in, AstraZeneca.

Hassan Burhan has received speaking fees/PI/Advisory board feeds/hospitality from AstraZeneca, Chiesi, GlaxoSmithKline, Novartis, and Sanofi.

M23 IDENTIFICATION OF ASTHMA-COPD OVERLAP USING A NOVEL HAND-HELD CAPNOMETER AND INTERPRETABLE MACHINE LEARNING

The ABRS study was supported by the National Institute for Health Research Invention for Innovation (NIHR i4i) Programme (Grant Reference Number: II-LA-1117-20002), the GBRS study was supported by Innovate UK (Grant Reference Number: 102977), the CBRS study was supported by SBRI Healthcare, the CBRS2 study was supported by Pfizer OpenAir and the CARES study was supported by Innovate UK through two grants (Grant Reference Numbers: 133879 and 74355). The authors had sole responsibility for the study design, data collection, data analysis, data interpretation and report writing.

This abstract was presented at the 2024 ATS Conference.

M24 A GLOBAL SYSTEMATIC LITERATURE REVIEW TO INVESTIGATE THE HUMANISTIC AND ECONOMIC BURDEN OF SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

This study was funded by Chiesi Farmaceutici Spa.

M37 DEPLOYING LIVE AI-BASED RISK PREDICTION MODELS FOR USE IN A COPD MDT: ACCEPTABILITY, FEASIBILITY AND UTILITY DATA FROM THE DYNAMIC-AI CLINICAL TRIAL

DYNAMIC-AI clinical investigation funded by an NHSX AI health and care award.

This abstract was presented at ERS Congress Sept 2024.

M38 RESPIRE: (RESPIRATORY EDUCATION, SELF-MANAGEMENT AND PULMONARY REHABILITATION) EVALUATING THE IMPACT OF GROUP EDUCATION FOR COPD MANAGEMENT IN A PRIMARY CARE NETWORK (PCN).

Funding: This project was funded by NHS England Primary Care and Community Services and Cardiovascular Disease and Respiratory Programme. (The funder was involved in the design of project; analysis and interpretation of the data was performed by Health In.

Author index

The number next to the author indicates the abstract number, not the page number.

ACKNOWLEDGEMENTS

The BTS Science and Research Committee organised the programme of the Winter Meeting 2024:

Professor James Chalmers (Chair)
Professor Mona Bafadhel
Dr Chloë Bloom
Dr Rebecca D'Cruz
Dr Louise Fleming
Dr Frances Grudzinska
Dr Stephen Holmes
Dr Wadah Ibrahim
Dr Kate Lippiett
Dr Anthony Martinelli
Dr Pujan Patel
Professor Najib Rahman
Dr Aran Singanayagam
Professor Karl Staples
Dr Matthew Steward
Dr Amanda Tatler
Dr Roger Thompson
Dr Steven Walker

The Society's Specialist Advisory Groups also provided suggestions for symposia content.

Topic Leaders, who organised the symposia, were:

Professor Mona Bafadhel
Dr Chloë Bloom
Professor James Chalmers
Dr Rebecca D'Cruz
Dr Louise Fleming
Dr Frances Grudzinska
Dr Kate Lippiett
Dr Anthony Martinelli
Dr Pujan Patel
Professor Najib Rahman
Professor Karl Staples
Dr Matthew Steward
Dr Amanda Tatler
Dr Roger Thompson
Dr Steven Walker

The BTS/BALR/A+LUK Early Career Investigator Awards, BTS/A+LUK/BALR Lecture Awards and Medical Student Award abstracts were judged by:

Professor Mona Bafadhel
Professor James Chalmers
Professor Karl Staples

The refereeing of the abstracts was performed by:

Professor Sanjay Agrawal
Dr Martin Allen
Ms Pearlene Antoine-Pitterson
Dr Rachelle Asciak
Dr Avinash Aujayeb
Professor Mona Bafadhel
Dr Christopher Barber
Dr Caroline Baxter
Dr Eihab Bedawi
Dr Thomas Bewick
Dr Anna Bibby
Professor Surinder Birring
Dr Chloë Bloom
Professor Kevin Blyth
Dr Malcolm Brodlie
Professor Jeremy Brown
Professor Andrew Bush
Dr Adam Byrne
Mr Edward Caruana
Professor James Chalmers
Dr Nazia Chaudhuri
Professor Rekha Chaudhuri
Dr Amelia Clive
Dr Jane Cross
Dr Duneesha De Fonseka
Professor Anthony De Soyza
Dr Martin Dedicoat
Dr James Duckers
Dr Hannah Durrington
Dr Amanda Farley
Professor Morag Farquhar
Dr Johanna Feary
Dr Sophie Fletcher
Dr William Flowers
Dr Stephen Fowler
Dr Erol Gaillard
Professor Michael Gibbons
Dr Neil Greening
Dr Justine Hadcroft
Dr Robert Hallifax
Dr Charles Haworth
Mrs Claire Hepworth
Dr Karen Heslop-Marshall
Professor Adam Hill
Dr Jennifer Hoyle
Professor John Hurst
Professor David Jackson
Ms Lorna Latimer
Dr Richard Lee
Professor Keir Lewis
Professor Marc Lipman
Dr Laurence Si Chong Lok
Professor William Man
Dr Swapna Mandal
Dr Zaheer Mangera
Professor Stefan Marciniak
Dr Matthew Martin
Dr Jane Mcdowell
Dr Jamilah Meghji
Dr Rachel Mercer
Dr Fraser Millar
Dr Philip Mitchelmore
Professor Philip Molyneaux
Dr Marko Nikolic
Dr Claire Nolan
Dr Helen Parfrey

Dr Sean Parker
Mrs Maria Parsonage
Mr Akshay Patel
Dr Pujan Patel
Dr Felicity Perrin
Ms Jacqueline Pollington
Mrs Samantha Prigmore
Professor Jennifer Quint
Professor Najib Rahman
Dr Sheila Ramjug
Professor Nicola Roberts
Dr Helen Rodgers
Dr Kay Roy
Dr Hitasha Rupani
Dr Mamta Ruparel
Dr Richard Russell
Professor Sejal Saglani
Dr Imran Satia
Dr Anand Shah
Dr Amelia Shoemark
Professor Angela Simpson
Professor Dave Singh
Dr Elaine Soon
Dr Lisa Spencer
Professor Karl Staples
Dr Jay Suntharalingam
Dr Tim Sutherland
Dr Karl Sylvester
Dr Roger Thompson
Dr Simon Tiberi
Professor Jorgen Vestbo
Dr Steven Walker
Dr Gareth Walters
Dr Helen Ward
Dr Thomas Ward
Dr Alex West
Dr Ruth Wiggans
Professor John Wort

I would like to particularly thank the outstanding BTS staff for all of their support and expertise in organising this year's Winter Meeting. Particular thanks to Cathryn Stokes, Bernice Bruce-Vanderpuije, Louise Preston, Joan Thompson, Kathryn Wilson, Trine Tofte and Sally Welham for their exceptional work and for making the organising of the meeting so enjoyable. It has been so much fun to work with you.

I am very proud of the programme for this year's Meeting, which represents the hard work of many people, particularly the Science and Research Committee members, abstract referees and individual session organisers listed above. Thanks to all of our session chairs and invited speakers and finally to our "book worms", the core abstract team who organised the sessions and had so much fun coming up with the session titles – Dr Chloë Bloom, Dr Rebecca D'Cruz, Dr Kamini Jain, Professor Karl Staples, Dr Roger Thompson and Dr Steven Walker. Thank you to everyone who works so hard to make the Winter Meeting such a highlight of the academic calendar.

Professor James D Chalmers, Chair, BTS Science and Research Committee

ACKNOWLEDGEMENTS

The British Thoracic Society gratefully acknowledges sponsorship from the under listed companies, through the purchase of exhibition space at the Winter Meeting 2024. None of them have had any input into the programme content or the planning of the conference. Furthermore, the Society does not allow any sponsored symposia at this event, within the programme, or associated in any way with it.

Abbott Rapid Diagnostics
Aerogen
Ambu
APR Medtech
AstraZeneca
BD
Broncus Medical Inc / Uptake Medical Inc
Chiesi
Cipla EU Ltd
Creo Medical
Erbe Medical UK Ltd
Fannin
Fisher & Paykel Healthcare
GSK
Guardant Healthcare
Healthcare21 Group
ICU Medical
Inogen + Physio-Assist
Insmed
Inspire Sleep
It's Interventional
Kenvue
Medtronic
MSD
Niox Healthcare Ltd
Olympus Medical
Orion Pharma
Richard Wolf UK Ltd
Roche
Rocket Medical
Sanofi
Stirling Anglian Pharmaceuticals
Thornton & Ross (STADA Group)
Tidal Sense
Vitalograph

Thorax

ORIGINALITY, RIGOUR AND EXCELLENCE IN RESPIRATORY MEDICINE

Impact Factor: 9

Journal of the British Thoracic Society

Guidelines for Authors and Reviewers

Full instructions are available online at http://thorax.bmj.com/pages/authors/. Articles must be submitted electronically https://mc.manuscriptcentral.com/thorax. Authors retain copyright but are required to grant *Thorax* an exclusive licence to publish https://thorax.bmj.com/pages/authors/

Aims and Scope: *Thorax* aims to cover all areas of respiratory medicine from paediatric to adults through publishing original papers, systematic reviews and meta-analyses, trial protocols, state of the art reviews, invited editorials, case-based discussions and images. The priorities are originality, rigour and excellence.

Subscription Information

Thorax is published monthly (subscribers receive all supplements)

Institutional Rates 2024

Print
£1121

Online
Site licences are priced on FTE basis and allow access by the whole institution. Details available online at http://www.bmj.com/company/bmj-for-institutions/ or contact Subscription (see above right).

Personal Rates 2024

Print (includes online access at no additional cost)
£454

Online only
£241

ISSN 0040-6376 (print)
ISSN 1468-3296 (online)

Personal print or online only and institutional print subscriptions may be purchased online at http://thorax.bmj.com/pages/subscribe/ (payment by (MasterCard/Visa only).
Residents of some EC countries must pay VAT; for details call us or visit http://www.bmj.com/company/eu-vat-rates/

Contact Details

Editorial Office
Thorax, BMJ Journals, BMA House, Tavistock Square, London, WC1H 9JR, UK
E: **thorax@bmj.com**
Twitter: **@ThoraxBMJ**

British Thoracic Society
17 Doughty Street, London WC1N 2PL, UK
T: **+44 (0)20 7831 8778**
E: **bts@brit-thoracic.org.uk**
W: **https://www.brit-thoracic.org.uk/**

Customer Support
For general queries and support with subscriptions:
T: **+44 (0)20 7111 1105**
E: **support@bmj.com**
W: **https://myaccount.bmj.com/myaccount/customerservice/support-home.html**

Self-archiving and permissions
E: **bmj.permissions@bmj.com**
W: **bmj.com/company/products-services/rights-and-licensing/**

Advertising
W: **bmj.com/company/for-advertisers-and-sponsor/**

Display Advertising ROW
Sophie Fitzsimmons
T: **+44 (0)20 3655 5612**
E: **sfitzsimmons@bmj.com**

Online Advertising ROW
Marc Clifford
T: **+44 (0)20 3655 5610**
E: **mclifford@bmj.com**

Display & Online Advertising Sales Americas
American Medical Communications (AMC)
T: **+1 973 214 4374**
E: **rgordon@americanmedicalcomm.com**

Author Reprints
BMJ Reprints Team
E: **admin.reprints@bmj.com**

Commercial Reprints ROW
Nadia Gurney-Randall
M: **+44 (0)7866 262344**
E: **ngurneyrandall@bmj.com**

Commercial Reprints Americas
Ray Thibodeau
T: **+1 267 895 1758**
M: **+1 215 933 8484**
E: **ray.thibodeau@contentednet.com**

Production Editor
Tasnia Nizam
E: **production.thorax@bmj.com**

For all other journal contacts:
https://**thorax.bmj.com/pages/contact-us/**