

## WHERE TO FIND FURTHER INFORMATION

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- Full guideline published in Thorax:
  - Chronic Obstructive Pulmonary Disease: National clinical guideline for management of chronic obstructive pulmonary disease in adults in primary and secondary care. *Thorax* 2004; **59** (Suppl 1):1–232
- Short version available on [www.nice.org.uk](http://www.nice.org.uk)
- Other BTS COPD Consortium materials including a new PowerPoint slide set and the new Guideline can be viewed and downloaded from [www.brit-thoracic.org.uk/copd](http://www.brit-thoracic.org.uk/copd) and can be ordered directly from the website.
- Patient version of guideline available from [www.nice.org.uk](http://www.nice.org.uk)
- Patient and carers requiring further information can contact the British Lung Foundation on 020 7688 5555 or [www.lunguk.org](http://www.lunguk.org)

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## PRACTICAL POINTERS WHAT'S IN THE NEW COPD GUIDELINES?

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Summary of key issues produced by  
the BTS COPD Consortium

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New evidence-based guidelines for the management of people with COPD have been produced for the National Institute of Clinical Excellence (NICE) by the National Collaborating Centre for Chronic Conditions (NCCCC); they have been endorsed by the British Thoracic Society (BTS).

# KEY CHARTS AND ALGORITHMS

## DEFINITION

### DEFINITION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

COPD is characterised by airflow obstruction. The airflow obstruction is usually progressive, not fully reversible and does not change markedly over several months. The disease is predominantly caused by smoking.

- The airflow obstruction is due to a combination of airway and parenchymal damage
- The damage is the result of chronic inflammation that differs from that seen in asthma and which is usually the result of tobacco smoke
- Significant airflow obstruction may be present before the individual is aware of it
- COPD produces symptoms, disability and impaired quality of life which may respond to pharmacological and other therapies which have limited or no impact on the airflow obstruction
- COPD is now the preferred term for patients with airflow obstruction who were previously diagnosed as having chronic bronchitis or emphysema
- Other factors, particularly occupational exposures, may also contribute to the development of COPD

## MAKING A DIAGNOSIS

Think of the diagnosis of COPD for patients who are:

- Over 35
- Smokers or ex-smokers
- Have any of these symptoms:
  - exertional breathlessness
  - chronic cough
  - regular sputum production
  - frequent winter 'bronchitis'
  - wheeze
- and have no clinical features of asthma (see table on page 9)

Perform spirometry if COPD seems likely

Airflow obstruction is defined as:

- FEV<sub>1</sub> <80% predicted and
- FEV<sub>1</sub>/FVC <0.7

Spirometric reversibility testing is not usually necessary as part of the diagnostic process or to plan initial therapy

If still doubt about diagnosis consider the following pointers:

- Clinically significant COPD is not present if FEV<sub>1</sub> and FEV<sub>1</sub>/FVC ratio return to normal with drug therapy
- Asthma may be present if:
  - there is a >400ml response to bronchodilators
  - serial peak flow measurements show significant diurnal or day-to-day variability
  - there is a >400ml response to 30mg prednisolone daily for 2 weeks

If still in doubt, make a provisional diagnosis and start empirical treatment

If no doubt, diagnose COPD and start treatment

Reassess diagnosis in view of response to treatment

## REASONS FOR REFERRAL ARE AS FOLLOWS

### Diagnostic uncertainty

- Suspected severe COPD
- Onset of cor pulmonale
- Dysfunctional breathing
- Aged under 40 years or a family history of  $\alpha_1$ -antitrypsin deficiency
- Uncertain diagnosis
- Symptoms disproportionate to lung function deficit
- Haemoptysis

- Assessment for long term nebuliser therapy
- Assessment for oral corticosteroids therapy
- A rapid decline in FEV<sub>1</sub>
- Assessment for pulmonary rehabilitation

### Consideration of surgery

- Assessment for lung volume reduction surgery
- Assessment for lung transplantation
- Bullous lung disease

### Optimising therapy

- Assessment for O<sub>2</sub> therapy

# Patient with COPD

Assess Symptoms/Problems  
Manage those that are present as below

Patients with COPD should have access to the wide range of skills available from a multidisciplinary team

Smoking	Breathlessness & exercise limitation	Frequent exacerbations	Respiratory failure	Cor pulmonale	Abnormal BMI	Chronic productive cough	Anxiety & depression
<ul style="list-style-type: none"> <li>Offer help to stop smoking at every opportunity</li> <li>Combine pharmacotherapy with appropriate support as part of a programme</li> </ul>	<p><i>Stop therapy if ineffective</i></p> <ul style="list-style-type: none"> <li>Use short-acting bronchodilator prn (beta<sub>2</sub>-agonist or anticholinergic)</li> <li>If still symptomatic try combined therapy with a short-acting beta<sub>2</sub>-agonist and a short-acting anticholinergic</li> <li>If still symptomatic use a long-acting bronchodilator (beta<sub>2</sub>-agonist or anticholinergic)</li> <li><b>In moderate or severe COPD:</b> If still symptomatic consider a trial of a combination of a long-acting beta<sub>2</sub>-agonist and inhaled corticosteroid. <b>Discontinue if no benefit after 4 weeks</b></li> <li>If still symptomatic consider adding theophylline</li> </ul> <ul style="list-style-type: none"> <li>Offer pulmonary rehabilitation to all patients who consider themselves functionally disabled (usually MRC grade 3 and above)</li> <li>Consider referral for surgery: bullectomy, LVRS, transplantation</li> </ul>	<ul style="list-style-type: none"> <li>Offer annual influenza vaccination</li> <li>Offer pneumococcal vaccination</li> <li>Give self management advice</li> <li>Optimise bronchodilator therapy with one or more long-acting bronchodilator (beta<sub>2</sub>-agonist or anticholinergic)</li> <li>Add inhaled corticosteroids if FEV<sub>1</sub> ≤50% and 2 or more exacerbations in a 12 month period. (N.B. These will usually be used with long-acting bronchodilators)</li> </ul>	<ul style="list-style-type: none"> <li>Assess for appropriate oxygen:                             <ul style="list-style-type: none"> <li>LTOT</li> <li>ambulatory</li> <li>short burst</li> </ul> </li> <li>Consider referral for assessment for long-term domiciliary NIV</li> </ul>	<ul style="list-style-type: none"> <li>Need for oxygen</li> <li>Use diuretics</li> </ul>	<ul style="list-style-type: none"> <li>Refer for dietetic advice</li> <li>Give nutritional supplements if the BMI is low</li> </ul>	<ul style="list-style-type: none"> <li>Consider trial of mucolytic therapy</li> <li>Continue if symptomatic improvement</li> </ul>	<ul style="list-style-type: none"> <li>Be aware of anxiety and depression and screen for them in those most physically disabled</li> <li>Treat with conventional pharmacotherapy</li> </ul>

## Palliative Care

- Opiates can be used for the palliation of breathlessness in patients with end stage COPD unresponsive to other medical therapy
  - Use benzodiazepines, tricyclic antidepressants, major tranquillisers and oxygen when appropriate
  - Involve multidisciplinary palliative care teams

## FOLLOW-UP AND MONITORING IN PRIMARY CARE

### At least annual

#### Mild to moderate

- Smoking status & desire to quit
- Adequacy of symptom control:
  - breathlessness
  - exercise tolerance
  - estimated exacerbation frequency
- Presence of complications
- Effects of each drug treatment
- Inhaler technique

- Need for referral to specialist and therapy services
- Need for pulmonary rehabilitation

#### Measurements

- FEV<sub>1</sub> & FVC
- Calculate BMI
- MRC dyspnoea score

### At least twice a year

#### Severe

- Smoking status & desire to quit
- Adequacy of symptom control:
  - breathlessness
  - exercise tolerance
  - estimated exacerbation frequency
- Presence of complications
- Presence of cor pulmonale
- Need for long-term oxygen therapy

- Patient's nutritional state
- Presence of depression
- Effects of each drug treatment
- Inhaler technique
- Need for Social Services & Occupational Therapy input
- Need for referral to specialist and therapy services
- Need for pulmonary rehabilitation

#### Measurements

- FEV<sub>1</sub> & FVC
- Calculate BMI
- MRC dyspnoea score
- Pulse oximetry (SaO<sub>2</sub>)

## MANAGING EXACERBATIONS IN PRIMARY CARE

### Definition of an exacerbation

- A sustained worsening of the patient's symptoms from their usual stable state which is beyond normal day-to-day variations, and is acute in onset
- Exacerbations of COPD can be associated with:
  - worsening breathlessness
  - increased sputum volume
  - changing sputum colour
  - cough

### Initial management

- Increase frequency of bronchodilator use – consider giving via a nebuliser
- Oral antibiotics if purulent sputum (sputum culture not normally recommended)
- Prednisolone 30mg daily for 7 to 14 days – for all patients with significant increase in breathlessness unless contraindicated

### Factors to consider when deciding where to manage patient

Factor	Favours treatment at home	Favours treatment in hospital
Able to cope at home	Yes	No
Breathlessness	Mild	Severe
General condition	Good	Poor – deteriorating
Level of activity	Good	Poor/confined to bed
Cyanosis	No	Yes
Worsening peripheral oedema	No	Yes
Level of consciousness	Normal	Impaired
Already receiving LTOT	No	Yes
Social circumstances	Good	Living alone/not coping
Acute confusion	No	Yes
Rapid rate of onset	No	Yes
Significant comorbidity (particularly cardiac and insulin dependent diabetes)	No	Yes
Pulse oximetry SaO <sub>2</sub> <90%	No	Yes

### Follow-up

- Arrange appropriate follow-up

## KEY PRIORITIES

The new COPD guidelines identify seven key priorities.

### DIAGNOSIS

COPD should be thought of in any smoker or ex-smoker over the age of 35 who has one or more of the following:

- breathlessness on exertion
- chronic cough
- regular sputum production
- frequent winter "bronchitis" wheeze.

### SMOKING CESSATION

Stopping smoking is one of the most important components of COPD management. All patients should be encouraged to stop, and be offered help to do so, at every opportunity.

### INHALED THERAPY

In patients who continue to experience problems despite the use of short-acting bronchodilators, long-acting inhaled bronchodilators (beta<sub>2</sub>-agonists or anticholinergics) should be used to control symptoms and improve exercise capacity.

In patients with FEV<sub>1</sub> less than or equal to 50% predicted and who have had two or more exacerbations in a twelve month period, inhaled corticosteroids should be added to long-acting bronchodilators in order to decrease exacerbation frequency.

### PULMONARY REHABILITATION

This should be offered to all patients who consider themselves functionally disabled by COPD.

*The British Thoracic Society recommends that pulmonary rehabilitation programmes must meet patient needs in terms of access, location and availability.*

## NON-INVASIVE VENTILATION

This should be used as the treatment of choice for persistent hypercapnic ventilatory failure during exacerbations after not responding to medical therapy. It should be delivered by staff trained in its application, experienced in its use, and aware of its limitations.

## EXACERBATIONS

Their frequency should be reduced by appropriate use of inhaled steroids and bronchodilators and by vaccinations. Their impact on patients should be minimised by:

- giving self-management advice on responding promptly to the symptoms of an exacerbation
- starting appropriate treatment with oral steroids and/or antibiotics
- use of non-invasive ventilation when indicated
- use of hospital-at-home or assisted discharge schemes.

## MULTIDISCIPLINARY WORKING

Patients with COPD should have their care delivered by a multidisciplinary team.

## WHAT'S NEW IN THE GUIDELINES – AND WHY THESE NEW RECOMMENDATIONS HAVE BEEN MADE

### MAKING A DIAGNOSIS

The diagnosis of COPD depends crucially on thinking of it in the first place as a possible cause of breathlessness or cough in any smoker or ex-smoker. Although spirometry is still essential for demonstrating airflow obstruction and thereby confirming the diagnosis, **for most patients spirometric reversibility testing (to inhaled bronchodilators or a trial of oral steroids) is no longer routinely recommended.** This is an important change from previous COPD guidelines. The correct diagnosis of COPD (and its differentiation from asthma) can usually be made on clinical grounds and, where necessary, by careful assessment of response to treatment.

## REVERSIBILITY TESTING

Traditionally, measurement of the degree of reversibility of airflow obstruction using bronchodilators or corticosteroids has been used to confirm the diagnosis and in particular to try and separate patients with asthma from those with COPD.

It is now recognised that there are many difficulties with this approach, and that routine spirometric reversibility testing may be unhelpful or even misleading because:

- repeated FEV<sub>1</sub> measurements can show small spontaneous fluctuations
- the results of a reversibility test performed on the same patient on different occasions can be inconsistent and not reproducible
- over-reliance on a single reversibility test may be misleading unless the change in FEV<sub>1</sub> is very large (e.g. greater than 400ml.)
- the definition of what constitutes the magnitude of a significant change is purely arbitrary (and has varied between 10% to 20% in different settings)
- response to long-term therapy in COPD is not predicted by acute reversibility testing.

## DIFFERENTIATION BETWEEN COPD AND ASTHMA

COPD and asthma are frequently distinguishable on the basis of history in untreated patients presenting for the first time. Assessing the response to treatment (whether using spirometry, peak flow, or symptoms) should also be used to help differentiate COPD from asthma.

Clinical features differentiating COPD and asthma		
	COPD	Asthma
Smoker or ex-smoker	Nearly all	Possibly
Symptoms under age 35	Rare	Often
Chronic productive cough	Common	Uncommon
Breathlessness	Persistent and progressive	Variable
Night time waking with breathlessness and or wheeze	Uncommon	Common
Significant diurnal or day to day variability of symptoms	Uncommon	Common

To help resolve cases where diagnostic doubt remains, the following findings should be used to help identify asthma:

- FEV<sub>1</sub> and FEV<sub>1</sub>/FVC ratio return to normal with drug therapy
- a very large (>400ml) FEV<sub>1</sub> response to bronchodilators or to 30mg prednisolone daily for 2 weeks
- serial peak flow measurements showing significant (20% or greater) diurnal or day-to-day variability.

If patients report a dramatic improvement in symptoms in response to inhaled therapy, either acutely or over a more prolonged period of time, the diagnosis of COPD should be reconsidered. Patients with remaining diagnostic uncertainty should be referred for specialist advice and more detailed investigations.

## CLASSIFICATION AND ASSESSMENT OF SEVERITY

The degree of airflow obstruction measured by spirometry does not always correlate with the presence or absence of other COPD symptoms, and mild airflow obstruction can be associated with significant disability in some patients. A true assessment of severity should therefore include not only spirometry but also the presence of other features such as:

- breathlessness and exercise limitation
- frequency of exacerbations
- respiratory failure or cor pulmonale
- weight loss (calculate body mass index BMI)
- chronic productive cough
- anxiety and/or depression.

MRC DYSPNOEA SCALE	
Grade	Degree of breathlessness related to activities
1	Not troubled by breathlessness except on strenuous exercise
2	Short of breath when hurrying or walking up a slight hill
3	Walks slower than contemporaries on the level because of breathlessness, or has to stop for breath when walking at own pace
4	Stops for breath after walking about 100m or after a few minutes on the level
5	Too breathless to leave the house, or breathless when dressing or undressing

There are new levels of gradation of severity of airflow obstruction according to FEV<sub>1</sub> as a percentage of the predicted normal value (see table below). These have been chosen:

- to harmonise and agree with the levels given in other national and international COPD guidelines
- to reflect the threshold for undertaking various assessments and starting new treatments.

Severity of airflow obstruction	FEV <sub>1</sub> % predicted
Mild	50–80
Moderate	30–49
Severe	<30

## A MULTISYSTEM DISEASE

COPD affects not only the lungs and breathing, but has extra-pulmonary effects such as muscle wasting and weight loss, pulmonary hypertension and cor pulmonale, anxiety and depression. Patients with COPD therefore should have access to a wide range of skills available from a multidisciplinary team.

In view of the multisystem nature of the disease, the response to various treatments may not be reflected by improvements in FEV<sub>1</sub>, but by changes in symptoms and quality of life scores, frequency of exacerbation, increased exercise tolerance, and so on.

## NEW DRUG TREATMENTS

There are new recommendations for long-acting inhaled bronchodilators, inhaled corticosteroids, combinations of different drug classes, and mucolytic therapy. These recommendations reflect recent evidence showing the proven efficacy of long-acting inhaled bronchodilators (both beta<sub>2</sub>-agonists and anticholinergics), and the much more clearly defined indications for inhaled corticosteroids:

- long-acting bronchodilators should be used when patients remain symptomatic despite the use of short-acting bronchodilators
- inhaled corticosteroids should be prescribed for patients with FEV<sub>1</sub> less than or equal to 50% predicted and two or more exacerbations per year
- mucolytic therapy should be considered in patients with chronic productive cough.

## PULMONARY REHABILITATION

Pulmonary rehabilitation is defined as a multicomponent, multidisciplinary programme of care for patients with chronic respiratory impairment that is tailored to an individual patient's needs and designed to optimise the individual's physical and social performance and autonomy. A typical programme incorporates physical training, disease education, and nutritional, psychological and behavioural intervention.

In view of the magnitude of the benefits of pulmonary rehabilitation programmes, the guidelines recommend that they should:

- be offered to all appropriate patients with COPD managed in primary or secondary care who consider themselves functionally disabled by their disease (usually MRC grade 3 and above)
- be available within a reasonable time of referral, held at times that suit patients in buildings that are easy for patients to get to and which have good access for people with respiratory disability.

A recent British Lung Foundation/British Thoracic Society survey has highlighted the poor provision of, and funding for, current pulmonary rehabilitation services.

## HOSPITAL BASED INTERVENTIONS

In the light of recent evidence showing its proven benefits and cost-effectiveness, non-invasive ventilation (NIV) is now recommended as the treatment of choice for persistent hypercapnic ventilatory failure during exacerbations not responding to optimal medical therapy.

Hospital-at-home and assisted (or early) discharge schemes for the management of patients with exacerbations of COPD are recommended as methods to reduce the need for patients to be admitted to, or stay in, hospital.

## WHAT'S BEEN UPDATED OR RE-EMPHASISED

A number of key issues, all highlighted in previous guidelines, still remain just as important.

### DIAGNOSIS

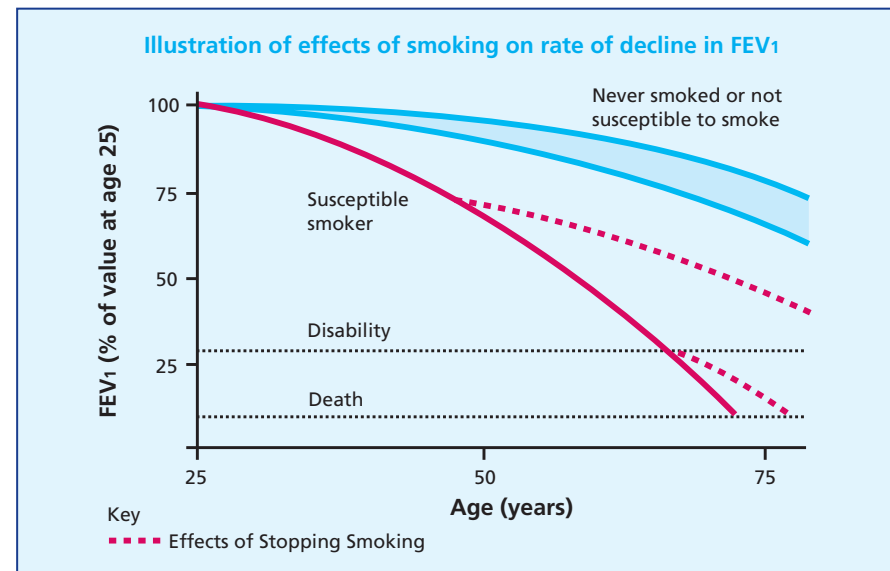
COPD remains under-diagnosed (or mis-diagnosed as asthma). The diagnosis should always be suspected on the basis of symptoms (breathlessness, cough, sputum, wheeze, winter infections).

### SPIROMETRY

The presence of airflow obstruction must always be confirmed by spirometry.

### SMOKING CESSATION

Smoking cessation remains paramount, and is beneficial at any stage of the disease. Its positive effect on the natural history of the disease is well illustrated by the Fletcher-Peto diagram (see graph below).



## INHALED BRONCHODILATORS

These remain the cornerstone of symptomatic treatment. Their benefits may need to be assessed by measures other than improvement in spirometry, such as better exercise tolerance, less breathlessness and fewer symptoms. Inhalers should be prescribed only after patients have received training in the use of the device and have demonstrated satisfactory technique.

## ORAL CORTICOSTEROIDS

Maintenance use of oral corticosteroid therapy is not recommended.

## OXYGEN THERAPY

Appropriate use of long-term oxygen therapy, ambulatory oxygen therapy, and short-burst oxygen therapy is emphasised. **Measurement of arterial oxygen saturation with an oximeter is now recommended at routine follow-up visits.** Oximetry is also of value in assessing severity of exacerbations.

## EXACERBATIONS

Correct management of exacerbations with oral steroids and/or antibiotics is emphasised. Frequent exacerbations are associated with worse health status and more rapid decline in lung function, so preventative strategies are important (vaccinations, inhaled corticosteroids).

## EDUCATION

There are significant differences in the response of patients with COPD and asthma to education programmes. Specific educational packages should be developed for patients with COPD. Programmes designed for asthma should not be used in COPD.

## WHAT TO DO AT FOLLOW-UP

Assess	Mild/Moderate	Severe
	At least annual	At least twice a year
Smoking status & desire to quit	✓	✓
Adequacy of symptom control: – breathlessness – exercise tolerance – estimated exacerbation frequency	✓ ✓ ✓	✓ ✓ ✓
Presence of complications	✓	✓
Effects of each drug treatment	✓	✓
Inhaler technique	✓	✓
Need for referral to specialist and therapy services	✓	✓
Need for pulmonary rehabilitation	✓	✓
Presence of cor pulmonale		✓
Need for long-term oxygen therapy		✓
Patient's nutritional state		✓
Presence of depression		✓
Need for Social Services & Occupational Therapy input		✓

Measurements	Mild/Moderate	Severe
	FEV <sub>1</sub> & FVC	✓
Calculate BMI	✓	✓
MRC dyspnoea score	✓	✓
Pulse oximetry (SaO <sub>2</sub> )		✓