Pleural services during the COVID-19 Pandemic – Revised

The COVID-19 pandemic continues to put an enormous strain on NHS resources, and caused disruption to established clinical pathways. This document is a revision of previous documents on the provision of pleural services during this crisis, building on recent data. Despite early reports of COVID-19 PCR positivity in effusion simples, aerosol generation has now been formally assessed and there is no evidence of aerosol generation during pleural procedures (including "open" procedures such as thoracoscopy and Indwelling Pleural Catheter (IPC) insertion) [1]. With the on-going COVID-19 pandemic there remains a strong focus on the maintenance and protection of cancer services including diagnostics and therapeutics as well as urgent medical services.

The priorities for pleural services continue to be to provide diagnostic pathways for suspected cancer patients, to minimise hospital visits and admissions for symptomatic patients with both benign and malignant conditions, and to ensure patient and staff safety. The role of the pleural nurse specialist (where this exists) remains critical in ensuring appropriate patient support and contact. Their time should be protected, rather than redeployed.

COVID-specific pathways should be undertaken in the following circumstances:

Pleural Effusion

- Prior to offering hospital admission for intercostal chest drain insertion and talc slurry consider the local prevalence of COVID-19, the volume of COVID-19 positive patients within the hospital, the ability to admit to an appropriate ward area and the presence/absence of ward outbreaks of COVID-19. A balanced discussion of alternative strategies (in the context of the local situation described above) should be completed as part of a shared decision-making process.
- The majority of IPC drainage will continue to be undertaken by district nurses. However, family members (within the patient's household) may also wish to be trained to reduce visit frequency.

Pneumothorax

- Primary Spontaneous Pneumothorax (PSP) should be managed on an ambulatory pathway where local expertise and resources allow. This can be achieved using an integrated device (e.g. Rocket pleural vent) or chest tube with Heimlich valve device attached, with early outpatient review following appropriate risk assessment.
- Consider conservative management of minimally symptomatic PSP patients with an appropriate risk assessment for ambulatory outpatient care.
- Secondary spontaneous pneumothoraces (SSP) may be amenable to management with a chest tube with Heimlich valve device attached. This can facilitate early ambulation and may enable outpatient management depending on individual risk assessment. .

Outpatient clinic appointments - Telephone or video clinic follow-up could be considered for:

- Remote assessment of symptoms for patients having recently undergone therapeutic drainage - to screen for those that will require face to face assessment with chest X-ray / thoracic ultrasound.
- Device troubleshooting for patients with IPCs.
- Routine follow-up and surveillance of presumed benign asbestos pleural disease or non-specific pleuritis, to screen for those that will require face to face assessment with chest X-ray, thoracic ultrasound or CT thorax.

Infection control measures for pleural procedures

Pre-procedure preparation

- Patients with pleural disease frequently require urgent intervention and the appropriate timing of a pleural procedure should be made on a case-by-case basis.
- Ideally, patients should undergo SARS-CoV-2 testing prior to pleural procedures. This should be performed within 72 hours of the pleural procedure but this will depend on local resources & pathways. The patients should also be assessed for COVID-19 symptoms on the day before and when they arrive for their care (as per NICE guidance[2]).
- Patients with **negative** SARS-CoV-2 test may undergo procedures as standard with staff wearing level 1 PPE (Surgical mask and eye protection, as well as gown and gloves).
- Outpatients positive on SARS-CoV-2 testing should usually have their procedure deferred. Ideally, this is for 10 days but pleural interventions frequently require urgent intervention and the appropriate timing of the pleural procedure should be made on a case-by-case basis.
- Patients whose urgency means they are unable to wait for SARS-CoV-2 testing should be treated as COVID-19 "Unknown" and efforts should be made to manage them separately from non-COVID patients (e.g. not using in the same waiting area).

Post-procedure management

- Patients with COVID-19 and bubbling chest drains should have viral filters installed onto the suction port of a Rocket chest drain bottle (see Appendix A).
- Patients with COVID-19 and bubbling drains with viral filters do not need to be considered AGP, so do not need to be managed in side rooms and level 2 PPE are not required.
- Digital drain circuits (for example, Thopaz+, Medela) are an alternative method of reducing risk of droplet spread, but they do not contain a viral filter.

References:

1. Arnold DT, Gregson FKA, Sheikh S, et al. Standard pleural interventions are not high-risk aerosol generating procedures. Eur Respir J 2021; in press (https://doi.org/10.1183/13993003.01064-2021).
2. NICE guidance: COVID-19 rapid guideline: arranging planned care in hospitals and diagnostic services. Last accessed 27.09.2021 https://www.nice.org.uk/guidance/ng179/resources/visual-summary-pdf-8782806637

Changes since last guidance (V3.0):

- New evidence suggests that pleural procedures are not AGP.
- Level 1 PPE (Surgical mask and eye protection, gown and gloves) is sufficient, even for "open" pleural procedures.

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Appendix A: Provided as an example of a method of reducing the risk of droplet generation.

No endorsement of products is implied.

Instructions for Use

Chest Drain Filter Modification for Pneumothorax in Patients with Known or Suspected COVID-19

Contents

1. Intended Use

To reduce the risk of viral particle expulsion from a R54500 Rocket Chest Drainage Bottle in the management of pneumothorax in patients suspected or confirmed infected with COVID-19.

The Rocket Chest Drainage Bottle in use must contain a pressure release valve as pictured below.


OPEN
CLOSE

2. Setting Up the Chest Drain

		
R54500 Rocket Chest Drainage Bottle with pressure release valve	Teleflex Humid-Vent Filter Compact, Ref 19402T	Filter Connector Assembly, Ref P070-01

2.1. Remove the Filter Connector Assembly from its sterile packaging by cutting it open below the seal. Alternatively, a new Filter Connector Assembly may be prepared according to the Instructions in Appendix 1 of this document.

2.2. Remove the Teleflex Humid-Vent Filter Compact from its packaging and firmly attach the opaque end of the Filter to the blue part of the Filter Connector Assembly.

2.3. Remove the Rocket Chest Drainage Bottle from its packaging.

2.4. Remove the green cap from the nozzle on the top of the Bottle.

2.5. Firmly push the tube end of the Filter Connector Assembly onto the exposed nozzle on the Bottle, so that only one of the rings on the nozzle is visible (see Figure 2A).

2.6. Proceed with normal use of the Rocket Chest Drainage Bottle.

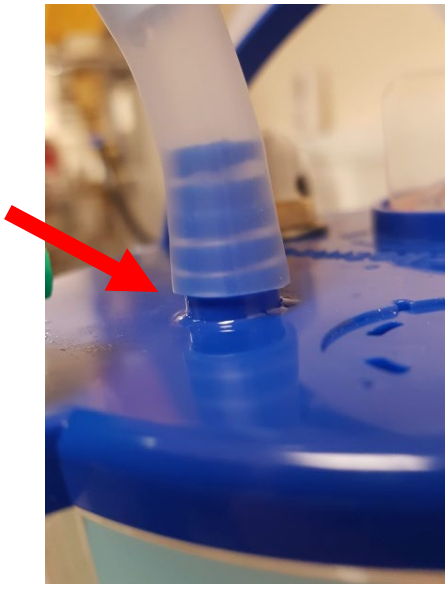

Figure 2A. Push the Filter Connector Assembly firmly onto the lowest ring of nozzle.

Figure 2B. The assembled COVID-19 Chest Drain Filter Modification.

3. Replacing the Filter

 Teleflex Humid-Vent Filter Compact, Ref 19402T	 Clamp	 Gauze

3.1. Wrap gauze around the exposed tube and apply a clamp, taking care to ensure that the tube is fully occluded.

3.2. Remove the old Filter by firmly holding onto the blue connector and pulling on the Filter. If the Filter cannot be easily removed, see Section 4.

3.3. Dispose of the Filter safely according to local clinical waste protocols.

3.4. Remove a new Filter from its packaging and firmly fit it to the Connector Assembly.

3.5. Remove the clamp and inspect the tube for damage. If the tube is visibly damaged or kinked the Filter Connector Assembly should be replaced as per Section 4 of this document.

4. Replacing the Filter and the Filter Connector Assembly

 Teleflex Humid-Vent Filter Compact, Ref 19402T	 Filter Connector Assembly, Ref P070-01

4.1. Remove the Filter Connector Assembly from its sterile packaging by cutting it open below the seal. Alternatively, a new Filter Connector Assembly may be prepared according to the Instructions in Appendix 1 of this document.

4.2. Remove the new Teleflex Humid-Vent Filter Compact from its sterile packaging and firmly attach the opaque end of the Filter to the blue part of the Filter Connector Assembly.

4.3. Disconnect the old Filter and Filter Connector Assembly from the Bottle nozzle.

4.4. Quickly replace with the new Filter and Filter Connector Assembly, firmly pushing the tube onto the exposed nozzle so that only one of the rings on the nozzle is visible.

4.5. Dispose of the Filter and Filter Connector Assembly in accordance with local protocols.

5. Important Information

5.1. Replace the filter after 24 hours of use (See Replacing the Filter Section 4).

5.2. Wear appropriate PPE for each procedure in this document as per local guidelines.

5.3. Regularly check that the connections between the Filter, Filter Connector Assembly and Nozzle remain tight and secure, and record on the chest drain chart.

5.4. Ensure that the cap on the Teleflex Humid-Vent Filter Compact remains closed at all times.

5.5. Take care to minimise swaying or knocking of the Bottle.

5.6. Regularly check that the Filter and tube are not visibly kinked or occluded. If kinking or occlusion is detected, replace the Filter Connector Assembly and/or Filter as necessary.

5.7. If the Filter comes into contact with liquid, or appears to be visibly saturated with liquid, the Filter and Filter Connector Assembly should be replaced.

6. Warnings

6.1. For use by a medical professional only.

6.2. Only use for the Intended Use as specified in Section 1 of this document.

6.3. The device is manufactured to comply with the requirements of the MDR Health Institute Exemption and is not approved for use in another health board/trust.

6.4. All parts are single use.

6.5. Do not use any parts if packaging has been visibly damaged.

6.6. Packaged parts must be used immediately once opened and must not be re-sealed.

6.7. This modification is not designed to prevent the release of viral particles via the pressure release valve.

6.8. Follow local guidelines for infection control and safe disposal of parts.

7. Incident Reporting

Any serious incident that has occurred in relation to this device should be logged in your incident reporting system and reported to the manufacturer (below).

8. Manufacturer Details

NHS Board/Trust name:_____
Responsible department:
Address:_____
_____
_____

Contact Email: _____

The manufacturer welcomes feedback on this device modification. To provide feedback, please visit:
_____
_____

Appendix 1: Preparing a Filter Connector Assembly for Immediate Use

			
Rocket Chest Drain Tubing Set, Ref R54502	8.0mm Portex Tracheal Tube, Ref 100/199/080	Sterile Scissors (or scalpel)	Sterile Ruler

8.1. On a sterile tray, remove the Rocket Chest Drain Tubing Set from its packaging.

8.2. Measure a 5cm section of tubing with the Sterile Ruler and cut using the Sterile Scissors or a scalpel.

8.3. Verify that the cut length of tubing is between 4.5-5.5cm (if otherwise, repeat step 2.2) then dispose of the remainder of the Tubing Set.

8.4. Remove the 8.0mm Portex Tracheal Tube from its packaging.

8.5. Remove the blue connector piece and dispose of the rest of the Tracheal Tube.

8.6. Attach the cut piece of tube to the blue connector. Ensure the tube is pushed to the end of the blue connector so that there is no more than a 5mm gap (see Figure 2A).

8.7. The prepared Filter Connector Assembly should be used immediately.

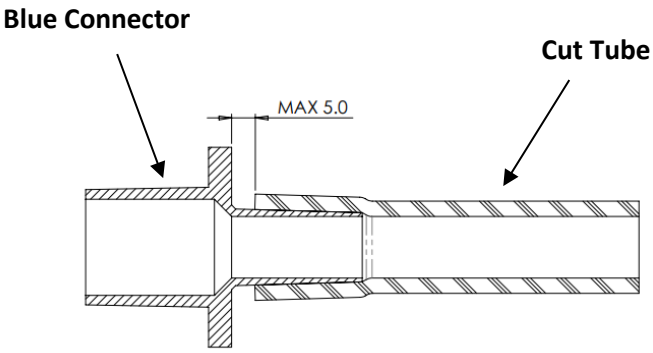

Figure 5A: Push the cut tube onto the blue connector so that there is no more than a 5.0mm gap between the end of the tube and the connector.