Policy for the Insertion and Management of Chest Drains (Adults)

Effective from: September 2010 Review date: December 2016

1. Introduction
This policy and its principles of matching skilled and experienced operators to clinical need for patient safety applies to the non-operative insertion and management of elective and semi-elective chest drains in any area of the Trust. In May 2008 the National Patient Safety Agency (NPSA) released an alert1 highlighting risks associated with the insertion of chest drains. This followed a national review of all reported serious injuries and fatalities resulting from the insertion of chest drains for pleural effusions. Each Trust was given the responsibility of introducing policy locally in response to this alert. While this policy is mostly concerned with the safe and appropriate management of chest drainage for pleural effusions, it also covers chest drainage for pneumothoraces. It is expected that chest radiographs will be used to identify pneumothoraces; if assistance is required with the identification of pneumothoraces or placement of drains for them, after full evaluation of available imaging, then CT may be of some value.

The British Thoracic Society (BTS) guidelines on the insertion of chest drains were updated and published in August 2010.2 These guidelines provide comprehensive guidance and recommendations that should be reviewed by all clinical staff involved in the insertion and management of chest drains. This policy contains recommendations from the BTS guidelines which have been included in bold to highlight good practice points.

2. Policy Scope
This policy is for all medical personnel who have competencies in the insertion of chest drains and for medical and nursing personnel who manage patients with chest drains.

3. Policy Aims
The aim of this policy is to ensure the safe insertion of chest drains and subsequent management of the patient.

4. Roles and Responsibilities
Consultants and senior nursing staff are responsible for ensuring that the policy is implemented in their individual departments. It is the individual responsibility of all medical and nursing personnel to ensure that they work in line with this policy.
The Trauma Peer review Group will review all reported critical incidents involving chest drains. This is in addition to the existing Trust process for the investigation of individually reported critical incidents.

5. Insertion of chest drains

5.1 Chest drains should only be inserted by competent and qualified individuals who have assessed the patient, reviewed any available radiology and assessed the timing and the suitability of clinical area for performing the procedure. **Pleural procedures should not take place out of hours except in an emergency.**

5.2 Written consent should be obtained for chest drain insertion except in emergency situations.

The commonest complications resulting from chest drain insertion (with both small bore and large bore drains) are pain, intrapleural infection, wound infection, drain dislodgement and drain blockage. Visceral injury is the most serious complication. All of these possible sequelae should be detailed in the consent process.

5.3 Chest drains should not be inserted for a pleural effusion out of hours unless there is clear evidence that the patient’s condition is compromised by the effusion. Oxygen should be administered to hypoxic patients until competent personnel are available for drain insertion.

5.4 Chest drains should be inserted in a clean area, using full aseptic technique including gowns, drapes, sterile gloves and skin cleansing.

5.5 Small or loculated pleural effusions should have ultrasound guidance for diagnostic thoracocentesis or chest drain insertion.

5.6 Ultrasound guidance reduces the risk of complications of pleural procedures in the critical care setting and its routine use is recommended. See Appendix 2 and 3.

6. Types of drain for insertion

There are two categories of chest drains available, Seldinger (small bore) and non-Seldinger (large bore) chest drains which are usually inserted surgically. It is recognised that in certain situations other devices may be used for chest drainage e.g. drains inserted under radiological control.

6.1 Seldinger (small bore) drains should be used as first line therapy for pneumothorax, free flowing pleural effusions and pleural infection.
6.2 During Seldinger (small bore) chest drain insertion, an attempt should be made to aspirate the pleural contents with a small needle. If this is not possible chest drain insertion should not continue.

6.3 Surgically inserted chest drains (large bore) should be inserted by blunt dissection. Trocars should not be used.

6.4 Seldinger drains should be used in preference to large bore drains in the majority of settings, with notable exceptions such as cardiothoracic surgery, complicated empyema, post surgery, trauma, or where an emergency drain is required to be inserted and a Seldinger drain is not possible.

7. Image Guidance for insertion of chest drains

7.1 A recent chest radiograph should be available prior to chest drain insertion.

7.2 It is strongly recommended that all chest drains intended to drain fluid should be inserted under ultrasound guidance.

7.3 Near point of care ultrasound NPoCUS3 guided or assisted drain placement involves real time bedside or procedure room assessment of the effusion. The use of NPoCUS should be encouraged where it is available and where skills exist.

7.4 Where NPoCUS is not available, the competent individual who is to perform the drainage procedure should accompany the patient to the radiology department, and insert the drain under image guidance or assistance in the department. The marking of a site using thoracic ultrasound for subsequent remote aspiration or chest drain insertion is not recommended except for large pleural effusions.

8. Competencies to insert chest drains

8.1 All doctors expected to be able to insert a chest drain should be trained using a combination of didactic lecture, simulated practice and supervised practice until considered competent.

8.2 Chest drain insertion is a core competency expected of doctors doing core accident and emergency, anaesthetic, intensive care, medical, radiology, respiratory and surgical training.

8.3 There is a hierarchy of competencies; see Appendix 1.
9. Chest drain fixation
All personnel inserting drains should use a method for drain fixation that minimises the risk of a drain falling out. This will be reviewed in future audit to be carried out across the Trust.

10. Chest drain documentation and patient management
10.1 Patients with chest drains should be managed on wards familiar with chest drains and their management.
10.2 Written consent should be taken by the competent medical personnel wherever possible before the insertion of the chest drain. Link to Consent Policy
10.3 Drains should be checked daily for signs of wound infection, fluid drainage volumes and documentation for swinging and/or bubbling. Accurate daily recordings of the drain and bottle readings, any changes instituted to the drain and any microbiological swabs taken should be documented appropriately on a dedicated chest drain chart. See Appendix 4.

11. Monitoring and Review
All incidents, accidents or near misses related to the insertion and management of chest drains should be reported through the Trust Incident reporting system. These incidents will be reviewed by the working party.

12. Patient information leaflet
The patient information leaflet relating to chest drain insertion produced by the British Thoracic Society (BTS)4 should be available to patients undergoing chest drain insertion.

13. References
1. NPSA alert
2. BTS guideline
Thorax 2010; 65 (suppl 2); ii61-ii76. Pleural procedures and thoracic ultrasound; British Thoracic Society pleural disease guideline 2010.
3. NPoCUS
www.npocus2008.com

Page 4 of 9
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<th>Chest drain insertion competencies</th>
<th>CT1, CT2, or equivalent in core accident and emergency, anaesthetic, intensive care, medical, radiology, respiratory, and surgical training</th>
<th>Can perform chest drain insertion with supervision by an operator (level 2 or greater) who has recent experience of chest drain insertion.</th>
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<td>Stage 2 competency</td>
<td>Accident and emergency, anaesthetic, intensive care, medical, radiology, respiratory, and surgical trainees ST3/equivalent and above</td>
<td>It is expected that doctors within this grade will have undertaken a number of chest drain insertions and have been directly supervised undertaking the procedure on at least 2 occasions in each year. Following such assessment they may carry out the procedure independently.</td>
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<td>Stage 3 competency</td>
<td>Any senior medical personnel experienced at performing these procedures, preferably with experience in ultrasound assisted drain insertion.</td>
<td>These doctors are experienced and independent operators and may undertake the observation and assessment of other operators carrying out the procedure.</td>
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