



**Guidance for the implementation of local Trust policies for the safe insertion of chest drains in children, following the NPSA Rapid Response Report – NPSA/2008/RRR003**

**British Paediatric Respiratory Society  
British Thoracic Society**

**General**

- This guidance is directed towards children cared for by medical teams on paediatric medical wards. Neonatal units, accident and emergency departments, intensive care units and surgical specialties have different needs and will need to develop their own policies for training and supervision.
- The indication for inserting chest drains in paediatric medical patients is either a significant pleural fluid collection or less commonly a pneumothorax. Inserting chest drains in children is a relatively rare event in most district general hospitals. It is seldom required urgently. Although some larger secondary units may have sufficient experienced personnel to be able to insert chest drains, we recommend that children who require chest drain insertion are transferred to a tertiary paediatric respiratory unit for the procedure, provided the child is well enough to transport.
- In tertiary units a consultant respiratory paediatrician should be identified as taking the lead in training and monitoring chest drain insertion in paediatric medical patients.
- More detailed advice on chest drain insertion in children with pleural fluid collections is given in the BTS guideline on the Management of Pleural Infection in Children (Balfour-Lynn et al Thorax 2005; 60 Supp1, also available on the BTS website [www.brit-thoracic.org.uk](http://www.brit-thoracic.org.uk)).

**Training**

Trainees should be supervised by an experienced respiratory paediatric consultant when first arriving at a Trust and should not carry out chest drain insertion unsupervised until deemed to be competent to do so by the consultant staff.

### **Anaesthesia and personnel**

- General anaesthesia for chest drain insertion is the preferred option for non-cooperative children with pleural fluid collections. The anaesthesia will need to be supervised by a consultant paediatric anaesthetist.
- Conscious sedation for chest drain insertion has logistic advantages and may be suitable for more co-operative children. Safety remains paramount and the same level of monitoring used for general anaesthesia should be employed. The sedation should only be carried out by a suitably trained doctor with an experienced assistant in attendance to monitor the patient's vital signs. Intravenous access is mandatory.

### **Consent**

Written informed consent should always be obtained. A patient information leaflet is highly recommended.

### **Image guidance**

- When chest drains are inserted to drain pleural fluid, ultrasound should be obtained to confirm the presence and size of the pleural collection.
- The ultrasonographer needs to be experienced in pleural ultrasound. It can be difficult to distinguish between the ultrasound appearance of consolidated lung and empyema.
- It is essential that the doctor who is going to insert the chest drain is present when the ultrasound is performed, either to insert the drain at the time of the ultrasound, or to mark on the skin where the drain is to be sited. In the latter case, it is important that the operator takes careful note of the position of the child at the time of the ultrasound and is able to place the child in the same position for the chest drain insertion.
- When inserting the drain it is essential that the fluid is identified using a 21 gauge needle before continuing with the procedure. If fluid cannot be easily aspirated the ultrasound should be repeated and if the presence of fluid is confirmed, needle aspiration followed by chest drain insertion should proceed with ultrasound guidance.

### **Equipment**

Several different types of Seldinger chest drains are available. A single system should be selected for use, and all personnel who insert drains should be familiar with that kit. Trocars should not be used to insert chest drains. Small bore drains should be used whenever possible to minimise patient discomfort.

### **Conclusions**

The BTS/BPRS supports ultrasound guided placement of chest drains in children and believes that tertiary paediatric respiratory units are best placed to deliver a safe and effective service. Paediatric respiratory consultants should be responsible for providing training for, and supervision of, chest drain insertion in paediatric medical patients.

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