CHEST DRAIN INSERTION – TRADITIONAL

INDICATIONS

- Treatment of pneumothorax or pleural effusion

EQUIPMENT

- Sterile dressing pack
- Cleaning solution as per unit policy and wash off with sodium chloride 0.9% once dried for babies <26 weeks' gestation
- Lidocaine 1%, with syringe and needle for preparation and injection
- Chest drains size FG 8,10,12 (use largest possible depending on size of baby)
- Low pressure suction unit
- Scalpel and fine straight blade (size 11)
- Fine blunt forceps
- Underwater seal chest drainage bottle and tubing or flutter (Heimlich) valve
- Steri-Strip™ and transparent dressing (e.g. Opsite/Tegaderm™)

SITES

- Site of insertion depends on position of pneumothorax
- preferred site is in anterior axillary line, between 4th and 6th intercostal space, to conceal subsequent scarring and avoid interference with breast development
- alternative site is just lateral to midclavicular line, in 2nd or 3rd intercostal space
- if pneumothorax does not drain satisfactorily, it may be necessary to insert >1 drain
- for pleural effusion, use midaxillary line between 4th and 5th intercostal spaces, and direct drain posteriorly
- For tension pneumothorax, consider needle thoracocentesis (see guideline) before insertion of chest drain

PROCEDURE

Preparation and position of baby

- Inform parents and obtain verbal consent as recommended by BAPM (unless emergency procedure)
- Use 10–12 FG pleural catheter (small babies may need 8 FG)
- Position baby supine and flat with affected side slightly tilted up (e.g. by using a folded blanket)
- Prepare skin with full aseptic technique
- Infiltrate with lidocaine 1%, consider morphine bolus if intubated

Insertion of tube

- Make small incision in skin with scalpel at lower edge of intercostal space to avoid injury to intercostal vessels
- Dissect bluntly with fine forceps through intercostal muscle and pleura
- Use fine forceps to gently advance tip of catheter
- Push and twist tube gently through incision into pleural space
- Insert chest drain 2–3 cm for small preterm and 3 cm for term babies
- If drain has additional proximal hole, ensure this lies within chest cavity
- Use of trocar not generally recommended. If used (in bigger baby), protect lung by clamping artery forceps onto trocar 1 cm from the tip
- Connect tube to prepared underwater seal or flutter (Heimlich) valve
- Manipulate tube gently so that tip lies anteriorly in thoracic cavity for pneumothorax, and posteriorly for effusion

- Secure tube with Steri-Strip™, and cover with gauze dressing. A suture may be required; **do not use purse-string suture**
- Secure tube to chest wall using suitable tape (Opsite/Tegaderm™)

AFTERCARE

- Check bubbling or oscillation of water column seen with every inspiration
- Check tube position with chest X-ray (consider lateral X-ray to confirm position)

Suction

- If bubbling is poor/absent and X-ray confirms drain is in correct position but pneumothorax not fully draining on X-ray or cold light, apply continuous suction of 5–10 cm H_2O. Thoracic suction is better suited for this purpose than routine wall suction. Occasionally, a second drain may be necessary

Flutter valve

- As an alternative to underwater chest drain system, especially during transport, a flutter valve can be used

Document

- Record presence of bubbling (continuous/intermittent/none) on nursing care chart
- Record with nursing observations, bubbling and/or oscillation of water column, or fluttering of valve seen with every inspiration

REMOVAL OF CHEST DRAIN

- Remove when no bubbling or oscillation of water column has occurred for 24 hr
- Clamp chest drain for 12 hr and repeat chest X-ray before removal**.** While removing drain, ask an assistant to hold wound edges close together
- After removing drain, close wound with Steri-Strip™; a suture is seldom necessary
- Close clinical observation after removal of drain is sufficient to diagnose reaccumulation of the air leak, routine chest X-ray not generally warranted