

Chest Tube Education

What is it?

Chest tube remove air, blood, or fluid from the pleural space while maintaining negative pressure and inhibiting back flow

What is causing pressure on the lungs?

- *Pneumothorax*: Air
- *Hemothorax*: Blood
- *Chylothorax*: Chyle (lymphatic fluid)
- *Empyema*: Pus
- *Pleural Effusion*

What do I need when provider is inserting chest tube?

- Informed Consent (unless emergency)
- Written Provider Order (unless emergency)
- Time Out Required
- Pain/ Sedation Plan
- Fluid/Push Pull or Vasoactives
- Dedicated Suction Set up for Pleur-evac (suction canister not necessary, connects directly to regular suction)
- Line cart outside room for extra supplies
- Turn on QRS volume during procedure and cycle BP at least q3 min
- PICU Fellow present or notified if Surgery is doing procedure

What supplies do I need? Where do I find it?



Clean Supply



Clean Supply



Cheetah
Cabinet/Sentact
(Equipment)

Line cabinet/Line cart/Sentact (materials)
CATH PERICARDIOCENTESIS 8.3X40 181919

Line cabinet/Line cart/Sentact (materials)
ADAPTER TBG MULTIPUR MALE LL 390591

Clean Supply

How do I set up the Pleur-Evac?

- Vac will come sterile and sealed, the peel pack can be opened clean, with the tubing in the back pouch of the Pleur-Evac must remain sterile until connection with the chest tube.
- Squeeze pre-filled sterile water into the suction port to fill the water seal chamber
- When the provider is ready to connect the chest tube to the pleur-evac, assist them to connect while maintaining sterility
- Provider will order the chest tube to water seal or suction.
 - **Water Seal** = NO SUCTION TUBING CONNECTION NEEDED
 - Water seal allows air and fluid to escape from the pleural space passively
 - **Suction:** aids in evacuating the air/fluid.
 - ...see below!
- **SUCTION:** Connect one end of the suction tubing to the suction port on the Pleur-Evac drainage unit (left-hand side facing the device). Attach the other end of the suction tubing to the wall suction source. Turn the wall suction regulator up until the orange float appears. **The position of the suction dial determines the approximate amount of suction imposed regardless of the amount of the suction source as long as the orange float appears in the indicator window. In other words, the amount of suction from the wall source is not what is critical here. Rather, it is the amount of suction you have programmed with the suction dial on the unit.** The unit is preset at -10 cm of water. Adjust as per physician order.

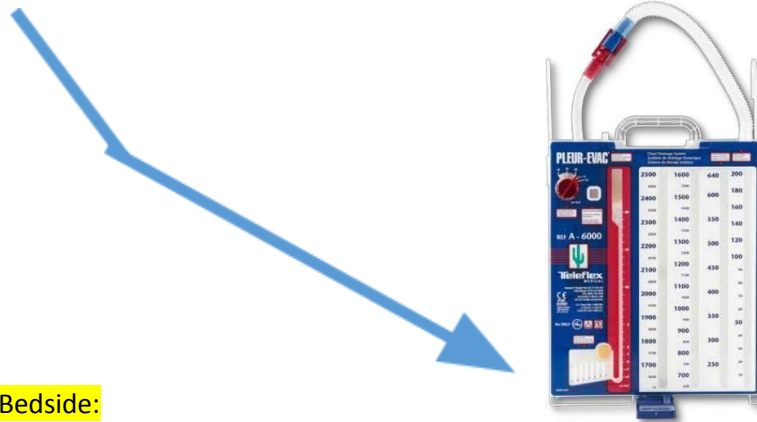


Post-Chest Tube Insertion and Pleur-Evac Hooked Up:

- X-ray will be obtained
- Assess your new chest tube from insertion down to the pleur-evac.
 - Are your connections tight?
 - Is there bubbling or tidaling in the water seal chamber?
 - Is your suction working appropriately?
- Make sure there are no kinks, dependent loops, and all clamps are open to drain
- You should be assessing your chest tube at least every hour

Assessing the Water Seal Chamber

- If air is leaving the pleural space, intermittent bubbling will be observed which is normal
- Tidaling is the rise and fall of fluid in the water seal tube chamber. The water level should rise during inspiration (negative) and fall during expiration (positive) in a spontaneously breathing patient
 - If the patient is on mechanical ventilation, the fluctuation pattern will be reversed.
- If there is no tidaling (fluctuations in the water-seal chamber with respiratory effort), the tubing may be occluded by a clot or kink, or the lung may be fully re-expanded



Emergency Supplies Needed at Bedside:

The supplies are placed in a biohazard bag, attached (via Kelly clamp) to the bed/sheet. AT ALL TIMES

- Xeroform (petroleum gauze)
- 4x4 Gauze
- Tegaderm
- Kelly Clamps
 - If chest is accidentally removed, cover with Xeroform, apply pressure and notify provider

Why is my chest tube bubbling?!

- If there is bubbling it means there is an air leak. Is it the patient or the system?
 - A **system** leak means a connection is not tight or there is a hole in the tubing
 - A **patient** leak can mean an issue at the tube insertion site or inside the chest cavity. If the leak persists, suspect it's coming from air remaining in the pleural space (an unresolved pneumo), a pleural injury, an exposed tube eyelet, or inappropriate communication between the bronchial and pleural spaces
- Persistent patient air leaks indicate that negative pressure hasn't been restored and the injury isn't resolving

When to change out the Pleur-evac?

- Once the collection chamber is approaching full it is time for a new system.
- Maintain as much of a sterile environment as possible (especially when disconnecting and reconnecting tubing).
- Clamp the tubing, disconnect the red clamp and reconnect to new Pleur-evac while holding tubing from patient facing down (towards ground) to help prevent any particles from landing in tubing

Shift Handoff and Rounds

What to report during RN shift Handoff:

- Rationale for Chest Tube
- Xray - where does the tube/tip lie, has it moved or changed?
- Suction (with setting ie 20cm H2O) or Water Seal?
- Is the chest tube bubbling? If yes, continuous vs intermittent
- Drainage amount, color, clots, clear, cloudy, etc
- Any issues with chest tube, suction, etc

Rounds:

- State chest tube and location
- 24 hour drainage and description
- Bubbling cont vs intermittent
- Any issues with chest or dressing

When to Notify Provider

- Any sudden change in drainage output (increased drainage or abrupt stop) or description (serous to frank blood)
- Uncontrolled pain
- Respiratory distress
- Change in respiratory rate/pattern and breath sounds

Considerations for Transport with Chest Tube

- Make sure to bring emergency supplies during any transport (enough for multiple chest tubes if applicable)
- Portable suction- test before transport to ensure it is working appropriately
- Be mindful of dressing status (Assess any new drainage during transport. Watch for any chest tube dislodgment during transport. Be mindful of sutures at site)

Great Video that Walks You Through Set Up:

https://www.youtube.com/watch?v=_OlzXZck3iw