

# MANAGING CHEST DRAINAGE

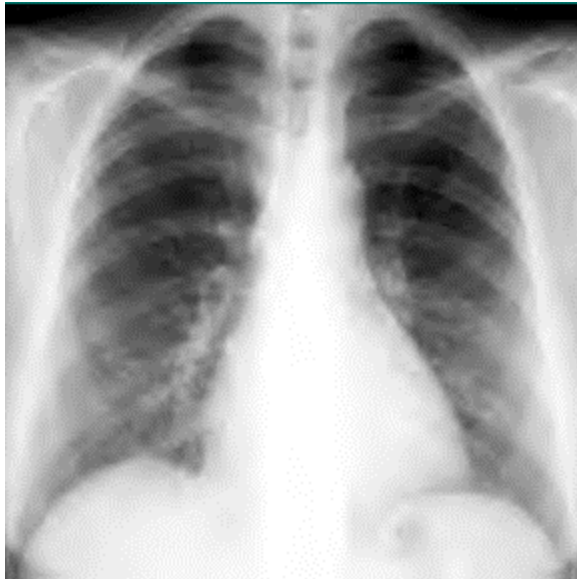


# Making It Simple To Understand

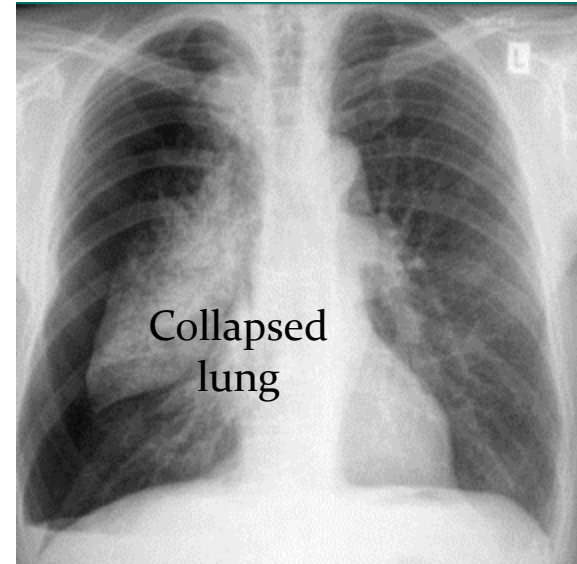
- Chest tubes are used to restore negative pressure in the pleural space after trauma/pneumothorax or chest surgery. Chest tubes also can be used to remove collections of fluid (effusions) such as blood, pus, chyle or serous fluid and/or air from the pleural space. Mediastinal chest tubes are used after cardiac surgery to prevent compression of the heart by accumulated fluid and blood.
- The pressure in the chest cavity is normally lower than the atmospheric pressure; whenever the chest is opened, there is air at atmospheric pressure (positive pressure) that enters the pleural space causing collapse of the lung, much like air entering an inflated balloon. Air or fluid in the pleural space restricts lung expansion and may reduce gas exchange.

# Indications for a chest drainage

- To evacuate air or fluid from the pleural space
- Pneumothorax
- Hemothorax
- Pneumohemothorax
- Pleural effusion
- Fluid collections
- Mechanically ventilated patients with any size pneumothorax or hemothorax.

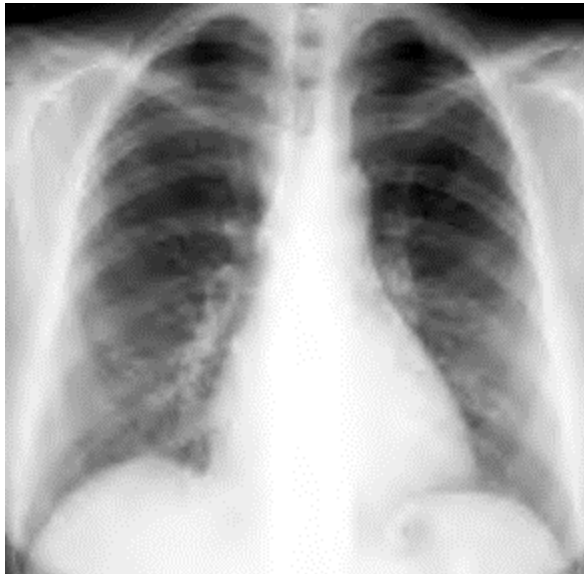


Normal chest x-ray

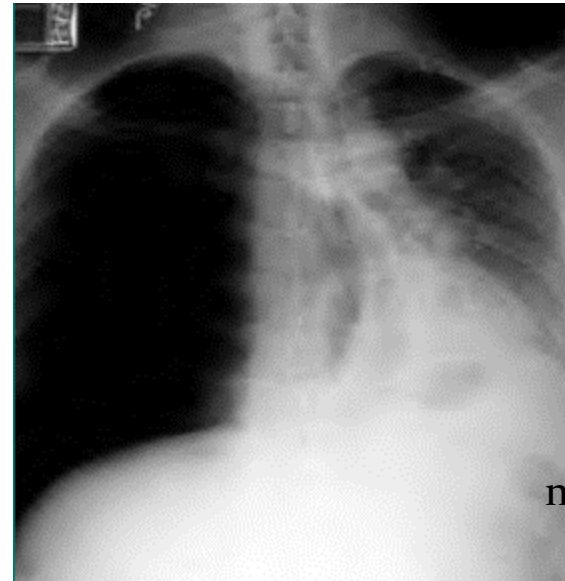


Simple pneumothorax

# Indications for a chest drainage



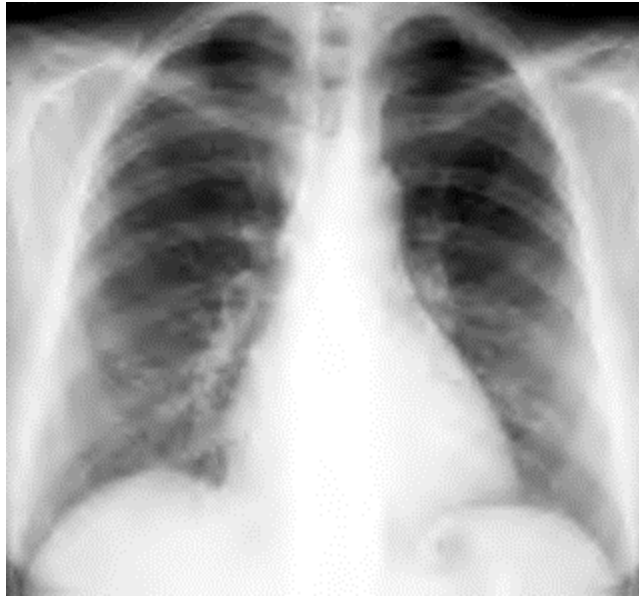
Normal chest x-ray



Note the  
mediastinal  
shift!!

Tension pneumothorax

# Indications for a chest drainage

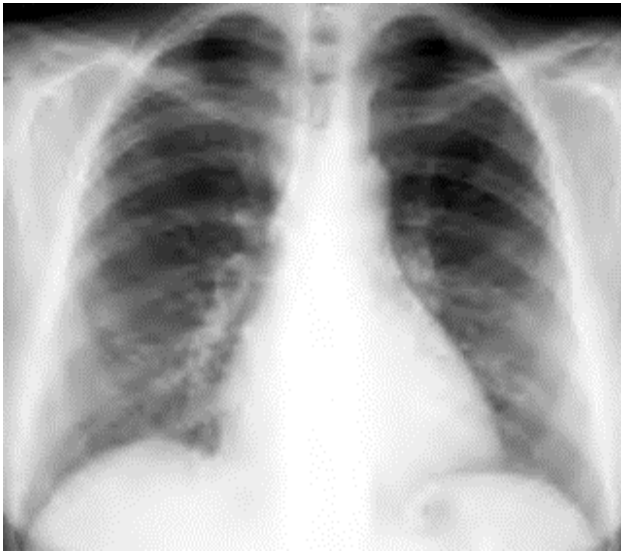


Normal chest x-ray

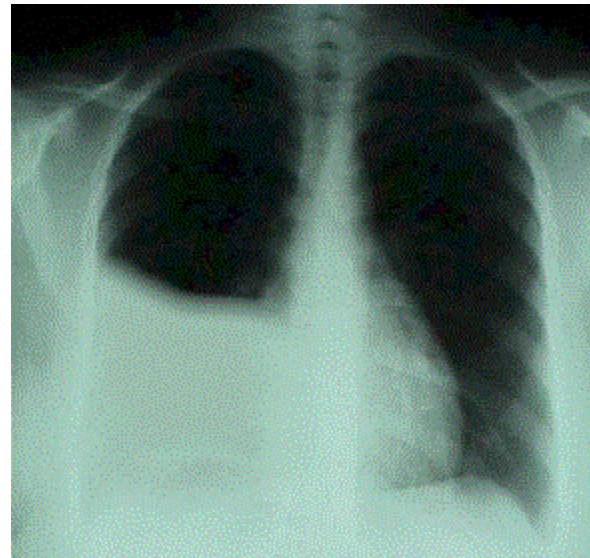


Pleural effusion

# Indications for a chest drainage



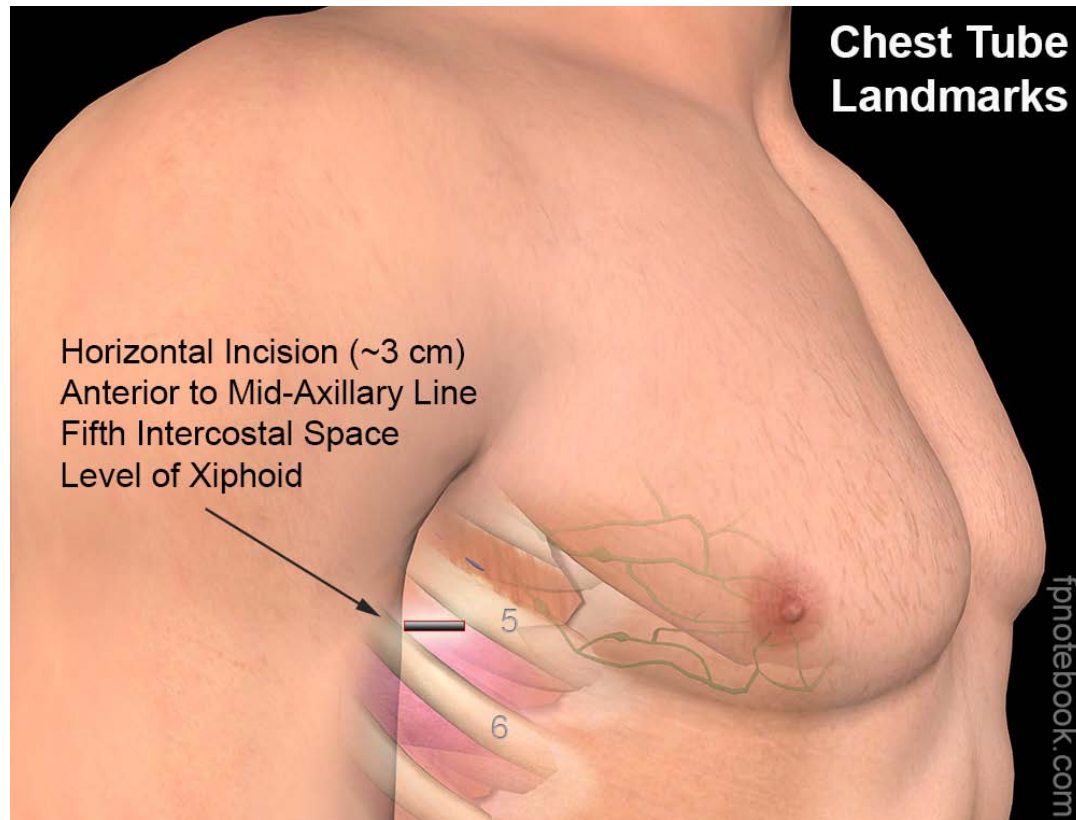
Normal chest x-ray



Right hemothorax

# Location of chest tube

- Make insertion at the sixth intercostal space, anterior axillary line.



# Assessment

- Vital signs, including temperature.
- Tidaling.
- Air leak.
- Appropriate suction.
- Amount, color, and consistency of drainage.
- Mark the volume of drainage. (*ask for “normal” amount of drainage*)
- Dressing for occlusiveness and drainage from insertion site.
- Chest wall at insertion site for subcutaneous emphysema (“Rice Krispies”).
- ***Refer to CLEMC protocol supplement #6 for more information***



# Documentation

- Type of chest drainage system. (*type and model*)
- Size and location of thoracostomy tube
- Wet or dry suction
- Suction or no suction (*Orders received from MD (note name of MD) regarding amount of suction*)
- The presence or absence of air leak (*note degree of leak, meter available on certain models*).
- Connections secured
- Site condition (*subcutaneous emphysema present? How is the connection secured?*)
- Drainage color, type, consistency, amount (*at contact time and transfer of care*).
- Monitor for tidaling (*water seal rises as intrapleural pressure becomes more negative, if there is no air leak the, the water level should rise and fall with the patient's respirations – rise during inhalation and fall during exhalation; if patient receives positive ventilation the opposite is the case*)
- Note if increased air leak is noted
- ***Refer to CLEMC protocol supplement #6 for more information***

# Keep in Mind

- **Never lift drain above chest level**
- The unit and all tubing should be below patients chest level to facilitate drainage
- Tubing should have no kinks or obstructions that may inhibit drainage
- Ensure all connections between chest tubes and drainage unit are tight and secure
  - Connections should have cable ties in place
- Tubing should be anchored to the patients skin to prevent pulling of the drain
- Ensure the unit is securely positioned on its stand or hanging on the bed
- Ensure the water seal is maintained at 2cm at all times

# Help? What now?

- Wet suction control
  - Is there continuous bubbling?
    - Gentle continuous bubbling indicates suction is operative. Vigorous bubbling speeds the evaporation of fluid which results in a lower level of suction.
    - If no bubbling, make sure the suction tubing is connected and not occluded.
    - Turn the suction higher
- Thoracostomy tube becomes disconnected:
  - Reconnect and secure the tubing
  - If the system tubing cannot be immediately reconnected – **This is an emergency and requires immediate intervention at closest facility!**
- No water in the water seal:
  - Fill with sterile water up to the fill line (2cm) and assess patient for respiratory distress.
- Thoracostomy tube becomes dislodged:
  - Treat as sucking chest wound.
  - Cover on three sides with an occlusive dressing.
- Increased air leak:
  - Check patency of closed system by checking all connections
  - Is the bubbling continuous or intermittent?
    - If it fluctuates with respirations, the most likely source is the lung
  - If all connections are tight and air leak continuous, **briefly** clamp the thoracostomy tube close to the patient.
    - If the bubbling stops then the problem is within the patient's chest. Unclamp **immediately** and maintain the integrity of the drainage system. Treat patient.
    - If the bubbling doesn't stop move the clamp down the tube towards the collection chamber. When the bubbling stops, the leak has been found. Unclamp the tube and attempt to secure the leak in the tubing with tape.
- Increased respiratory distress:
  - Check tubing for kinks, clots
  - Ensure appropriate suction is maintained
  - Check patency of closed system by checking connections
  - Medicate for pain

# Training

- <http://www.youtube.com/watch?v=YGT228Gxihc>
- [http://www.teleflex.com/en/usa/prod\\_rain\\_series.php](http://www.teleflex.com/en/usa/prod_rain_series.php)
- <http://www.teleflex.com/en/usa/ucd/>
- [http://www.rch.org.au/rhcpg/hospital\\_clinical\\_guideline\\_index/Chest Drain Management/](http://www.rch.org.au/rhcpg/hospital_clinical_guideline_index/Chest_Drain_Management/)