

# Chest Tube Guide

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## Overview:

- Components of chest tube:
  - Collection Chamber
  - Water Chamber
  - Suction Control Regulator
  - Suction Monitor (Red Ball in window)
  - Suction Port (where you connect the suction tubing if the patient is to suction. Also where you put the water if priming a new Pleur-Evac)
- Where chest tubes can be placed: a) Pleural b) Mediastinal
  - Chest tubes are only inserted by a provider
- The 2 types of orders you will see for a chest tube:
  - CT to water seal
  - CT to suction
- Note where to connect suction tubing and how to assess for a) air leak and b) tidaling (aka-fluctuation with respiration)
- Situations/problems that warrant physician notification: e.g., new air leak, excessive output, change in output color (e.g., serous to bright red), rigorous bubbling due to CT migration from the chest
  - Output and assessments documented in WALDO
- Dressing changes
  - Are performed daily/PRN in the ICU and every other day/PRN on the medical surgical floors (*exception* - as needed in trauma patients).
  - Swab chest tube insertion site with single sterile 3% Chlorhexidine (CHG) with 70% Isopropyl Alcohol (IPA) swab stick. Start from center in circular motion outward for 30 seconds. If allergy to CHG: alcohol swab.
  - Cover with sterile split gauze dressings, 4x4 gauze or ABD pad, secure with tape.
  - Label dressing with date, time, and RN initials.
  - Remove and dispose of gloves. Hand hygiene.
  - Document chest tube site appearance and drainage (type and amount) in the patient's medical record.
- Troubleshooting:
  - Rigorous bubbling- check all connections, check CT insertion site to ensure CT is not migrating out of chest
  - Suction monitor (red ball) not appearing in Pleur-Evac window-Ensure all connections are secure and/or increase wall suction regulator
  - If the chest tube inadvertently becomes dislodged at the insertion site, place a sterile dressing on the site and tape it on three sides. To prevent increased tension in the lung, do not tape the fourth side. Monitor the patient's vital signs, oxygenation, and respiratory status.
  - If the chest tube or drainage tubing inadvertently becomes disconnected at any point from the water seal, place the end of the tube or drainage tubing in a container of sterile water to reestablish a water seal. Monitor the patient's vital signs, oxygenation, and respiratory status. Clamping the chest tube is not safe if the lung has not reinflated; doing so may cause a tension pneumothorax.
- Care Post Removal
  - Occlusive dressing applied
  - Monitor respiratory status and pain
  - Monitor insertion site for bleeding, infection, or drainage
  - Monitor for development of subcutaneous emphysema
  - If any concerns, call the provider
- Note how to prime a new Pleur-Evac

## 1. Definitions:

- Pneumothorax (other than surgical drainage) is the most common reason for inserting a chest tube.**
- Pneumothorax** = presence of air in pleural cavity, disrupts negative pressure that keeps lungs from collapsing at the end of exhalation.

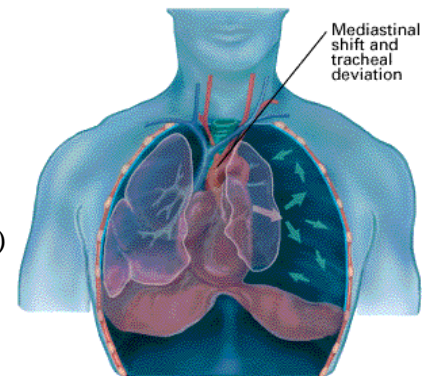
- c. **Closed pneumothorax** = air enters the pleural cavity from the lungs. Examples: blunt trauma to the chest can cause rib fractures which in turn puncture the lung
- d. **Open Pneumothorax** = air enters from an opening in the outer chest wall. Examples: trauma, gun-shot wounds, stab wounds (Sucking chest wounds)
- e. **Pneumo-mediastinum** = air accumulates in mediastinum. Can rupture pleura causing pneumothorax.
- f. **Pleural effusion** = excessive **fluid** in the pleural cavity; compresses lung tissue that air would usually fill.
  - i. Hemothorax=blood in the pleural space (trauma or surgery)
  - ii. Chylothorax=lymph fluids in pleural space
  - iii. Empyema=purulent material in pleural cavity (can be from pneumonia, lung abscess, contamination from original injury)

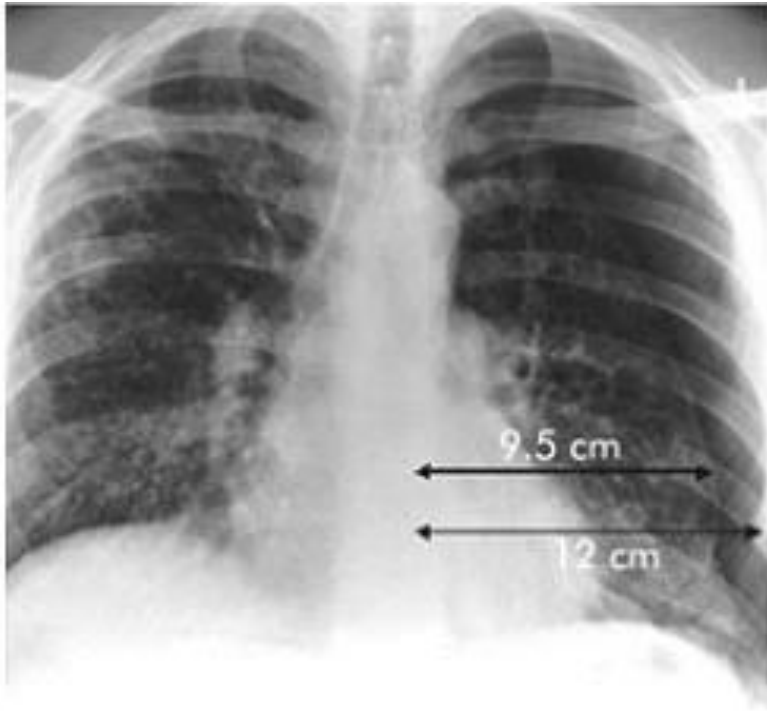
## 2. Functions of a chest tube:

- a. Evacuation of fluid/air
- b. Restores negative pressure
- c. Assessment of air leak/lung healing
- d. Monitors bleeding

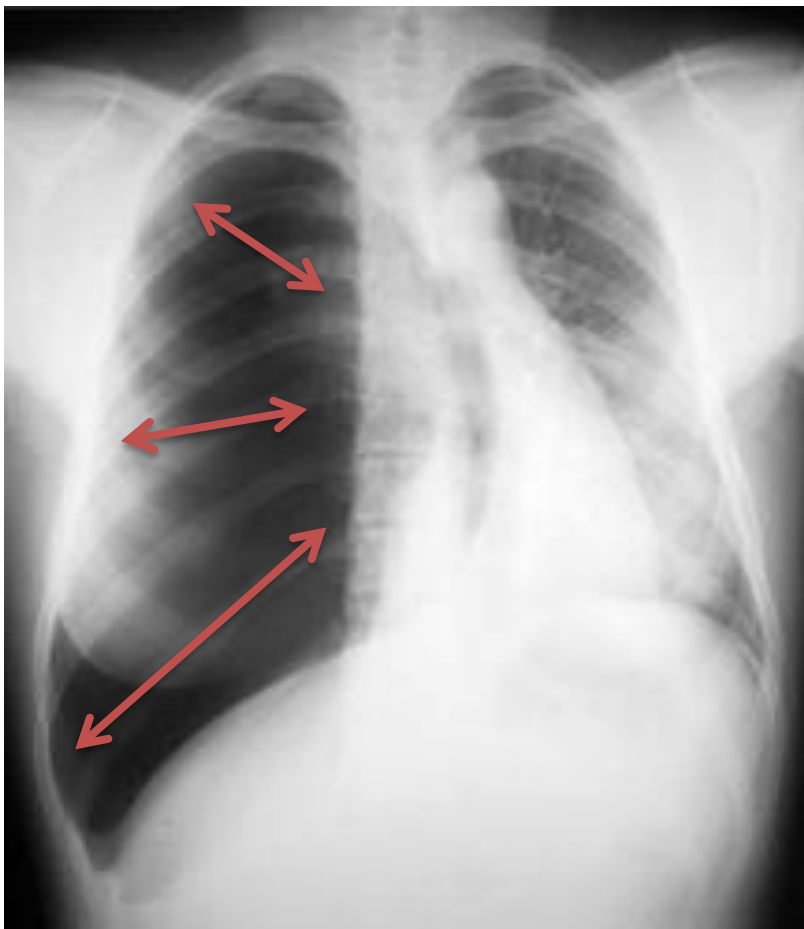
## 3. Tension Pneumothorax =Life-threatening complication of closed pneumo (air enters the pleural cavity from the lungs)

- a. Air accumulates in the pleural cavity, increasing pressure dangerously
- b. Pressure collapses the lung & shifts the mediastinum-pushes the heart, great vessels, trachea, lungs to unaffected side
- c. Pressure on the heart - impedes venous return & cardiac output.
- d. Early symptoms: Ask the group s/s of a tension pneumothorax
  - Anxiety
  - Tachycardia
  - Increased respiratory rate
  - Worsening pain with deep breaths
  - Possible dysrhythmias
- e. Later signs:
  - Severe respiratory distress (grunting, retractions, agitation)
  - Distended neck veins
  - Hypotension
  - Subcutaneous emphysema
  - Tracheal deviation to the unaffected side
  - Cyanosis
  - Muffled heart sounds
  - Cardiac arrest
  - Sudden increase in inspiratory pressures (high pressure alarm on ventilator) (PICU)



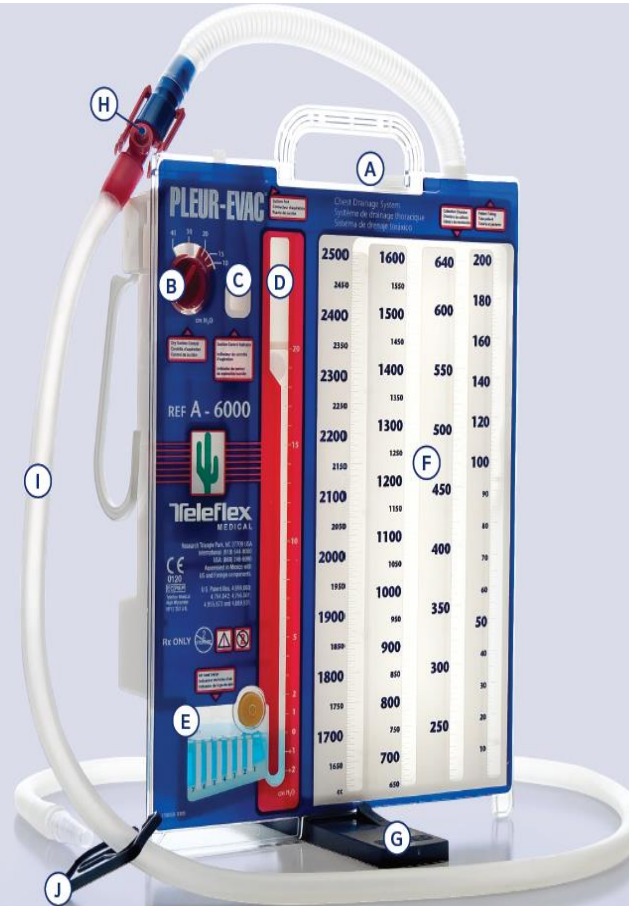


Pneumothorax



Tension Pneumothorax  
Tracheal deviation to the left side, right lung pushing heart to the left

- A Filtered High Negativity Relief Valve:** When excessive negativity occurs depress the button to relieve negativity. Filtered air will enter the unit and the water level in water seal will drop. Release the button when desired level of negativity, as indicated by water level in Water Seal Pressure Scale, has been attained.
- B Suction Dial:** The suction level is determined by the position of the edge of the red stripe in the semi-circular window above the suction dial. Rotate the dial to position the edge of the stripe at the desired suction setting.
- C Suction Control Indicator:** When suction is applied and the orange float appears in the suction indicator window, the approximate suction imposed is determined by the dial setting (red stripe). As long as the float appears in the window, the unit is operating at the suction setting that appears in the suction control window.
- D High Negative Float Valve:** Water floats the valve up into the closed position when excessive negativity occurs; valve opens upon decrease in negativity.
- E Patient Air Leak Meter:** Quantifies the size: (1) low to (7) high and progress of air leak. The higher the numbered column through which the bubbling occurs, the greater the degree of air leak.
- F Collection Chamber:** Marking surfaces are for making notations. Use pen or pencil.
- G Floor Stand:** Helps prevent tipover. Swings out for stability in use. The floor stand contains an automatic locking mechanism that locks the floor stand in the open position. To close, press locking tab to retract floor stand.



- H Sampling Port – NO NEEDLE REQUIRED:** Use only a standard luer lock syringe to withdraw samples from the autotransfusion connector.
- I Patient Tubing:** Not made with natural rubber latex.
- J Patient Tube Clamp:** Clamp on patient tube should be placed away from patient, avoiding accidental closure.

# NURSING CONSIDERATIONS AND TROUBLESHOOTING\*

COLLECTION CHAMBER	WATER SEAL CHAMBER	AIR LEAK METER	DRY SUCTION CONTROL CHAMBER
<p><b>MEASUREMENT OF DRAINAGE</b> When reading collection chamber calibrations, please note there may be a decrease in original volume of first section after fluids spill over into the next. (This may be attributed to surface tension "build-up".) The actual volume of the previous section(s) should therefore be checked if accuracy of the total reading is critical. "Spillover" from one section to the next should also be noted after the Pleur-ovac unit has been moved or handled.</p> <p><b>FULL COLLECTION CHAMBER</b> When drainage reaches 2500cc, the unit is filled to capacity. Replace unit. Prepare new unit prior to changing unit.</p> <p><b>WARNING:</b></p> <ul style="list-style-type: none"> <li>• The collected contents of the Pleur-Evac unit should not be used for reinfusion.</li> <li>• Chest tubes should not be clamped except when changing the Pleur-Evac Unit. In the event of a patient air leak, clamping the chest tubes could lead to a tension pneumothorax.</li> <li>• Stripping the patient tube must be done with the patient tubing clamp open. Stripping with the clamps closed can result in the build-up of excessive positive pressure.</li> </ul> <p><b>HAS THE DRAINAGE STOPPED SUDDENLY?</b> A sudden (not gradual) cessation of drainage in the patient with mediastinal tubes can be caused by accumulated clotted blood occluding the tube. This can lead to life-threatening cardiac tamponade. To keep the tubes patent, or to dislodge clots, gently milk the patient tube according to hospital policy.</p>	<p><b>LEVEL OF WATER IN WATER SEAL CHAMBER</b> The water level should be at 2 cm. Water may need to be added due to evaporation. Add as needed through short suction tube. Water may need to be withdrawn if chamber is overfilled. To withdraw water, a syringe with a 1-1/2" 18 or higher gauge needle angled downward through the Self-Sealing Diaphragm on the front of the chamber, may be used.</p> <p><b>PRESSURE SCALE (TO DETERMINE NEGATIVE PRESSURE IN PATIENT'S CHEST CAVITY):</b> <b>WITHOUT SUCTION,</b> the pressure in the chest cavity is read directly by the fluid level in the calibrated water seal pressure scale.</p> <p><b>WITH SUCTION,</b> add the reading from the suction dial setting to the reading of the water seal pressure scale. (Example: -20 suction plus -10 water seal = -30 cm H<sub>2</sub>O patient negativity.) The orange float must appear in the suction indicator window, indicating suction is operative, in order to determine the negative pressure in the chest cavity.</p>	<p><b>WATER RISING IN SMALL ARM OF THE WATER SEAL/AIR LEAK METER?</b> Depress the manual high negativity relief valve until the water level reaches the desired level. <b>CAUTION:</b> If suction is not operative, or if operating on gravity drainage, depressing the high negativity relief valve can reduce negative pressure within the collection chamber to zero (atmosphere) with the resulting possibility of a pneumothorax.</p> <p><b>CONTINUOUS OR INTERMITTENT BUBBLING?</b> Note the pattern of the bubbling. Identify the source of the air leak: (a) check and tighten connections, (b) test the tubing for leaks**, (c) if a leak exists, it may be at the insertion site, remove the chest tube dressing and inspect the site. Make sure the catheter eyelets have not pulled out beyond the chest wall. If you cannot see or hear any obvious leaks at the site, the leak is from the lung. Replace the dressing.</p> <p>If the bubbling fluctuates with respiration (i.e. occurs on exhalation in a patient breathing spontaneously), the most likely source is the lung.</p> <p>In a patient with a mediastinal tube, there should be no bubbling or movement in the water seal/air leak meter. Lack of bubbling is normal.</p> <p>Notify doctor of any new, increased or unexpected air leaks that are not corrected by these actions.</p> <p>** To test the system for the site of an air leak: Using a booted (or padded) clamp, begin at the dressing and clamp the drainage tubing momentarily.</p> <p>Look at the water seal/air leak meter chamber. Keep moving the clamp down the drainage tubing toward the chest drainage system, placing it at 8-12 inch (20-30 cm) intervals. Each time you clamp, check the water seal/air leak meter chamber. When you place the clamp between the source of the air leak and the water seal/air leak meter chamber, the bubbling will stop. If bubbling stops the first time you clamp, the air leak must be at the chest tube insertion site or the lung.</p>	<p><b>IS THE ORANGE FLOAT IN THE INDICATOR WINDOW?</b> The orange float indicates that the desired suction level has been achieved. The suction source must be capable of delivering a minimum of 16 liters per minute (LPM) airflow. If the orange float falls due to changes in the wall suction source, you may adjust the wall suction setting until the float rises back up in the window.</p> <p><b>DOES THE WATER RISE IN THE SMALL ARM OF THE AIR LEAK METER WHEN THE DRY SUCTION SETTING IS LOWERED?</b> The water rising in the small arm is normal and simply reflects the previous higher setting. If the patient does not have an air leak, vent the excess negativity by depressing the manual high negativity relief valve: filtered air will enter the unit and water level in water seal will drop. Release button when desired level of negativity, as indicated by water level in water seal pressure scale, has been attained. <b>CAUTION:</b> If suction is not operative when depressing this valve, negative pressure may be reduced to zero (atmosphere) with the resulting possibility of a pneumothorax.</p> <p><b>DISPOSAL:</b> The Pleur-ovac unit should be handled and disposed of in accordance with all applicable regulations including, without limitation, those pertaining to human health and safety and the environment.</p>

\* This is a trouble shooting guide only. Please refer to the Instructions For Use for full operating and set-up instructions.

### SETUP INSTRUCTIONS:

If suction is prescribed, follow steps 1 through 5.

If suction is not required, follow steps 1 and 2.

#### 1. Fill water seal chamber

- A sterile water bottle is provided to facilitate filling. To open, twist and break the bottle seal.
- Attach the exposed tip to the connector on the suction port.
- Squeeze the bottle. The bottle contains enough water to fill the water seal chamber. Fill to the "fill line."
- Once filled, the water will turn blue

#### 2. Connect Patient Tube

Connect long patient tube from the collection chamber to the patient's thoracic catheter. (Figure 1)

#### 3. Connect to Suction Source

Connect the suction source to the suction port. (Figure 1)

#### 4. Suction Control

Suction control dial is preset at -20 cm H<sub>2</sub>O (Figure 2). To adjust the suction control setting, rotate the dial until the red stripe appears in the semi-circular window at the prescribed suction level line and clicks into place. Suction can be set at -10, -15, -20, -30 and -40 cm H<sub>2</sub>O.

#### 5. Suction Source

Turn on the suction and increase it until the orange float appears in the suction indicator window. The position of the suction control dial determines the approximate amount of suction imposed regardless of the amount of source suction — as long as the orange float appears in the indicator window. Figure 3 shows the suction control dial set at -40 cm of water and the float in the indicator window.

**Note:** Source suction must be capable of delivering a minimum of 16 liters per minute (LPM) air flow.

**CAUTION:** Keep Pleur-evac® Unit below patient's chest level at all times.

**AVOID:** Dependent loops in patient tubing.

**DO NOT:** Clamp patient tubing during transport (patient has protection of water seal).

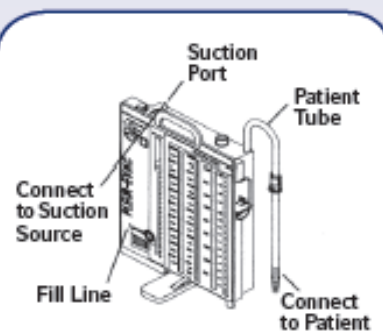


Figure 1

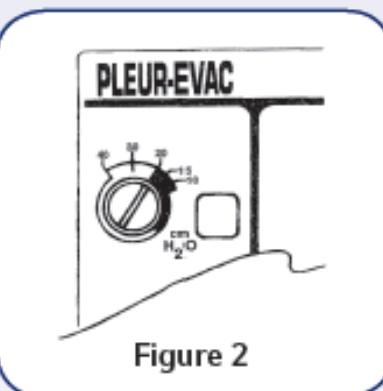


Figure 2

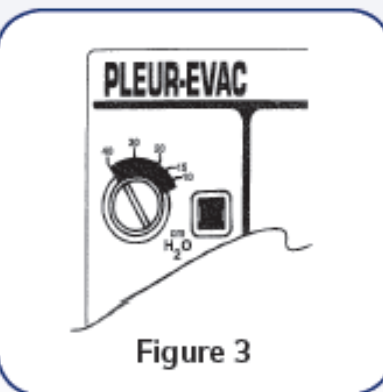


Figure 3

## A-6000 Series: Setup

1. Fill seal with pre-packaged fluid
2. Attach patient tube to thoracic catheter
3. If suction is prescribed, set dial to desired pressure
4. Attach suction tubing to suction port and wall source with suction off
5. Increase wall suction source until orange float appears in the window
  - Distinct "on/off" orange float is only visible when suction has reached prescribed level



The chest tube set-up comes with the sterile water to add to the system – Instill the entire amount. Water will mix with blue dye to help with monitoring for air leak and fluid levels

## A-6000 Series: Self-compensating Regulator

No need to add water for suction control;  
simply dial in to the prescribed setting!



**DO NOT** use a canister –  
attach the suction tubing  
directly to the wall source –  
the canister adds dead space  
that may affect your suction  
accuracy

- Use suction control dial to set suction setting at prescribed level
  - Dial can be adjusted from -10 to -40 as prescribed
- Connect to suction source

## A-6000 Series: High Negativity Float Valve

Maintains Seal During High Negativity

- Water rises, floating the ball to a closed position
- Relief chamber automatically vents excessive negative pressure and prevents H<sub>2</sub>O from spilling over





## A-6000 Series: Manual High Negativity Relief Valve

### Reduces Negativity

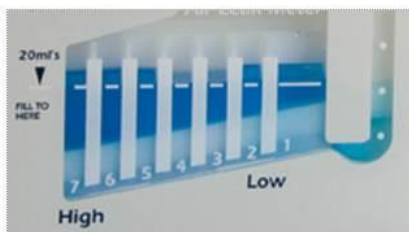
- Press down to allow filtered air in
- Caution: If suction is not on, pressure may be reduced to zero



## A-6000 Series: Patient Air Leak Meter

### 7-Column Patient Air Leak Meter

- Indicates degree of air leak from 1 (low) to 7 (high)
- Allows clinician to *quantify* air leak
- Easy-to-read<sup>1</sup>



#### 4. **Nursing Considerations:**

- **Vitals** as ordered by provider
- **Cardiac and pulmonary assessment**
- **Output** q4hrs and PRN and record amount and color (notify physician for bloody drainage greater than or equal to 200ml/hr, sudden cessation of drainage, or change in the character of the drainage)
- **Pain** assess at the insertion site or for chest discomfort
- Evaluate chest drainage system for rise and fall (tidaling) or bubbling in the **water-seal chamber**. Notify physician for sudden absence of tidaling in the water seal chamber or for persistent bubbling in the air leak meter.
- Assess the **insertion site** and surrounding skin with dressing change. Notify the provider for presence of fever, redness around insertion site, purulent drainage, and subcutaneous emphysema.
- **Dressing changes** are performed daily/prn in the ICU and every other day/prn on the medical surgical floors (*exception* - as needed in trauma patients).
- **Do not clamp the chest tube.**
- If the chest tube inadvertently becomes dislodged at the insertion site, place a sterile dressing on the site and tape it on three sides. To prevent increased tension in the lung, do not tape the fourth side. Monitor the patient's vital signs, oxygenation, and respiratory status.
- If the chest tube or drainage tubing inadvertently becomes disconnected at any point from the water seal, place the end of the tube or drainage tubing in a container of sterile water to reestablish a water seal. Monitor the patient's vital signs, oxygenation, and respiratory status.
- **After removal** of the chest tube:
  - Occlusive dressing applied
  - Monitor respiratory status and pain
  - Monitor insertion site for bleeding, infection, or drainage
  - Monitor for development of subcutaneous emphysema
  - If any concerns, call the provider

#### 5. **Chest Tube Dressing:**

- Per physician preference
  - Gauze around insertion site secured with tape
  - Sterile procedure for any dressing changes (gloves and mask)
  - Label dressing (time, date, RN initials)
  - Document in WALDO

#### 6. **Nursing Assessment: Start at the patient and work your way back through the system!**

- Thorough respiratory assessment
- Inspect site & intactness of dressing
- Inspect tubing for connections/kinks
- Look at Pleur-evac unit
  - Note character and level of drainage
  - Look at water seal chamber
  - Is there an air leak?
  - Look at suction control
- Special considerations with mediastinal chest tube-cardiac
- Monitor patient for pain and discomfort
- Document output on drainage unit w/ date and time q shift and in patient medical record

## 7. Patient/Family Teaching:

- Explain procedure before & during –reinforce why tube is being placed
- Explain how chest tube drains –show drainage system
- Lung expansion –cough deep breath, CPT, incentive spirometry
- Pain plan (splinting, meds etc.), including appropriate pain scale
- Signs of respiratory distress
- Limitations to ambulation –what to be careful of when moving
- Reinforce over and over!

## 8. Troubleshooting Chest Tubes:

- In general, you should not clamp a chest tube.
- If there is no air leak detected, the tube may be clamped for a short time to change the system. Prepare new Pleur-Evac before clamping tube to decrease amount of time tube is clamped.
- If there is an air leak, you SHOULD NEVER CLAMP THE TUBE. Doing so will cause air to accumulate in pleural cavity.
- If the patient needs to go off the unit and therefore needs to be taken off suction-need medical order to remove the patient from suction and set up to water seal, DO NOT CLAMP.
- Only clamp if the system comes apart and you need to troubleshoot the equipment – clamping should be brief until problem resolved
- If the collection device accidentally tips over = can refill with sterile water
- Drainage sampling= use leurolock syringe on port connection and clean with chlorhexidine

## 9. Chest Tube Removal:

- Things you will need:
  - Suture removal kit
  - Large bio-occlusive dressing
  - 4x4 gauze
  - Xeroform gauze
- Nursing responsibilities:
  - Thorough respiratory assessment
  - Monitor patient for pain
  - Maintain integrity of dressing
  - Ensure chest x-ray order is obtained and x-ray is taken promptly

Additional Resources:

[Pleur-Evac Chest Drainage System](#)



[Pleur-Evac Chest Drainage System \(Autotransfusion & Infant Unit\)](#)



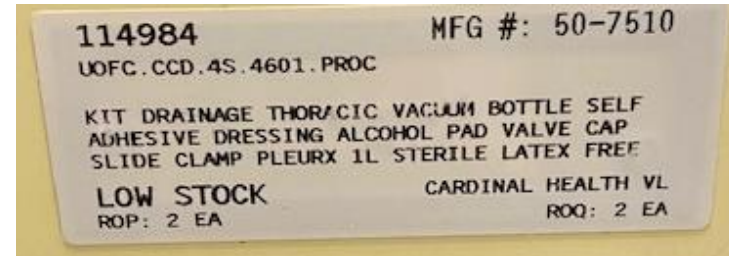
[Chest Tube Tutorial](#)



**Pleurex Drain**



**Item #**



# Drainage instructions

## PleurX<sup>®</sup> catheter system

These instructions are to be used only as a reference. Read the *Instructions for Use* that come with the drainage kits and watch the *drainage video* for more detailed instructions.

### Getting started

Get all drainage supplies ready and thoroughly wash your hands.



**1** Open all packaging. Unfold blue wrapping. Place bottle near wrapping and lay access tip on blue wrapping.

**2** Tear open alcohol pads. Lay open pouches on blue wrapping a short distance from sterile items.



**3** Pick up each glove by the wrist and put both of them on.



**4** Open pouch containing valve cap and let it fall onto sterile blue wrapping.

### Connecting the drainage bottle

Be sure to keep the end of the catheter and access tip clean.



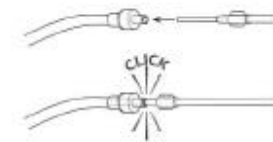
**5** Squeeze clamp on drainage line completely closed and remove cover from access tip.



**6** Take valve cap off catheter.



**7** Clean around valve opening with first alcohol pad.



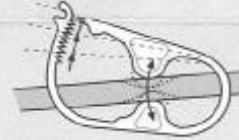
**8** Insert access tip into catheter valve.

## Draining fluid

Do not drain more than 1000mL from your chest or 2000mL from your abdomen at any one time.



**9** Remove support clip from top of drainage bottle and push down "T" plunger.



**10** Release clamp on drainage line to begin draining.

**11** Squeeze clamp on drainage line completely closed when finished draining.

## Final steps and disposal

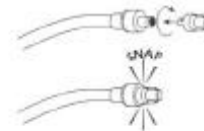
If you have any questions or concerns, contact your doctor or nurse.



**12** Pull access tip out of valve; set drainage line down.



**13** Clean around valve opening with second alcohol pad.



**14** Place new cap on catheter valve and twist it until it snaps into its locked position.



**15** Clean around catheter site with third alcohol pad.



**16** Place foam catheter pad around catheter and wind catheter on top of pad. Cover catheter with gauze pads.



**17** Place self-adhesive dressing over gauze pads and remove plastic covering.



**18** Push down "T" plunger and move plunger in a circular motion to further puncture the foil seal so fluid can be poured out.



**19** Remove flexible cap and drainage line from bottle.

**20** Empty bottle into toilet. Place bottle in a plastic bag, seal tightly and discard.

**Patient Education Link:**

[https://hub.uchospitals.edu/sites/patienteducation/Patient%20Education%20Materials/PleurX%20Catheter%20At%20Home%20Instructions%20\(patient%20copy\).pdf#search=drainage](https://hub.uchospitals.edu/sites/patienteducation/Patient%20Education%20Materials/PleurX%20Catheter%20At%20Home%20Instructions%20(patient%20copy).pdf#search=drainage)

## PleurX™ Lung Drainage Catheter At Home Instructions

Patient Sticker  
Patient Copy

PleurX™ drainage catheters are put in to remove fluid built up in your lungs. When the vacuum bottle is attached, the catheter drains fluid quickly from the lung.

### Activity for 24 hours after Catheter Placement

Rest all of today. You may go back to your normal activity tomorrow. The sedative you were given may take up to 24 hours to wear off.

#### For the next 24 hours:

- **Do not** drive, operate heavy machinery or use power tools
- **Do not** drink any alcohol
- **Do not** take any sleeping pills or depressant drugs
- **Do not** take care of any legal business or sign any legal documents

### Diet and Medications

Unless your doctor tells you differently, you may go back to your usual diet and medications.

You may take Tylenol or your usual pain medication for mild pain at the catheter site.

### Taking Care of Your Catheter

You will be given a starter kit with a bottles and instructions for how to use them. **To get more drainage supplies**, call the doctor that had the drain put in place. They will send in an order so that you can get the right amount of supplies at home.

- Wash your hands with soap and water before and after bandage changes. Hand washing is the best way to prevent infection.
- **Do not** do anything that causes pulling, pain, or bending of the drainage tube.
- **Do not** put the area where the catheter is under water (no baths or swimming)
- If the bandage gets wet, remove it and replace it.
- You may shower 48 hours after the tube is put in. Cover the skin site with plastic wrap taped to the skin so the bandage is completely covered.
- Keep a daily record of how much fluid drains. If you have questions on how often and how much to drain, contact the doctor who had the drain put in place.





<b>PleurX™ Lung Drainage Catheter At Home Instructions</b>	Patient Sticker <b>Patient Copy</b>
<b>Problems With Your Catheter - Call Us Right Away if:</b>	
<ul style="list-style-type: none"> <li>• Your catheter comes out or is broken</li> <li>• Your catheter begins to leak</li> <li>• Your catheter stopped draining and is not working.</li> <li>• If you have a temperature over 101 degrees or have pain, redness, unusual drainage, or it is warm around the catheter insertion site.</li> </ul>	
<b>Monday to Friday 7am to 5pm</b> call (773) 702-7235 to speak to a nurse.	
<b>After hours and weekends</b> call (773) 702-6800. Ask for the radiology resident on-call. Their pager number is 7046.	
<b>To Get More Help for the Care of Your Catheter:</b>	
<p>Call your primary doctor if you are having a difficult time caring for your catheter at home and it becomes too much for you to do.</p>	
<p>If taking care of your catheter at home is difficult for you and your caregivers, home health may be an option. This is a nurse who can visit with you to make sure the catheter is working properly, empty the drain and change your bandage. Getting this home care will depend on your insurance coverage.</p>	

[PleurX Drain Video](#)



### Aspira Drains

Floor In-Service Video – Draining and Dressing Change:

<https://vimeo.com/398372717/b3940e2268>

[www.myaspira.com](http://www.myaspira.com) – Excellent resource with videos, FAQ's, etc...

[Aspira Drainage System In-service](#)

[Aspira Quick Reference Patient Guide](#)

[Aspira Hospital Implementation Planning Guide](#)

## PROPERLY READ THE PLEUR-EVAC® AIR LEAK METER



- Read air leak meter at the bottom
- Note how many columns are bubbling
- Document the highest column with bubbles. For example, air leak bubbling in column 7 equals air leak 7

*Always refer to the Instructions for Use packaged with each unit.*

**FOR MORE THOROUGH GUIDELINES, ALONG WITH OTHER EDUCATIONAL MATERIALS, PLEASE CONTACT CUSTOMER SUPPORT 877-886-3487**



**HAS YOUR PATIENT  
DEVELOPED AN AIR LEAK?**  
A Quick Reference Guide

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## CHECK FOR TIDALING\*

- Assess for fluctuations or tidaling in the water seal or air leak meter 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 just the opposite
- If there is no tidaling, the tubing may be occluded by a clot or kink, or the lung may be fully re-expanded

## CHECK FOR AIR LEAKS\*

- Bubbles are seen in water-seal or air leak meter chamber
- Tidaling is absent or less obvious
- Determine the location of the air leak

\***Note:** Temporarily disconnect suction to correctly assess for tidaling and air leak. You may need to wait a few minutes after taking the patient off suction to assess.

## DETERMINE THE TYPE OF AIR LEAK

Starting at the chest tube insertion site, momentarily clamp off the tubing with a booted (or padded) clamp. Does the air leak meter stop bubbling?

YES: The leak originates from inside the patient

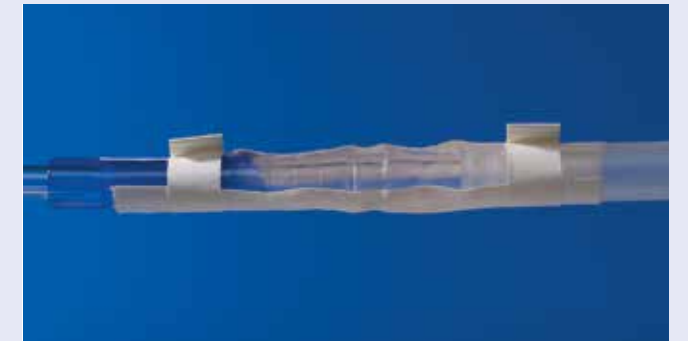
NO: The leak originates somewhere in the system

### PATIENT AIR LEAK

- Assess at frequent intervals (i.e., every 4 hours) to evaluate progression or resolution
- Disconnect suction. Observe during natural respiration and instruct patient to cough. This forces expiration, during which air usually leaves the pleural space
- Assess and document degree of air leak using the Pleur-evac® Air Leak Meter. 1 = low to 7 = high
- Notify physician of new or increased air leak

### SYSTEM AIR LEAK

- Continue the clamping process down the tubing at 8–12 inch (20–30 cm) intervals until you find the origin of the leak
- Tighten all connections
- Tape connection between patient drainage tube and thoracic catheter



*For proper connection between patient drainage tube and thoracic catheter, refer to Association of Critical-Care Nurses procedures.*

- If air leak is in the chest drainage system, replace the system