About Your Pleural Space

Your lungs are surrounded by 2 layers of tissue, called the pleura, that protect your lungs. The space between the 2 layers is called the pleural space (see Figure 1).
Normally, the pleural space has some fluid in it. This fluid helps your lungs move smoothly when you breathe.

Sometimes, too much fluid can build up in your pleural space. This makes it hard for your lungs to expand all the way and can make you feel short of breath. Fluid may build up around either one or both lungs.

A PleurX drainage catheter (flexible tube) can be placed in your chest to drain the fluid from your pleural space. This can make it easier for you to breathe.

**About Your PleurX Drainage Catheter**

Your PleurX drainage catheter may be placed by an
interventional radiologist or an interventional pulmonologist. An interventional radiologist is a doctor who specializes in image-guided procedures. An interventional pulmonologist is a doctor who specializes in procedures to treat diseases in the lungs and chest.

Your PleurX drainage catheter will be placed by:

_____ Interventional Radiology
_____ Interventional Pulmonology

The procedure to place a PleurX drainage catheter usually takes about 45 to 90 minutes. Your doctor will explain the procedure to you and give you time to ask questions before you sign a consent form.

Sometimes, PleurX drainage catheters are placed urgently when you’re sick. In other cases, the placement procedure is planned and scheduled ahead of time.

**What to expect during the placement of your PleurX drainage catheter**

Your nurse will place an intravenous (IV) line in your hand or arm. You will be brought into the procedure room. You will receive medication through your IV to make you feel drowsy.

If you have fluid around only 1 lung, the catheter will be placed on that side of your chest. If you have fluid around both lungs, your doctor will choose the best side for the catheter. Before the
catheter is inserted, the area will be numbed with an anesthetic (medication that keeps you from feeling pain).

During your procedure, your doctor will make 2 small incisions (surgical cuts), one into your pleural space and another one a few inches away (see Figure 2). They will make a tunnel under your skin between the 2 openings. The catheter will be passed through this tunnel.
Figure 2. Catheter placement

The catheter has many holes to allow the fluid to drain. It also has a 1-way valve that allows the fluid to come out but doesn’t allow air to go in.

After your catheter is inserted, your doctor will cap it. In rare cases, your doctor will attach it to a collection unit to allow for further drainage of the fluid.
You will have a dressing (bandage) over the catheter. You may have another bandage over the second incision made when the catheter was placed.

**After your procedure**

After your procedure, you will be brought to the recovery room. You will need to stay in bed until you’re fully awake. You will then return to your hospital room or go home with your caregiver.

Tell your nurse if you have:

- Difficulty breathing
- Increasing pain or discomfort
- Any symptoms that concern you

**Caring for Your PleurX Drainage Catheter**

Your nurse will teach you how to care for the catheter. Use this information at home to remind you of what you learned. At first, a visiting nurse will come to your home to help you care for the catheter. It won’t be long before you feel confident doing it yourself.

To care for your PleurX drainage catheter, you will:

- Inspect your catheter every day.
- Drain the fluid from your pleural space (chest) every day, or as directed by your doctor.
• Change your dressing once a week, or whenever it becomes loose, wet, or soiled. If a wet dressing is left against your skin, it may cause your skin to become irritated and sore.

Don’t use any sharp objects around your catheter.

Inspectioning your catheter

You must inspect your catheter every day. You can use a handheld mirror to do this.

1. Check the dressing. If the dressing is wet, soiled, has come loose, or started to lift from your skin, it needs to be changed.

2. Examine your skin around the catheter when you’re changing the dressing. There should be no redness, areas of broken skin, or rash. Fluid shouldn’t leak around the catheter.

3. Inspect the catheter for kinks in the tubing.

If you see a problem call your doctor or nurse.

If your catheter becomes damaged, cut, or broken, follow these instructions:

1. Pinch the catheter closed between your fingers.

2. Open the drainage kit and remove the blue emergency slide clamp. Slip it over the catheter and tighten the clamp. If you don’t have a slide clamp, bend the catheter and tape it in this position.
3. Call your doctor.

Draining your pleural space
You will need to drain the fluid from your chest every day, or as directed by your doctor. To drain the fluid, you will attach the catheter to a vacuum bottle (see Figure 3). The vacuum pulls the fluid from your chest into the bottle.

If you have pain when you drain the catheter, take your pain medication as directed by your doctor 30 minutes before you drain it.

Amount of drainage
Your doctor will tell you how much drainage you should expect and what it should look like. Keep a record of when and how much you drain. This will help your doctor develop a schedule that’s right for you.

Some people may drain up to 500 milliliters (mL) (16.9 ounces) of fluid a day. Don’t drain more than 1,000 mL unless directed by your doctor. If you drain less than 200 mL of fluid for 3 days in a
row, reduce how often you drain to once every other day. If you drain less than 100 mL every other day, start draining every 3 days. Call your doctor’s office once you drain less than 50 mL for 3 sessions, over 9 days. If you find that, over time, the fluid stops collecting in your pleural space, your doctor may recommend that the catheter be removed.

**How to drain your catheter**

Before draining your catheter, choose a clean, open surface to set up your supplies. If you have an open counter or table in your bathroom, that may be a good spot. Remember to take your pain medication 30 minutes before draining, if you need to.

1. Gather your supplies:
   - 1 drainage kit, which includes:
     - A vacuum bottle (500 mL or 1,000 mL)
     - The PleurX Procedure Pack, which includes:
       - 4”x4” gauze pads (to change the dressing afterward)
       - Foam catheter pad (to change the dressing afterward)
       - Valve replacement cap
       - Gloves
     - If you aren’t going to change your dressing after draining fluid from your catheter, use the kit with only a vacuum bottle and valve replacement cap.
2. Wash your hands with warm water and soap, or use an alcohol-based hand sanitizer.

3. Open the outer bag of the drainage kit.

4. Open the PleurX Procedure Pack. Remove the package with the valve replacement cap. Be careful not to touch anything else in the pack.

5. Open the package with the valve replacement cap, but don’t touch the inside of the packaging and don’t remove the cap. Place it next to the PleurX Procedure Pack.

6. Open the package with the vacuum bottle and place the bottle on the table.

7. Check to see that the tip of the drainage tube on the vacuum bottle has a plastic sleeve (see Figure 4). If the sleeve has fallen off, begin again with a new drainage kit.

![Figure 4. Plastic sleeve](image)
8. Remove and throw out the paper holding the drainage line of the vacuum bottle in a coil.

9. Tear the tops off on 2 of the alcohol wipes, but leave them in their wraps. Place them on the table.

10. Tighten the roller clamp on the drainage line completely closed (see Figure 5).

11. Remove the support clip on the bottle by grasping the flat part and pulling outward (see Figure 6).
12. Wash your hands thoroughly with warm water and soap or use an alcohol-based hand sanitizer.

13. Twist the cap to remove it from the valve on your PleurX drainage catheter. While still holding the catheter, throw away the cap (see Figure 7).
14. Continue to hold the catheter in one hand. With your other hand, take 1 alcohol wipe and clean the valve on the catheter thoroughly. Be careful not to let anything touch the end of the catheter after it has been cleaned. Throw away the alcohol wipe.

15. Pick up the drainage line of the vacuum bottle and remove the plastic sleeve on the tip. You may be able to do this with 2 fingers from the hand holding the catheter, but it will be easier if you have a helper do it. Don’t allow anything to touch either the catheter valve or the tip of the drainage line.

16. Insert the tip of the drainage line into the cleaned catheter valve. Push the tip of the drainage line completely into the valve at the end of the catheter. You may hear and feel a click when the tip and valve are locked together (see Figure 8). Never insert anything but the drainage line into the catheter.

![Figure 8. Lock the tip and valve](image)

17. Activate the vacuum in the bottle.

- To do this, you can hold the bottle with one hand while you push down on the white T-plunger to puncture the seal (see Figure 9). Or, set the bottle on the table and press the T-
plunger to puncture the seal.

- Then, release the clamp on the drainage line (see Figure 10). You will see fluid flow into the drainage bottle.

You can control the flow rate by rolling the clamp partially closed. If you feel pain, slow down or stop the flow of the drainage. Rest for a few minutes, then restart the flow rate slowly. If you still have pain, contact your doctor or nurse after you have completed the procedure.

18. The flow into the bottle will slow down when the fluid is almost completely drained from your chest. When the flow stops or the bottle is filled, roll the clamp on the drainage line to completely close it.

19. If you’re using a 500 mL bottle and have been told to drain more than 500 mL and the bottle is full, have your caregiver
open another drainage kit. Have your caregiver:

- Remove the vacuum bottle from the packaging.
- Tighten the white clamp on the drainage line closed.
- Tear the top off of an alcohol pad.

20. From this point forward, you can resume care.

- Hold the Pleurx catheter with 1 hand. Pull the tip of the drainage line from the filled bottle out of the valve in a firm smooth motion with the other hand. Set the drainage line down, but keep holding the Pleurx catheter with 1 hand.
- Use an alcohol wipe to clean the catheter valve thoroughly. While continuing to hold the catheter, throw away the alcohol pad.
- Proceed with draining into the new bottle starting with step 21.

21. When you’re finished draining, hold the Pleurx catheter with one hand. Make sure the clamp on the drainage bottle is closed. Pull the tip of the drainage line out of the valve in a firm, smooth motion with the other hand (see Figure 11). Set the drainage line down, but keep holding the catheter in one hand.
22. Use an alcohol wipe to clean the catheter valve thoroughly.

23. Pick up the replacement valve cap but don’t touch the inside. Place the new cap over the catheter valve and twist it clockwise until it snaps into its locked position (see Figure 12). If you touch the inside of the valve cap, you must open another pack and use a new one.

24. Use an alcohol wipe to clean the catheter valve thoroughly.

25. Make sure the clamp on the vacuum drainage bottle(s) is tightly closed. Remove the top part of the bottle by pushing up
on the soft plastic piece. If necessary, you can make the foil opening larger by twisting the plunger on the vacuum drainage bottle to allow for easier emptying.

26. Empty the drainage into the toilet. Place the drainage bottle and tubing in a plastic bag. Secure the opening with a twist-it or zip lock. Throw it out with your household garbage.

**Managing problems with draining your catheter**

If no fluid drains from your chest into the vacuum bottle, there may be several reasons.

- The bottle may have lost its suction.
  
  - Check the T-plunger at the top of vacuum bottle to make sure that it’s compressed.

- There may be a problem with the catheter, vacuum bottle, or drainage line.

  - Make sure that there aren’t any kinks in the catheter.
  
  - Check to see that the clamp on the drainage line is open.

  - Check that the drainage line and catheter valve are securely connected.

  - Check if the catheter is clogged. If it is, roll it between your fingers. This will help loosen anything that’s blocking the drainage flow.

- If these steps don’t work, or if the bottle has lost its vacuum,
repeat the drainage procedure with a new drainage kit and bottle.

If fluid still isn’t draining, you may not have enough fluid in your chest to drain. It’s possible that over time, the amount of fluid will decrease. If it does, you won’t need to drain as often as you did when the catheter was first put in. Call your doctor if fluid isn’t draining.

**Changing the dressing**

The dressing must be changed once a week or whenever it becomes wet, soiled, or pulls away from your skin. Change the dressing just after you have drained your pleural space. That way, you only have to open 1 drainage kit.

1. Gather your supplies
   - Foam catheter pad, from your drainage kit
   - Self-adhesive bandage, from your drainage kit
   - 4”x4” gauze pads, from your drainage kit
   - Soap and small bowl with water
   - Extra gauze or clean washcloth

Figure 13. Clean around the catheter
1. Use a waste basket.
2. Wash your hands with warm water and soap or use an alcohol-based hand sanitizer.
3. Hold the catheter in place to prevent tension or pulling on it. Remove the dressing from your catheter and throw it away.
4. Wash your hands again.
5. Use a gauze pad moistened with soap and water to clean the skin around the catheter (see Figure 13).
6. Rinse and dry the skin with fresh gauze and water.
7. Place the foam catheter pad under the catheter (see Figure 14).
8. Remove and throw away the center panel from the backing of the self-adhesive dressing (see Figure 15). Do not stretch.
9. Peel the printed liner from the self adhesive dressing, exposing the adhesive surface.
10. Place a new gauze pad over the catheter and foam pad.

11. Center the bandage over the gauze pad.

12. Press the bandage down, allowing the end of the catheter to come out from under the bandage (see Figure 16). Make sure you don’t stretch the dressing when you apply it.

13. Slowly remove the frame while smoothing down the self adhesive dressing edges. Smooth and press the dressing down to make sure it is completely secure. If the part of the catheter that is not covered is too long, secure it to your body with paper tape.

14. Wash your hands with warm water and soap or use an alcohol-based hand sanitizer.

**Showering with your catheter**

You can take showers with your PleurX catheter, but you will need to keep the dressing dry. If the dressing gets wet, you will need to change it. Wet dressings are a common cause of skin problems.
A hand-held shower can help direct the water away from your dressing. You will also need to cover your dressing with a waterproof plastic covering.

Before you shower, tape plastic wrap or a gallon sized bag over the dressing to keep it dry. You can also use AquaGuard®, which is a one-time use waterproof cover to protect your dressing. When you shower, make sure that your catheter is covered to prevent it from getting wet.

**Applying the AquaGuard**

1. The edges of the AquaGuard have peelable tape. Fold over a corner of each side of the tape (see Figure 17).

   ![Figure 17. Prepare the waterproof cover](image)

2. Hold the AquaGuard with the arrows pointing towards your head. Peel off the top strip and place the top edge of the
AquaGuard above the dressing. Smooth it down.

3. Then, grab a folded corner and peel down one side, smoothing as you go.

4. Do the bottom and remaining side the same way.

Don’t let the tape on the AquaGuard touch your dressing. If it does, it can lift your dressing when you remove the AquaGuard after showering.

Call Your Doctor or Nurse if:

- You have a temperature of 100.4 °F (38 °C) or higher
- The drainage changes color or consistency
- The drainage is cloudy or smells bad
- The amount of fluid draining from your chest changes
- You have pain when you drain the catheter or pain that continues after it’s drained
- You have redness, swelling, drainage, or pain where the catheter goes in or in the area of the catheter
- You damage, break, or cut the catheter
- The catheter comes out
- You see leaking from the valve or catheter
- You have any concerns about your catheter
Contact Information for Interventional Radiology

If your PleurX drainage catheter was placed by an interventional radiologist, and you have any questions or concerns, call Interventional Radiology at 212-639-2236. You can reach a staff member Monday through Friday from 9:00 AM to 5:00 PM. After 5:00 PM, during the weekend, and on holidays, please call 212-639-2000 and ask for the fellow on call for Interventional Radiology.

Contact Information for Interventional Pulmonology

If your PleurX drainage catheter was placed by an interventional pulmonologist and you have any questions or concerns, call Interventional Pulmonology at 212-639-LUNG (212-639-5864). You can reach a staff member Monday through Friday from 9:00 AM to 5:00 PM. After 5:00 PM, during the weekend, and on holidays, please call 212-639-2000 and ask for the fellow on call for the Pulmonary Service.

Ordering Information

When you go home, your nurse will give you enough supplies to last for 2 weeks. In most cases, the visiting nurse service will order your supplies after that.

If you would like to order supplies yourself, call Edgepark Medical at 888-394-5375 and ask to speak with the PleurX specialist. You
can also go online to www.edgepark.com

You can purchase AquaGuard from the MSK General Stores.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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