Peritoneal Fluid Drainage Using a Tunnelled PleurX™ Catheter

CAUTION: Sound Alike / Look Alike Warning
➢ The title of this policy and procedure is similar to another policy/procedure entitled “Pleural Effusion Drainage Using a Tunnelled PleurX™”

Purpose
To describe the standards of care and procedure for draining abdominal ascites when the patient has an indwelling PleurX™ catheter in the peritoneal space.

Applicability
This procedure applies to all Covenant Health facilities, staff, members of the medical staff, volunteers, students and any other persons acting on behalf of Covenant Health.

General
- Confirm patient care orders to drain fluid using the PleurX™ catheter. Order must indicate:
  - frequency of drainage;
  - maximum amount of fluid to be removed per drainage;
  - type of drainage: intermittent or continuous;
  - suture removal order, if sutures in-situ; and
  - frequency of vital signs, if required\(^1,2\)

- Standard Infection Prevention and Control practices shall be followed for all procedures associated with an indwelling peritoneal catheter. This includes hand hygiene with an antiseptic agent (either an alcohol-based hand rub or washing with an antimicrobial soap), appropriate use of personal protective equipment (PPE) and adherence to aseptic technique.

- The patient’s indwelling PleurX™ catheter must not be accessed with any object or device other than the specialized connector provided in the PleurX™ drainage line.

- The PleurX™ catheter dressing will be changed each time the catheter is accessed using strict aseptic technique. If the catheter is not accessed, the dressing will still be changed at least twice a week in an acute care or and continuing care settings, or at a minimum of every seven days in the community, or PRN if soiled, wet, or loose.

\(^1\) Frequency of vital signs depends on patient’s prognosis and symptom management that aligns with their values and wishes for care

\(^2\) For patients who are mobile, falls’ risk, or at risk of hypotension, consider obtaining pre and post procedure vital signs
• When the health care professional is accessing the catheter to drain the abdominal cavity, they must remain with the patient until the procedure is complete if utilizing drainage bottles. If attaching the catheter to straight drainage (i.e. drainage bag), direct supervision during drainage may or may not be required - refer to unit or site-specific protocols.

• In the community, the client or caregiver may perform the procedure if the in-home training has been completed with successful demonstration of the procedure observed. In acute care and continuing care settings the client or caregiver may perform the procedure if training has been completed, provided that this is allowed per institutional or site-specific protocol.

• If complications occur during the drainage, contact the physician/nurse practitioner (NP). Refer to Section 8, Potential Complications.

**Equipment**

If the patient from the community presents to the Emergency Department, requires abdominal (ascites) drainage and has the drainage kit with them, staff may use this equipment. While in hospital, the equipment utilized will be a PleurX™ drainage line, an evacuated/wound drainage bottle, or if the physician/NP has ordered the drainage to straight drainage you would use the PleurX™ drainage line and a drainage system container/bag.

**Required Equipment:**

- PleurX™ drainage kit
  
  **NOTE:** If you are using the PleurX™ kit for drainage, all the supplies you require will be located in that kit.

  OR

- PeritX™ drainage bag (For peritoneal drainage only)
  
  Note: If you are using the PeritX™ kit for drainage, all of the supplies you require will be located in that kit.

  OR

- If using PRE-VAC wound drainage bottle you will also need to gather:
  - 1 PleurX™ lockable drainage line
  - 1 PleurX™ valve cap
  - 1 sterile 4 x 4 foam dressing
  - 2 sterile 4 x 4 gauze dressings
  - 1 pair of sterile gloves
  - 4 - 5 chlorhexidine swabs or swab sticks
  - 1 sterile procedure pack or dressing tray
  - 1 large sized occlusive dressing

**Procedure**

See Appendix 1 for step by step procedure.
Peritoneal Fluid Drainage Using a Tunnelled PleurX™ Catheter  

**Resources**

- BD. 2017). PleurX Catheter System Home Page:  
- PleurX Drainage Procedure Manual:  

**Related Policies**

- Covenant Health PleurX Catheter Insertion Policy V-197
- Covenant Health Biomedical Waste Sorting, Handling and Disposal Covenant Health Policy (Policy # 3.1.3.7)
- Covenant Health Policy and Procedure Pleural Effusion Drainage using a Tunnelled PleurX™ Catheter (Policy # VII-B-95)

**References**

- CareFusion. (n.d.). *PeritX drainage procedure*. McGraw Park, IL: CareFusion

**Revisions**

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APPENDIX 1: PROCEDURE

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1. **Pre-Drainage Assessment**

   1.1 Presenting symptoms such as shortness of breath or abdominal discomfort often indicate drainage is required.

   1.2 Baseline vital signs may be required depending on the patient’s condition and disease trajectory, and patient care orders\(^3\).

2. **Initial Steps and Dressing Removal**

   2.1 Perform hand hygiene as per Infection Control Guidelines. Don clean protective gloves.

   2.2 Clean your working surface using a hospital approved disinfectant and allow the surface to air dry.

   2.3 Remove the old catheter dressing, note the skin condition, sutures (if in situ), and puncture site. **Note:** Do not use scissors or sharp objects around the pleural catheter to avoid the risk of damaging the line.

   2.4 Open the procedure pack/dressing tray and place it on your working surface, ensuring you maintain a sterile field.

   2.5 Open the appropriate drainage bottle and/or catheter drainage bag in addition to the drainage line package. Place the bag/bottle onto, or next to, the sterile field with the drainage line on the sterile field.

   2.6 Prepare the sterile dressing items onto your sterile field (i.e. open your swabs, dressings, new valve cap, scissors).

   2.7 Remove and dispose protective gloves.

   2.8 Perform hand hygiene and put on sterile gloves.

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\(^3\) Frequency of vital signs depends on patient’s prognosis and symptom management that aligns with their values and wishes for care.
DRAINAGE (depends on drainage device being used, see below)

3. Intermittent Drainage: Draining fluid from the peritoneal cavity using the PRE-VAC wound drainage bottle

<table>
<thead>
<tr>
<th>Note:</th>
<th>With PRE-VAC brand wound drainage bottles, the drainage line that comes pre-attached to the PRE-VAC bottle IS NOT ACCESSIBLE to the indwelling patient peritoneal catheter, so you must change out the attached PRE-VAC drainage line with the PleurX™ lockable drainage line.</th>
</tr>
</thead>
</table>

3.1 Change out the drainage line attached to the PRE-VAC bottle to a PleurX™ lockable drainage line by utilizing a luer-lock connection and sterile technique. Rest this line and bottle onto your sterile dressing field.

3.2 Ensure the clamps on the drainage bottle and drainage line are completely closed.

3.3 Using one swab, clean around the indwelling catheter insertion site. Using another swab, clean from the proximal to distal end of the catheter, both front and back side. Using another swab, clean the valve cap.

<table>
<thead>
<tr>
<th>Note:</th>
<th>During cleaning, prevent the indwelling catheter from touching non-sterile surroundings by holding the catheter upright with your sterile gloved hand.</th>
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</thead>
</table>

3.4 Position a sterile drape next to the patient and rest your cleaned catheter and cap on the drape.

3.5 Remove and discard the old catheter cap. While still holding the valve, pick up one of the chlorhexidine swabs and wipe the valve opening. Do not push the swab into the valve.

3.6 Continuing to hold the catheter valve in your hand, pick up the drainage line and insert the tip into the patient’s catheter valve. Push the tip completely into the valve. You will likely feel and hear a ‘click’ when the tip and valve are locked together. **DO NOT ATTEMPT TO ACCESS THE CATHETER VALVE WITH ANYTHING OTHER THAN THE PLEURX™ DRAINAGE LINE.**

3.7 Open the slide clamp on the vacuum drainage bottle.

3.8 Release the squeeze clamp on the drainage line. Fluid will now flow into the vacuum bottle. Regulate the flow rate by partially closing and opening the squeeze clamp.

3.9 When the bottle is full (indicated by the complete expansion of the green-colored vacuum regulator on the bottle) or if flow stops, close the squeeze clamp on the drainage line completely.

3.10 If you need to drain additional fluid using additional bottle(s), verify the patient care order to ensure you are within drainage volume parameters. Set up additional drainage bottle(s) as per points 2.5 through 2.8 above. Repeat steps 3.2 to 3.9. **It is not necessary to replace the drainage line with a new one if you are accessing additional drainage bottles.**

<table>
<thead>
<tr>
<th>Note:</th>
<th>It should not be necessary to reposition the patient to increase flow. Repositioning will only yield small amounts of fluid.</th>
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</thead>
</table>
4. Intermittent Drainage: Draining fluid from the peritoneal cavity using the PleurX™ vacuum bottle

**Note:** If you are using the 500 mL or the 1000 mL vacuum bottle kit, ensure you remove the plastic support clip from the neck of the bottle. Then push the white T-plunger firmly into the neck of the bottle to puncture the foil seal within the bottle.

4.1 Ensure the clamp on the drainage line is completely closed.

4.2 Remove the drainage tip cover. Carefully place the tip of the drainage line back onto the sterile field.

4.3 Grasp the catheter valve, remove and discard the old cap. While still holding the valve, pick up one of the chlorhexidine swabs and wipe the valve opening. **Do not push the swab into the valve.**

4.4 Continuing to hold the catheter valve in your hand, pick up the drainage line and insert the tip into the catheter valve. Push the tip completely into the valve. You will feel and hear a ‘click’ when the tip and valve are locked together. **DO NOT ATTEMPT TO ACCESS THE CATHETER VALVE WITH ANYTHING OTHER THAN THE PLEURX™ DRAINAGE LINE.**

4.5 Open the slide clamp on the vacuum bottle.

4.6 Release the squeeze clamp on the drainage line. Fluid will flow into the vacuum bottle. Control the flow by partially closing the squeeze clamp.

**Note:** Remove fluid as tolerated according to the order. **Discontinue drainage** if the patient experiences pain and / or discomfort in the abdomen.

4.7 When the bottle is full or flow stops, close the squeeze clamp on the drainage line completely.

4.8 If you need to drain additional fluid using additional bottle(s), verify patient care order to ensure you are within drainage volume parameters. Set up additional drainage bottle(s) as per steps 2.5 to 2.8 and repeat steps 4.1 to 4.7. **It is not necessary** to replace the drainage line with a new one if you are accessing additional drainage bottles.

**Note:** It should not be necessary to reposition the patient to increase flow. Repositioning will only yield small amounts of fluid.
5. Intermittent Drainage: Draining fluid from the peritoneal cavity using the PeritX™ drainage Bag:

5.1 Close the roller clamp by rolling the wheel on the drainage line downward (toward the bag).

5.2 Remove the cover from the access tip by twisting it and pulling gently. Discard the cover. Set the access tip back on the sterile field.

5.3 Hold the base of the catheter valve and remove the cap by twisting it counter clockwise and pulling gently. Discard the cap.

5.4 While still holding the valve, pick up one of the chlorhexidine swabs and wipe the valve opening. **Do not push the swab into the valve.**

5.5 Insert the access tip on the drainage line securely into the catheter valve. You will feel and hear a click when the access tip and valve are locked together.

5.6 Hang the drainage bag at a level that is lower than the catheter insertion site.

**Caution:** Ensure that the drainage line is not tugged or pulled.

5.7 Open the roller clamp completely by rolling the wheel upward. The drainage bag will start to fill with fluid.

**Caution:** Loops or kinks in the tubing may cause fluid flow to stop early. If this occurs, remove the kink or loop and resume draining.

6. Continuous Drainage: Draining fluid from the peritoneal cavity using the continuous drainage method

6.1 New equipment is required each time you are accessing the PleurX™ catheter to drain the space.

6.2 Attach the white adapter piece located in the PleurX™ lockable drainage line package to the luer lock end of the drainage line.

6.3 Open the clamp on the drainage line and let the fluid flow by gravity into the catheter bag.

6.4 This drainage system needs to be changed every 2-3 days.

**HOW TO ‘BUILD’ THE CONTINUOUS DRAINAGE ASSEMBLY:**

a) Cut the blue ends of a non-conductive connecting tube off, with sterile scissors.

b) Cut the clear tube to the desired length.

c) Attach one end of this tube to urine drainage bag tubing.

d) Attach the other end of the clear tube to the white adapter piece attached to the end of the PleurX™ drainage line.

e) If using a leg bag cut the green connecting tube found in the bag package to the desired length and attach as above.
Note: It is essential to closely monitor and record the amount of fluid that is draining when using the continuous drainage method.

7. Terminating the Drainage

7.1 Hold the drainage line in one hand and the catheter valve in your other hand; pull the drainage line tip out of the valve in a firm, smooth motion.

7.2 Using a chlorhexidine swab, clean around the catheter access valve.

7.3 Place the new cap over the catheter valve and twist it clockwise until it snaps into its locked position.

7.4 Dispose of the drainage line, vacuum bottle or drainage bag as per the Biomedical Waste Sorting, Handling and Disposal Covenant Health Policy (Policy # 3.1.3.7).

8. Specimen Collection (If prescribed/ordered)

8.1 Collect specimen from the vacuum bottle immediately following drainage procedure.

8.2 Ensure to maintain sterile technique to avoid contaminating specimen.

8.3 Dispose of the drainage and vacuum bottle set as the Biomedical Waste Sorting, Handling and Disposal Covenant Health Policy (Policy # 3.1.3.7).

9. Placing a New Dressing

9.1 Ensure you have maintained sterile technique; otherwise, perform hand hygiene and don new sterile gloves.

9.2 Clean around the PleurX™ catheter site with a chlorhexidine swab/swab stick. Allow the skin to thoroughly air dry.

9.3 Starting at the exit site, clean the catheter with a chlorhexidine swab/ swab stick, working from proximal to distal end.

9.4 Place a foam dressing around the catheter insertion site. If the dressing is not pre-split, you will need to create a split foam using your sterile scissors to cut the dressing.

9.5 Wind the catheter into loops and place it over the foam pad. Cover the catheter with sterile gauzepads.

9.6 Apply the transparent self-adhesive dressing to ensure the catheter insertion site and dressings are completely covered.

9.7 Add label, including the date and your initials, onto the new dressing.

9.8 For continuous drainage, remove the old dressing and apply the new dressing, securing the drainage tubing to the patient.
10. Assessment during Drainage

Note: Monitoring vital signs depends not only on the patient care orders, but also depends on patient's prognosis and symptom management that aligns with their values and wishes for care. For patients who are mobile, falls’ risk, or at risk of hypotension, consider obtaining pre and post procedure vital signs.

10.1 Monitor patient for:
- symptoms of hypotension
- signs/symptoms of infection
- increased pain, pressure in the abdomen
- dyspnea and/or orthopnea

10.2 Monitor appearance and volume of drainage fluid

11. Documentation

11.1 The following should be noted on the patient care record:
- system function (type and amount of drainage);
- time drainage was initiated or system changed;
- patient status (respiratory rate, lung sounds, pulse oximetry, blood pressure, skin color, temperature, mental status);
- abdominal dressing status and care done;
- drainage characteristics and amount;
- patient tolerance of procedure.
12. Potential Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>Action</th>
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</table>
| INFECTION at the insertion site and/or PERITONITIS | • Routinely monitor patient and catheter site for signs of infection (redness, discomfort, swelling, fever, chills, rigidity of muscles).  
  • Monitor the drainage fluid for changes in colour, clarity, viscosity, odor and volume. Colour of the fluid can change depending on the volume status of the patient; e.g., if the patient is dehydrated the fluid can look more concentrated).  
  • Notify the physician/NP immediately if problems arise. |
| HYPOTENSION                           | • If indicated, obtain baseline vitals prior to draining the catheter.  
  • If indicated, monitor the vital signs after the drainage procedure.  
  • Observe for signs of pallor, tachycardia, dyspnea and oliguria.  
  • If patient develops dizziness or fainting, slow the flow of drainage  
  • If symptoms persist, stop the drainage  
  • If the symptoms remain after the drainage, contact the physician/Nurse Practitioner |
| CATHETER IS ACCIDENTALLY DISLODGED OR PUNCTURED | • Immediately clamp or pinch the catheter closed as close to the skin as possible  
  • Place the patient on their side, catheter side down  
  • Notify the physician/NP  
  • Monitor for signs of shock |
| HEMODYNAMIC INSTABILITY               | • Altered electrolyte balances after multiple drainages  
  • Protein depletion in the blood  
  • Notify the physician/Nurse Practitioner immediately if problems arise |