

Care of the  
**Apheresis  
Catheter**



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# The Apheresis Catheter

## What is an apheresis catheter?

An apheresis catheter is a small tube made of a material called silicone. It is inserted into a large vein and “tunneled” under the skin to a place where it exits your body. In this booklet, we will simply refer to it as a catheter.

## What does the catheter do?

This type of catheter will allow stem cell collection needed for your transplant. The catheter may be used for people who must receive medications, fluids, blood products, chemotherapy, or I.V. nutrition through a vein. It may also be used for drawing blood. There are several things you will need to know in order to care for your catheter. Your nurse will make sure you understand the procedures and provide time for you and your family to practice.

## How is the catheter inserted?

The catheter will be inserted while you are in the operating room or radiology and should only take 30-60 minutes. The doctor will make a small cut at the base of your neck or your upper chest. This is where your catheter is inserted into your vein. The catheter is threaded into your vein until the catheter tip is near your heart in the large vein called the superior vena cava. A second cut, called the “exit site”, will also be made. This is the place where the other end of the catheter will come out of your chest. This cut is placed on your chest so that you see the catheter ends to do your own catheter care. After the catheter has been inserted, the doctor will check that the catheter tip is correctly placed and you will be given Tylenol® for pain, if needed. The first cut will be closed with steri-strips and will heal in a few days.

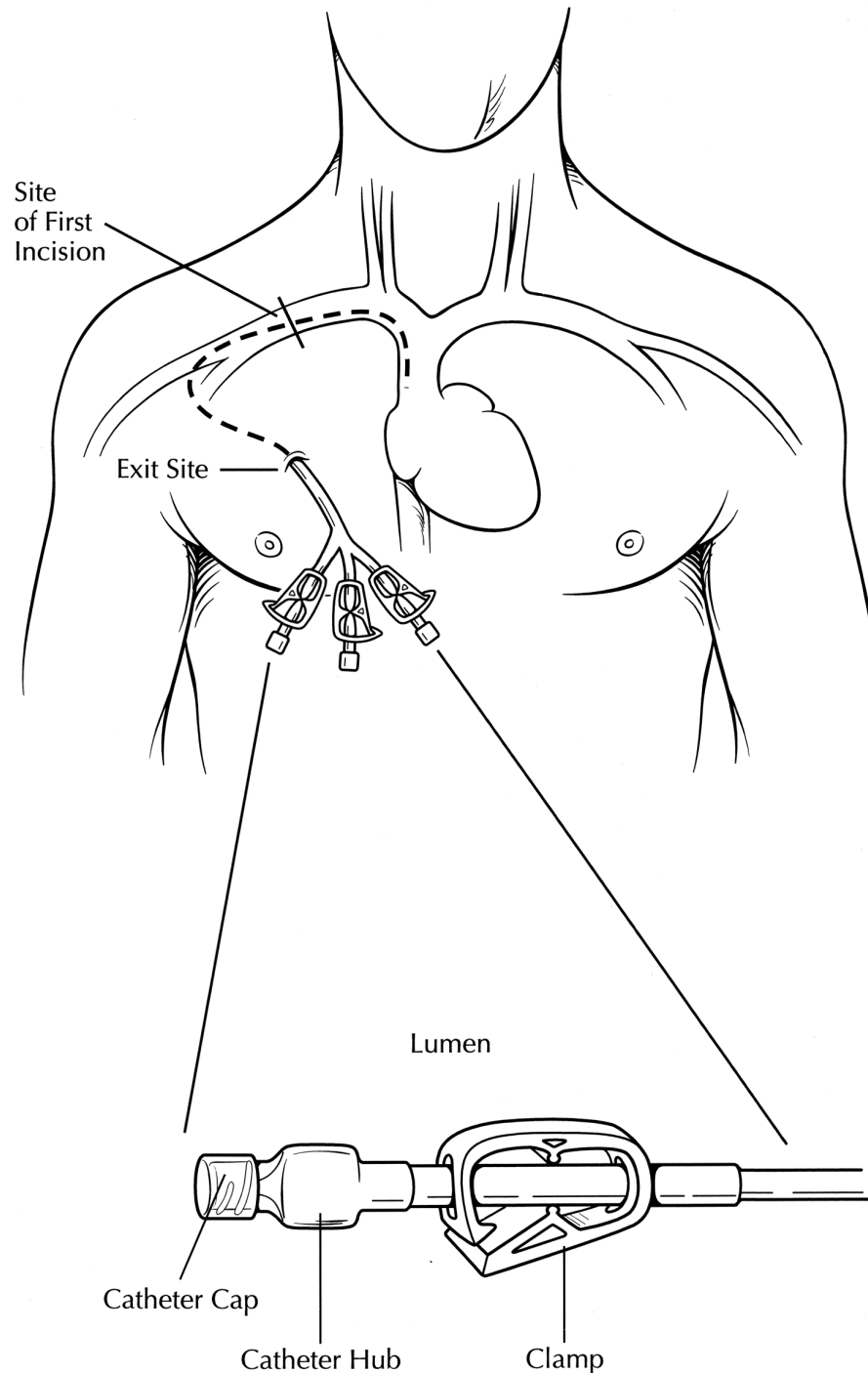
## What is a cuff?

Most catheters have a small fuzzy cuff that lies beneath the skin about one to four inches from the exit site. The cuff serves two main purposes:

1. The cuff holds the catheter in place by forming scar tissue. Scar tissue will grow around the cuff after 1-2 weeks, making it difficult to pull the catheter out.
2. The cuff helps protect against infection by blocking bacteria from entering the exit site.

## What is a lumen?

The word Lumen means the opening or channel that is inside the catheter. It is through this opening that medications are given or blood is drawn. We also use this word to describe the ends of the catheter that are outside your body. You will notice that your catheter has 3 lumens.



# Catheter Care

Routine care of your catheter is very easy, but also very important. Below are the few simple steps you must do. We will discuss each of them in more detail later in the booklet.

1. If you have a clear dressing, it should be changed every 7 days. If you have a gauze & tape dressing, it should be changed every 3 days. If any dressing becomes soiled, wet, or loose, it should be changed right away.

**Purpose:** To prevent infection of your catheter.

2. Your catheter should be flushed with heparin solution 3 times a week. For example, flush on Monday, Wednesday and Friday.

**Purpose:** To keep your catheter from clotting.

3. The catheter cap should be changed every 7 days.

**Purpose:** To decrease the risk of infection from overuse or leakage in the catheter cap.

## Preparing for Catheter Care

To help prevent infection or other problems, you must pay attention to cleanliness. When caring for your catheter you will use what is called “clean technique”. This method does not require sterile gloves or a face mask, but still means careful hand washing, cleaning your work surface, and avoiding contamination of the sterile items. Before doing any catheter care, always follow these guidelines.

### Wash Your Hands...The Proper Way

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Although your hands may look and feel clean, it is always important to wash your hands in order to remove germs you can't see. Your hands should always be washed before any catheter care. You must wash your hands again if you touch anything that might be considered dirty, such as after blowing your nose, picking something up off the floor, using the telephone, touching your face or glasses, or removing a soiled dressing.

**There are two ways to properly clean your hands: washing with soap and washing with hand cleaner.**

## Washing Your Hands with Soap

### Supply list:

- Warm water
- Clean paper towels or clean cloth towel
- Antibacterial Soap



1. Wet your hands and wrists under warm running water.
2. Apply soap and scrub **VIGOROUSLY** for 15 seconds.
3. Work lather between fingers, under nails, over the palms and back of your hands.
4. Rinse your hands well. Make sure to keep your hands up so the dirty water runs toward your elbows.
5. Dry your hands with a clean paper or cloth towel.
6. Turn off the faucet with a clean towel.

## Washing Your Hands with Hand Cleaner

### Supply list:

Check the label on the gel or lotion. It should contain ethyl alcohol (ethanol), propyl alcohol, or isopropyl alcohol in concentrations between 60-90%.

1. Place a dime-size amount of gel in one hand.
2. Gently rub the gel into palms and backside of hands and between fingers.
3. Allow your hands to dry.

## Select Your Work Area

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### Consider:

- An area in your home that is free from drafts, dirt, dust, and clutter.
- A smooth table, catheter care mat, counter top, or tray (a cookie sheet works well!) that can be cleaned with rubbing alcohol.
- An area that has enough space and good light in which to work.
- An area that is near your supplies.
- DO NOT use the bathroom - most of the germs in your house are located in this room.

## Prepare Your Work Area

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### Always:

1. Clean your work area with rubbing alcohol, bleach, or household cleaning products or wipes that contain a disinfectant. Placing a clean paper towel on the work area will also work.
2. Allow the area to dry.
3. Do not have the surface cluttered with other things.
4. Be sure to clean the surface again if you dirty your work area during use.

## Check Your Supplies

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### You Must:

1. Inspect your syringes. **Do not use your syringe if:**
  - There are any leaks present.
  - There is cloudiness or discoloration of the fluid.
  - Any particles or specks appear in the fluid.
  - It is past its expiration date.
2. Inspect all packaging. **Do not use if:**
  - Seal is broken.
  - Package is torn.
  - Any part of the package is wet.

## **Prepare Your Supplies**

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### **After placing the packaging on your work surface, you should:**

- Check to see that the new catheter cap and blunt needles have a protective cover.
- NEVER use any supplies that do not have a protective cover.

## **Store Your Supplies**

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- Away from other household items and out of the reach of children and pets.
- As close to your work area as possible.
- Where they will not get wet.
- In a single container such as a plastic basket, lunch box, fishing tackle box, etc.

## **Care in Handling Sterile Supplies**

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- Some of the supplies are sterile. Sterile means that all germs have been removed by a special cleaning process.
- Parts of supplies that must be kept sterile are protected with a cover.
- Never touch sterile parts with your hands or allow a sterile item to touch a non-sterile surface.
- If you are inserting a sterile needle through a non-sterile surface, always use an alcohol wipe to clean the surface. Never touch this area after cleaning it.

## **Proper Disposal of Sharps**

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It is important to dispose of syringes and needles properly, both for your safety and for the safety of others. The Environmental Protection Agency (EPA) states that needles, also known as “medical waste sharps”, should be thrown away in sturdy, non-recyclable containers whenever possible. Many containers found in your house will work fine, including an old liquid detergent bottle. You may also purchase containers specially designed for the disposal of medical waste sharps. Choose a hard-plastic or metal container with a screw-on or tightly secured lid. Before throwing the container away, be sure to reinforce the lid with heavy-duty tape and write on the outside “do not recycle”. Your state or community environmental program may have other rules or suggestions. You should contact your local EPA office or waste hauler for any information you may need.

## Changing the Dressing

### Supply list:

- 1 cleansing swabstick for infants
- 3 cleansing swabsticks for children & adults
- Clear dressing or gauze & tape

### Key Points

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- Clean the skin and change the dressing every 3 days for gauze & tape dressing
- Clean the skin and change the dressing every 7 days if you have a clear dressing
- If the dressing becomes soiled, wet, or loose, change right away.
- NEVER use scissors near the catheter.
- Do not pull, bend or kink the catheter.

### Procedure for Changing the Dressing

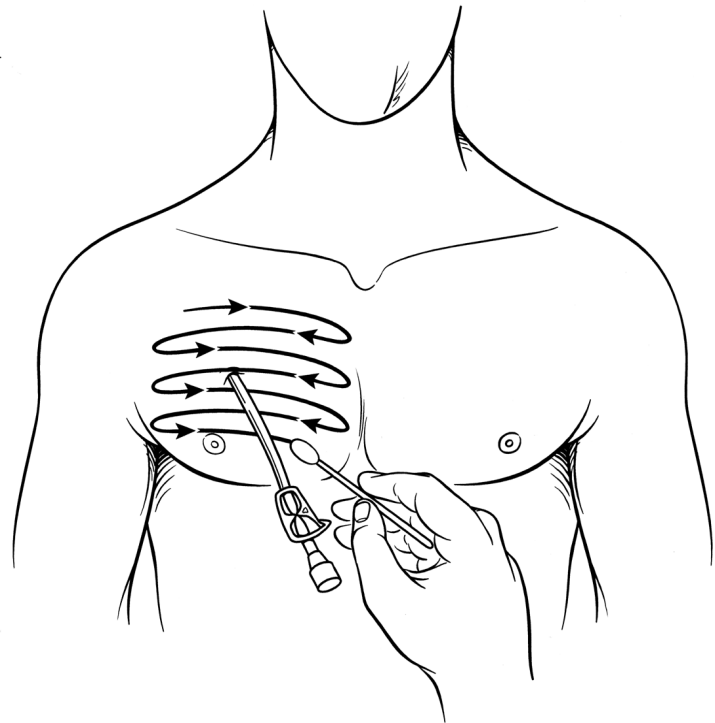
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1. Clean work area.
2. Gather supplies.
3. Wash hands for 15 seconds or use hand cleaner and allow to dry.
4. Avoid tugging on the catheter.
5. Carefully remove the old dressing.
6. Throw the old dressing away.
7. Do not touch or allow your child to touch the catheter site while the dressing is off.
8. Look around the catheter site for swelling, redness, tenderness or drainage. These could be signs of an infection. If present, call your nurse or doctor.
9. Open the dressing package, but do not remove the protective backing.

10. Remove the cleansing swabstick from the package.

11. Carefully clean the area around the catheter with the swabstick:

- Use a back-and-forth motion for 30 seconds.
- Completely clean at least 2 inches around the catheter exit site.
- Allow the area to air-dry for about 1 minute. Do not blot or wipe away.
- Discard the swabstick.
- Children and adults should clean the area again with the remaining swabsticks, discarding after each use and allowing to air-dry.



12. Apply the new dressing:

- Remove the protective backing from the dressing.
- Apply dressing over the exit site.
- Pinch the adhesive portion around the catheter.
- Be sure the catheter is secure.
- Loop and tape the catheter next to the dressing.
- Use tape, vests, or other clothing to cover the catheter from view.
- NEVER allow infants & children to chew or pull on the catheter.

## Flushing the Catheter

The inside of your catheter must be kept clean to prevent infection and blood from clotting. Before your transplant, your catheter must be flushed every Monday, Wednesday and Friday. It must also be flushed after blood is drawn or before medications are given through the catheter. After your transplant, you will be instructed to flush using a less concentrated heparin solution and you will flush every day.

### Supply list:

- Heparin vial (1000 units/mL)  
3 syringes, one for each catheter lumen  
1 vial adaptor
- 3 Blunt needles
- 3 Alcohol swabs
- Container for needle disposal

### Key Points

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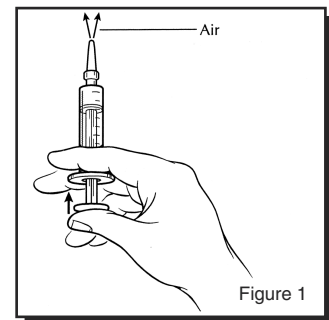
- The heparin vial does not need to be refrigerated.
- DO NOT use the heparin vial if you see anything floating in it, it has expired, or if you see any change in the color of the fluid.
- You will need 1 flush syringe and the blunt needle to flush each lumen.
- ALWAYS use a 10ml syringe (or larger) and flush slowly to avoid rupturing the catheter (smaller syringes generate more pressure than larger syringes and can increase the chance of the catheter breaking).

### Preparing to Flush the Catheter

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1. Clean work area.
2. Gather supplies.
3. Wash hands for 15 seconds or use hand cleaner and allow to dry.
4. Remove the prefilled syringe from its package.
5. Remove the protective cap from the heparin vial so that you can see the rubber stopper.

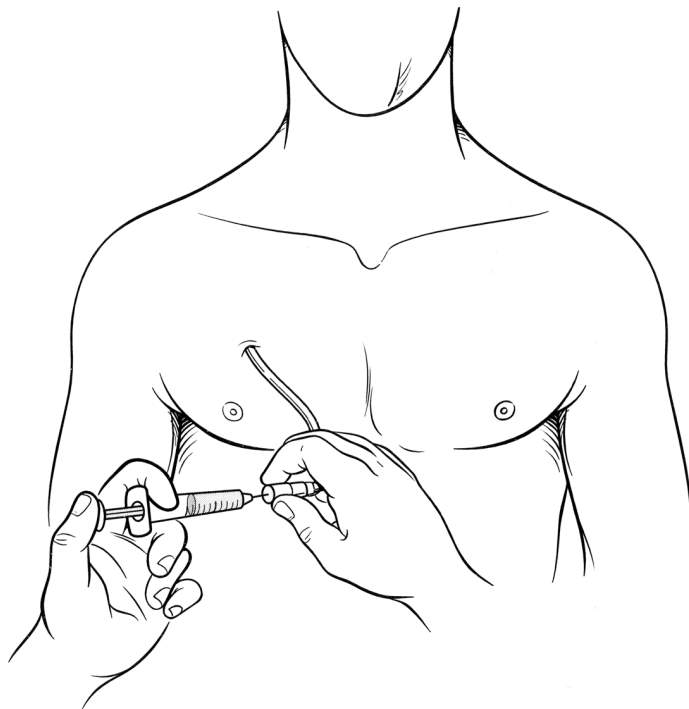
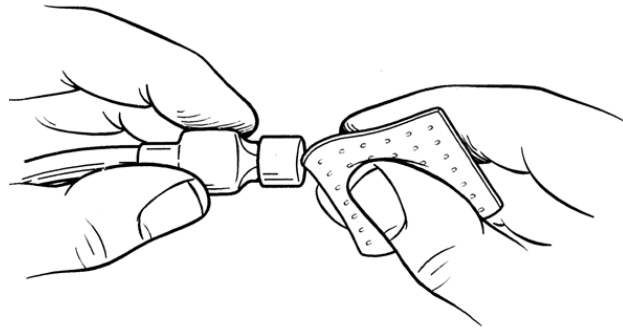
6. Vigorously scrub the top of the heparin vial with an alcohol wipe for 15 seconds.
7. Remove the protective cover from the vial adaptor package.
8. Grasp the vial adaptor while still in the clear package. Don't touch the spike of the vial adaptor. Push the vial into the spike of the vial adapter.
9. Attach a blunt needle to the syringe:
  - Twist the cap off the blunt needle.
  - Attach the needle to the syringe by turning the needle clockwise.
  - Do not take off the plastic protective cover cap that protects the blunt needle.
10. Hold the syringe upright. Pull the syringe plunger back to the 2.5 mL mark to fill with air.
11. Vigorously scrub the top of the vial adaptor with an alcohol wipe.
12. Take off the cap and put the blunt needle into the vial adaptor.
13. Hold the vial and syringe with the needle pointing upward. Push the air in the syringe into the vial.
14. Pull the plunger down past the 2.5 mL mark to fill with fluid.
  - If bubbles appear, gently tap the sides of the syringe.
  - The bubbles will rise to the top of the syringe.
  - Push the plunger back to the 2.5 mL mark to remove all of the air from the syringe. (Figure 1)
15. Remove the syringe from the vial adaptor and replace the plastic protective cover from the blunt needle before placing it on the clean work surface.
16. Prepare the other 2 flush syringes the same way.
17. You are now ready to flush the catheter with the heparin solution.



## Procedure for Flushing the Catheter

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1. Clean the catheter cap  
VIGOROUSLY with an alcohol swab for 15 seconds.
2. Carefully remove the plastic protective cover from the blunt needle on the syringe.
3. Without touching any part of the blunt needle, carefully insert the blunt needle into the center ring on the top of the catheter cap.
4. Unclamp the catheter.
5. Push the heparin flush into the catheter. When 0.5 mL of solution remains in the syringe, gently push forward on the syringe plunger while clamping the catheter over the thickened area of the catheter.
6. Dispose of the syringe and blunt needle in your sharps container.



**WARNING:** DO NOT use force when flushing your catheter. If the catheter will not flush, stop and call your doctor.

Repeat for each lumen.

## Changing the Catheter Cap

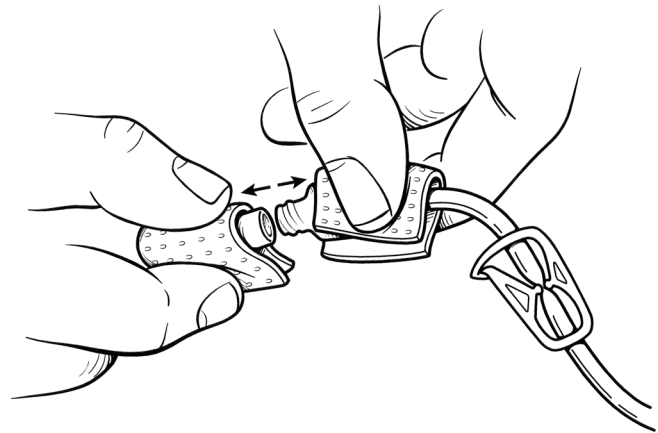
### Supply list:

- Sterile injection cap
- Alcohol swabs
- Piece of medical tape (at least 4 inches long)

### Procedure for Changing Cap (every 7 days)

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1. Clean work area.
2. Gather supplies.
3. Wash hands for 15 seconds or use hand cleaner and allow to dry.
4. Open the sterile catheter cap package carefully and leave the cap in the package without touching it.
5. Clamp your catheter over the thickened area of the catheter.
6. If there is tape around the catheter cap, remove it.
7. While holding the catheter lumen with an alcohol swab in one hand, vigorously clean the catheter/cap connection with a second alcohol swab for 15 seconds.
8. Carefully remove the catheter cap and throw away. If you cannot get the cap off, try using rubber gloves, or tape to get a better grip. **DO NOT USE PLIERS.** Once the cap is off, be very careful not to touch the open end of the catheter.
9. Unscrew the protective covering on the new catheter cap making sure that you do not touch the protected area.
10. Screw on the new cap.



You will need to change the cap on each lumen.

## Activities

- You may participate in most “normal” activities including things like riding a bike, running, or playing tennis.
- You should not swim in public pools
- Do not allow your catheter ends to soak in bathtub water. Clean the cap and connection with alcohol and apply fresh tape after baths and showers.
- Change the dressing if it becomes wet, loose or soiled.
- Do not do any high diving. Do not play football, wrestle, or any contact sports where the catheter might be pulled or grabbed.
- If you have any questions about activities while wearing your catheter, please contact your doctor.



# Troubleshooting Catheter Problems

PROBLEM	POSSIBLE CAUSE	WHAT TO DO
<b>Infection</b>		
<ul style="list-style-type: none"> <li>• Fever and/or chills after flushing.</li> <li>• Tenderness or pain at or above the exit site.</li> <li>• Drainage, odor, or swelling at the exit site.</li> </ul>	<ul style="list-style-type: none"> <li>• Infection in or around the catheter.</li> <li>• Other health issues such as flu, kidney/bladder infections, or pneumonia.</li> </ul>	<ul style="list-style-type: none"> <li>• Call your nurse or doctor immediately.</li> <li>• If pus or drainage is present, note the color, odor, and amount. Give this information to your nurse or doctor.</li> </ul>
<b>Catheter Damage</b>		
<ul style="list-style-type: none"> <li>• Break</li> <li>• Puncture</li> </ul>	<ul style="list-style-type: none"> <li>• Repeated clamping, excessive pulling on the catheter, or contact with a sharp object.</li> <li>• Rupture from attempt to flush a blocked catheter: higher risk when using small syringes.</li> </ul>	<ul style="list-style-type: none"> <li>• The catheter should immediately be clamped above the damaged area. This will prevent bleeding and keep air from entering the catheter.</li> <li>• Call your nurse or doctor immediately.</li> </ul>
<b>Blocked Catheter</b>		
<ul style="list-style-type: none"> <li>• Cannot flush</li> <li>• Cannot withdraw blood</li> </ul>	<ul style="list-style-type: none"> <li>• Catheter is clamped, kinked, curled, clotted, or positioned against the wall of your vein.</li> </ul>	<ul style="list-style-type: none"> <li>• Visually check the catheter for kinks and make sure that the catheter is unclamped.</li> <li>• Move your arms, shoulders, and head to see if a change in position helps.</li> <li>• If still unable to flush the catheter, call your nurse or doctor.</li> </ul>

PROBLEM	POSSIBLE CAUSE	WHAT TO DO
<b>Cuff showing outside of the skin exit site</b>		
<ul style="list-style-type: none"> <li>• Pulling or tugging on the catheter line</li> </ul>	<ul style="list-style-type: none"> <li>• Loop the catheter onto your chest with tape.</li> <li>• Use a vest to further secure the catheter.</li> <li>• Keep the catheter out of the sight of infants or small children.</li> </ul>	<ul style="list-style-type: none"> <li>• On the next business day, notify your nurse or doctor that the cuff is showing outside of the skin exit site.</li> </ul>
<b>Catheter Comes out of body</b>		
	<ul style="list-style-type: none"> <li>• Excessive pulling on catheter.</li> </ul>	<ul style="list-style-type: none"> <li>• Immediately apply pressure over the catheter site to stop any bleeding.</li> <li>• Notify your nurse or doctor immediately.</li> </ul>
<b>Air embolism – air in the blood stream</b>		
<ul style="list-style-type: none"> <li>• You may have one or more of the following symptoms:               <ol style="list-style-type: none"> <li>1. Shortness of breath</li> <li>2. Coughing</li> <li>3. Chest pain</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• A tear or hole in the catheter.</li> <li>• The catheter was not clamped when the catheter cap was removed.</li> <li>• The IV tubing became separated.</li> <li>• The catheter cap fell off the catheter.</li> </ul>	<p>If you notice any of these symptoms, you should:</p> <ol style="list-style-type: none"> <li>1. Notify your doctor immediately.</li> <li>2. Clamp catheter and breathe slowly.</li> <li>3. Lie on your left side with your feet and legs elevated with your chest and head slightly lower than your feet.</li> <li>4. Attach a syringe to the end of the catheter; unclamp the catheter and withdraw any air; continue to withdraw the air until you get blood in the syringe.</li> <li>5. Flush the catheter with heparin solution.</li> </ol>

PROBLEM	POSSIBLE CAUSE	WHAT TO DO
<b>Skin irritation</b>		
<ul style="list-style-type: none"> <li>• Redness</li> <li>• Tenderness</li> <li>• Blistering of the skin</li> </ul>	<ul style="list-style-type: none"> <li>• Irritation from the dressing or tape.</li> </ul>	<ul style="list-style-type: none"> <li>• You may need to use another type of dressing or change the areas of the skin you are taping the catheter to.</li> <li>• Call your nurse or doctor if the problem does not improve.</li> </ul>
<b>Fluid leakage or blood back-up</b>		
<ul style="list-style-type: none"> <li>• Fluid leakage from:               <ol style="list-style-type: none"> <li>1. End of the catheter</li> <li>2. Along the catheter</li> </ol> </li> <li>• Blood back-up into catheter.</li> </ul>	<ul style="list-style-type: none"> <li>• Connection between the catheter and cap is loose or disconnected.</li> <li>• Catheter is damaged from a puncture or rupture.</li> </ul>	<ul style="list-style-type: none"> <li>• Check catheter and cap connection. Be sure they are tight.</li> <li>• Flush catheter and observe exit site for signs of fluid leakage. Notify your nurse or doctor.</li> <li>• Check for catheter damage. If found, clamp the catheter and call your nurse or doctor immediately</li> </ul>

## Resources and Phone Numbers

Contact: \_\_\_\_\_

Doctor: \_\_\_\_\_

Clinic: \_\_\_\_\_

Home Infusion Provider: \_\_\_\_\_

**After 5 p.m. and on weekends only, call the University Hospitals  
paging operator at (734) 936-6267 and ask for the physician  
who is covering for:**

\_\_\_\_\_

# ***Notes***

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