Care of the Apheresis Catheter
The Apheresis Catheter

What is an apheresis catheter?
An apheresis catheter is a small tube made of a material called silicone. It is called “tunneled” because 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.

Why are apheresis catheters used?
This type of catheter will allow stem cell collection needed for your transplant. The catheter is used to give medications, fluids, blood products, chemotherapy, or nutrition through a vein. It may also be used for drawing blood.

How is the catheter inserted?
The catheter will be inserted in an operating room or radiology department and should take about 30-60 minutes. The practitioner makes a small opening in the mid-chest area. Another opening is made where the catheter will enter the vein. A tunnel is formed under the skin between the two openings. The catheter is passed through this tunnel and then gently threaded until the tip is near your heart in the large vein called the superior vena cava. After placement, the catheter will be checked to confirm it is in the right position.

What is a cuff?
Most catheters have a small 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 path that is inside the catheter. It is through this opening that you give medications or blood can be 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 three lumens.
How will I care for the catheter?

There are several things you will need to know in order to care for your catheter. Below are the steps you must take to prevent infection and ensure it will continue to work well for as long as you need it:

- Properly store, check and handle supplies.
- Prepare a work area and clean your hands.
- Flush your catheter with heparin 3 times a week.
- Change your catheter dressing regularly.
- Change your caps weekly.

This booklet details these skills, then lists ways to protect your catheter and includes a table for troubleshooting problems that can happen. Your nurse will make sure you understand the procedures and provide time for you and your family to practice.

Storing Your Supplies

- Keep items away from children and pets.
- Store supplies in an area that is dry and free from dirt, dust, and clutter.
- Choose a place as close to your work area as possible.

Checking Your Supplies

Check your heparin vials and do not use if:

- Leaks are present.
- Fluid is cloudy or discolored.
- Particles or specks appear in the fluid.
- Expiration date has passed.

Check all packaging and do not use if:

- Seal is broken.
- Package is torn.
- Any part of the package is wet.
Selecting Your Work Area

Work on a table, laminate mat, counter top, or tray that can be cleaned with a household disinfectant or rubbing alcohol in an area:

- Free from drafts, dirt, dust, and clutter.
- With enough space and good lighting.
- Near your supplies.

Do not work in the bathroom since most of the germs in your house are located there. Also, avoid working in your kitchen where you prepare food.

Preparing Your Work Area

1. Place a trash can next to your work area.
2. Clean your work surface or laminate mat with household disinfectant or rubbing alcohol. Let the area air dry.

Cleaning Your Hands

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. Wash your hands before any catheter care. Wash your hands again if you touch anything that might be considered dirty.

There are two ways to properly clean your hands: Washing with antibacterial soap or using an instant hand sanitizer (containing 60-90% ethyl alcohol). Do not use an instant hand sanitizer if your hands are visibly dirty or you have a C. difficile infection.

Washing Your Hands with 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.

Using an Instant Hand Sanitizer

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

Handling Sterile Supplies

- 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.
Flushing Your Catheter

Your catheter lumens must be flushed to prevent infection and keep 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 and after medications are given through the catheter. **After** your transplant, you will be instructed to flush with a less concentrated heparin solution and you will flush **every day.**

### Supply list: Pre-transplant
- Heparin vial (1000 units per mL)
- 3 syringes (one for each lumen)
- 3 sterile caps
- Needleless multidose vial adapter
- Alcohol pads

### Key Points
- The heparin vials do not need to be refrigerated before use.
- **Do not** use force when flushing your catheter. If you cannot flush your catheter easily, call your clinician.
- **Always** use a 10 mL 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).
- Check your catheter cap to make sure it is on securely (always hold your catheter cap while connecting/disconnecting syringes to prevent accidental removal of your cap).
- Never reuse a syringe.

### Preparing your syringes
1. Remove the protective cap from the heparin vial so you can see the rubber stopper.
2. **Vigorously** scrub the rubber stopper with an alcohol pad for 15 seconds.
3. Remove the vial adapter from its package being careful not to touch the spike.
4. Attach the vial adapter onto the heparin vial by pushing the spiked end of the adapter through the rubber stopper on the heparin vial.

5. Remove the syringe from its package being careful not to touch the tip.

6. Hold the syringe upright and pull the plunger back to the 2.5 mL mark to fill with air.

7. **Vigorously** scrub the top of the vial adapter with an alcohol pad for 15 seconds.

8. Push and twist the syringe into the top of the vial adapter to the right until secure and push the air into the vial.

9. Turn the vial upside down and withdraw the heparin.
   - 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.

10. Attach the sterile cap onto the syringe to keep the tip sterile.
    - **Repeat steps** 5-10 to prepare the two additional syringes.

**Giving your heparin**

1. **Vigorously** scrub the end of the cap on your catheter with an alcohol pad for 15 seconds.

2. Remove the sterile cap from the syringe.

3. Push and twist the heparin syringe into your catheter cap to the right until secure.

4. Unclamp your catheter.

5. Push the heparin flush into your catheter until 0.5 mls of solution remains. Clamp your catheter, remove the syringe and discard in your trash.

    ➢ **Repeat steps** 1-5 to flush each lumen of your catheter.
Changing the Catheter Dressing

Supply list:
- 3 cleansing swabsticks
- Clear dressing or gauze and tape

Key Points
- Clean the skin and change the dressing every 7 days if you have a clear dressing.
- Clean the skin and change the dressing 3 times a week for gauze and tape dressing.
- Change the dressing if it becomes dirty, wet or loose as soon as possible.
- Never use scissors near the catheter.
- Do not pull, bend or kink the catheter.

Follow these steps:
1. Place a trash can next to your work area.
2. Clean your work surface.
3. Wash your hands for 15 seconds or use an instant hand sanitizer.
4. Carefully remove the old dressing.
   - Pull the dressing one corner at a time toward the catheter exit site
   - After all the corners are loosened, hold the catheter down and pull the dressing up and off.
5. Throw the old dressing away.
6. Do not touch the catheter site while the dressing is off.
7. Look around the catheter insertion site and surrounding area for swelling, redness, tenderness or drainage. These could be signs of an infection. If present, call your clinician after finishing the dressing change procedure.
8. Open the dressing kit.
9. Remove the cleansing swabstick from the package.

10. Carefully clean the area around the catheter:

   - Completely clean at least 2 inches around the catheter exit site using a back and forth motion for 30 seconds.
   - Discard the swabstick.
   - Clean the area again with the remaining swabsticks, discarding after each use.
   - Allow the area to air-dry completely. Do not blot or wipe away.

11. Apply the new dressing:

   - Remove the protective backing from the dressing.
   - Apply dressing over the exit site.
   - Pinch the adhesive portion around the catheter.
   - Check that the catheter is secure.
   - Loop and tape the catheter next to the dressing.
Changing the Catheter Caps

Supply list:
- IV catheter caps
- Alcohol swabs

Key Point
- Change each cap every 7 days.

Follow these steps:
1. Clean work area.
2. Gather supplies.
3. Wash hands for 15 seconds or use an instant hand sanitizer.
4. Open the sterile catheter cap package carefully and leave the cap in the package without touching it.
5. Clamp your catheter.
6. 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.
7. Carefully remove the old 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.
8. Unscrew the protective covering on the new catheter cap making sure that you do not touch the protected area.
   - Repeat steps 4-9 to change the cap on each lumen.
How will I protect the catheter?

You may participate in most normal activities including work, school and exercise. The following precautions will help prevent damage and infection:

- Do not participate in any contact sports where the catheter might be pulled or grabbed.

- Keep the dressing and catheter clean and dry when you shower or bathe.
  
  o Cover the dressing and catheter with plastic and tape the edges of the plastic onto your skin.

  o If the dressing gets wet, change the dressing as soon as possible.

  o Never let the catheter ends get wet.

If you have any questions about activities or protecting your catheter, contact your clinician.
# Troubleshooting Catheter Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>What to Do</th>
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</thead>
<tbody>
<tr>
<td><strong>Infection</strong></td>
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<tr>
<td>• Fever and/or chills after flushing.</td>
<td>• Infection in or around the catheter.</td>
<td>• Call your clinician immediately.</td>
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<tr>
<td>• Tenderness or pain at or above the exit site.</td>
<td></td>
<td>• If pus or drainage is present, note the color, odor, and amount. Give this information to your clinician.</td>
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<tr>
<td>• Drainage, odor, or swelling at the exit site.</td>
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<tr>
<td><strong>Catheter Damage</strong></td>
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<tr>
<td>• Break</td>
<td>• Repeated clamping, excessive pulling on the catheter, or contact with a sharp object.</td>
<td>• The catheter should immediately be clamped above the damaged area. This will prevent bleeding and keep air from entering the catheter.</td>
</tr>
<tr>
<td>• Puncture</td>
<td>• Rupture from attempt to flush a blocked catheter: higher risk when using small syringes.</td>
<td>• Call your clinician immediately.</td>
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<tr>
<td><strong>Blocked Catheter</strong></td>
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<tr>
<td>• Cannot flush</td>
<td>• Catheter is clamped, kinked, curled, clotted, or positioned against the wall of your vein.</td>
<td>• Visually check the catheter for kinks and make sure that the catheter is unclamped.</td>
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<tr>
<td>• Cannot withdraw blood</td>
<td></td>
<td>• Move your arms, shoulders, and head to see if a change in position helps.</td>
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<tr>
<td>• Cannot infuse medication</td>
<td></td>
<td>• If still unable to flush the catheter, call your clinician.</td>
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<tr>
<td><strong>Cuff Showing Outside of the Skin Exit Site</strong></td>
<td></td>
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</tr>
<tr>
<td>• Cuff showing outside of the skin exit site.</td>
<td>• Pulling or tugging on the catheter line</td>
<td>• Loop the catheter onto your chest with tape.</td>
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<td></td>
<td></td>
<td>• Call your clinician immediately.</td>
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<tr>
<td><strong>Movement of the Catheter or Pain in the Neck or Shoulder</strong></td>
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<tr>
<td>• New onset of pain in the neck or shoulder.</td>
<td>• The catheter is flexible and in rare cases may move out of position.</td>
<td>• Call your clinician immediately.</td>
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<tr>
<td><strong>Catheter Comes Out of the Body</strong></td>
<td>• Catheter comes out of body</td>
<td>• Immediately apply pressure over the catheter site to stop any bleeding.</td>
</tr>
<tr>
<td></td>
<td>• Excessive pulling on the catheter</td>
<td>• Notify your clinician immediately.</td>
</tr>
<tr>
<td><strong>Air Embolism — Air in the Blood Stream</strong></td>
<td>• You may have one or more of the following symptoms:</td>
<td>If you notice any of these symptoms, you should:</td>
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<tr>
<td></td>
<td>o Shortness of breath</td>
<td>1. Notify your doctor immediately.</td>
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<td></td>
<td>o Coughing</td>
<td>2. Clamp catheter and breathe slowly.</td>
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<td></td>
<td>o Chest pain</td>
<td>3. Lie on your left side with your feet and legs elevated with your chest and head slightly lower than your feet.</td>
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<td></td>
<td>• A tear or hole in the catheter.</td>
<td>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.</td>
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<td></td>
<td>• The catheter was not clamped when the catheter cap was removed.</td>
<td>5. Flush the catheter with heparin solution.</td>
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<tr>
<td></td>
<td>• The IV tubing became separated.</td>
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<td></td>
<td>• The catheter cap fell off the catheter.</td>
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<tr>
<td><strong>Skin Irritation</strong></td>
<td>• Redness</td>
<td>• Notify your clinician.</td>
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<td></td>
<td>• Tenderness</td>
<td>o You may need to use another type of dressing or change the areas of the skin you are taping the catheter to.</td>
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<tr>
<td></td>
<td>• Blistering of the skin</td>
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<tr>
<td></td>
<td>• Irritation from the dressing or tape.</td>
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<td><strong>Fluid or Blood Leakage</strong></td>
<td>• Fluid leakage from:</td>
<td>• Check catheter and cap connection. Be sure they are tight.</td>
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<tr>
<td></td>
<td>o along the catheter</td>
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<tr>
<td></td>
<td>o the end of the catheter</td>
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<tr>
<td></td>
<td>• Blood seen in the catheter lumen or cap</td>
<td>• Flush catheter and observe exit site for signs of fluid leakage. Notify</td>
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<tr>
<td></td>
<td></td>
<td>your clinician.</td>
</tr>
<tr>
<td></td>
<td>• Connection between the catheter and cap is loose</td>
<td>• Check for catheter damage. If found, clamp the catheter above the</td>
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<tr>
<td></td>
<td>or disconnected.</td>
<td>damaged area and call your doctor immediately.</td>
</tr>
<tr>
<td></td>
<td>• Catheter is damaged from a puncture or rupture.</td>
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Resources and Phone Numbers

Contact: ____________________________________________

Doctor/Clinician: _____________________________________

Clinic: ______________________________________________

Home Infusion Provider: ________________________________

Notes
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