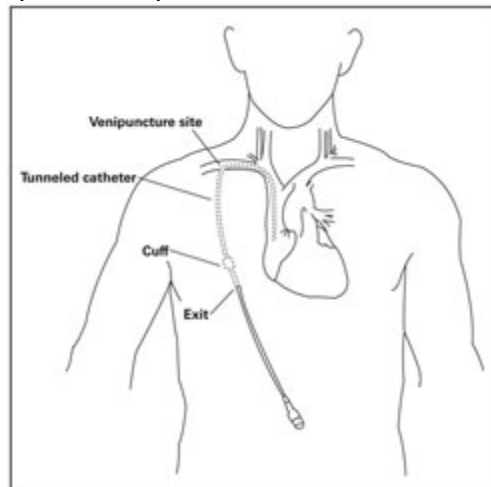


CARE OF YOUR CENTRAL VENOUS CATHETER

Patients receiving treatment for various illnesses may have a central venous catheter (CVC) inserted. A catheter is a soft hollow tube. The central venous catheter is placed into a large vein leading into the heart and comes out through a small opening in the chest area. This opening is called the exit site. A CVC can be used to give you fluids, blood products, and medicine. It can also be used to take blood samples.

That way, you will not have to be “stuck” again and again. The type of CVC to be placed will depend upon the type of illness you have and the therapy you will most likely need. The catheter can remain in place for weeks to months.

The CVC may be inserted in the operating room or at the bedside, depending upon the type of catheter. In both instances local numbing of the skin is used. Sutures may be placed at the exit site to help hold the catheter in place. Some catheters tunnel under the skin and have a small bulged area near the exit site, called a “cuff.” The cuff remains under the skin and helps to hold the catheter in place and prevent infection.



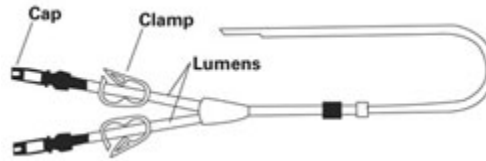
Above is a drawing of a person’s chest and blood vessels, showing one possible placement of the tunneled catheter.

Types of Central Venous Catheters

Here are some types of Central Catheters:

- Hickman Triple Lumen Catheter
- Hohn Double Lumen Catheter
- Groshong Single Lumen Catheter
- Groshong Double Lumen Catheter

These catheters may have the following features:



- Hollow, soft tubes that may be separated into 2 or 3 individual channels called lumens
- Screw-like adapters on the ends of the lumens that allow caps, syringes, and intravenous tubing to be securely connected
- Hickman and Hohn CVCs have plastic clamps on the lumens to close the catheter when not in use or when disconnecting the cap, infusion tubing, or syringe.

Catheter Care at Home

Your catheter has been inserted through a small cut (incision) near the catheter exit site. Steri strips (small adhesive strips) are placed over the incision. Do not remove these strips. Let them fall off. Check this site for bleeding, redness, warmth or drainage until it is completely healed. Call your doctor if you have any of these symptoms.

Sometimes before you leave the hospital, your nurse will show you how to flush the catheter and how to change the cap and the dressing. He or she will allow time for you to become familiar with catheter care and will answer your questions. For most patients, a home care nurse will visit after discharge to help the patient and caregiver become independent in caring for the catheter.

Signs of Catheter Problems

The signs of catheter infection and problems are similar for all types of central venous catheters. **If you have any sign of infection or catheter problem, call your doctor immediately.**

Signs of infection, clotting, or other problems include:

- Redness, tenderness, drainage, warmth, or odor around the catheter site
- Fever of 100.5F (38 C) or greater, or chills
- Swelling of the face, neck, chest, or arm on the side where your catheter is inserted
- Leakage of blood or fluid at the catheter site or the cap
- Inability to flush the catheter, or resistance to flushing the catheter
- Displacement or lengthening of the catheter

Guidelines for Central Venous Catheter Care

You must always wash your hands carefully for 15 seconds before and after working with the CVC. Anyone who helps you with CVC care must do the same. This is necessary to protect you from infection. Use liquid antibacterial soap and paper towels to dry your hands.

To prevent infection, anything that touches the exit site of the CVC and anything that goes into the CVC must be sterile. Your nurse will show you how to care for the CVC properly. The following guidelines are helpful in preventing infection:

- **Do not** let the CVC exit site get wet until it is well healed. You may shower 72 hours after the catheter has been inserted. When you bathe or shower, you must cover the

site with waterproof material, such as household plastic wrap, taped over the dressing and injection caps.

- **Do not** submerge the CVC site or caps below the level of water in a bathtub, hot tub, or swimming pool.
- Store CVC supplies in a clean, dry place such as a shelf in a closet or a drawer.
- Always clean your work area with alcohol and let it to dry completely before setting up your supplies. Or you can cover the area with clean paper towels.
- Use only sterile supplies. Open all packages carefully without touching the contents. Handle dressings only at the edges.
- **Never** touch the open end of the CVC when the cap has been removed.
- **Never** touch the end of the needleless cannula or the end of the open syringe. If this happens accidentally, use a new cannula or syringe.
- **Never** use scissors, pins, or sharp objects near the CVC or other tubing. The catheter could be damaged easily.
- If your catheter has a clamp, keep it clamped when not in use. Some CVCs show where the clamp must be placed. If your CVC does not show the clamp location, ask your nurse to show you where to clamp.
- **Remember to wash your hands thoroughly before and after working with the CVC.**

Changing the CVC Dressing

The CVC dressing is changed every 7 days if you are using a transparent dressing. Change it every 48 hours if you are using gauze or Telfa island dressing and tape. If the dressing becomes wet or loose, change it even if it is not the normal time to change it. A nurse will give specific instructions to you and your caregiver about your type of dressing. If your doctor agrees to it, your home health nurse can teach you or your caregiver to change your CVC dressing.

Supplies

- A roll of medical tape (silk, paper, or transparent)
- A central line dressing change kit that includes:
 - sterile gloves
 - ChloroPrep® applicator
 - a transparent dressing
 - skin protectant swab

Other supplies as needed:

Steps

1. Set up a clean work surface.
2. Gather supplies and arrange them in the order to be used.
3. Wash your hands for 15 seconds with liquid antibacterial soap. Dry your hands thoroughly using paper towels.
4. If someone else changes your dressing, he or she should put on sterile gloves.
5. Carefully loosen and remove the old dressing. Peel the dressing toward the site without pulling on the CVC. Never use scissors or sharp objects near the CVC.

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6. Inspect the area around the site for any sign of infection (redness, swelling, drainage, tenderness, warmth, or odor). Call the doctor or nurse if you see any sign of infection. Also report dry skin, rash, or irritation from the dressing. Note: You may notice some oozing of blood from the site for several days after CVC placement. If there is a lot of blood, or if the site keeps bleeding, call the doctor or nurse right away.
7. Check the entire chest area for new or prominent veins, rash, change in color, or swelling.
8. Wash your hands again for 15 seconds with liquid antibacterial soap. Dry your hands thoroughly with paper towels.
9. Open the dressing change kit.
10. Put on sterile gloves.
11. Activate the ChloroPrep® applicator by pinching the plastic wings.
12. Using the ChloroPrep® applicator, vigorously cleanse an area 4 x 5 inches in size. Cleanse for 30 seconds using an up-and-down or side-to-side motion.
13. Allow this area to dry for about 30 seconds.
14. Swab the edges of the cleaned area with the skin protectant swab. Allow to dry.
15. Remove backing from the transparent dressing, and place the dressing over the site. If possible, alternate skin areas where the dressing is placed to avoid skin irritation.
16. Loop and tape the catheter to skin to prevent the catheter from dangling.

Flushing of Catheter With a Clamp

Some CVCs have separate tubes. Each tube is called a lumen. Each lumen of the CVC needs to be flushed regularly to keep it clear of backed-up blood. If you have more than 1 lumen, it is helpful to have a routine for flushing lumens in the same order each time. For instance, you might always flush the red one first, then the white, then blue. You will flush each lumen of the CVC once a day using 3 cc of heparin solution (100 units heparin/cc), unless you have been instructed differently.

Other flush:

Supplies (Exact supplies may vary.)

- 1 vial of heparin (100 units/cc) and a 10 cc syringe for each catheter lumen OR pre-filled heparin syringe
- Needleless injection cannula (unless your needleless system does not need this) for each catheter lumen
- Alcohol swabs
- Needle/syringe disposal box

Steps

1. Wash hands for 15 seconds with liquid antibacterial soap. Dry hands thoroughly with paper towels.
2. Gather all the supplies.
3. Wipe the rubber stopper of the medicine vial with an alcohol swab for 5 seconds.
4. Remove the syringe cover. Twist on the needleless injection cannula or needle, if it is not already attached. Remove the cover from the needleless cannula or needle.
5. Draw 3 cc of air into the syringe by pulling back on the plunger.
6. Push the cannula or needle through the rubber stopper of the vial.
7. Push the syringe plunger to discharge air into the vial.
8. Turn the vial upside down. Be sure the tip of the cannula or needle is in the solution. Draw back on the plunger to draw up 3 cc of heparin into the syringe.
9. Before removing the cannula or needle from the vial, check for air bubbles. To remove air bubbles, gently push the heparin back into the vial and re-measure your dose.
10. Remove the cannula or needle from the vial and replace the cap loosely. Fill other syringes at this time if more than 1 lumen will be flushed.
11. Replace the needle with needleless cannula, if that is what you are using.
12. Use the alcohol swab to clean the injection cap of the lumen to be flushed. Rub the cap with an alcohol swab, rubbing vigorously for 15 seconds, and then allow it to dry. Hold the end of the catheter so it does not touch anything. Open the clamp on the lumen.
13. Remove the cap from the cannula or needle and insert into injection cap.
14. Slowly inject the entire amount of heparin into the lumen of catheter. If you meet resistance, check to see if the clamp is closed. If there is still resistance, do not flush that lumen. Call the doctor.
15. If you are using a standard cap, clamp the catheter as you are finishing the injection. If you are using a positive pressure cap, remove the syringe and then clamp the catheter. Then remove the syringe. Place it into the needle disposal box.
16. Repeat all of the above steps for each lumen to be flushed, using a clean syringe to flush each catheter.
17. Close the syringe disposal box lid and place the container out of reach of children and pets.
18. Wash hands for 15 seconds with liquid antibacterial soap.
19. When the syringe box is full, return it to your home care program or doctor's office.

Flushing of Groshong Catheter

Groshong catheters are flushed once a week or when the catheter is used. The lumens are flushed using 10 cc of saline solution on the same day of each week. Heparin is not used because of the special construction of the Groshong catheter.

Supplies (Exact supplies may vary.)

- Normal saline solution
- 10 cc syringe for each catheter lumen
- Needleless injection cannula (unless your needleless system does not need this) for each catheter lumen
- Alcohol swabs
- Needle/syringe disposal box

Steps

1. Wash hands for 15 seconds with liquid antibacterial soap. Dry hands thoroughly with paper towels.
2. Gather all the supplies.

3. Wipe the rubber stopper of the saline vial with an alcohol swab for 5 seconds.
4. Remove the syringe cover. Twist on the needleless injection cannula or needle if it is not already attached. Remove the cover from the needleless cannula or needle.
5. Draw 10 cc of air into the syringe by pulling back on the syringe.
6. Push the cannula/needle through the rubber stopper of the vial.
7. Push the syringe plunger to discharge air into the vial.
8. Turn the vial upside down. Be sure the tip of the cannula is in the solution. Draw back on the plunger to draw up 10 cc saline into the syringe.
9. Before removing the cannula or needle from the vial, check for air bubbles. To remove air bubbles, gently push the saline back into the vial and re-measure your dose.
10. Remove the cannula or needle from the vial and replace the cap loosely. Fill other syringes at this time if more than one lumen will be flushed.
11. Replace the needle with the needleless cannula, if that is what you are using.
12. Use an alcohol swab to clean the injection cap to be flushed. Rub the cap vigorously for 15 seconds, and allow it to dry. Hold the end of the catheter so it does not touch anything.
13. Remove the cap from the cannula/needle and insert it into injection cap.
14. Briskly inject the entire amount of saline into the lumen of the catheter. If you meet resistance, do not flush that lumen. Call the doctor.
15. Remove the syringe and place it into the syringe disposal box.
16. Repeat all the above steps for each lumen to be flushed, using a clean syringe to flush each catheter.
17. Close the syringe disposal box lid, and place container out of reach of children and pets.
18. Wash hands for 15 seconds with liquid antibacterial soap.
19. When syringe box is full, return it to your home care program or doctor's office.

Central venous catheter cap changes

The injection cap on each lumen of your CVC is changed every 5 to 7 days. Change a cap any time it is leaking. The cap is also changed when blood is drawn from the CVC.

Supplies

1 injection cap for each CVC lumen

Steps

1. Set up a clean work surface.
2. Gather all the supplies.
3. Wash your hands for 15 seconds with liquid antibacterial soap. Dry your hands thoroughly using paper towels.
4. Make sure that the CVC lumens are clamped.
5. Remove the new cap from its package. Loosen, but do not remove, the cover on the end of the new cap.
6. While holding onto the lumen of the CVC with one hand, use the other hand to:
 - remove the old cap and set it aside
 - remove the cover from the new cap
 - screw the new cap onto the open end of the lumen
7. Repeat these steps for each of the caps and lumens. Follow your routine to change caps in the same order as flushing.

This requires doing a lot with only one hand, but it is important to hold onto the lumen of the CVC to keep it from hanging free and touching anything. The patient and caregiver may need to work together to have enough hands for this procedure.

Problem-solving for central venous catheters

See the table on the next page for some potential CVC problems and what to do about them. It is a good idea to carry a few CVC supplies with you at all times.

Emergency	Response
Sudden chest, neck, or shoulder pain, coughing, or difficulty breathing	Make sure the CVC is clamped. Lie on your left side with your head down. Stay in this position while your caregiver calls 911. Then call the number written below immediately.
Accidental removal of the CVC from the chest	Apply pressure to the exit site and chest area above it with a gauze dressing or clean washcloth. Call the doctor's office or number written below immediately.
Accidental removal of injection cap	Make sure that the CVC is clamped. Clean the outside threaded area of the lumen with an alcohol wipe for at least 30 seconds. Place a new cap securely into the open end. If you do not have a new cap, wrap the end of the lumen with sterile gauze until you can get a cap. Flush catheter following the usual steps.
Swelling of face, neck, chest, or arm. New or prominent chest veins.	Call the doctor's office or number written below immediately.
Drainage, redness, swelling, or bleeding at the exit site	Call the doctor's office or number written below immediately.
Fever of 100.5F. (38C) or greater and/or chills	Call the doctor's office or number written below immediately.
Damage to the CVC, such as a hole or crack in the tubing	Immediately clamp the CVC between the hole and your chest. If necessary, pinch or fold it over to clamp it. Cover the hole or crack with sterile gauze. Call the number written below immediately.
Difficulty flushing the catheter	Make sure the CVC is unclamped. Change your position by raising your arms, lying down, sitting up more straight, coughing, or taking a deep breath. If you still cannot flush it, stop using the catheter and call the doctor's office or number written below immediately.

Loose suture at exit site	Tape the CVC to your skin. If you do not need to flush or use the CVC, notify your doctor or nurse during routine business hours. If you need to flush or use the CVC, do not use it until you speak with your doctor or nurse. Call the doctor's office or number written below if you need to use the CVC.
CVC is displaced, CVC is longer, a "cuff" is visible at exit site, or CVC is not working.	Do not use the CVC. Tape the CVC to your skin if it seems loose. Call the doctor's office or number written below immediately.