How to Care for Your Child's Central Venous Catheter (CVC)

Broviac, Ash-Split, or Hickman Catheters
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Introduction

When a child is diagnosed with a serious condition, parents often feel out of control because they don’t understand everything that is happening. However, once they learn about the illness and master home care skills, parents get their sense of control back.

Perhaps you, too, are feeling out of control and overwhelmed because you need to learn about central venous catheter care. This information may seem like too much to handle right now, but don’t give up. Like other families, you will also be able to take care of your child’s central venous catheter.

Why are central venous catheters necessary? Some children with medical problems need frequent IV (intravenous) treatments. To avoid some of those needle sticks, the doctor may decide to insert a central venous catheter (CVC) into a vein.

Central venous catheters can be used to give IV medications, blood transfusions, fluids, nourishment or possibly draw blood samples. A central venous catheter may also make it possible to do some of these things at home.

This booklet describes tunneled central venous catheters used with children and the care they need at home. Many families find that the catheter helps make their child’s medical treatment a little easier. Your child’s nurses will review this home care with you. They will answer your questions and watch you do the skills you need.

CVC brand names include:
• Hickman
• Ash-Split
• Broviac

This manual is only an introduction to tunneled central venous catheter care. Your health care team will teach you the details. They will watch you practice. Don’t try
any skill alone until you are sure you can do all the steps. If you have any questions, ask the members of your child’s health care team.

Medical care is always improving. As health care professionals learn more, they change how they do things. Your child’s team may not follow this booklet exactly, depending on the reason for your child’s tunneled central venous catheter, supplies available, the most recent research and practices within your community. Over time, your child’s catheter care may change.

Your child will not be sent home with a CVC until it can be safely cared for.

The Catheter

A child with a central venous catheter may be able to avoid some painful needle pokes. Fewer pokes can mean fewer breaks in the skin for germs to enter, so less chance of infection.

The tunneled central venous catheter is a thin tube made of soft, flexible rubber-like material called silicone. The catheter is placed in the child under general or local anesthesia in the operating room or interventional radiology by a specialist who has been trained to place these types of central venous catheters. The catheter is not painful to the child when it is in place.

The CVC is threaded into a large vein. Medicines and fluids which can bother a small vein can be handled by a large vein without problem.

The CVC goes directly into the blood. **Do not put anything in the CVC that does not belong in your child’s blood.** Stop and think before you inject anything into the CVC. If you put the wrong thing in (like food, or medicine meant for the mouth), it could hurt or even kill your child.

Central venous catheters can have one, two, or three openings (lumen or lumens). The health care team will decide which to put in, based on the kind of IV treatment your child will receive. A double or triple lumen catheter can deliver more than one IV treatment at the same time.

Your child’s health care team will help you decide if a central venous catheter is right for your child. They will discuss their thoughts with you and your child. Before the tunneled CVC is placed, they can tell you the type of catheter they have chosen and why.
First, a cut is made (an incision) near the vein where the catheter is being placed. This is called the insertion site.

The other end of the catheter is tunneled just under the skin to another incision called the exit site. The catheter comes out of the child's body at the exit site.

The insertion end of the catheter is threaded into a vein until the tip of the catheter lies at the entrance to the right atrium of the heart.

Just above the exit site, under the skin, is the CVC’s catheter cuff. It looks soft and fuzzy like cotton, and is made of Dacron. Within three to four weeks after the catheter is put in, the fat tissue under the skin grows onto the cuff. The seal that is formed helps to hold the catheter in place. It also acts as a barrier to prevent germs on the skin from traveling to the bloodstream.

When the catheter is put in, sometimes a stitch (suture) may be placed around the catheter and through the skin. This will hold the catheter in place until the seal is formed on the cuff. If a stitch is needed, it will be removed about four weeks later.

An x-ray is taken after the surgery to make sure that the catheter is in the right position.

The end of the catheter that is outside the child’s body is capped with a needleless connector at all times, except when the needleless connector is being changed.

The catheter is designed to stay in place a long time. However, each child is different. Your child's health care team will decide how long the catheter must stay in place.

Until you, your family, and your child get used to the catheter, talk about it. Talk about how it looks and how you feel about it.
Catheter Care

Once the catheter is placed, it needs to be cared for at home. Your child’s health care team will teach you how to care for the CVC. When they tell you how often to do each of the steps, fill in the blanks on your own copy of the checklist below.

To keep the CVC working well, and to find problems early:

• look at the skin around the exit site every time you do a dressing change

• change the exit site dressing every ____________________
  ☐ yes ☐ no transparent dressing (page #8)
  ☐ yes ☐ no other type of dressing ordered________________________
  If other type of dressing is ordered, ask your doctor for directions on how to change the dressing.

• flush the catheter (page #14)
  — after blood is drawn
  — after any fluid is put through the tube
  — and flush each lumen of the catheter
    every _______ hours or _______ times a day

• change the needleless connector (page #18)
  — every _______ days
  — any time you see blood in the needleless connector

Be sure someone from your health care team watches you care for the catheter before you go home with the CVC. This will help you be comfortable and gives you a chance to ask questions. Ask all those “what if?” questions until you’re comfortable with the answers.
Dressing Changes

The dressing is a covering placed over the site where the catheter exits the child’s body. It helps to protect the catheter.

There are several different types of dressings which can be used to protect an exit site. Instructions for a transparent dressing change are listed in this handbook. If your doctor orders a different type of dressing change, ask your doctor for instructions.

The dressing over the exit site must be changed on a regular basis. It may be changed daily, every two days, or once a week. Your child’s health care team will tell you how often to change the dressing. As your child’s condition changes, the schedule may too.

However, if the dressing ever becomes wet, dirty or loose, it should be changed right away. If the dressing is not clean and well-attached, germs may be able to grow. They can enter the skin through the exit site and cause an infection.

Transparent Dressing

What you need

☐ dressing change kit with the following:
  ☐ clean gloves (not sterile, optional)
  ☐ sterile gloves
  ☐ mask
  ☐ chlorhexidine (CHG) applicator stick
  ☐ transparent dressing
  ☐ tape
  ☐ antimicrobial soap
  ☐ 1 package of 2x2 or 3x3 gauze (2 pieces of gauze per package)
  or ☐ ____________________________

☐ antimicrobial disk (for example, Biopatch)
☐ 2 more masks (for your child, and anyone else near you)
☐ alcohol based hand rub (optional)
☐ disinfectant cleaner
☐ paper towel
☐ other items: ______________________________
  _______________________________________
  _______________________________________
  _______________________________________
What to do

1. Find a quiet place to do catheter care, where you will not be disturbed.

2. If the child is active, you will need another person to help keep the child still while you do the catheter care.

3. Clean your work area with a household disinfectant cleaner and a paper towel.

4. Put a mask on yourself.

5. Wash your hands with the antimicrobial soap for 30 to 45 seconds. Wash every surface of your hands. Wash under your fingernails, the backs of your hands, your wrists and between your fingers. Rinse completely and dry your hands with a clean towel or paper towel.

6. Open the dressing kit on your work area.

7. Put masks on your child and anyone else near you.

8. Open the sterile glove package on your work area. As you open the supplies, touch only the outside of the packaging. Keep everything sterile. Sterile means there are no germs at all. Even though you washed your hands, they are not sterile until you put the sterile gloves on.

9. Make a sterile field. Take the sterile drape out, open it, and put it on your child’s chest, below the exit site. Only touch the side of the drape that will be down. The side that will be up when flat should not touch anything as you open it because it is sterile.

10. Open the package of the antimicrobial disk. Touch only the outside of the package. Gently drop the antimicrobial disk into the dressing change kit with the other supplies that are still sterile.

11. Remove the old dressing.
   — Do not touch the exit site with your clean fingers or gloved hands. If you use gloves, put on clean gloves, not sterile gloves.
   — It is important not to pull the CVC out while taking the old dressing off. Gently
pull back the old dressing with one hand, using your other hand to keep the catheter from being pulled out.
— Keep the exit site as clean as possible. Do not touch the exit site.
— Do not touch the sterile drape while you are taking the old dressing off.

12. Look for signs of possible problems.
   Signs of infection can be:
   — drainage or oozing, such as pus
   — swelling
   — tenderness, soreness
   — warmth
   — pain
   — redness at the exit site
   — redness along the catheter path beneath the skin
   — a temperature above 101°F orally
      (check with your health care provider)
   — odor from the exit site
   — chills
   Other problems to look for:
   — is the CVC coming out?
   — is the CVC cracked or leaking?

If you notice any of these signs, finish the dressing change, then call your child's health care team right away.

13. Clean your hands by washing them with antimicrobial soap or use alcohol based hand rub.

14. Put on sterile gloves without touching the outside with your hands. Once you have sterile gloves on, do not touch anything except sterile supplies until the new transparent dressing is in place over the CVC.

15. To clean the exit site and catheter:
   Take the chlorhexidine (CHG) applicator stick from the package.
   Keep the applicator from touching anything, so it stays sterile.

16. Hold the CHG stick so it faces down.
   Gently squeeze the wings until the liquid flows out.
   With your other hand, pick up the gauze from the dressing change kit.
   Using the gauze, pick up the end of the catheter.
   Hold it up, but do not pull on it.
17. Scrub the site with the CHG stick stick for 30 seconds.
   Scrub back and forth from the insertion from the exit site outward over the
   entire area the dressing will cover.
   Clean up the catheter from the exit site.
   Let the CHG liquid dry on the skin. This takes another 30 seconds, or
   sometimes longer. Do not fan or blow on it.

18. If an antimicrobial disk is being used, put it on the catheter at the exit site. Make
   sure the skin is dry before putting the antimicrobial disk on the catheter.

19. Put the transparent dressing over the exit site, antimicrobial disk, and skin. Gently
   smooth it down and out from the exit site to the edge of the dressing, to take out the
   air bubbles. Do not stretch the dressing when putting it on.

20. Tear a one-half inch wide piece of tape. Slide the tape, sticky side up, under the connector at the end of
   the catheter or hub, where the dressing ends. Cross each end over, in a V shape (a chevron). The tape
   will be stuck to the top of the transparent dressing. This helps keep the catheter from moving.
21. Put another wider piece of tape over the chevron. Some people like to fold a piece of gauze and slide it under the crossed chevron, before covering it with the wider piece of tape. This puts a cushion between the rough hub and your child’s skin. It’s a good idea to also use a second piece of wide tape across the bottom of the gauze and over the connection tubing, to better hold the dressing. Put gauze under the hub. Add tape to hold the dressing and connector.

22. If the CVC has two lumens, you need to chevron and tape each of the lumens separately to secure them to your child’s body. Do this after you finish taping the large part of the catheter hub.

**Important Safety Information**

If your child has both NG and CVC tubes, use colored tape to mark each tube. Phoenix Children’s Hospital uses white tape for CVC lines and purple tape for feeding tubes. For extra safety, write "CVC" on the tape of every CVC lumen.

23. Thank your child for helpful behaviors during the dressing change.
Care of the Skin Around the Catheter

The better you care for your child’s catheter, the less likely you will be to have problems and the sooner you’ll find and treat problems if they occur.

Find Problems Early

Look at the skin around the catheter each day through the transparent dressing. Finding a problem early can make a great deal of difference to the child’s health and well-being.

Irritation

Irritation is also called skin breakdown. This can happen when skin is sensitive, weak or irritated for a long time. Catheter dressings taped to the same patch of skin day after day can make the skin sore. Sometimes, a child can be sensitive to a certain type of tape.

If the skin around the exit site or under the tape lines becomes red or sore:

- Clean the skin before putting on the tape.
- Make sure the skin is dry before putting on the dressing.
- Avoid using too much tape.
- Alternate where you put the tape on the skin.
- Tell your health care team. They may suggest a different type of tape to secure the dressing or something to protect the skin.
- If the problem continues, call your child’s health care team.

Infection

The skin is the body’s natural barrier against infection. Any open area on the skin makes it easier for germs to get in and cause infection. Irritated, broken skin and incisions are two ways germs can get into the body.

The redness, heat, pus, and swelling that signal infection are made by the body to kill the germs. This is called the body’s inflammatory response. The heat kills heat-sensitive germs. The swelling walls off germs and helps to stop them from spreading throughout the body. The pus is made of white blood cells that help kill the germs.
Some illnesses and medicines lower the body’s response to germ invasion. The infection may be there, but you don’t know it because there’s no redness, warmth, swelling or pus. Steroids, such as cortisone, can lower the inflammatory response. A low supply of white blood cells (neutropenia) also lowers the body’s response to germs. Some illnesses and medicines can cause low white blood cell counts.

When the inflammatory response is lowered, it is especially important to watch for little changes that may mean an infection is brewing.

Examine the catheter exit site. Look for any sign of infection:
— drainage, such as oozing or pus
— swelling
— tenderness, soreness
— warmth
— pain
— redness at the exit site
— redness along the catheter path beneath the skin
— a temperature above 101º F orally (check with your health care provider) or chills
— odor from the exit site

If you notice any of these signs, finish changing the dressing, then call your child’s health care team.

**Flushed Catheters**

To stop bleeding from a wound, blood clots. This forms a scab. Sometimes, though, blood can clot when it doesn’t need to, like in a central venous catheter.

To prevent this, the inside of the central venous catheter is rinsed or flushed. The doctor decides whether the catheter gets flushed with saline (a special sterile solution of salt water) or heparin. **Heparin** is a medicine that prevents the blood from clotting.

The small amount of saline or heparin that is used rinses the entire length of the tube. If heparin is ordered, the small amount of heparin used is not enough to thin the blood in your child’s body, and will not cause bleeding problems.
When heparin is used, the flushing technique is called **heparinization**. Heparinization is the process of putting heparin into the catheter to prevent the blood from clotting between uses.

All ports of the CVC need to be flushed:
- on a regular schedule
- after you draw blood
- after you put any fluid through the tube.

If blood clots form, the tube may become plugged. Your child’s health care team will tell you how often to do this procedure.

**Important Safety Information**

The CVC goes directly into the blood. **Do not put anything in the CVC that does not belong in your child's blood.** Stop and think before you inject anything into the CVC. If you put the wrong thing in (like food, or medicine meant for the mouth), it could hurt or even kill your child.

**What you need**
- antimicrobial soap
- 2 chlorhexidine with alcohol pads or 2 alcohol pads
- prefilled heparin or saline syringe with correct drug name, strength, and amount to give:
  - heparin syringe is labeled 10 units/ml, unless ordered differently by your child’s doctor.
  - or saline syringe
  - and amount to give: __________ ml, as ordered by your child’s doctor. If your syringe has more than the amount ordered, see step #6 for instructions on how to waste the extra amount.

**What to do**

1. Find a quiet place to do the flushing, where you will not be disturbed.

2. Prefilled syringes are not stored in the refrigerator. If the heparin or saline is refrigerated, take it out of the refrigerator about ten (10) minutes before you use it. Let it warm to room temperature. Cold liquid will not harm your child, but he or she may feel the coldness when it is injected.
3. If the child is active, you will need another person to help keep the child still while you flush the catheter.

4. Wash your hands with the antimicrobial soap for 30 to 45 seconds. Wash the entire surface of your hands. Wash under your fingernails, the backs of your hands, your wrists and between your fingers. Rinse completely and dry your hands with a clean towel or paper towel.

5. As you open the supplies, touch only the outside of each package. Keep everything sterile.

6. Remove air bubbles and any extra liquid from the prefilled heparin or saline syringe.
   — point the syringe up and away from the sterile supplies
   — gently tap the side of the syringe with your finger
   — large air bubbles will rise to the top
   — press the plunger until a small amount of fluid squirts out with the air bubbles. Some syringes will allow you to do this with the cap on. If your syringe does not, gently take the cap off to get the air out. Do not touch the tip of the syringe while cap is off because it is sterile.

   Your homecare company may give you prefilled heparin or saline syringes with more than the amount ordered. Check your doctor’s order. If your order is to give 3mL of heparin or saline to flush the catheter, but the syringe has 6 mL in it, you will need to waste some of the liquid before the flush.
   — After you have removed the air bubbles from the syringe, press the plunger until the ordered amount plus 1/2 mL remains in the syringe. The extra 1/2 mL is needed in step #11 because some liquid will remain in the syringe at the end of the flush.
   — When air and any extra liquid are out, put the cap back on the syringe while making sure you do not touch the tip of the syringe.

7. Wipe the needleless connector with one chlorhexidine with alcohol pad or alcohol pad for 30 seconds. Allow to completely dry. Do not fan or blow on it.
8. Be sure the catheter clamp is open.

9. Take the cap off of the syringe and screw the prefilled heparin or saline syringe into the needleless connector.

10. Push the solution into the catheter using the **push-and-pause method**. Push a little solution, then pause for 1 to 2 seconds. Then push a little more solution, and pause for 1 to 2 seconds. Continue this method until the correct amount of solution has been given.

11. Inject the heparin or saline until 1/2 mL is left in the syringe. While you are flushing the last 1/2 mL into the catheter, but before the syringe is empty, close the clamp. Then remove the syringe from the needleless connector. This is called using **positive pressure** to get liquid to the tip of the catheter inside. There should be a small amount of liquid left in the syringe when it is removed.

**Important safety information:**

- If the catheter does not flush easily:
  - make sure the clamp is open.
  - do not use force to flush.
  - have your child raise his or her arms over the head, or lay on his or her side, and try again.
  - change the needleless connector and try again.

- If your child has a very tiny catheter, it may have twisted and kinked. You may need to change the dressing to look for kinks.

  - If you still cannot flush the catheter, call your child’s health care team.

12. Thank your child for helpful behaviors while flushing the catheter.
Changing the Needleless Connector

The needleless connector should be changed regularly. Each one will only take so many entries before it begins to leak.

If the needleless connector is changed at the time of flushing, the flush is given through the new needleless connector.

The health care team will tell you how often to change the needleless connector.

What you need:
☐ antimicrobial soap
☐ disinfectant cleaner
☐ paper towel
☐ gloves (clean, not sterile)
☐ new needleless connector
☐ tape
☐ chlorhexidine with alcohol pad or alcohol pad
☐ prefilled heparin or saline syringe with correct drug name, strength, and amount to give:
  ☐ heparin syringe is labeled 10 units/ml, unless ordered differently by your child’s doctor.
  or ☐ saline syringe
  and ☐ amount to give: __________ ml, as ordered by your child’s doctor. If your syringe has more than the amount ordered, see step #11 for instructions on how to waste the extra amount.
☐ 3 masks (for yourself, your child, and anyone else near you).

What to do:
1. Find a quiet place to change the needleless connector, where you will not be disturbed.

2. Prefilled syringes are not stored in the refrigerator. If the heparin or saline is refrigerated, take it out of the refrigerator about ten (10) minutes before you use it. Let it warm to room temperature. Cold liquid will not harm your child, but he or she may feel the coldness when it is injected.

3. If your child is active, you will need another person to help keep your child still while you change the needleless connector.
4. Clean your work area with a household disinfectant cleaner and a paper towel.

5. Put a mask on yourself, your child, and anyone else near you.

6. Wash your hands with the antimicrobial soap for 30 to 45 seconds. Wash the entire surface of your hands. Wash under your fingernails, the backs of your hands, your wrists and between your fingers. Rinse completely and dry your hands with a clean towel or paper towel.

7. Put on gloves.

8. As you open the supplies, touch only the outside of each package. Keep everything sterile. Sterile means there are no germs at all.

9. Be sure the clamp on the catheter is closed and on the clamping area of the catheter. Never take the cap off the catheter without clamping the catheter.

10. Open the prefilled heparin or prefilled saline syringe package. Lay it out flat on the clean work area. Touch only the outside of the package to keep it sterile.

11. Remove air bubbles and any extra heparin or saline from the prefilled syringe.
   - point the syringe up and away from the sterile supplies
   - gently tap the side of the syringe with your finger
   - large air bubbles will rise to the top
   - press the plunger until a small amount of fluid squirts out with the air bubbles. Some syringes will allow you to do this with the cap on. If your syringe does not, gently take the cap off to get the air out. Do not touch the tip of the syringe while the cap is off because it is sterile.

Your homecare company may give you prefilled heparin or saline syringes with more than the amount ordered. Check your doctor’s order. If your order is to give 3ml of heparin or saline to flush the catheter, but the syringe has 6 ml in it, you will need to
waste some of the liquid before the flush.
— after you have removed the air bubbles from the syringe, press the plunger until the ordered amount **plus 1/2 mL** remains in the syringe. The extra 1/2 mL is needed in step #14 because some liquid will remain in the syringe at the end of the flush.
— When air and any extra liquid are out, put the cap back on the syringe while making sure you do not touch the tip of the syringe.

12. Attach prefilled syringe to the new needleless connector. Flush until just a drip comes out at the end.

13. Put the syringe and new needleless connector down on the open syringe package.

14. With the chlorhexidine with alcohol pad or alcohol pad, scrub the connection between the old needleless connector and catheter for 30 seconds. Allow to completely dry.

15. Check again to be sure the line is clamped, then gently take the old needleless connector off of the catheter.

16. Pick up the new needleless connector and syringe. If the new needleless connector has a cap, remove it.

17. Without touching the connecting ends, attach the new needleless connector to the catheter. **Step 17: Without touching the connecting ends, attach the new needleless connector to the catheter.**

18. Flush the catheter with heparin or saline as ordered. Push the solution into the catheter using the **push-and-pause method**. Push a little solution, then pause for 1 to 2 seconds. Then push a little more solution, and pause for 1 to 2 seconds. Continue this method until the correct amount of heparin or saline has been given.

19. Inject the heparin or saline until 1/2 mL is left in the syringe. While you are flushing the last 1/2 mL into the catheter, but before the syringe is empty, close the clamp. Then remove the syringe from the needleless connector. This is called using **positive pressure** to get liquid to the tip of the catheter inside. There should be a small amount of liquid left in the syringe when it is removed.

20. Thank your child for helpful behaviors while changing the needleless connector.
Home Supplies for CVC Care

Your nurse, case manager, or doctor will help you order your child’s supplies for CVC care. Use the following space to create a list of what you need for about a month. Plan on one dressing and cap change every week, and a flush in each port twice a day and after each use. Allow for some extras, but order only the supplies you actually need.

☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________
☐ ______________________________________________________________________

Supplies are ordered through: ________________________________________________

For orders, call: ___________________________________________________________

Allow ________ hours notice.

☐ Supplies will be delivered  ☐ Supplies need to be picked up

Phone number of child’s health care team: ________________________________
Living With a CVC

Safety

• The CVC goes directly into the blood. **Do not put anything in the CVC that does not belong in your child's blood.** Stop and think before you inject anything into the CVC. If you put the wrong thing in (like food, or medicine meant for the mouth), it could hurt or even kill your child.

• A medical alert bracelet or identification can help your child in an emergency. Ask your health care provider about medic alert items.

• Tell your child's dentist about the CVC. Children with CVCs may need to take antibiotics before dental work. During dental work, bacteria can be released into the bloodstream and attach to the CVC to cause an infection. Antibiotics could prevent that. Your dentist and doctor can decide whether your child needs an antibiotic before dental work.

• All people who care for the child should know your child has catheter and how to clamp it. This includes family members, babysitters, school nurse and teachers.

• For the first _____ weeks after the catheter is put in, when you bathe your child, keep the skin dry where the tube enters the body. Plastic wrap can be taped over a transparent dressing to protect the site during bathing. If the dressing becomes wet during bathing, change it after the bath is finished.

• Keep all sharp objects, especially pins and scissors, out of the reach of a young child with a CVC.

• Never use scissors near the exit site.

• A T-shirt, a one-piece outfit, overalls or outfits that open in the back can keep your child from playing with the catheter.

• Never leave a young child with a CVC alone when he is undressed.

• Keep the CVC tubing away from the diaper area.
Prevention

Germs live on everyone's skin all the time. The strong immune systems of healthy people keep these germs from causing infections.

If the child's body is unable to fight off germs, they may cause problems. Even if you have perfect catheter care technique, irritation or infection can still occur.

To help prevent infections, always use good hand washing. Wash your hands with the antimicrobial soap for 30 to 45 seconds. Wash the entire surface of your hands. Wash under your fingernails, the backs of your hands, your wrists and between your fingers. Rinse completely and dry your hands with a clean towel or paper towel.

If your hands are not visibly dirty, you can use alcohol based handrub to clean them using the following steps:
   1. Put alcohol based handrub to fill the palm of your hand.
   2. Spread the handrub over all parts of your hands.
   3. Rub hands until dry.

It is important to follow the dressing change schedule and procedure ordered by your child's health care team. This is one more way to help prevent infections.

Keep the child clean and dry. Germs can't be seen and they are everywhere. They are on everything that is not sterile. But germs are even more likely to grow in dirty, damp areas.

Activities

• Children with central venous catheters can enjoy most of their usual activities.

• A child with a central venous catheter needs to avoid pressure or blows to the catheter area. He or she should not play contact sports which may hit or pull the catheter.

• Talk to your health care team about how your child will take a bath or shower, and if your child can go swimming with a CVC.

• Discuss activity restrictions with your child's health care team.
Supplies

• Order supplies before you run out.

• When on a trip, take enough supplies for catheter care during that time.

• A dressing change may occasionally be necessary at school. Keep catheter care supplies and catheter care instructions with the school nurse.

Coping

• If your child does not like the smells of the medicines of catheter care, you can:
  — have your child turn his or her head to the side, away from the catheter care activity.
  — let your child chew gum, suck candy or smell a cotton ball with perfume during the procedure.

When a child is diagnosed with a serious condition, parents often feel out of control because they don’t understand everything that is happening to their child. This crisis occurs because old ways of coping don’t work in this new situation.

But there are things you can do to get through this overwhelming time:

• Learn about the medical condition and the treatment options. Ask questions about the things you don’t understand. Keep asking the questions until you understand the answers.

• Master the home care techniques. Caring for your child can help you regain your sense of control over the situation.

• Express your feelings and concerns. When you are in the middle of a crisis, you may feel all alone. But you are not alone. Talk to your family, your friends and your support group. Talk to your child’s nurses, doctors and other members of the health care team. Talk to other parents who have children with CVCs. Talk to your
clergy person. Talk to your child. Talk to your other children.

- Write down questions as you think of them. Ask your health care team all of your questions. Ask questions over again until you understand the answers. When you don’t get the answers you need, you may feel you won’t be able to take care of your child. When you understand what to do, you can feel more in control over your situation.

- If you have any questions, ask your child’s health care team. After you leave the hospital, your health care team can answer your questions during your follow-up office visits, or you can call them. A nurse may also visit your home to see how you are doing and answer any new questions you have.

Dealing With Problems

If the catheter stops working, or causes discomfort, the child will have to return to the doctor’s office or hospital to have it checked. Problems may include an out-of-place catheter, a plugged catheter, damage to the catheter and infection. If you have any questions or concerns about these, or other situations, call your child’s health care team.

Out-of-Place Catheter

- Always tape the catheter securely.

- To avoid catheter dislocation, don’t twist or pull on the catheter.

- If you notice the CVC is coming out or the catheter is hard to flush, call your child’s health care team right away. After office hours, they may tell you to go to your Emergency Department to have the CVC looked at or repaired.
A Plugged Catheter

• If it is not possible to flush the CVC using normal flushing pressure, it may be plugged.

• Flush the catheter regularly, and every time you use it, to prevent plugging.

• Catheters may become plugged by blood clots or mineral build up.

• Never use force to flush the catheter. The pressure could loosen a plug so it is free to block a blood vessel. Forceful pressure could even break the catheter.

• A plug in the catheter can be treated by the health care team with medicine that dissolves the plug.

• If the catheter is hard to flush, call your child’s health care team.

Damage to the Catheter

• Don’t use scissors, pins or other sharp objects near the catheter.

• Clamp the catheter only on the clamping site.

Catheter-Related Emergencies

• Call your child’s health care team right away if your child has any unusual and severe:
  — shortness of breath
  — chest pain
  — dizziness
  — confusion
  — a temperature above 101º F orally.

If you have any questions or concerns about these, or other situations, call your child’s health care team.
• Keep spare clamps with you at all times.

• If you see any leaking of blood or fluid from a catheter tear or hole, or if the tubing balloons out, clamp the catheter between the damaged area and the exit site.

• If the catheter is torn, clamp above the tear. If the end of the catheter is off, clamp, then place the end of the tubing in an open alcohol pad package. Fold the package closed around the tubing to keep it clean.

• Repairs can be made on damaged central venous catheters.

• The tube should be repaired as soon as possible because of the risk of infection. Call your child’s health care team right away. After office hours, they may tell you to go to the Emergency Department to have the CVC looked at or repaired.

**Infection**

• Examine the catheter exit site with each dressing change for signs of infection.

• Signs of infection can be:
  — drainage or oozing, such as pus
  — swelling
  — tenderness, soreness
  — warmth
  — pain
  — redness at the exit site
  — redness along the catheter path beneath the skin
  — odor from the exit site
  — confusion
  — a temperature above 101º F orally (check with your health care provider) or chills.

• If you notice any of these signs call your child’s health care team.
Now that you've read this:

☐ Tell your nurse or doctor what type of central line your child needs. (Check when done).

☐ Show your child's nurse or doctor how you will care for your child's central line. (Check when done).

☐ Tell your nurse or doctor what can be safely put into the central line. (Check when done).

☐ Tell your nurse or doctor how you would recognize a problem with the central line, and how you would respond. (Check when done).

Words to Know

antimicrobial soap  A liquid soap that is made to kill germs. Examples are Dial, Safeguard, Hibiclens, povidine-iodine scrub and sephsoft.

Ash-split  The name brand of a central venous catheter.

Broviac  The name brand of a central venous catheter.

CVC  See central venous catheter.

catheter  A flexible tube put into the body to withdraw or inject things like medicine or fluids.

catheter cuff  Just below the exit site, under the skin, is the CVC’s catheter cuff. It looks soft and fuzzy like cotton, and is made of Dacron. Within 3 to 4 weeks of catheter insertion the fat tissue under the skin grows into the...
cuff. The seal that is formed helps to hold the catheter in place and acts as a barrier to stop germs on the skin from traveling to the bloodstream.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>chlorhexidine (CHG)</td>
<td>A liquid that kills germs.</td>
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<tr>
<td>central venous catheter (CVC)</td>
<td>A thin tube made of soft, flexible rubber-like material (silicone) put into a major vein (&quot;central venous&quot;) to withdraw or inject things like medicine or fluids.</td>
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<tr>
<td>clamping sheath</td>
<td>The area on the catheter where the clamp may be safely pinched on the catheter.</td>
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<tr>
<td>cuff</td>
<td>See <strong>catheter cuff</strong>.</td>
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<tr>
<td>dressing</td>
<td>A covering placed over the site where the catheter exits the child's body. It helps to keep germs from getting under the skin.</td>
</tr>
<tr>
<td>exit site</td>
<td>The catheter is tunneled just under the skin to an incision called the exit site. The catheter comes out of the child’s body at the exit site.</td>
</tr>
<tr>
<td>heparin</td>
<td>A medicine that prevents the blood from clotting. This is one of the medicines in a group called anticoagulants.</td>
</tr>
<tr>
<td>heparinization</td>
<td>The process of putting heparin into the catheter to prevent the blood from clotting between uses.</td>
</tr>
<tr>
<td>Hickman</td>
<td>The name brand of a central venous catheter.</td>
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<tr>
<td>IV</td>
<td>See intravenous.</td>
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<tr>
<td>inflammatory</td>
<td>The body’s response to invasion and germs. The response includes redness, swelling, warmth, and germ-fighting blood cells. Some illnesses and medicines lower the body’s response to germ</td>
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</table>
invasion. The infection may be there, but you may not know it because you can't see the inflammatory response.

**insertion site** The incision where the catheter is put into a blood vessel. This is usually near your child's collarbone.

**intravenous (IV)** Inside the vein.

**lumen** The opening at the end of the catheter. Central venous catheters can have either one, two, or three lumens.

**neutropenia** A low supply of white blood cells. White blood cells kill germs.

**port** The end of the CVC tubing with the needleless connector. Catheters may have one, two or three ports.

**skin breakdown** Irritated skin that is red, sore or broken. When skin breaks down, germs can get through and cause an infection.

**saline** A special sterile salt water solution.

**sterile** There is nothing living on the object. It means there are absolutely no germs at all. Your skin cannot be sterilized and still be alive itself. It can only be disinfected, where most of the germs on it are killed.
If you want to know more about child health and illness, visit our library at The Emily Center at Phoenix Children’s Hospital 1919 East Thomas Road Phoenix, AZ 85016 602-933-1400 866-933-6459 www.phoenixchildrens.org Facebook: facebook.com/theemilycenter Twitter: @emilycenter Pinterest: pinterest.com/emilycenter

Disclaimer
The information provided at this site is intended to be general information, and is provided for educational purposes only. It is not intended to take the place of examination, treatment, or consultation with a physician. Phoenix Children’s Hospital urges you to contact your physician with any questions you may have about a medical condition.

August 18, 2015 • DRAFT for Family Review
#197 • Written by Fran London, MS, RN and Esther Muñoz, BSN, RN • Illustrated by Dennis Swain
How to Care for Your Child's Central Venous Catheter (CVC)

Name of Health Care Provider: _______________________________
Date returned: ______________ □ db

Family Review of Handout

Health care providers: Please teach families with this handout.
Families: Please let us know what you think of this handout.

Would you say this handout is hard to read? □ Yes □ No

easy to read? □ Yes □ No

Please circle the parts of the handout that were hard to understand.

Would you say this handout is interesting to read? □ Yes □ No

Why or why not?

Would you do anything differently after reading this handout? □ Yes □ No

If yes, what?

After reading this handout, do you have any questions about the subject? □ Yes □ No

If yes, what?
Is there anything you don’t like about the drawings? ☐ Yes ☐ No
If yes, what?

What changes would you make in this handout to make it better or easier to understand?

Please return your review of this handout to your nurse or doctor or send it to the address below.

The Emily Center
Health Education Specialist
Phoenix Children’s Hospital
1919 East Thomas Road
Phoenix, AZ 85016-7710

Thank you for helping us!