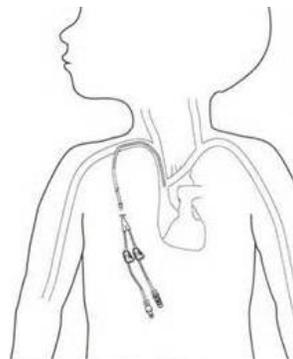


# Central Venous Catheter (Central Line) Care Pediatrics



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## **Overview of a central venous catheter (central line)**

### **What is a central venous catheter?**

A central venous catheter, or central line, is a small flexible tube inserted into a large vein in your child's chest. It is used to give your child fluid, nutrients, medicine, and blood products. It may also be used to get blood samples. A central venous catheter is also called a central line, tunneled catheter, central venous line, or Hickman line. In this document, we will refer to it as a "central line". There are many types of central lines.

Note: A central line should not be used for oral medications. A central line is not the same as a nasogastric (NG) tube.

### **How is the central line placed?**

Inserting the central line is a minor surgical procedure. It is done in an operating room and takes about 1 hour. Your child's doctor will use general anesthesia (full sleep) to numb their neck and chest.

During the surgery, your child's doctor will make 2 small incisions. Your child will have 1 small incision at the bottom of their neck, by their collar bone, where the central line enters their vein. The other incision will be in their upper chest where the central line exits their body. The central line is threaded through a "tunnel" under the skin between these 2 sites. Your child will likely have a few stitches placed to help secure the central line. Your child will have a dressing (bandage) placed on top of each incision site.

A small cuff on the central line helps hold it in place in the tunnel underneath the skin. This cuff also acts as a barrier to help prevent bacteria on your child's skin from traveling up the central line tunnel and into their bloodstream.

### **Will it hurt?**

Your child's shoulder and chest area may be sore for a few days after the central line is placed. They may be prescribed a mild pain reliever. It helps for your child to move their shoulder and neck right after surgery to keep the area from getting stiff.

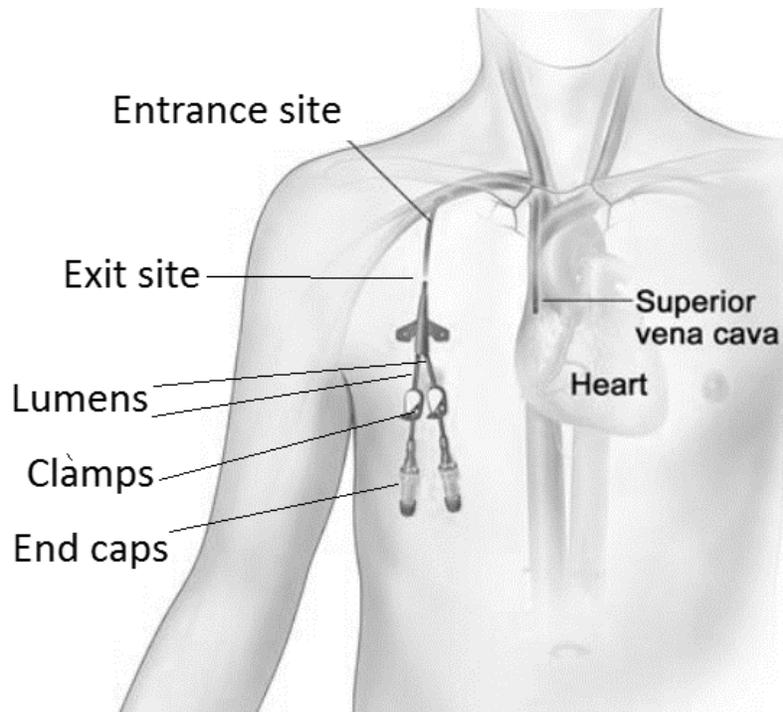
### **What instructions should we follow after the procedure?**

- Do not give your child over-the-counter (non-prescription) pain medications such as acetaminophen (Tylenol®) and ibuprofen (Advil®) without checking with your care team first.
- Secure the line by dressing your child in a tight-fitting tank top/undershirt or sports bra for at least 1 night after placement.
- Do not let your child lift anything heavier than 5 pounds for 3 days after their surgery. Do not let them participate in any activities that strain their chest muscles.

## How do we care for the central line?

The day after your child's surgery, your child will have an appointment to get their dressing changed for the first time. The dressing over the central line exit site will need ongoing care as long as they have the central line in place. This care is described in the rest of this packet.

## Parts of the central line



## Central line care tasks

You will need to care for your child's central line daily to prevent infection. Care involves cleaning the central line, flushing the lumens (lines), protecting the central line from water, and changing the dressing. The chart below gives an overview of this care.

Central line care	How often
<b>Clean central line</b> <ul style="list-style-type: none"><li>• Use alcohol wipes</li><li>• Change tape tabs, if using</li></ul>	Daily
<b>Flush lumens</b>	Daily or with each use
<b>Protect line from water:</b> <ul style="list-style-type: none"><li>• Put Parafilm® on end caps</li><li>• Put AquaGuard® or Press'n Seal® over dressing</li></ul>	When bathing/showering
<b>Change dressing</b>	Every 7 days for Tegaderm® CHG or other clear dressing  Every 1-2 days for gauze and tape dressing

## Supplies to care for your child’s central line

Below are the supplies used to care for your child’s central line. You may receive some of them from a home infusion company or SCCA. If not, all of them are available online, but Press’n Seal, alcohol wipes, plastic tape, and gloves can usually be found at a grocery or drug store. If you have any questions about which supplies you should buy, please contact your care team nurse.

### Supplies

- Parafilm
- AquaGuard or Press’n Seal; you do not need both
- Alcohol prep pads
- Plastic tape—do not use paper, cloth, scotch, or masking tape
- Medical gloves
- Bulldog clamp
- 2 lanyards
- Cloth pouches



*Parafilm*



*AquaGuard*



*Press’n Seal*



*Alcohol prep pads*



*Plastic tape*



*Clean medical gloves*



*Cannula "Bulldog" clamp  
(SCCA will provide this)*



*Lanyard  
(SCCA will provide this)*



*Cloth pouch  
(SCCA will provide this)*

## Important notes on central line care

### Keep your child's line safe

- Keep the bulldog clamp with your child at all times. The bulldog clamp is a safety clamp. If the central line leaks, gets cut, or breaks, clamp the central line close to your child's chest and call the clinic immediately.
- Secure your child's central line **one** of the below ways to prevent accidental removal of the line:
  - Place central line ends in a clean cloth pouch and secure the pouch with a bulldog clamp to clothing or a lanyard. Pouches are for one-day use and should be washed daily; OR
  - Place plastic tape tabs between clamp and cap on the central line and change daily. Use the plastic tape tabs and bulldog clamp to secure the central line to clothing or a lanyard.
- Always place the central line clamp on the thick, reinforced area of the line.

### Protect your child's line from water

- Always cover your child's central line dressing with a plastic covering such as AquaGuard or Press'n Seal to prevent water from entering the dressing and exit site. The uncovered dressing and exit site should never come in contact with water.
- Always securely wrap your child's central line end caps with Parafilm to prevent water from entering the cap top or into the connection to the central line. If you notice moisture under the Parafilm, ask to have your child's end caps changed in the clinic.

### Clean your child's line

- Clean your child's lumens once a day with alcohol wipes after your bath or shower. If using plastic tape tabs to secure your child's line, replace tape tabs each day.
- Your child's care team will tell you how often to change their dressing and if you will change it yourself or have it changed in the clinic.
- If your child's dressing starts to come off, gets wet, or if there is moisture underneath it, it needs to be changed right away. Call your care team to get your child's dressing changed in the clinic as soon as possible. You may change it yourself if you have been taught how to do this and have the correct supplies at home.

### Do not

- Do not remove the end caps off of your child's central line.
- Do not let end caps, central line or dressing go under your child's bath water.
- Do not allow your child to go into swimming pools and hot tubs.
- Do not store central line supplies in a moist (humid) area, such as the bathroom or kitchen.
- **Do not use scissors near your child's central line.**

## Cleaning your child's central line

It is important to clean your child's central line daily. This helps to prevent infection. See instructions below for how to do this.

### Supplies

- 4 or more alcohol wipes (use 2 per lumen)
- Plastic tape, if using

### Instructions

1. If using tape tabs, remove plastic tape tabs. If not using tape tabs, go to step 2.
2. Use 2 alcohol wipes, 1 to hold the line and 1 to clean it. Start where the line exits the dressing and wipe towards the end cap. Using the same alcohol wipes, clean the clamps.
3. If using plastic tape tabs, replace them. Fold about ½ inch of tape over at each end to make the tab easier to remove.
4. Repeat this for each lumen.

Note: After cleaning longer lines, secure the central line **one** of the below ways to prevent accidental removal of the line:

- Place central line in a clean cloth pouch and secure the pouch with a bulldog clamp to clothing or a lanyard. Pouches are for one-day use and should be washed daily;

OR

- Place plastic tape tabs between clamp and cap on the central line and change daily. Use the plastic tape tabs and bulldog clamp to secure the central line to clothing or a lanyard.

## Flushing your child's central line

Flush your child's central line with saline and heparin at least once a day or at the end of an infusion. Heparin helps prevent a clot within the central line. The daily heparin flush is still required even if your child is on any oral or injectable blood thinners to prevent or treat a blood clot.

### When to flush the central line

- Flush each lumen with saline followed by heparin at least once each day and after each use.
- If your child has a blood draw or infusion at the clinic, the central line will be flushed there. You do not need to flush it again at home.
- If your child is doing an infusion at home:
  - Flush the central line at the beginning of the infusion with saline only.
  - Flush the central line at the end of the infusion with saline followed by heparin.
- **If your child is receiving antibiotics at home**, their care team will instruct you to alternate your infusions of antibiotics between the lines of their catheter.

### How to flush the central line

Gather your supplies and then follow steps 1 through 16 below

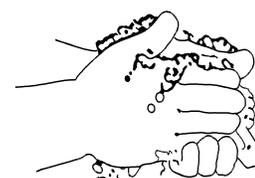
#### Supplies

- 2, 5 ml syringes with saline flush
- 2, 3 ml syringes with heparin flush
- Alcohol wipes
- 1 pair of gloves

\*You need a prescription for saline and heparin syringes.

#### Instructions

1. Wash your hands.

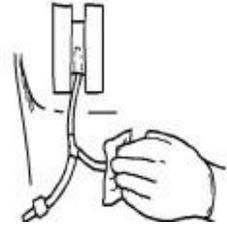


2. **Place all supplies on a clean surface.** Remove the syringe(s) from their package(s) by peeling the plastic downward.



## How to flush the central line, continued

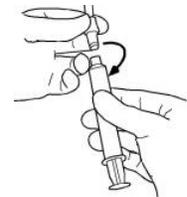
3. Put on gloves. Vigorously scrub the central line end cap with an alcohol wipe for 15 seconds (count one one-thousand, two one thousand, etc.) using a twisting motion as if you were juicing an orange. **Take special care to clean the tip of the cap.** Allow the cap to dry completely (at least 5 seconds).



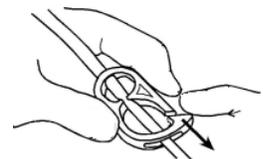
4. **Start with the saline syringe.** Hold the syringe with the cap on, pointed towards the ceiling, and remove the cap of the syringe. Carefully remove the air bubble by gently pulling down and then pushing up on the plunger. **Do not touch the end of the syringe because it is sterile. If you touch it, throw it out.**



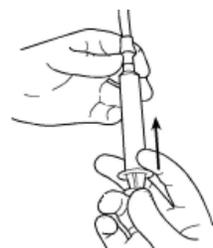
5. **Do not touch the tip of the end cap or the end of the saline syringe with your hand.** Insert the saline syringe into the center of the end cap by pushing in and turning clockwise. Suggestion: A flushing routine that starts with the same color lumen is helpful for remembering which lumen has been flushed.



6. Unclamp the central line.

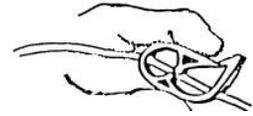


7. Push the plunger on the saline syringe with **alternating pressure and release** (starting and stopping to create turbulence) to inject the fluid into the central line. This keeps clots from forming in the central line. Leave ½ ml of saline in the syringe.

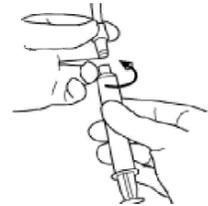


## How to flush your child's central line, continued

8. Clamp the central line (leaving ½ ml of saline in the syringe) while keeping your thumb on end of the plunger of the syringe.



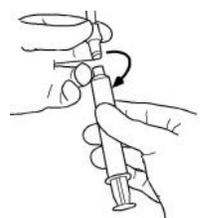
9. Remove the syringe. **Hold the end cap**, not the central line, when disconnecting from your line. Throw syringe away in regular garbage can.



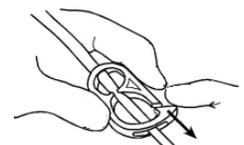
10. **Next, use the heparin syringe.** Hold the syringe with the cap on, pointed towards the ceiling, and remove the cap of the syringe. Carefully remove the air bubble by gently pulling down and then pushing up on the plunger. **Do not touch the end of the syringe because it is sterile. If you touch it, throw it out.**



11. **Do not touch the tip of the end cap or the end of the heparin syringe with your hand.** Insert the heparin syringe into the center of the end cap by pushing in and turning clockwise. Suggestion: A flushing routine that starts with the same color lumen is helpful for remembering which lumen has been flushed.

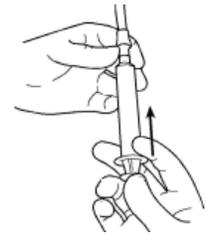


12. Unclamp the central line.

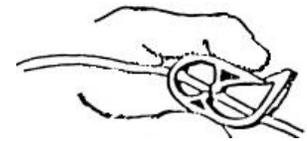


## How to flush your child's central line, continued

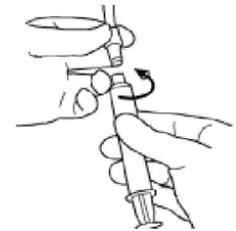
13. Push the plunger on the heparin syringe with **alternating pressure and release** (starting and stopping to create turbulence) to inject the fluid into the central line. This keeps clots from forming in the central line. Leave  $\frac{1}{2}$  ml of heparin in the syringe.



14. Clamp the catheter (leaving  $\frac{1}{2}$  ml of heparin in the syringe) while keeping your thumb on end of the plunger of the syringe.



15. Remove the syringe. **Hold the end cap**, not the central line, when disconnecting from your line. Throw syringe away in regular garbage can.



16. Repeat steps for each lumen.

## Protecting your child's central line when bathing or showering

It is important to protect your child's central line from water. You will do this by covering the end caps with Parafilm and covering the dressing with AquaGuard or Press'n Seal. Repeat the instructions below for each end cap.

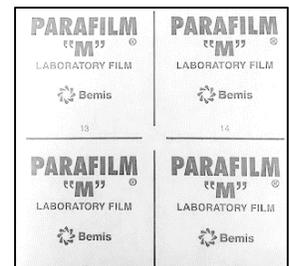
### Supplies

Gather your supplies and then follow steps 1 through 9 below.

- Parafilm
- AquaGuard or Press'n Seal
- Clean cloth pouch or tape tabs
- Alcohol wipes
- Bulldog clamp
- Lanyard

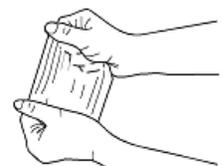
### Instructions

1. Wash your hands.
2. Place Parafilm on central line end cap and tubing connection. Use 4 squares for each side of your child's central line.



Picture of 4 squares of Parafilm.

- a) Peel Parafilm from adhesive cover backing.
- b) Stretch the Parafilm. This makes it stick to itself.
- c) Place it over the end cap of the central line.



## How to protect when bathing or showering, continued

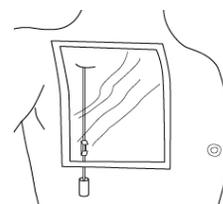
- d) Fold Parafilm over the top of the end cap (like you would seal the top of an envelope). Make sure it covers the connection point between the end cap and the central line. This will make it waterproof.



3. Wrap only around the thicker part of the end of the central line. The Parafilm will fit closely around the end cap and will stick to itself. Make a tab on the end so it will be easier to remove. Use the heat of your hand and grip onto the wrapped end cap to mold the Parafilm around the central line.



4. Cover the entire dressing with a square of AquaGuard or Press'n Seal. If you are using Press'n Seal, it may be helpful to use a piece large enough to drape over your child's shoulder. The central line lumens should hang out of the bottom edge of AquaGuard or Press'n Seal. Reinforce the edges with medical tape if it does not stay secure.



5. **Place the Parafilm-covered central line ends in a pouch** and secure with a bulldog clamp to the lanyard. You may also secure with a lanyard with the bulldog clamp applied to the central line.
6. **If your child takes a bath, the central line should be kept above the water level at all times. If they shower, the dressing should be kept out of the direct stream of water.**
7. After bathing, dry the AquaGuard or Press'n Seal with a towel, then remove and throw it away.
8. Dry the Parafilm with a towel, then remove from central line end caps – **DO NOT USE SCISSORS. After removing, test end cap connections to ensure they are secure.**
9. If there is moisture underneath the dressing or if it has come loose, the dressing should be changed.

## How to protect when bathing or showering, continued

10. Clean both of your child's lumens once a day with alcohol wipes and replace plastic tape tabs, if using. For longer lines, secure the central line **one** of the below ways to prevent accidental removal of the line:

- Place central line in a clean cloth pouch and secure the pouch with a bulldog clamp to clothing or a lanyard. Pouches are for one-day use and should be washed daily;  
OR
- Place plastic tape tabs between clamp and cap on the central line and change daily. Use the plastic tape tabs and bulldog clamp to secure the central line to clothing or a lanyard.

## Troubleshooting your child's central line

Problem	Solutions
<b>Line does not flush.</b>	<ol style="list-style-type: none"> <li>1. Check to see if central line is clamped or kinked.</li> <li>2. Call the SCCA clinic or after-hours numbers for instructions.</li> </ol>
<b>Fluid is leaking from the central line.</b> Central line may be cut accidentally if dressing is removed with scissors.	<ol style="list-style-type: none"> <li>1. Immediately place a bulldog clamp on the central line as close to the chest as possible.</li> <li>2. Wash hands and put on gloves</li> <li>3. Check the central line to find the break. It can be as small as a pinhole.</li> <li>4. Clean the break with an alcohol wipe.</li> <li>5. Wrap a sterile 2x2 gauze or an alcohol wipe around the break in the central line and tape it in place.</li> <li>6. Call the SCCA clinic or after-hours numbers for instructions.</li> </ol>
<b>Central line end cap comes off.</b>	<ol style="list-style-type: none"> <li>1. Immediately clamp central line – <b>DO NOT REPLACE CAP.</b></li> <li>2. Wash hands and put on gloves</li> <li>3. Scrub central line end with alcohol for 15 seconds and let dry 5 seconds.</li> <li>4. Place sterile saline syringe on end of central line – <b>DO NOT FLUSH.</b></li> <li>5. Call the SCCA clinic or after-hours numbers for instructions.</li> </ol>
<b>Swelling around the exit site or fluid leaking from exit site.</b> Swelling of the exit site, or bloody drainage or fluid leaking from the exit site can be a sign that the central line is out of place.	<ol style="list-style-type: none"> <li>1. Stop any fluids running into the central line.</li> <li>2. Place an ice pack on the swollen area; do not apply directly to bare skin.</li> <li>3. Call the SCCA clinic or after-hours numbers for instructions.</li> </ol>
<b>Swelling of the neck and face.</b> Swelling of the neck and face can be a sign that the central line is out of place or that the vein is obstructed.	<ol style="list-style-type: none"> <li>1. Stop any fluids running into the central line.</li> <li>2. Call the SCCA clinic or after-hours numbers for instructions.</li> </ol>
<b>Air in the central line, your child is NOT short of breath.</b> This could be caused by air being accidentally injected into the central line or the end cap falling off when the line is not clamped.	<ol style="list-style-type: none"> <li>1. Check the clamp to make sure that it is closed.</li> <li>2. Wash hands and put on gloves.</li> <li>3. Open 2 saline syringes and 1 heparin flush syringe.</li> <li>4. Scrub the end of the central line cap with alcohol wipe for 15 seconds and let dry 5 seconds.</li> <li>5. Attach one of the saline syringes.</li> <li>6. Unclamp the line.</li> <li>7. <b>Pull back</b> on the syringe until blood appears.</li> <li>8. Clamp the line and discard the syringe.</li> <li>9. Scrub the end of the central line cap with alcohol for 15 seconds and let dry for 5 seconds.</li> <li>10. Flush the central line as usual, making sure to close the clamp at the end of the flush.</li> <li>11. Call clinic if central line end cap is off.</li> <li>12. <b>If you become short of breath, call 911.</b></li> </ol>
<b>Air in the central line and your child SUDDENLY becomes SHORT OF BREATH, DIZZY, OR CONFUSED.</b>	<ol style="list-style-type: none"> <li>1. Lie your child down on their left side so that their right hip is lifted above the level of the heart while checking the clamps on the central line to be sure they are closed.</li> <li>2. Call 911 for emergency assistance.</li> <li>3. Tell the medics to take your child to Seattle Children's emergency room.</li> </ol>

