



MODIFIED ON: JANUARY 2025

Port: Central Venous Catheter Care Manual

A Helpful Resource for Your Family

This book belongs to:

My child has a _____ (type) line in their
_____ (location of the body)

This central line is used for _____.

The medical team managing my child's line is _____.

Company delivering supplies and IV medicines _____;

Phone number _____;

contact person/direct phone number _____.

Company providing nursing support at home _____;

Phone number _____;

contact person/direct phone number _____.

**If your child is under 5 years old, ask about the Gus Gear vest for chest CVC's.*

Important phone numbers:

If you have questions or concerns about your child's central line, call:

- Your child's doctor or care team
- The Parent Smart Nurse line: 720-777-0123

Watch the central line videos

Scan the QR code below to watch the videos on YouTube:



Table of Contents

6	What is a Central Venous Catheter?
10	Emergencies
12	Entering and Flushing the Catheter
16	Changing the Cap
20	Tubing Change
22	Changing the Dressing
26	Putting on EMLA
28	Port Accessing
32	Port De-accessing
35	Living with a Port
40	Common Questions

What is a Central Venous Catheter?

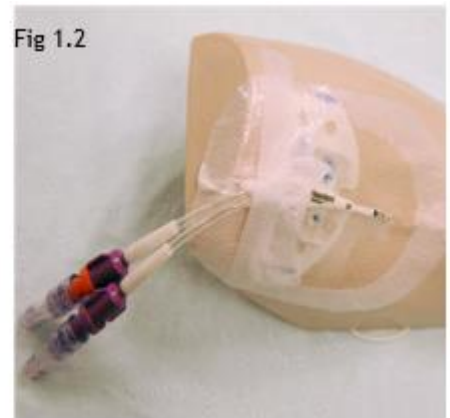
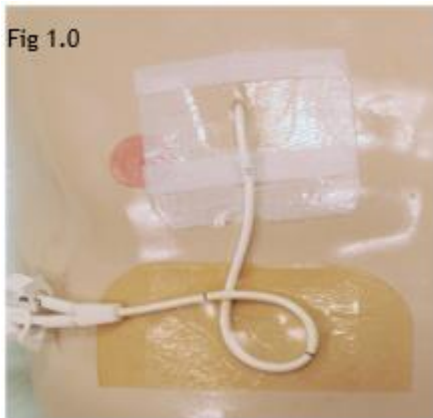
Helpful tips about CVC care



What is a Central Venous Catheter?

A central venous catheter (CVC) or central line is like a permanent IV. This tube is put into the body to deliver medicine and fluids to the heart, so it can be moved to the rest of the body quickly. It can also be used to draw blood for lab work. Most of the time the CVC is put in during surgery, however sometimes it is put in while the child is awake. Because the CVC goes straight into the heart, we have to be very careful when caring for the line, to make sure it does not get an infection. Your nurse will show you how to properly care for the central line.

Some common types of CVCs used at Children's Hospital Colorado are Broviacs (Fig. 1.0), Mediports/Powerports, (Fig. 1.1) and Peripherally Inserted Central Catheters (PICC's) (Fig.1.2).



What is a central line-associated bloodstream infection (CLABSI)?

A central line-associated bloodstream infection (CLABSI) is an infection that can happen when bacteria or other germs enter the blood of a patient with a central line. If a patient gets a CLABSI they may get a fever and chills and become very sick. This infection should be considered an emergency, even though it is well treated for with medicines. The area around the central line may look red and irritated with a CLABSI.

Increased risk of infection

A CVC puts a patient at an increased risk of getting an infection. Even if you do all the right steps in caring for your child's central line, it can still get infected. **The most important thing to do is call your child's doctor right away when your child has fever, redness at the CVC site, or any type of illness.** We will help you with the next steps on what to do.

How are CLABSIs treated?

This type of infection is treated with medicines through the CVC, usually antibiotics. Sometimes, the CVC may need to be removed.

What can you do to reduce the risk of CLABSI?

- Clean your hands and put on clean gloves, every time you touch the CVC or handle supplies to help prevent infection (Fig. 1.3).
- Use soap, running water and friction (or use hand sanitizer and friction) for 15 seconds to wash your hands. Use a clean towel or paper towel to dry.
 - If your hands are not visibly dirty, you can use a hand sanitizer – using friction until your hands are dry.
 - The most important thing about cleaning your hands is to use a lot of friction when rubbing them to make sure they're clean.
- If the dressing gets dirty, wet, or is peeling off do a sterile dressing change, or call the clinic or your homecare nurse right away.
- Change the dressing, caps, and tubing at the scheduled times.
- Do not **have fake nails**, gel, shellac, or chipped nail polish.
- Do not do any central line care in the kitchen or bathroom and if you have pets be sure to keep them out of the room.
- Brush your teeth twice a day - using a soft bristle toothbrush or toothette.
 - Talk to your child's care team before going to the dentist.
- Take a bath or shower every day.
- Put on clean clothes and underwear daily.
- Change bed sheets every week.
- Change towels used for bathing at least twice a week.
- If a Gus Gear vest is used to secure the line, wash it every day. You should have 2 vests to allow for daily washing.
- Change Bandnet with every bath.
- Keep supplies in a clean, dry place like a dresser or closet.
- Limit the number of times you use the CVC.
 - This may mean getting a finger poke when labs are needed.
- Decide each day if the CVC is still needed and remove it as soon as possible, if it's not needed.

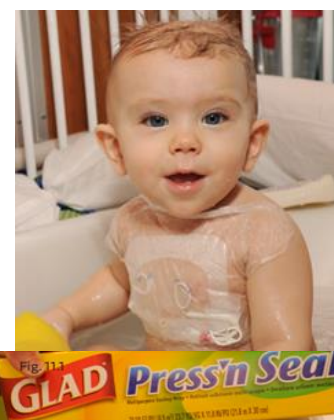


Fig. 1.3

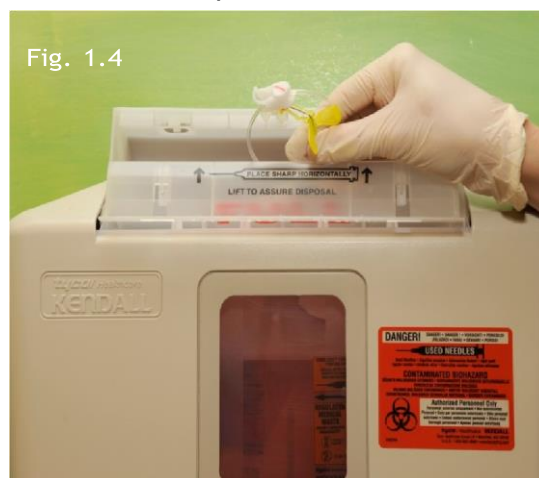


Fig. 1.4

Helpful tips about CVC care

- If your child is allergic to any of the supplies needed, please let your nurse know. We can help find a product that works best for your child.
- Put used needles (sharps) in a puncture resistant container (like a strong plastic or metal container with a screw-on lid) (Fig. 1.4). Examples are empty formula, coffee, or detergent containers. When full, the container should be taped closed and thrown away in the normal trash.
 - If you are throwing away sharps that were used for chemotherapy, your home care company will pick the container up OR bring it to your local hospital to be thrown away.
 - Keep any sharps container out of ANY child's reach.
- When your child is at home, they should continue normal activities, but try to avoid rough-housing or forceful movement. We want to make sure the CVC does not accidentally get pulled out.
- **Do not let anyone touch the CVC unless they are familiar with how to use it.** If you go to another hospital, take a copy of the steps of how to care for the CVC with you. It is okay if they choose to follow their own procedure instead.
- A home care company will be chosen before your child leaves the hospital. They will deliver supplies and equipment you will need to care for the line. To get more supplies, contact your home care company.

Emergencies



Emergencies

Keep emergency supplies with you at all times, especially if you live outside the Denver Metro area.

Call your child's care team or go to the Emergency Room right away for any of the following:

- Fever of 101°F (38.3°C) or higher at **any time** OR
- Fever of 100.4°F (38°C) or higher **two** times in 24 hours (taken 2 hours apart)
- If your child is followed by the GI team, fever criteria is 100.4°F (38 °C) or higher 1 time.
- Swelling of chest, neck, face, or arm
- Cannot flush the CVC (**don't force it**)
- Pain, redness, or swelling at the site
- If the needle comes out, call your child's doctor right away, or reaccess the port if you have been trained to do so.
- If the catheter is leaking, deaccess your child's port and call right away.
- **Never** use scissors or sharp objects near the CVC!
- If the CVC breaks, deaccess your child's port and call right away.

Entering and Flushing the Catheter



Entering and Flushing the Catheter

General Information

Each CVC lumen or tube must be flushed at least 1 time a day to keep the line open and flowing well. If you are not using the CVC at home, you still need to flush 1 time a day with Heparin only (see schedule below). If you are using the CVC to give IV fluids, TPN/lipids or medicine, you will use the SASH method for flushing (see page 14).

CVC Flushing Schedule/Volume for Heparin Flushes

CVC device	Patient Weight	Volume	Frequency	Solution
Flush schedule when accessed				
InfusaPort™ MediPort™ PortaCath™ Powerport™	Less than or equal to 10 kg (22 lbs)	1-2 ml	Daily	Heparin 10 units/ml (Prefilled Syringe)
	Over 10 kg (22 lbs)	3-5 ml		
Flush schedule when not in use				
InfusaPort™ MediPort™ PortaCath™ Powerport™	Less than or equal to 10 kg (22 lbs)	1-2 ml	Monthly	Heparin 100 units/ml (Prefilled Syringe)
	Over 10 kg (22 lbs)	3-5 ml	Monthly	Heparin 100 units/ml (Prefilled Syringe)
Flush to de-access				
InfusaPort™ MediPort™ PortaCath™ Powerport™	Less than or equal to 10 kg (22 lbs)	1-2 ml		Heparin 100 units/ml (Prefilled Syringe)
	Over 10 kg (22 lbs)	3-5 ml		Heparin 100 units/ml (Prefilled Syringe)

CVC Flushing Supplies

1. Alcohol swabs
2. Normal saline or heparin syringe
3. Clean gloves



How to Flush a CVC

1. Wash Hands for 15 seconds or use hand sanitizer.



2. Put on clean gloves.



3. Open the syringe packaging.



4. Take cap off the syringe, pull back plunger then push out the air bubble, put the cap back on. *(Remember, only touch the sides of the blue cap, not the part that attaches to the syringe.)*



5. Clean the cap with friction for 15 seconds, let it dry for 15 seconds. **DO NOT** touch the tip of the cap after it's been cleaned.



6. Attach the syringe to the cap, unclamp the line, flush using push-pause method. Clamp the line then remove the syringe.



PORT: CENTRAL VENOUS CATHETER

SASH Method

When giving IV fluids, TPN/lipids or medicine at home, use the SASH method:

clean Saline *clean* Administer (give) medicine *clean* Saline *clean* Heparin

The reason you'll flush in between the medicine and heparin is to make sure they don't mix together. If the medicine is flushed with heparin, it may cause the medicine not to work.

REMEMBER: Clean with a **new alcohol pad** in between each step!

Important Reminders

- Always wash your hands or use hand sanitizer and put on clean gloves before touching the CVC.
- Always clean the clear cap on the end of the CVC with a new alcohol wipe before connecting anything to it (flushes, medicine, tubing, etc.).
 - Scrub the cap with alcohol for 15 seconds and let it dry for 15 seconds. The alcohol works best when it dries completely, so don't skip that step!
- Each lumen or tube must be flushed separately.
- Always use 5-10 ml syringe for flushing any CVC, no smaller, no bigger.
- Always use the push-pause method when flushing. Push a little fluid and then pause, this helps make sure clots do not form on the line.
- If it feels difficult to flush the line and you feel like you need to use force to flush it, **STOP! Don't flush it**, there might be a clot in the line. Close the clamp and call your child's doctor.

Alcohol Caps

- Alcohol caps are an added layer of protection for the end of the line, but the line is not considered to be open if these are not used.
- Not all hospitals and home care companies use alcohol caps.
- If you're using alcohol caps on the end of the CVC when it's not being used, you should still clean with alcohol after removing them.
- Each alcohol cap should only be used 1 time, so throw it away after removing it.



Changing the Cap



Changing the Cap

General Information

The clear caps on the end of each CVC lumen or tube must be changed 2 times a week or sooner if they get dirty. Pick 2 days that are a few days apart, such as Monday and Thursday, and change the caps on those 2 days every week.

- Make sure you do not go more than 4 days without changing the cap.
- If your child has IV fluids or medicine running continuously (all the time), change the tubing and cap together.
- Cap changes at home are done using clean technique which is different than in the hospital.

Important

If the clear cap looks dirty (with poop, throw-up, or you noticed it's in the diaper or toilet) change the cap right away. If you accidentally touch any materials when you are changing the cap, throw the dirty supply away and start again.

If the end of the line without a cap is accidentally touched, DO NOT clean it with alcohol. Instead, carefully replace the cap with a new, clean one right away.

Outpatient and Home Care Cap Change Frequency

CVC is being used for:	Change frequency
Daily flushes or medicine	2 times a week
IV Fluids given continuously (running all the time)	2 times a week
IV Fluids given intermittently (not running continuously)	2 times a week
TPN	2 times a week
Lipids	2 times a week
Chemotherapy	2 times a week
**Any cap that appears soiled	Change right away

Cap Change Supplies

1. Clear cap
2. Normal saline syringe
3. Heparin 10 unit/1ml syringe
4. Clean gloves
5. Mask



How to Change a Cap using Clean Technique

1. Put on mask, for you and your child (and any helpers).



2. Wash hands for 15 seconds and put on clean gloves.



3. Open syringe packaging.



4. Take cap off syringe, push out air bubble, put cap back on.



PORT: CENTRAL VENOUS CATHETER

5. Open cap packaging from the bottom side and attach syringe.
 - Keep the packaging on the cap as best as possible.



6. Prime cap: push liquid through the cap until you see it come out the other side. Take off the package.



7. Carefully remove the blue tip of the cap



8. Take the old cap off the line.



9. Quickly put the new cap on the line.



10. Unclamp the line, flush the line.
Clamp the line then remove the syringe.



Tubing Change



Tubing Change

General information

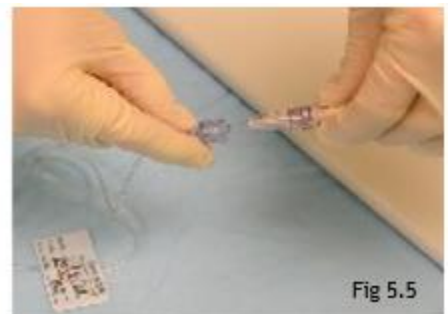
The tubing used for your child's infusion will need to be routinely changed. Depending on what your child is getting through their central line, the tubing may need to be changed with each new bag of medicine or fluids, or it will need to be changed twice a week with their cap changes. Please follow the instructions provided by the home care company providing your infusion supplies.

Tubing Change Procedure

1. Wash hands with soap and water or use hand sanitizer for 15 seconds. Make sure to rub your hands really well so they are completely clean (Fig. 5.1).
2. Put on clean gloves (Fig. 5.2).



3. Clamp CVC.
4. Remove the old IV tubing.
5. Scrub the cap with an alcohol swab for 15 seconds and let it dry for 15 seconds. Don't forget to use friction. (Fig. 5.3). *Remember: if anything gets touched after it's cleaned, clean again, or throw the dirty supply away.*
6. Follow the "Flushing the Line" steps and flush the line with normal saline. (Fig. 5.4).
7. Remove syringe and clean the cap again with a new alcohol wipe for 15 seconds and let dry for 15 seconds.
8. Remove the protective tip from the end of IV tubing.
9. Attach the primed IV tubing to the cap (Fig. 5.5).
10. Unclamp CVC.
11. Start infusion pump.



If you have any questions about the pump, please contact your home care company.

Changing the Dressing



Changing the Dressing

General information

- CVC dressing changes are done using sterile technique.
- Chlorhexidine (Chloraprep®) is the cleaning agent used to clean the area where the dressing is placed.
 - If your child has an allergy to Chlorhexidine there are other cleaning products we can try.
 - Please ask your doctor or nurse for more information.
- Clear dressings are preferred for all CVCs.
 - Dressings are changed every 7 days with needle change or if wet, dirty, or peeling off.
 - If you notice the dressing is peeling off, it needs to be changed right away.
 - Gauze should not be put under the dressing unless the site is oozing. If gauze is used, change the dressing every 2 days.
- Do not scrub too hard on a new dressing site, but friction is important!

Dressing Change Supplies (Fig. 6.0)

1. Clean Gloves
2. Sterile Gloves
3. Mask for caregiver, helpers and patient
4. Clear Dressing
5. Chlorhexidine (or other cleaning agent)



How to Change a dressing using sterile technique

1. Clean surface area (table) for sterile field.
2. Put on mask, for you and your child (and any helpers).



3. Wash hands for 15 seconds and put on clean gloves.



4. Set up sterile field (sterile gloves, ChloroPrep, dressing). Be sure to only touch the inside of the gloves. After you have the sterile gloves on, only touch the port supplies.



5. Take off old dressing (you may use adhesive remover) and check site for oozing, redness, bleeding, skin breakdown, rash.



PORT: CENTRAL VENOUS CATHETER

6. Wash hands for 15 seconds.



7. Put on sterile gloves.

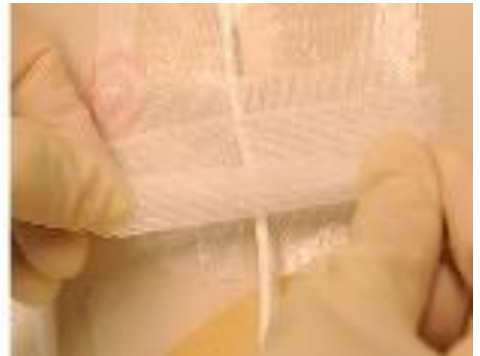


8. Clean the CVC area for 30 seconds using a back-and-forth motion.



9. Let dry (this takes about 2 minutes).

10. Apply dressing and tape for extra security



EMLA Cream



Putting EMLA (Numbing Cream) on the Port Site

What is EMLA?

EMLA is a numbing cream that helps your child feel less pain before their port is accessed. To access the port, a large needle is put into the skin to deliver medicines to the port. The needle is good for 7 days before we must change it. This is to prevent infection and keep the central line area clean.

How to put EMLA on

- Put EMLA cream on the port site 45-60 minutes before it needs to be accessed. This can be done at home before coming in for a visit or before getting accessed for medicines at home. In an Emergency we may not have time to wait to numb the site before accessing. This is for your child's safety.
- The supplies you will need to put EMLA on the port site are (Fig. 7.0):
 - EMLA cream
 - Glad Press n'Seal or
 - Clear dressing (Tegaderm)

Fig. 7.0



1. Find the port site.
2. Glob on a quarter size amount of cream*
3. Put either a clear dressing or Press'n Seal over the cream.
4. Wait 45 - 60 minutes before accessing the port.

*Make sure not to rub in the cream, and instead glob it on.

Port Accessing

How to put the needle in



Port Accessing

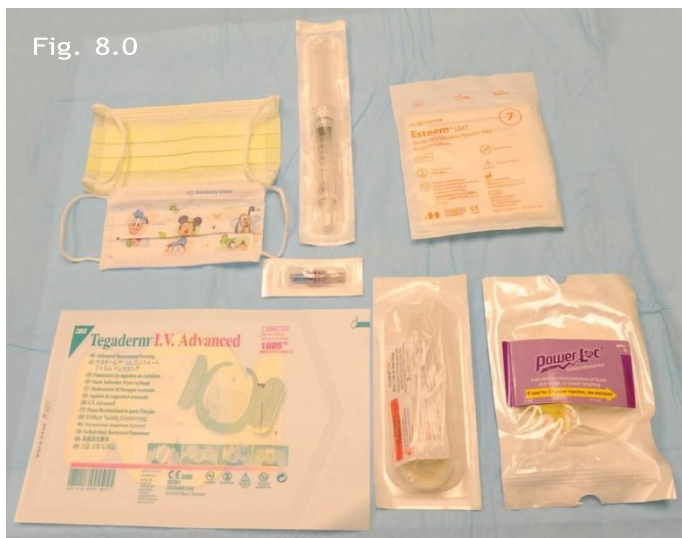
Port Access Info

- Port access and dressing changes are done using sterile technique.
- You will be specially trained how to do this. **DO NOT** let anyone that has not been trained access the port.
- The needle used is called a non-coring needle. It's important to know which size needle is used for your child.
 - My child's needle size is _____ inch, _____ gauge
- Needles are changed every 7 days or sooner if having problems (like not being able to draw back or flush).
- The clear dressing on the needle is changed every 7 days with needle changes or sooner if loose, dirty or wet.
- EMLA cream can be used before port access (see page 27).

For a double lumen port do this for each port

Port Access Supplies (Fig. 8.0)

1. Sterile Gloves
2. Clean Gloves
3. Mask for caregiver, patient and any helpers
4. Clear Dressing
5. Chloraprep® 3ml Applicator (or other cleaning product if allergic)
6. Needle
7. Cap
8. Normal Saline Syringe



How to access a Port using sterile technique

1. Put on a mask for you and your child (and any helpers) then wash hands for 15 seconds.



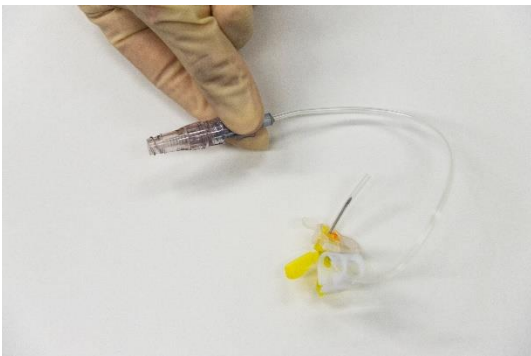
2. Set up sterile field (sterile gloves, sterile saline, Chloraprep, dressing, port needle and cap).



3. Put on sterile gloves. Be sure to only touch the inside of the gloves. After you have your sterile gloves on, be sure to only touch the port supplies.

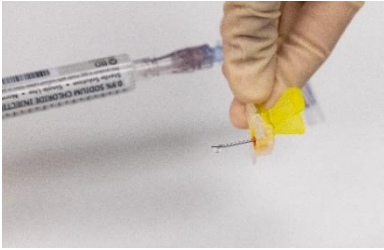


4. Attach cap to the port needle, then attach saline to the cap.



PORT: CENTRAL VENOUS CATHETER

5. Prime the cap and needle with saline (push fluid so you can see it dripping out the needle)



9. Once accessed, flush 5mL of saline into the port. It should flush easily.



6. Clean the skin using Chloraprep for 30 seconds (using a back-and-forth motion). Let dry (this takes about 2 minutes)



10. Pull back on the syringe to check blood return, and then flush the rest of the saline into the line.



7. Use non-dominant hand to hold the port stable.



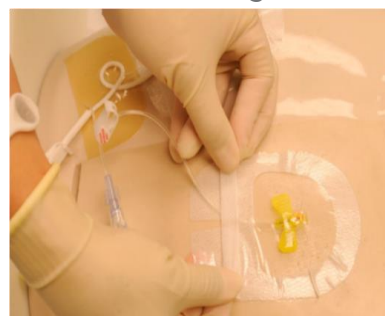
11. Clamp the line.



8. With the dominant hand, hold the needle by the wings, and firmly push the needle into the center of the port.



12. Put on the dressing



Port De-Access

How to take the needle out



Port De-Accessing (Taking the needle out)

Port De-Access Supplies:

- Heparin 100 units/1ml Syringe (yellow syringe)
- Clean Gloves
- Gauze or bandaid
- Adhesive remover (if needed)



How to De-Access the Port:

1. Wash hands for 15 seconds or use hand sanitizer. Put on clean gloves.



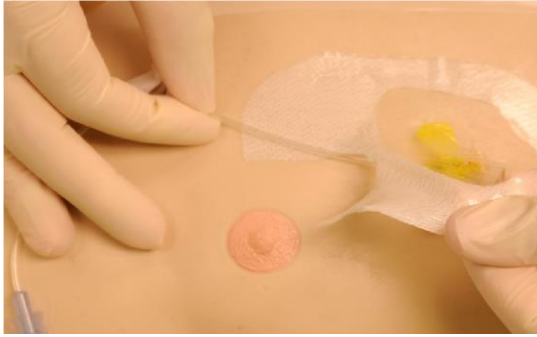
2. Clean the cap with alcohol for 15 seconds and let it dry for 15 seconds.



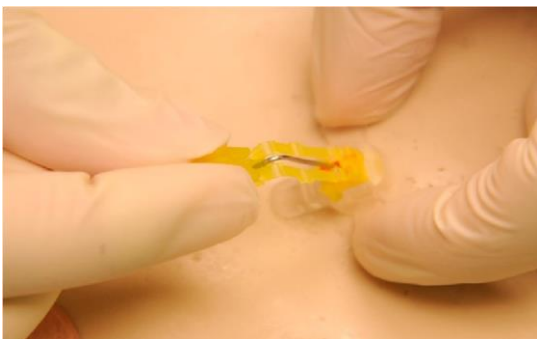
3. Flush the line with Heparin (100 units/1ml) following the “CVC Flushing”



4. Remove the clear dressing, using alcohol swabs or adhesive remover to loosen the dressing.



5. Once the dressing is off, use one hand to hold the port against the chest. While holding the wings with the other hand, slowly and firmly pull needle straight up until you hear a click. You will see an orange button at base of the needle. This puts a safety cap over the needle to prevent pokes.



6. Throw away the needle in sharps or hard plastic container (empty formula, coffee, or detergent holder).



7. Wipe any drainage on the skin with a gauze and put a Band-Aid on the site.



Living with a Port



Bathing and Showering

General Information

If your child's port is accessed at home, (the needle is connected) and your child wants to take a shower or bath, it is important to prevent the dressing from getting wet. **Germ's love any moisture so make sure the dressing is completely covered when bathing and showering.** This will help decrease the chance of the CVC getting an infection. **If your child is de-accessed, there are no restrictions for taking a bath or shower.**

- There are 2 things that are available to cover the dressing during a bath or shower: Aquaguard® which is available in the hospital and GLAD Press'n Seal® which can be bought at the store and used at home. Sometimes home care companies will give you Aquaguard® to use at home.
- Always cover your child's CVC site, even if you will be changing the dressing after the bath or shower.
 - For baths: only fill the tub to the waistline or lower to make sure the water is away from the CVC.
 - For showers: keep the water spraying on the back of your child, away from the CVC.
- If your child is connected to tubing, make sure to hold the tubing out of the water so that it does not get wet.
- If your child is wearing a Gus Gear vest, take it off before their bath or shower. Make sure their skin is dry before putting on a clean vest.



PORT: CENTRAL VENOUS CATHETER

Using GLAD Press'n Seal®

1. Take a piece of GLAD Press'n Seal® that will be large enough to completely cover the site. (Fig. 11.1)
2. Wrap the caps with GLAD Press'n Seal® to make sure they stay dry.
3. Pull the caps up to the dressing, so they are not hanging out of your covered area.
4. Apply GLAD Press'n Seal® over CVC dressing, covering the dressing and caps. (Fig. 11.2)
5. You may need to use some tape on the edges to make sure the GLAD Press'n Seal® forms a tight seal on the skin.
6. Pat the body and site dry with a clean dry towel, before removing the GLAD Press'n Seal®.
7. Remove the GLAD Press'n Seal® after the bath or shower is finished.
8. If CVC dressing seems wet, change it right away.



What if my child is on continuous intravenous (IV) fluids?

- If your child is on continuous IV fluids and they can be stopped for the time of the bath, disconnect the fluids to ensure the site is fully covered for the bath or shower.
- If you are not able to disconnect the IV fluids, use GLAD Press'n Seal® to cover the site and cover all the IV connections near the site (Fig. 11.3).
- Use small pieces of GLAD Press'n Seal® to wrap around the IV connection (Fig. 11.4).
- Remove the GLAD Press'n Seal® after the bath or shower is finished.



Swimming

Swimming and Water Sports with an Implanted Port

Children with ports that are **de-accessed (do not have a needle in)** can swim, bathe, and play with water without any issues. They do not need to cover the port site. They can swim in pools, lakes, rivers and oceans—just make sure this is okay with your doctor.

If your child wants to swim after recently being de-accessed, there is no time limit, they can swim right after!

Patients with **accessed ports (the needle is in)** cannot swim or soak in water. They can shower and bathe with a covering (see bathing section). They can participate in water activities when the chance of getting soaked or wet is low (Example: fishing on a boat or water bank but may not go rafting). The line and caps must be covered when doing these activities.



Securing the Port

What is Gus Gear?

Gus Gear is a soft fabric vest that is used to protect your child's port. It helps prevent the line from accidentally being pulled out.

Your child may use Gus Gear if:

- They have a CVC in their chest.
- They are 5 years old and younger.
- Their port is currently accessed.

Stop using Gus Gear if your child:

- Shows signs of sensitivity (redness, irritation, hives).
- Has skin breakdown or pressure sores under their vest.
- Is getting Thiotepe chemotherapy.

Before using Gus Gear with a port:

You must cut a circular area out of the part of the vest that goes over your child's accessed port. This will keep the vest from pressing on your child's port.

To do this, follow these steps:

1. Put the vest on your child.
2. Close the Velcro tabs on the front, keeping the front flap open.
3. Draw a circle around the area over your child's accessed port.
4. Take the vest off your child and cut out the circle.
5. The vest is now ready to wear.

How do I care for my child with Gus Gear?

- Look at the CVC site frequently by opening 1 strap and lifting the side of the vest. **Take the vest off right away if your child has irritation or pressure sores.** Move the tubing so it is sitting in a different place. This helps prevent pressure sores.
- Do not let the vest get wet or dirty. Take the vest off right away if it is wet or dirty.
- Wash the Gus Gear vest every day.
 - Vest must be machine washed with hot or cold water.
 - Let the vest air dry. **Do not put it in the dryer.**
- Read the Gus Gear manufacturer instructions for how to put on and take off the vest.

For more information, scan the QR code or visit the following websites:

Gus Gear website:

<https://gusgear.net/product/central-line-vest/>



Gus Gear video

<https://youtu.be/XyyiGQ1ReK4>



Common Questions



Common Questions

Questions to ask about your child's Central Line:

How long will this line be in for?

Who will take the line out when it's ready?

Who is the team that will manage the line?

What is the line being used for?