



ELASTOMERIC PUMPS



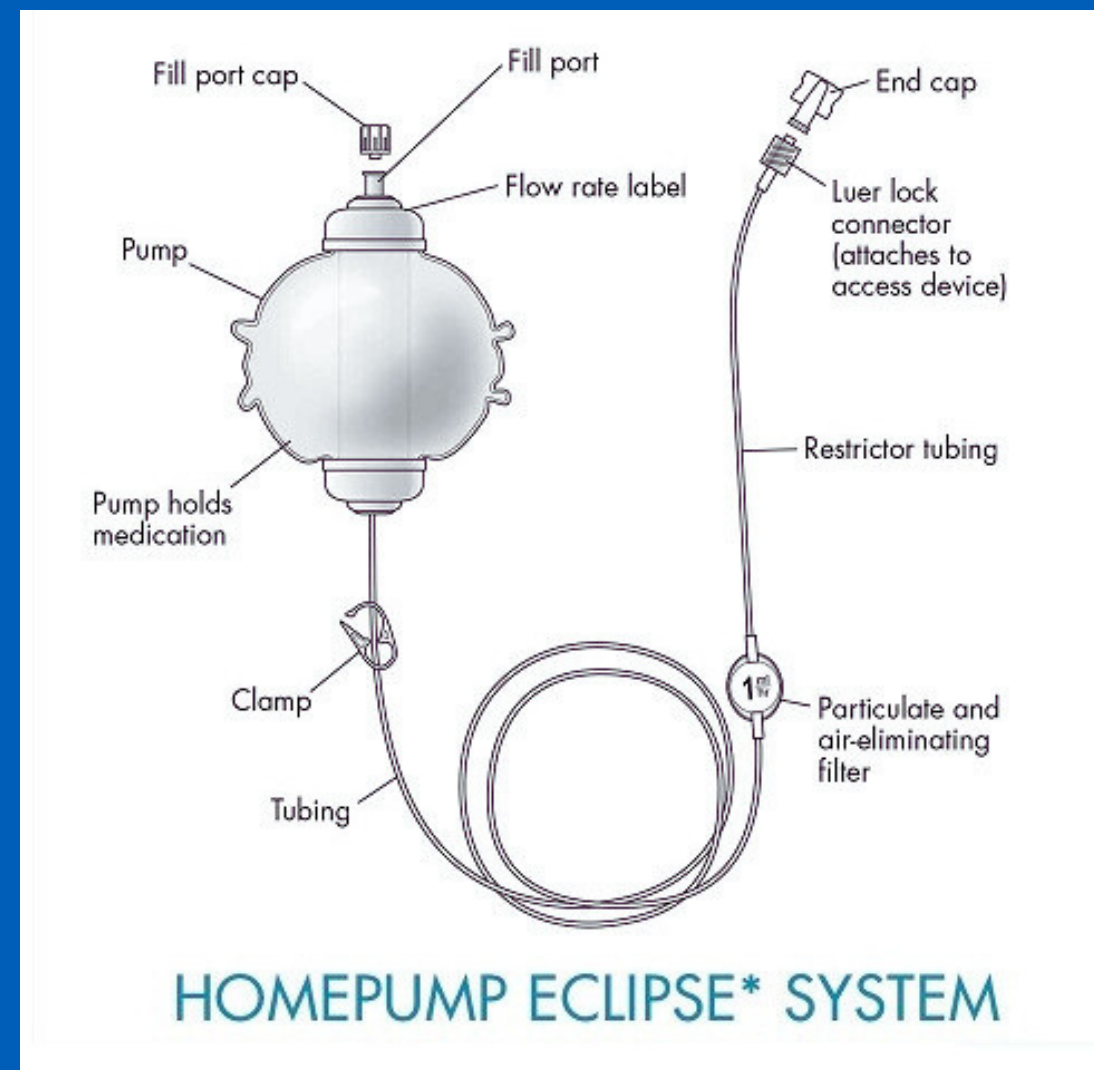
Presented by the
Vascular Access Team

Last Revised: March 12, 2024



What is an elastomeric pump?

- This is a “balloon” pump with no buttons, alarms or programming.
- Pressure from the balloon delivers your child's antibiotics through their PICC. The antibiotic medication moves at a pre-determined rate.
- It is very easy to use.
- This diagram shows the different parts of the elastomeric pump



How does it all work?



Calea Pharmacy fills the elastomeric pump and the connected tubing with the antibiotic.



You store the pump in your fridge and inspect each pump before use.



You administer to your child at the prescribed times.

Family responsibilities



● ● ●

01

Storing medication

- Be home to receive medication deliveries
- Store elastomeric pumps in the fridge away from food

● ● ●

02

Giving medication

- Ensure you are giving the medication ON TIME
- Give yourself one hour to do each dose
- Minimize distractions

● ● ●

03


Checking medication bags

- Inspect each elastomeric pump prior to administration
- Call the pharmacy or PIVOT Clinic if there is something wrong with the pump

● ● ●

04

PIVOT follow-up

- Be ON TIME to your follow-up appointments
 - If you have any problems, contact the PIVOT team as soon as you can
- 

Family and PIVOT partnership

Availability: The PIVOT Clinic may call or text you with updates. They may also check in about how things are going at home. During your child's treatment, please ensure that PIVOT can reach you by cell phone or landline. Please reply to the team within the same business day.

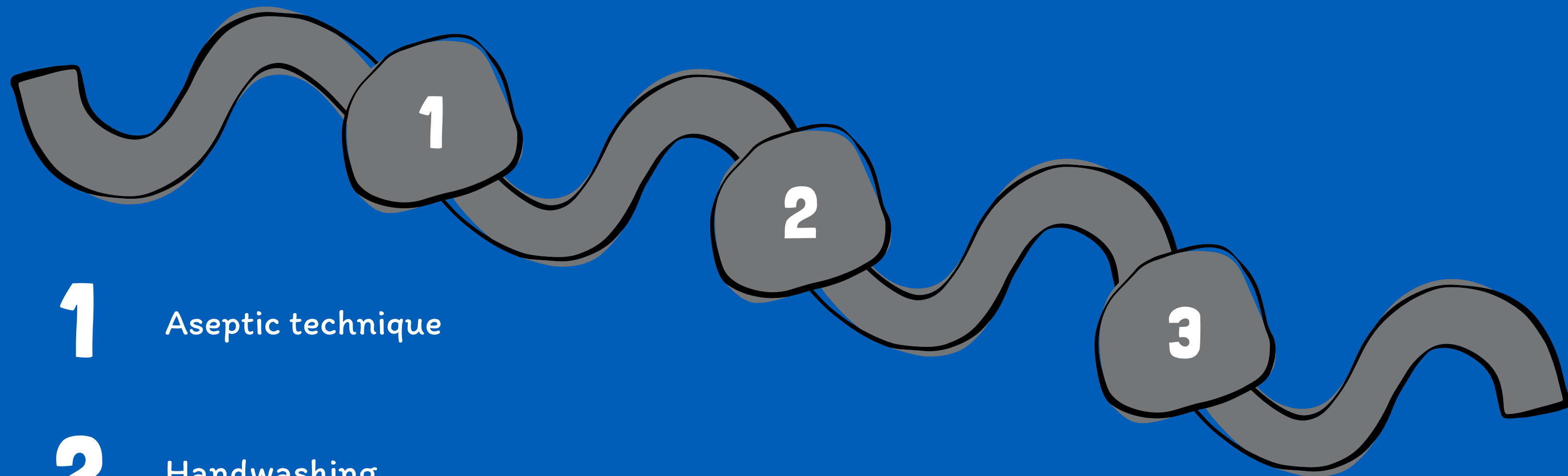
Central line: All medications from the PIVOT Clinic are to be given through a central line (PICC, Implanted Port or CVC). These medications must not go through a peripheral IV. If the central line comes out, your child must go to a health-care setting for antibiotics. Go to your nearest emergency department or outpatient IV clinic.

Updating your team: Please tell the PIVOT team and your hospital doctor if:

- your child misses a dose of medication;
- the central line comes out or does not work; or
- your child becomes unwell.

We can help you to navigate these issues.

Set-up



1 Aseptic technique

2 Handwashing

3 Setting up your work area

Set-up



4

Checking the medication bag

5

Preparing your child

6

Giving the medication



1

Aseptic technique

- Aseptic technique is a set of steps that reduces bacteria. These steps are important because bacteria in the central line can cause infections.
- For example: Before you touch the central line, you must wash your hands and create a sterile work area. “Sterile” means that all microorganisms have been removed.
- A central line goes through the body's natural barrier — the skin. It is very important to keep bacteria out of the catheter. The best way to do this is to keep the equipment, medication and exit site clean.
- Aseptic technique is a way to prevent infection from entering by this route.

*Sterile : means that all microorganisms have been removed.

All equipment and supplies you will be using for the central line must be sterile.



1

Aseptic technique

- Things can become contaminated through contact or by droplet.
- Contact contamination occurs when a clean or sterile piece of equipment comes in contact with a dirty or non-sterile surface.
- Droplet contamination is when small amounts of dust and bacteria from the air land on the equipment you are using. You can avoid contact contamination by not sneezing, coughing or smoking near the work area. If you have a cold or the flu, you must wear a mask before touching the central line.



If any of your supplies become contaminated they must be thrown away.
DO NOT USE THEM!

2

Handwashing

When to wash your hands:

- before you touch any central line supplies
- before you touch the central line or dressing
- before you do any central line procedures
- when your hands are visibly dirty
- after you use the toilet, change a diaper or touch an ostomy



- Hand sanitizers kill most microorganisms. However, they are not 100% effective against germs in stool (poo).
- If your hands are visibly dirty, you must clean them with soap and water.



Proper handwashing is the most effective way to reduce your child's risk of infection.

2

Handwashing



- Remove all jewelry from your fingers and wrists.
- Use warm water and anti-bacterial soap.
- Wash for 30 seconds (the length of "twinkle, twinkle little star").
- Dry your hands with clean paper towel.
- Turn off the tap using paper towel.

Time to practice!



3

Setting up your work area

Your work area should be:

- Clean, without drafts or dust
- Clear of food, pets and pet supplies and other non-home-IV-related items
- At waist level
- A smooth, non-porous surface



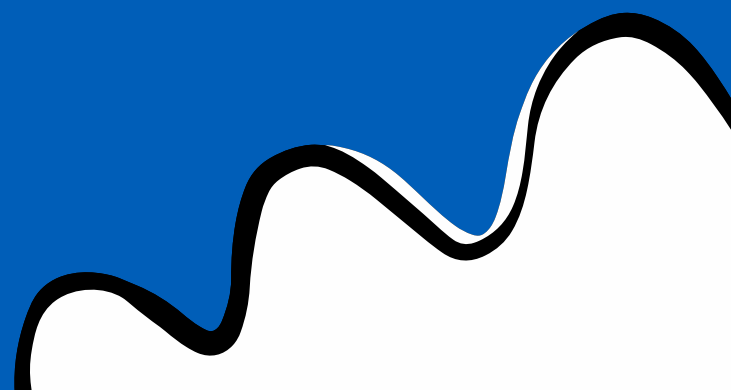
- A clean, unused large metal baking sheet is a good, non-porous work surface.
- Always clean the surface with alcohol before starting any procedure.



3

Setting up your work area

Prepare your work area:

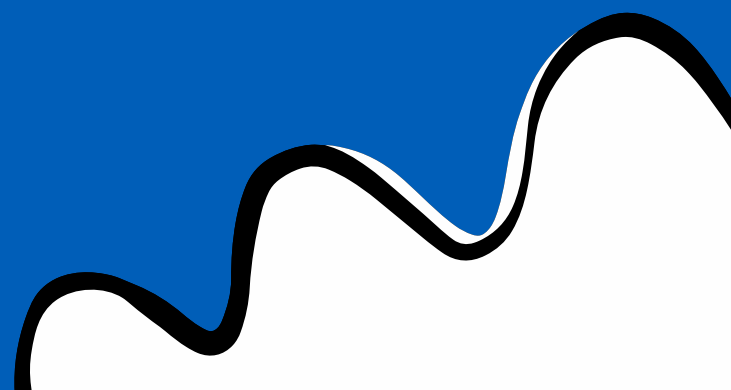
- Clean the work area with an antiseptic solution, like isopropyl alcohol, and paper towels.
 - Pour the antiseptic solution into the middle of the surface. Use the paper towels to wipe in a circular motion, and clean out toward the edges.
 - Use friction to clean your work area. Really scrub to get it clean.
 - Repeat these steps with your tray.
 - Let the work surface and tray air dry before gathering your home IV and central line supplies.
- 



3

Setting up your work area

Keep your work area clean. To reduce contact and air contamination:

- Choose a work area that is quiet, calm and separate from the busy areas of the house.
 - Keep the room clean and well-dusted. Do not allow coughing, smoking, sneezing or stirring up dust in the room.
 - During the procedure:
 1. Do not allow anyone into the room, unless they are helping with the procedure.
 2. People in the room must wear a mask if they are not family members.
 3. People in the room must wear a mask if they have a cold or illness.
- 

3

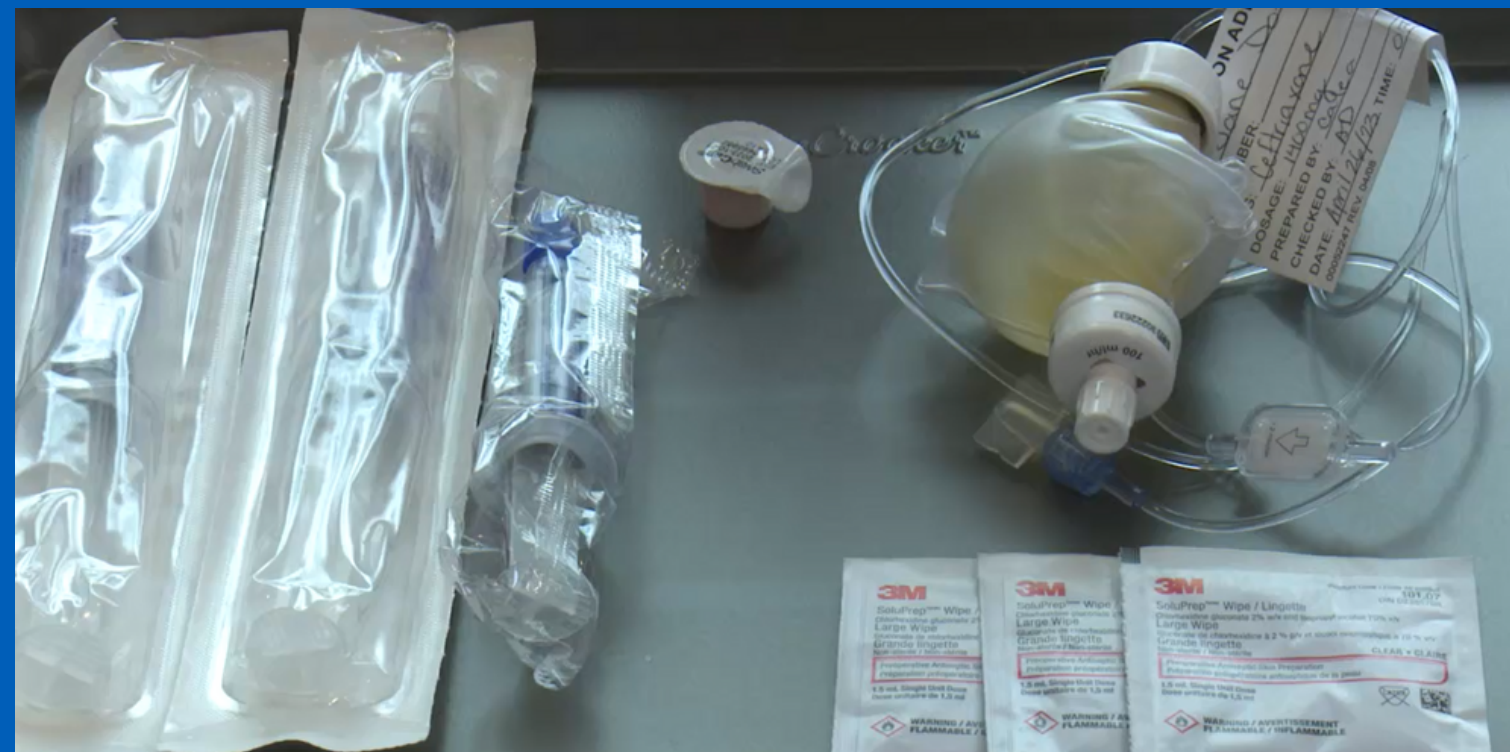
Setting up your work area

Gather your supplies and put them on your cleaned tray:

- 3 chlorhexidine swabs
- 2 saline syringes
- 1 heparin syringe
- 1 swab cap
- 1 elastomeric pump



If you are giving the medicine through an implanted port you will need 4 saline syringes



4

Checking the medication bag

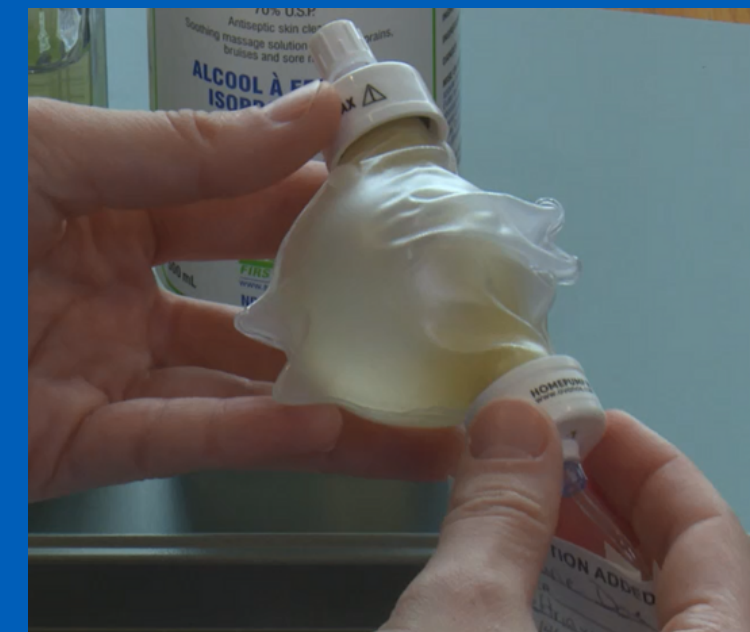
- First, check the elastomeric pump.
 - Is the name on the label correct?
 - Are the medication and dose on the label correct?
 - Has the expiration date passed?
- Then, check the parts of the pump.
 - Are the end cap and the fill port cap in place?
 - Is the medicine the correct colour?
 - Is the balloon intact?

If you see any problems on the label, do not give the medication. Contact PIVOT as soon as possible.

- Next, check the medication bag for air bubbles. If the bubble is smaller than the size of a pea, the medication is safe to use.



Ensure that the medication stays at the correct temperature. Let it warm for 1 hour, at room temperature, before your child's infusion. **DO NOT** use a warming device on the pump.



5

Preparing your child

- Make sure your child is sitting in a comfortable position. Make sure you can access the central line easily.
- Allow your child to relax while you change their medication bag. Your child can watch a show or read a book.
- Change your child's medication bag at home, in a clean space. Do not change their medication bag while you are out and about.



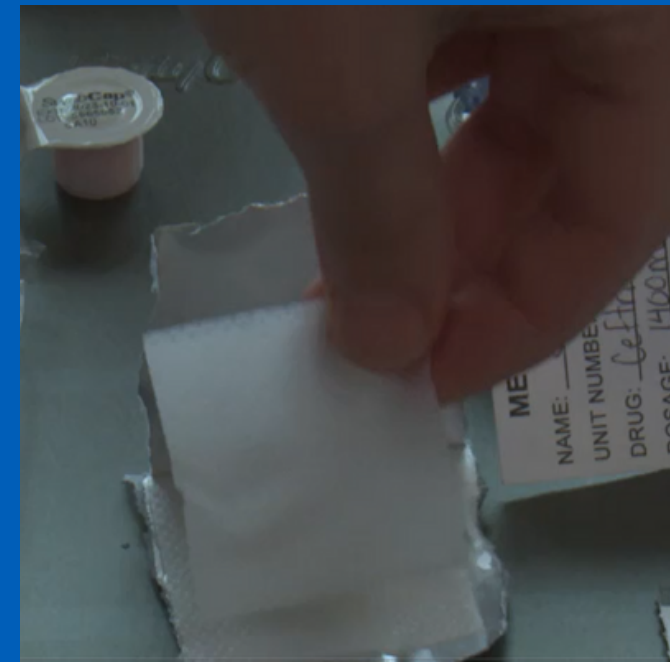
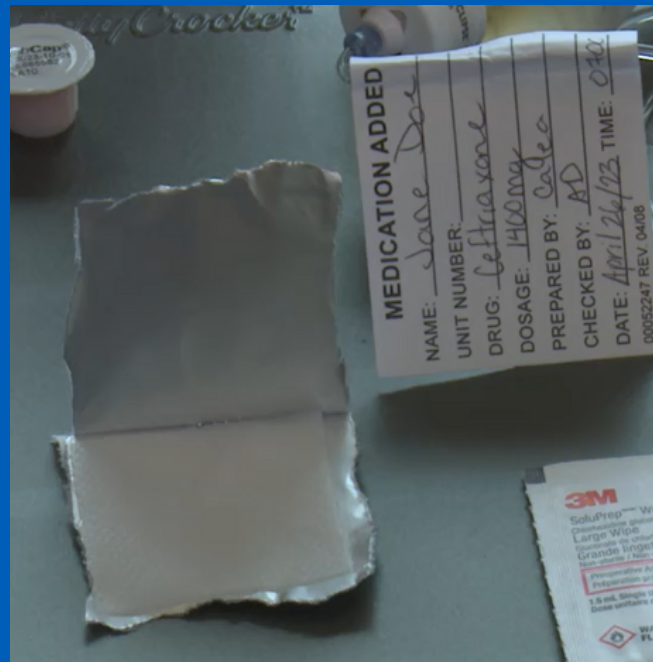
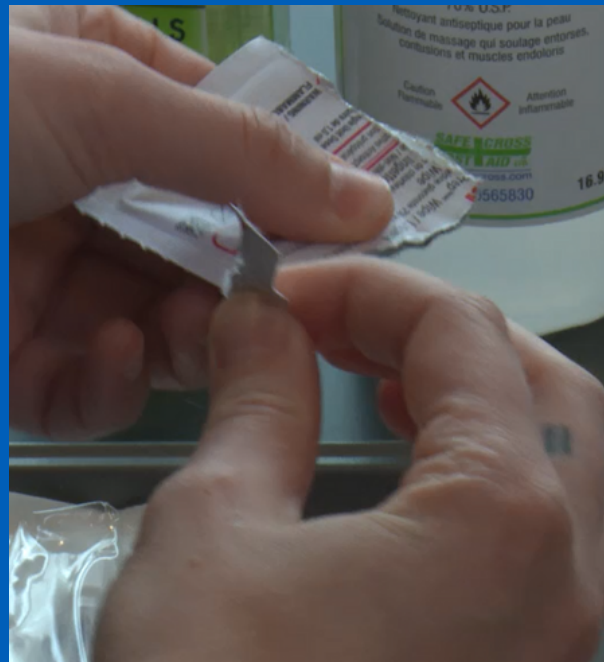
If your child wants to get up during the infusion, ensure the pump is supported. Your child can put it in a sweater pocket, or hold it gently in their hand.



6

Giving the medication

Open the chlorhexidine swab. Remove the edges on three sides. Then, open it like a book and place it on your tray.

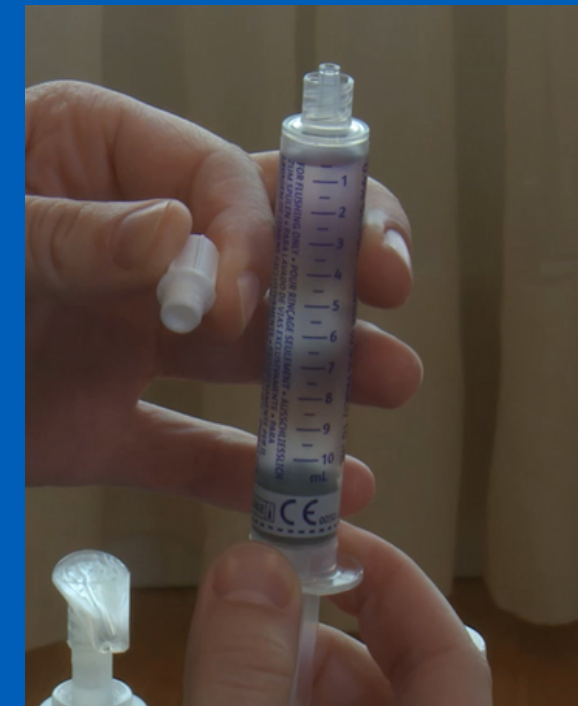
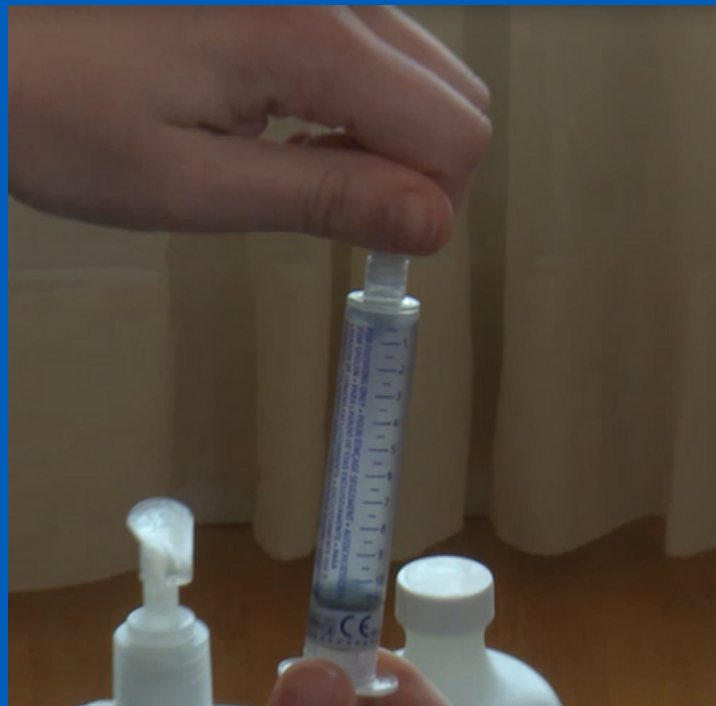
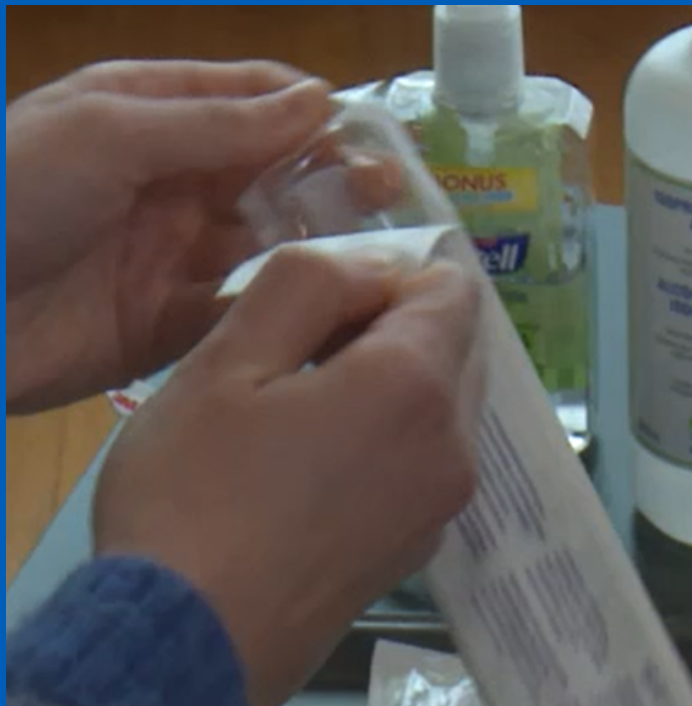


Open one more swab and place it on top of the first one.

6

Giving the medication

Open one of the normal saline syringes. Twist the cap left to open.



DO NOT touch the end of the syringe or the inside of the cap.

Pull down on the plunger to break the seal.

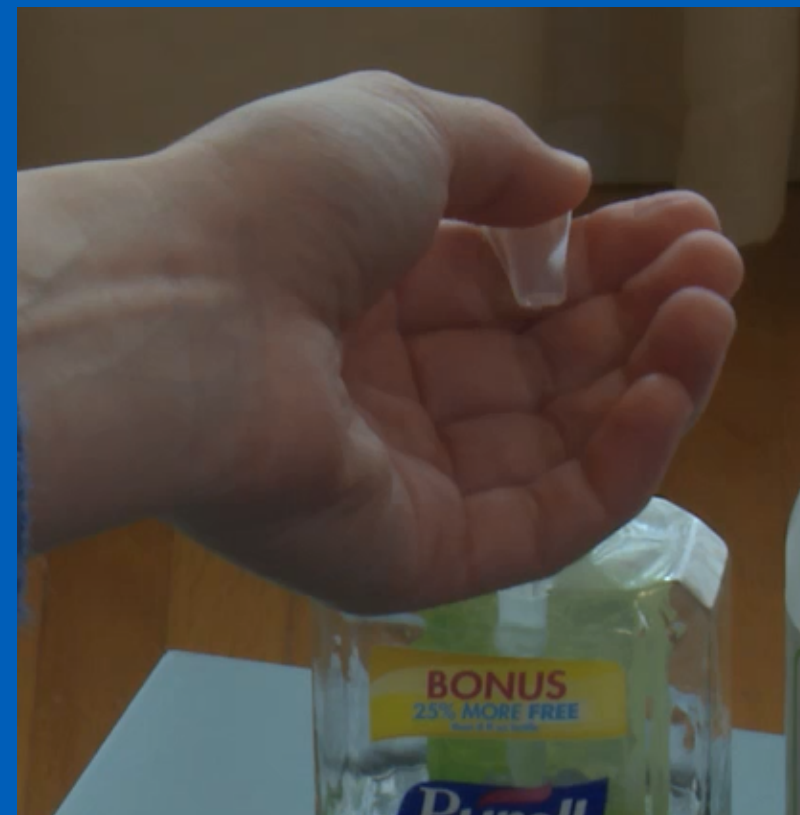
Hold the syringe level and push the plunger up to remove the air from the syringe.

Put the cap back on the syringe and place it on your tray.

6

Giving the medication

Wash your hands again after touching all the packaging and supplies. If your hands are not visibly soiled, you can use hand sanitizer.



6

Giving the medication

Hold the central line in your non-dominant hand. Remove the swab cap from the end of the line.



DO NOT fan or blow on the line.

With your dominant hand, grab a chlorhexidine swab and clean the end of the cap for 30 seconds.

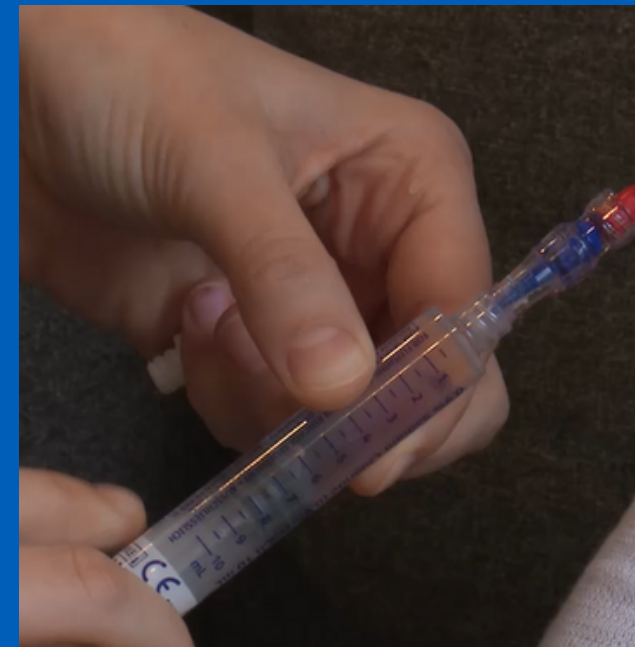
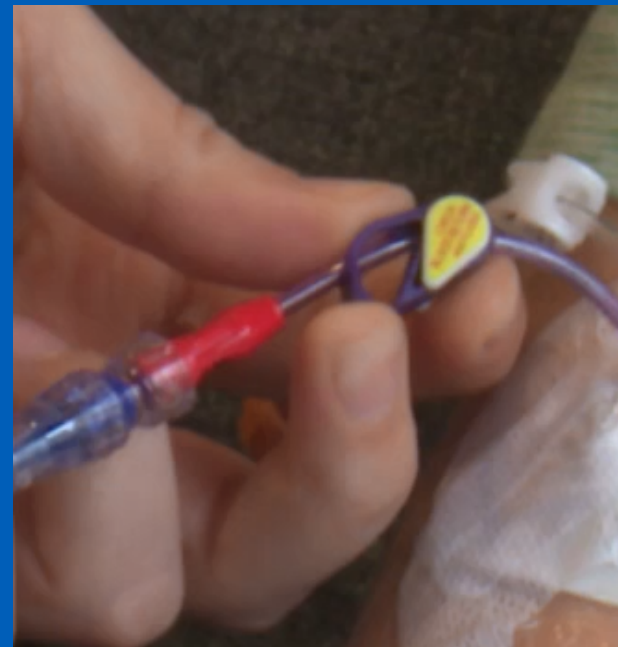
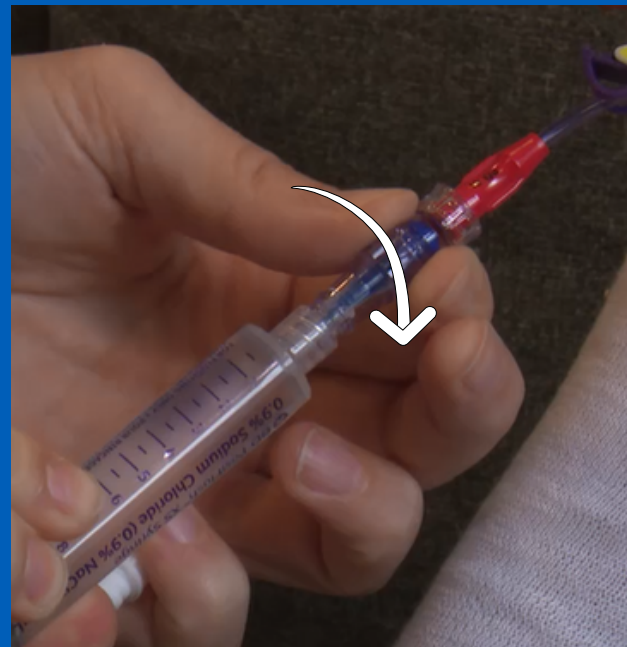
After cleaning the end of the cap discard the swab and take a new one. Scrub the central line tubing including the clamp for 30 seconds.

Do not touch the end of the cap. Allow the cap to dry for 1 minute.

6

Giving the medication

Remove the cap on the end of the normal saline syringe. Attach the saline syringe to the end of the central line by pushing in and twisting right.



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Please note: This is a 10mL syringe, so 1mL will remain in the syringe.

●●●

Please note: young infants will have a smaller flush amount (e.g. 1.5mL)

Open the clamp on the central line. Flush 9mL into the line using a turbulent flushing method. This is done by giving a quick push, pausing and giving another quick push until the 9mLs have gone in. Clamp the central line and remove the saline syringe. Ensure the end of the central line does not touch anything.



6

Giving the medication

We flush the line with normal saline to make sure it is working properly.

The elastomeric pump does not have alarms. You **MUST** flush it to check that it works. Do this before every dose of medication.

The line should flush easily with minimal resistance. If it is difficult to flush:

- First, check that the clamp is open.
 - If the clamp is open and it is still difficult to flush, **DO NOT** force it. Call the PIVOT or Vascular Access Team. They will help you fix the problem.
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6

Giving the medication

Remove the end piece from the elastomeric pump tubing with your dominant hand. (Your non-dominant hand should still be holding the central line).

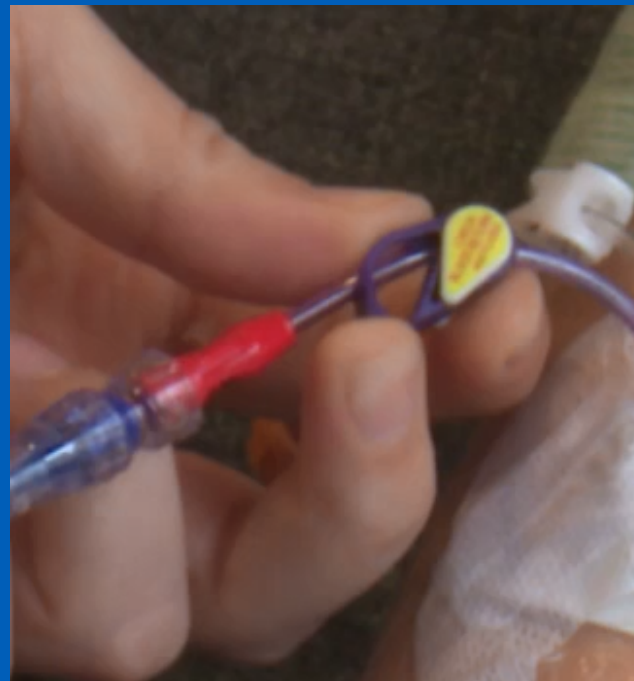


DO NOT touch the end of the tubing. Attach the elastomeric tubing to the end cap on the central line by pushing in and twisting right.

6

Giving the medication

Position the pump in the area between your child's armpits and hips. Raising the pump higher or lower can make it run too fast or too slow. Open the clamp on the elastomeric pump tubing. Open the clamp on the central line.



As soon as you open the clamps, the medication will flow. It may take 15-20 minutes before you notice that the balloon deflating (getting smaller).

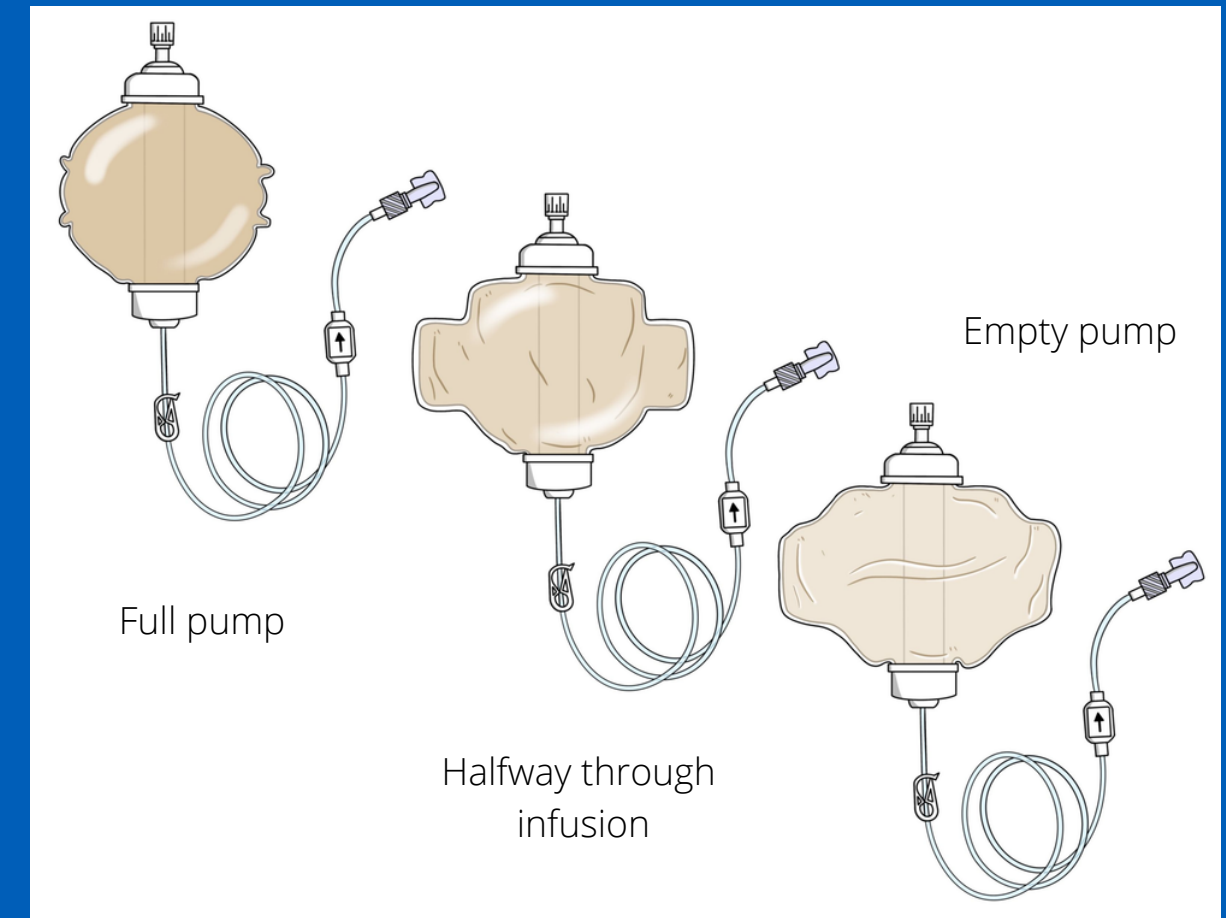
How to know it's working

Within 15 - 20 minutes you should see the balloon deflating.

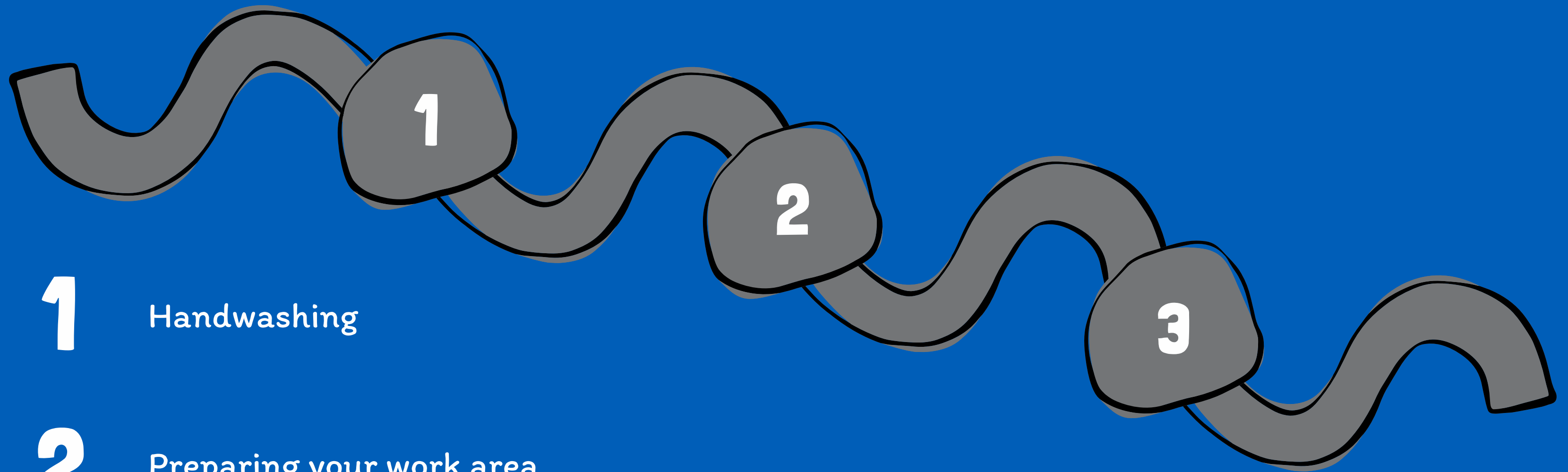
02

If the balloon has not deflated and formed wrinkles:

- Check to see if your elastomeric tubing or central line tubing is pinched in one of the clamps.
- Make sure there are no kinks in the tubing. If there are, straighten the tubing to remove the kinks.
- Call the PIVOT Nurse or Vascular Access Team to tell them if it is still not infusing.



What to do when the infusion is done



1

Handwashing

2

Preparing your work area

3

Heparin locking

1

Handwashing

- Remove all jewelry from your fingers and wrists
- Use warm water and anti-bacterial soap
- Wash for 30 seconds (the length of "twinkle, twinkle little star")
- Dry your hands with clean paper towel
- Turn off the tap using paper towel

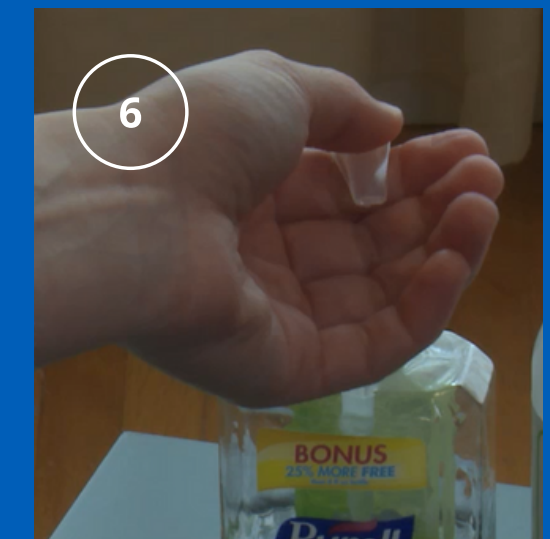
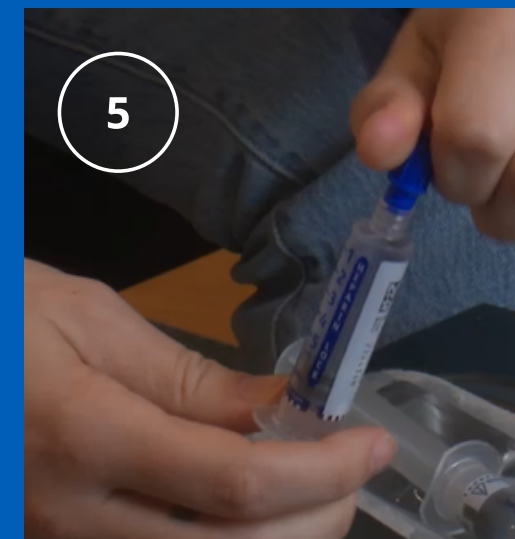
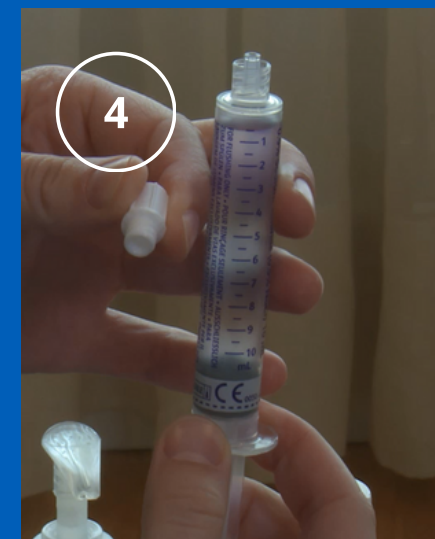
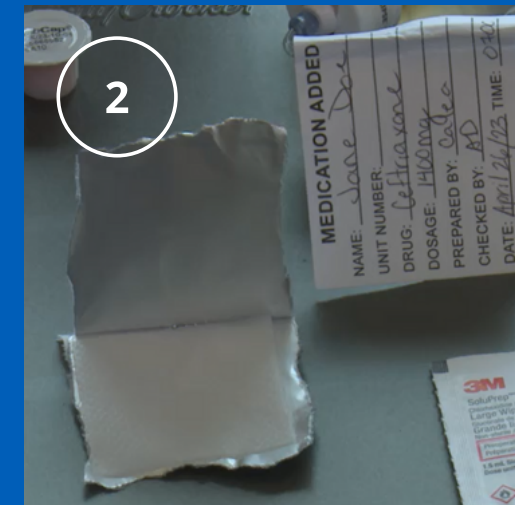
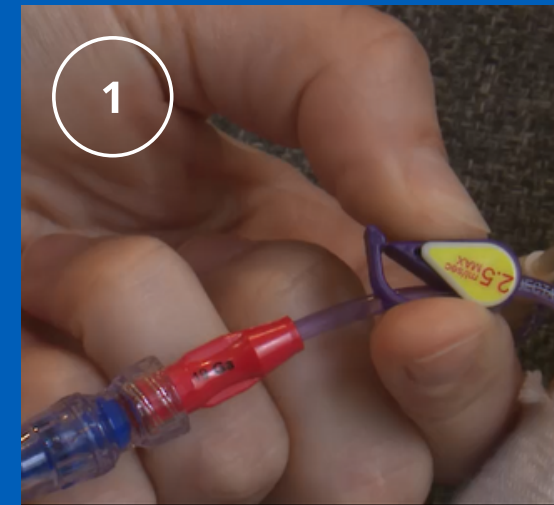


As it has been about 30 minutes we do need to properly wash our hands again with soap and water before touching our tray, supplies and the central line.

2

Preparing your work area

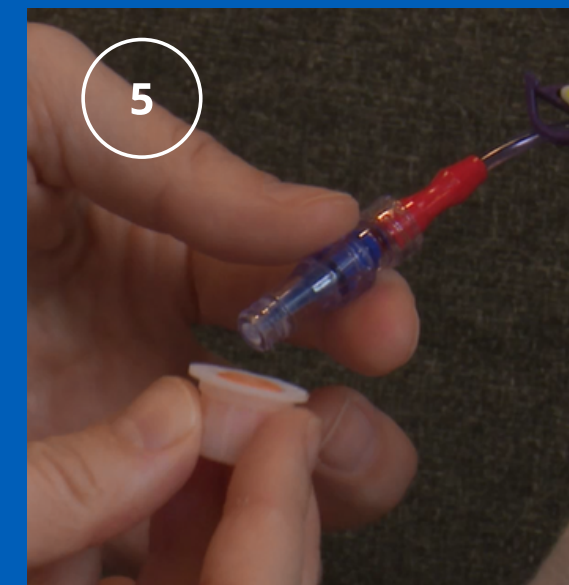
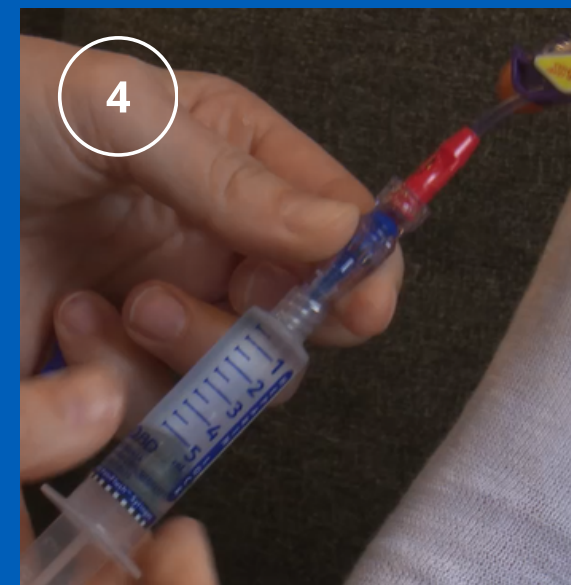
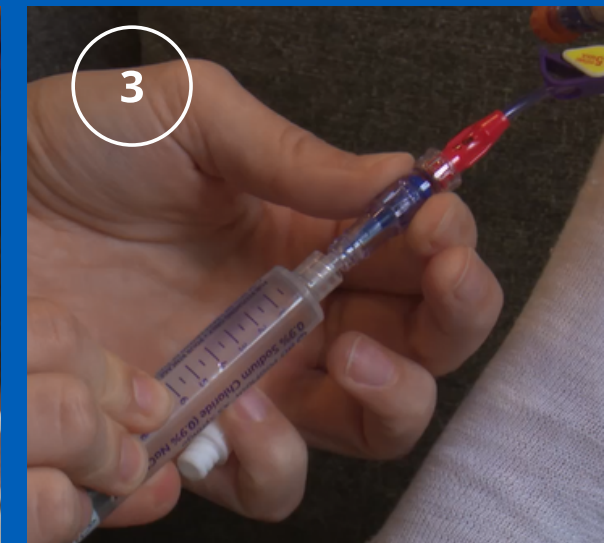
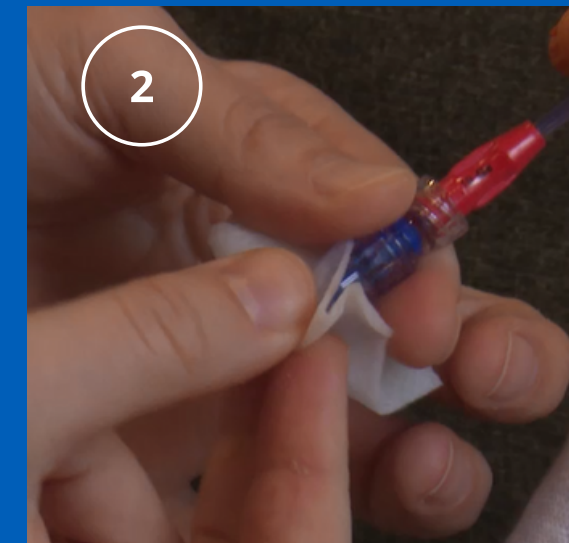
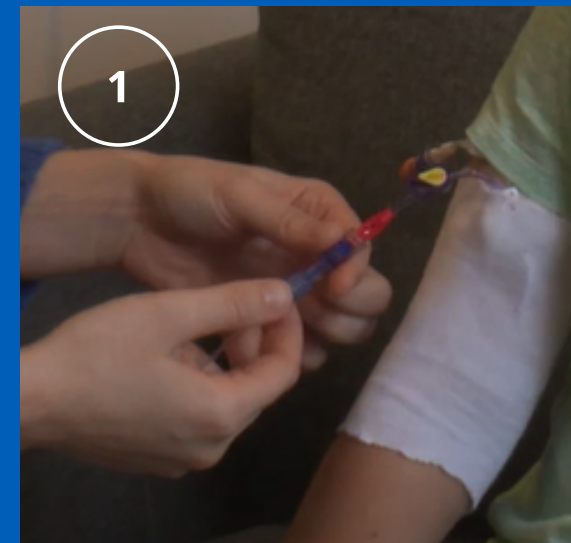
1. Clamp the elastomeric pump tubing. Clamp the central line.
2. Open the chlorhexidine swab by removing the edges on three sides and open it like a book. Place it on your clean working surface.
3. Peel the lid off the end of the swab cap, place back on your clean working surface.
4. Open the remaining normal saline syringe and remove the air from it.
5. Open the heparin syringe and remove the air from it.
6. Clean your hands with sanitizer. If your hands are visibly soiled, wash them with soap and water.



3

Heparin locking

1. Unhook the elastomeric pump from the central line by twisting left. Dispose of the pump in your regular garbage.
2. Clean the end of the cap on the central line with your chlorhexidine swab for 30 seconds. Allow that to dry for 1 minute.
3. Flush the line with 9mL of normal saline. Clamp after flushing.
4. Flush the line with heparin. (The PIVOT team will tell you how much heparin to flush and it will be on your SASH Handout as well.) Clamp after flushing.
5. Apply the swab cap to the end of the line.



Please note: young infants will have a smaller flush amount (e.g. 1.5mL)

You will get a copy of this handout to keep beside your set-up to remind you of the steps for giving your child's antibiotics.

SASH METHOD

OF MEDICATION ADMINISTRATION

STEP 1 - SET UP

Clean the area where your supplies will be placed with alcohol or a disinfectant wipe.



STEP 2 - CLEAN HANDS

Wash your hands for one full minute. Dry with paper towel.



S

STEP 3 - SALINE FLUSH

1. Prepare saline syringe.
2. Clean needleless connector.
3. Attach saline syringe.
4. Unclamp and flush with 9 mL saline. (Push-pause method)
5. Re-clamp.



A

STEP 4 - ATTACH MEDICINE

1. Clean needleless connector.
2. Attach medicine.
3. Unclamp to start.
4. When finished re-clamp.



S

STEP 5 - SALINE FLUSH

1. Wash your hands.
2. Prepare saline and heparin syringes.
3. Detach empty bag or syringe.
4. Clean needleless connector.
5. Attach saline syringe.
6. Unclamp and flush with 9 mL saline. (Push-pause method)
7. Re-clamp.



H

STEP 6 - HEPARIN FLUSH

1. Clean needleless connector.
2. Attach heparin syringe.
3. Unclamp and flush with 1.5 mL heparin. (Push-pause method)
4. Re-clamp.
5. Apply disinfectant cap.



SCRUB TIMES:

Chlorhexidine Pad: 30 second scrub and 1 minute dry

Note: When medicines are no longer being given through the line(s) saline will no longer be needed. Heparin flush only in each line every 24 hours.

Troubleshooting

01

PUMP NOT EMPTYING

- Check that the clamps on your child's PICC are open
- Check the balloon pump tubing to make sure it is not twisted or kinked
- If the balloon is still not emptying, call the PIVOT Clinic or the Vascular Access Team

02

EMPTYING TOO FAST

- Clamp the tubing
- Call the PIVOT Clinic or the Vascular Access Team

03

PUMP DISCONNECTED

- Clamp your child's line. Keep the line and pump as clean as possible. Avoid letting them touch anything.
- Call the PIVOT Clinic or the Vascular Access Team

04

PUMP LEAKING

- Clamp the balloon pump line
- Place the pump in a plastic bag and call the PIVOT Clinic or the Vascular Access Team

Other topics to review

01

Central line care

- Bathing
- Checking the dressing
- Checking the placement (PICC)
- Activity
- Travel

02

Central line safety

- Clamp, Cover, Call
- Potential problems (infection, breaks, air embolism, blockage)
- Bleeding

03

Contact

- When to call for help
- Who to call for help (PIVOT, VAT, Calea, Emergency)



THANK YOU

PIVOT Clinic 604-862-6824

