

IV Medicine at Home: Excelsior Syringe Pump (ESP)

Patient Name : _____ **MRN** _____ **DOB** _____

Medication Information

Name of Medication: _____ Dose: _____

Medication stable at room temperature for: _____

Give medication every _____ hours

Times to give medication:

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Pump speed

- Normal Slow Extra Slow

Flush line with:

- Normal saline flush solution
 Dextrose flush solution

Amount to give: _____ ml

When to give it:

- before and after giving the medication

Heparin flush solution

Solution: _____ units/ml

Amount to give: _____ ml

When to give it:

- After giving the medication and normal saline flush

What is an Excelsior Syringe Pump (ESP)?

The ESP is a small battery-powered medicine delivery pump. A medicine-filled syringe, with a long, thin tube is attached to the ESP. The thin tube is then attached to your child's IV and the medicine is slowly pushed into the IV.

Preventing infection

It is very important to prevent infection. Failure to do so might require removal of the central venous catheter. The nurse will show you how to keep your supplies clean, so no germs will enter the catheter and cause an infection.

Cleanliness is a must!

Each time you handle supplies or perform a procedure, do the following steps:

1. Prepare a clean work space area by cleaning a solid surface with household cleanser.
2. Clean hands well, using one of the following methods:
 - Use an alcohol hand sanitizer according to directions.
 - If hands are dirty or alcohol hand sanitizer is not available, wash hands for *at least 20 seconds* with soap, rubbing all surfaces briskly, including fingernails. Use a paper towel or clean hand towel to dry your hands, and then use the towel to turn off the faucet.
3. Before *each time* you flush or attach a new syringe/tubing to the injection cap, scrub the injection cap for 30 seconds with a fresh chlorhexidine wipe, using friction. Let it dry. Do not fan or blow on it.

Getting ready

1. Warm the medication to room temperature
 - Remove the medication from the refrigerator as directed. Your homecare nurse will discuss with you how early this should be removed to make sure it is safe to use.
 - Do not use a microwave, oven, or water to warm.
2. Check the label on the syringe and verify:
 - Child's name
 - Medication/Dose
 - Expiration date

Priming the tubing

1. Check for air bubbles in the medication syringe and remove them if needed.
 - To remove air bubbles: remove the tip cover from the syringe and point the syringe upward, pull back slightly on plunger and squirt air bubble out.
2. For the very first dose, or if changing the syringe pump tubing:
 - Remove tubing from package.
 - Remove the flat cap and twist the tubing securely onto the new medicine syringe.
 - Remove the round cap at the patient end of the tubing. Do not touch the tip once the cap is off; carefully place this face up on a clean surface. Push the syringe plunger until all the air is removed from the tubing (primed). Put the cover back on the tubing.

Setting up the ESP

1. Pinch the two black levers and move the pusher arm to the top of the pump.
2. Open the bottom clamp and place the medicine syringe into the clamp. Be sure the rim of the syringe barrel is in the slot at the top of the clamp.
3. Pinch the two black levers and move the pusher arm down until it touches the syringe plunger. Place the syringe plunger into the slot on the pusher arm.

Connecting Medication/Fluids to Patient

Review of S.A.S.H. method:

1. Flush with normal **S**aline
2. **A**dminister medication or fluid
3. Flush with normal **S**aline
4. Flush with **H**eparin



Note: Every time you flush the IV line with normal saline or heparin, use the "**push-and-pause**" method: push a little solution, then pause for 1 to 2 seconds, then push a little more, pause, and so on. This method cleans the inside of the IV line. Your home care nurse will show you how to do this.

1. Gather supplies:
 - chlorhexidine wipes
 - normal saline syringes or dextrose solution syringes (2)
 - heparin syringe
 - IV medicine/fluids you will be giving
 - non-sterile gloves
 - disinfectant cap
2. Put supplies in order of use on the work surface.
3. Check the labels of the normal saline and heparin syringes, and any other medicines or fluids before giving them. Make sure they are the right medicines.
 - A medicine is good until the end of the day on the day it expires. Throw it away sooner if you see sediment in it or if you question its cleanliness. If you do throw a medicine away, be sure to call the home care pharmacy for a replacement dose.

Preparing pre-filled syringes:

All pre-filled syringes have an air bubble in them (normal saline, heparin). Remove the tip cover from the syringe and point the syringe upward, pull back slightly on plunger and squirt air bubble out.

4. Put on non-sterile gloves.
5. Remove disinfectant cap **OR** if disinfectant cap not in place, scrub the injection cap with a chlorhexidine wipe for 30 seconds and let it dry.
6. Attach normal saline syringe tip into the injection cap.
7. Unclamp the catheter.
8. Flush with normal saline using the push-and-pause method. When syringe is empty, remove it from the injection cap.
9. If you are not giving medicines at this time, go to step 1 of the next section
10. If you are giving medicines, scrub injection cap with a new chlorhexidine wipe for 30 seconds and let it dry.
11. Connect the IV tubing to the patient's IV line.
12. Open all clamps.
13. Press the desired start button ("Normal", "Slow", or "Extra-Slow") to begin the infusion. A blinking green light shows that the pump is running.
14. Put the ESP pump on a nearby surface.

At end of infusion or when medication complete:

1. At the end of the infusion, the red Attention light will flash. A beeper will also sound. Push the "Audible Alarm" button to stop the beep. Push the OFF button.
2. Disconnect the tubing from the injection cap.
3. Scrub the injection cap with a new chlorhexidine wipe for 30 seconds and let it dry.
4. Attach normal saline syringe or dextrose solution syringe and flush using the push-and-pause method. When syringe is empty, remove it from the injection cap.
5. Scrub the injection cap with a new chlorhexidine wipe 30 seconds and let it dry.
6. Attach heparin syringe and flush using the push-and-pause method. When syringe is empty, remove it from the injection cap.
7. Clamp the line.
8. Apply disinfectant cap to injection cap.

Problem solving **Note: Pressing the "Audible Alarm" button will silence an alarm.**

Problem	Possible cause	What to do
Red Attention light is flashing.	<ul style="list-style-type: none"> • Infusion is complete. • Clamp is closed. • Kink or bend in tubing. 	<ul style="list-style-type: none"> • Follow steps for when medication is complete • Open all clamps. • Change hand or arm position or straighten out tubing
Low Battery light is flashing.		<ul style="list-style-type: none"> • Replace all batteries with size C alkaline batteries.

Questions?

If you have any questions, please call your home care nurse.