Kennedy Krieger Institute

Maryland State Department of Education
PREPARING WORLD CLASS STUDENTS

Factsheet: Vascular Devices

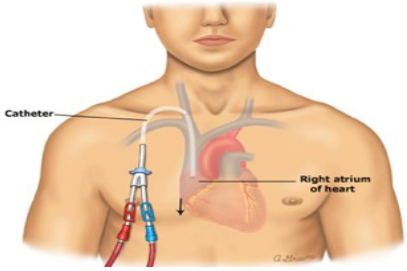
SHNIC
Specialized Health Needs
Interagency Collaboration

What is it?

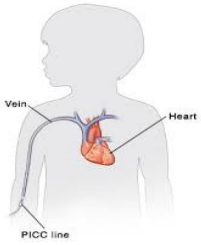
A variety of vascular access devices exist to allow long term use of catheters for fluid, nutrition or medication infusion. The type of vascular access device, or catheter to be used, depends on the length of time for use, the medication to be administered, the child's anatomy, and the setting for the child. Catheters can be single, double or triple lumen meaning there are one, two, or three ports for infusion. Each lumen is considered separate. Incompatible fluids can therefore be infused via separate lumens. Catheters are held in place by sutures and/or products like a transparent dressing tape and securement devices. Sometimes, other products like anti-microbial patches are also used to prevent bacterial growth. The transparent dressing is normally changed, using sterile technique, once a week or as needed.

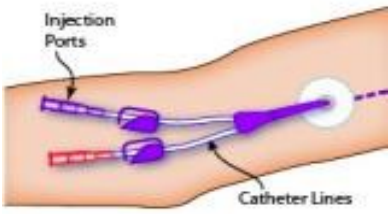
Types of catheters

A **central veneous catheter**, or central line, is a catheter surgically placed into the large vein in the neck, chest or groin. It then makes its way to the superior or inferior vena cava leading to the heart.

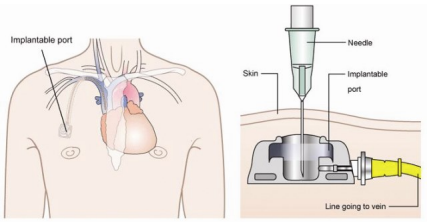


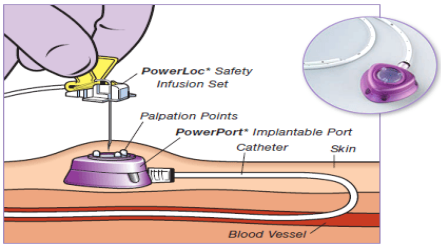
A **peripherally inserted central catheter** (PICC) is a thin, flexible catheter that is inserted into a vein (arm, leg or neck) and guided into a large vein in the chest near the heart. A PICC is normally used when access is required 6 days to 1 year.





An **implantable venous access device** (IVAD) is implantable port placed under the skin. When accessed for use, a special needle is inserted through the skin into the top of the rubber port reservoir. Sometimes a numbing cream is applied to the skin before the needle insertion. "Twiddler's Syndrome" occurs when the port has been moved under the skin because of trauma or "twiddling" by the child. If you notice the port is easy to move under the skin or swelling has occurred, do not use the port.





Complications

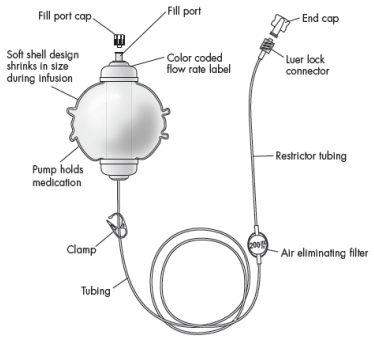
It is important to be familiar with any possible complications of central lines. To prevent such complications, be sure the catheter is clamped before/after use, as appropriate. Kelly clamps should also be easily accessible in order to clamp the line if the catheter should break or migrate from its ordered position. Possible complications, as well as your plan of action, should be established for the following:

- Air embolism
- Occlusion
- Device malfunction
- Infection
- Swelling
- Broken or damaged catheter

Types of Pumps

There are a variety of infusion devices that allow for portable, convenient medication infusion in the comfort of the home setting. The following are 2 home-pumps you may see in the school setting.

Eclipse: A pump where a balloon-type membrane holds and delivers the medication. Once started, this membrane acts as a pump to automatically squeeze the medication at a preset rate. Infusions can last 15 minutes to 5 hours. A pre-set flow rate means no complex programming or calculation is required. The Eclipse one-use pump is not electronic and can therefore be discarded after use. The pump must be at room temperature before use and should not be exposed to long periods of heat or cold. The student should carry the pump as close to level of access device (catheter).



C-Series: A pump that works the same as Eclipse pump with a balloon-type membrane. This pump can accommodate infusions that last 1-12 days.

SHNIC school nurses information:

Specific health issues for individual health care plans

- Student's diagnosis and reason for catheter
- Type of catheter including insertion site, date of placement
- French size and length of catheter tubing, note mark on tube if applicable
- Current medication/fluid list including storage (room temperature, refrigerator)
- Emergency protocol for possible complications that require immediate attention (dislodgement, breakage, occlusion, leakage, blood in the line, etc.)
- Location of clamps in event of emergency
- Orders for flushes
- Location and storage of supplies like alcohol swabs, tubing, saline, clamp, clear adhesive dressing
- Location and storage of supplies for a sterile dressing change
- Pump and tubing requirements including storage of, priming of, etc.
- Fever protocol
- Orders for activity restrictions

Resources & Manuals

Fraser Health CVC Self Learning Module (8th version) http://www.fraserhealth.ca/media/2016-CentralVenousCatheters.pdf

University of Rochester Medical Center– Central Line Education

https://www.urmc.rochester.edu/community-health/research/communicable-disease-surveillance/healthcare-associated-infections/clabsi/central-line-education.aspx

Homepump Eclipse– Ambulatory Infusion System
https://www.halyardhealth.com/media/232353/Eclipse-Patient-Guidelines.PDF