

## Venous Access

- Venous access is crucial for administration of chemotherapy and supportive care in children. Peripheral IV's may be used but many of the chemotherapy drugs and antibiotics cause sclerosis of the veins and ultimately lack of venous access
- Only nurses certified and familiar with central line care should access central lines using the BCCH Guidelines

### Central line care

#### Insertion and Removal

It is recommended that Central Venous Access Devices (CVADs) either cuffed central venous catheters (CCVCs) or Implanted Vascular Access Devices (IVADs) be inserted and removed at BCCH.

#### Prevention of infection

The following have been shown to reduce the risk of catheter related infections:

- Personnel (nurses) trained in central line care
- Hand washing prior to accessing lines
- Aseptic technique when accessing lines
- Chlorhexidine prep and dressing

#### Reference

Garland JS, Henrickson K, Maki DG. The 2002 Hospital Infection Control Practices Advisory Committee Centers for Disease Control and Prevention guideline for prevention of intravascular device-related infection. Pediatrics Nov 2002;110(5) 1009-13

### Central Line Reference Guide

| What?           | How?   | When?   | Why?  |
|-----------------|--|---|---|
| Dressing Change | <ul style="list-style-type: none"> <li>~ Chlorhexidine Gluconate is the recommended solution for skin antisepsis.</li> <li>~ Use of a semipermeable polyurethane dressing (Tegaderm or Op-cite 3000) is recommended, but gauze dressing may be used if patient unable to tolerate others.</li> <li>~ Coiling of catheter under dressing is strongly recommended to prevent catheter dislodgement.</li> </ul> | <ul style="list-style-type: none"> <li>~ CVCs : 7 days post insertion then weekly &amp; prn</li> <li>~ VADs : q10 days with Huber needle change &amp; prn</li> <li>**If gauze dressing used, change twice weekly</li> </ul> | <ul style="list-style-type: none"> <li>~ To prevent dislodging of the catheter until insertion site is healed</li> <li>~ To cleanse and assess exit site</li> <li>~ Chlorhexidine Gluconate has been shown to be superior to iodophors for preventing colonization of IV devices and IVD-related blood stream infections</li> </ul> |
| Cap Change      | ~ Aseptic procedure  | ~ q6 days and prn   | ~   |

| What?            | How?   | When?   | Why?  |
|------------------|--|---|---|
| Blood sampling   | ~ Aseptic procedure using vacutainer or syringe method   | ~ As ordered but try to limit number of times lines are accessed<br>~ IVADs are not routinely accessed solely for the purpose of blood sampling | ~ To reduce risk of introducing bacteria  |
| Saline flushing  | ~ Use a <b>10 ml of larger syringe</b> when flushing a Central Line  | ~ After blood sampling or following bolus chemotherapy injection<br>~ When converting from continuous to locked system<br>~ prn                 | ~ To flush blood, chemo, etc through the line<br>~ Saline flushing is <b>NOT</b> required<br>~ Before initially connecting to the IV line<br>~ Before daily heparin locking |
| Heparin locking  | ~ Use a <b>10 ml or larger syringe</b> when flushing a Central Line<br>~ Pressure of fluids through a central line must not exceed 40 psi (2068 mm hg); use of a syringe smaller than 10 mls should be avoided for flushing as it may rupture the line<br>~ Heparin lock solution 2.5 cc of 100 U/ml | ~ CCVCs: q24 hours and prn<br>~ IVADs: q10 days if accessed, q28 days if not accessed   | ~ To prevent intraluminal thrombotic events   |
| IV tubing change | ~ Aseptic procedure  | ~ q72 hours and prn<br>~ q4 hours if used for blood or blood products<br>~ q24 hours (TPN, Insulin)   | ~ To prevent bacterial growth in IV tubing  |

# Implanted Venous Access Devices

## Who may access

A registered nurse who has completed the Central Line Education Program, and who has demonstrated competency in accessing an IVAD to the clinical educator or designate, may access an Implanted Venous Access Device.

## Indications for access

- Monthly flushing
- IV Chemotherapy
- IV Access

It is **not** recommended the IVADs be accessed for routine blood work unless due for monthly flushing.

## Method of access

- Sterile technique
- Wash hands and prepare equipment
- Glove
- Sterilize skin using
  - 0.5%-2% chlorhexidine gluconate
  - or Povidone-Iodine if chlorhexidine not available
  - Swab a 5-7cm radius THREE TIMES
  - Allow solution to dry for one minute
- Drape patient
- Stabilize the IVAD with thumb and fingers
- Insert Huber needle at 90° angle through skin, into the septum of the device until the needle contacts the base. Do not twist or rock the needle once inserted
- Proceed with blood sampling, flushing, heparin locking, chemotherapy administration or connect to IV infusion as required
- Apply dressing over insertion site and secure tubing

## Method of De-accessing

- Ensure device has been heparin locked
- To de-access, remove dressing, stabilize device with thumb and fingers, remove Huber needle by pulling straight up and out
- Apply pressure to puncture site if any bleeding
- A bandaid may be applied prn.

## **Cuffed Central Venous Catheters**

### Who may access:

- A registered nurse who has completed the Central Line Education Program, and who has demonstrated competency in related skills to the clinical educator or designate, may access a Cuffed Central Venous Catheter
- Patient or family member who has been taught how to do the following skills: dressing change, cap change, heparin locking.

### Indications for access

- Daily flushing
- Chemotherapy administration
- IV Access
- Blood sampling
- Cap change
- Dressing change
- Hemodynamic monitoring (CVP monitoring)

### Dressing Change:

- Wash hands and prepare equipment
- Remove old dressing and inspect site for any signs of infection
- Using alcohol soaked gauze, clean catheter from exit site away from patient
- Place drape under cleaned catheter
- Using chlorhexidine impregnated swabs, clean immediately around catheter covering a 5 cm radius around exit site. Repeat with 2 more swabs
- Allow Chlorhexidine to dry 1 full minute
- Coil catheter and apply transparent dressing covering exit site and coiled catheter
- Secure catheter below dressing using waterproof tape or catheter securement device.
- It is strongly recommended that the catheter be further secured using a tape tab and pinning through the tab to the child's underclothes.

## Blood Sampling, flushing and heparin locking a CCVC or IVAD

- Wash hands and prepare equipment
  - If double lumen and second lumen has infusion running, clamp 2<sup>nd</sup> lumen and place infusion on hold
  - Using alcohol swabs cleanse injection port for 1 minute. With second swab, cleanse from port up line toward patient. Allow alcohol to dry
  - Using a vacutainer or syringe method remove and discard 3.0 ml of blood
  - Obtain samples as required, clamp tubing, remove syringe or vacutainer
  - Flush with NS: Attach syringe with 10 ml NS and flush by giving 2 quick pushes (to create turbulence), then with continuous motion, flush catheter with 9 ml NS (If IVAD, repeat with 2<sup>nd</sup> syringe for total of 18 mls)
- Note:** It is necessary to create positive pressure when flushing the tubing to prevent backflow of blood into catheter. This is accomplished by clamping the tubing while flushing. If using a positive displacement cap, do not clamp tubing until after removal of syringes
- After flushing with NS, either connect tubing to infusion and administer chemotherapy, or heparin lock device using a 10 ml syringe with 3 ml Heparin lock solution 100 U/ml. Flush device with 2.5 ml solution using same technique as for saline flush above.

## Complications of central lines: nursing/medical aspects

Consult Pediatric Oncologist for the following:

| Complication   | Investigation                            | Treatment   |
|--|--|---|
| No back flow   |  |   |
| Broken line CCVC                                     | ~ Inspection chest x-ray                 |   |
| Broken line IVAD                                     | ~ Chest x-ray                            |   |
| Infection – local (site/tunnel)                      | ~ Culture site and line                  | ~ Start Vancomycin. If neutropenic, add empiric protocol                                |
| Infection – line (fever & rigors when line accessed) | ~ Culture line<br>~ Complete blood count | ~ Start Vancomycin +/- Vancomycin lock. If neutropenic, add empiric antibiotic protocol |
| Infiltration/Extravasation                           | ~ Investigate for blocked line           | ~ Link to chemo extravasation**   |
| Blocked line   | ~  | ~ Page 258 BCCH 2002/2003 Pediatric Drug Dosage Guidelines                              |

\*\* References:

- Cancer Drug Manual - Appendices
- The parent home kits will be introduced to facilitate IVAD access in the patient's home community.
- Patient teaching pamphlets: [link to the family resource library](#).