Blood Collection via CVAD

Collecting blood for laboratory testing from a CVAD should be considered on a risk versus benefit evaluation. Arterial line sampling is generally preferred. Venous sampling is often a last resort due to the high risk of occluding the small lumens in neonatal venous catheters. However, venous sampling post-insertion may be considered by the care team to avoid skin pokes.

**Benefits of Blood Sampling via CVAD**
1. Avoidance of anxiety/discomfort associated with venipuncture for both parent and neonate
2. Prevention of multiple peripheral blood draws for neonates with difficult vascular access

**Risks of Blood Sampling via CVAD**
1. Occlusion
2. Catheter related blood stream infection (CR-BSI)
3. Potential for inaccurate blood results
   a. Increased likelihood of hemolysis
   b. Potential for contamination with fluids and/or medications

**Note:** PICC’s less than 3 Fr or 20 g are *not* to be used for obtaining blood specimens.

**Test Specific Considerations**

**Coagulation Study**
1. Collection by venipuncture is preferred due to the high-volume draw required to ensure accuracy of results. If required to obtain from CVAD, discuss with MRHP.
2. If possible, coagulation specimens should be drawn from a lumen not infusing an anticoagulant, locked with anticoagulant, or distal to an anticoagulant infusion.
3. If specimen for INR or PTT is drawn from a line with heparin, request addition of hepzyme to the specimen for analysis.

**Medication Levels**
1. Medication level specimens should not be drawn from a CVAD lumen through which that drug has been infused.

**Blood Culture**
1. Should only be collected from a CVAD if no arterial line available for use or no peripheral site is available for venipuncture.
2. For suspected CR-BSI, there may be orders for paired blood samples from both the catheter and the peripheral vein.
3. Needleless connectors should be replaced prior to drawing sample to reduce risk of a false positive.
4. Collect aerobic specimen first then anaerobic specimen if ordered.

Collecting a Blood Sample

Some sites limit CVAD blood collection to specific clinicians. Please check with the unit manager or educator to find out who is designated to collect a blood sample at a particular site.

Blood sampling must be done using aseptic technique. If possible, blood specimens should be collected from the largest available lumen and proximal lumen of a multi-lumen, non-tunneled CVAD.

- Choose a dedicated lumen for blood draws whenever possible
- Clamp all lumens and stop all infusions into the CVAD prior to drawing blood specimen(s)
- Patency shall be confirmed by slowly aspirating until brisk blood return is obtained and no resistance to flushing is noted

In order to prevent possible test error due to cross contamination from tube additives, blood samples should be collected according to lab specifications. Information can be found on the [AHS Laboratory Services](#) site or contact laboratory services with further questions.

The following measures may be necessary if blood collection is difficult:

- Reposition the neonate, e.g. raise neonate’s extremity if CVAD is in a limb
- Decrease the speed of the withdrawal

Hemolysis can be caused by using force during aspiration and injecting:

- Excessive suctioning and forceful plunger depression during blood collection or transfer creates shear forces and breakage of red blood cells
- Use gentle aspiration for obtaining the specimen allowing blood in the syringe to maintain contact with the plunger
- Do not push on the plunger when transferring blood into the specimen tube - allow the vacuum in the tube to fill it but control the plunger so that only the required volume is withdrawn
If laboratory values for blood withdrawn from a CVAD are significantly altered in a previously stable neonate, the nurse should collaborate with MRHP in re-testing before any treatment is implemented.