

PROTOCOL FOR: Central Lines: Patient Care (applies to Surgically-placed, Percutaneous Central Venous Catheters and Non-Central Percutaneous Catheters)

- POLICY:**
1. Central lines will be maintained using aseptic technique and in a manner which prevents air from entering the system. Under no circumstances should central lines be opened to air.
 2. Always clamp the line before the line is opened. Keep the line clamped until continuity of the system or system closure are reestablished.
 3. IV solutions and infusion sets will be changed every 24 hours and labeled with date, time and RN initials when hung.
 4. Medications may be infused through a central line only when there is a written order. Medications administered must be filtered unless there are specific contraindications because of the characteristics of the medication (e.g. Amphotericin, Insulin).
 5. The closed in-line medication system must be set up to all central lines, whether infusing or Heparin-locked, even if no medications are ordered. The closed in-line medication infusion sets and normal saline bags will be changed every 24 hours with the IV solutions and infusion sets. Label the closed in-line medication with time, date and RN initials when hung.
 6. Blood may be drawn from a Broviac or other surgically-placed central line only when there is a written order.
 - a. Blood specimens for newborn metabolic screen filter paper tests can not routinely be drawn from any indwelling line.
 7. All saline and sterile water solutions used as flush or medication diluents are to be preservative-free to avoid potential toxicity of benzyl alcohol.
 8. Saline and sterile water vials are for single use only and should be discarded after one use.
 9. Kangaroo care should be avoided (unless written MD/AP order) for the first week after surgical placement of a central venous line and for 24 hours after PICC insertion.
 10. The decision to hold infants after placement of central lines must take into account the assessment of the site and security of the line and the infant's clinical status.
 - a. Infants with cutdowns cannot be held.
 - b. Infants with percutaneous catheters must wait at least 24 hours after placement before being held.
 - c. Ideally, infants with surgically-placed central venous catheters should not be held until granulation has occurred around the insertion site.
 - d. If the cuff is visible, holding must be deferred.

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11. Platelet transfusions should not be infused into central catheters unless there is an emergency situation and no available peripheral access.
12. When directly flushing percutaneous catheters, a 6 ml syringe or larger must be used to prevent rupture of catheter. Smaller syringes may be used when infusing medications via pump and the in-line closed IV medication system because the infusion pump regulates the infusion pressure.
13. Percutaneously-inserted catheters that are not in a central position will be treated in the same manner as centrally-placed catheters.

DESIRED PATIENT

- OUTCOMES:**
1. Will have no catheter-related bloodstream infection.
 2. Will have catheter patency maintained without thromboembolic complications, interference with cardiac function, vessel perforation or development of hydrothorax.

**CLINICAL
ASSESSMENT AND**

- CARE:**
1. Assess the system for the presence of free air, especially after any manipulation or entry into the system.
 - a. Remove any free air so that it is not infused into infant.
 2. Ensure that all connections are tight and interlocked at all times. Connections should be visible.
 - a. Limit the number of connectors and extensions that may become disconnected.
 - b. Do not use stopcocks on surgically-placed or percutaneous central lines.
 3. Assess the stability and placement of the catheter and the security of the dressing with each hands-on vital signs.
 - a. Dressing should be occlusive and intact.
 - b. Dressings that are not intact must be changed. It is not appropriate to "reinforce" a dressing.
 - c. Be aware of the centimeter marking at catheter insertion site.
 - d. Observe for presence of visible cuff for Broviac or other surgically-placed catheters.
 - 1) *Report suspected catheter displacement.*
 4. Assess site for and report signs of infection/inflammation (redness, edema, drainage, foul odor), bleeding or skin breakdown.

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- a. Document surgically placed central line site assessment every hour for the first 48 hours, then minimum every 4 hours after that.
- b. Document PICC site assessment every hour.
5. Assess for and report signs of infiltration/edema/phlebitis:
 - a. Monitor leg distal to insertion on femoral line for swelling, color change, coolness and change in pulse.
 - b. Monitor head, neck, jaw, back and axilla for edema when thoracic line in place.
 - c. Monitor site for redness, tenderness, palpable cord.
6. Assess for and report signs of respiratory deterioration.
7. Assess EKG pattern for arrhythmias. If arrhythmias are noted, obtain rhythm strip and report.
 - a. *Report any cardiac murmur that was not previously noted.*
8. To decrease the likelihood of infection, limit the number of times the line is entered.
9. Report any changes in abdominal assessment.
10. Be aware of tenuous nature of catheter when positioning, weighing, etc. Gather and secure tubings in such a way to avoid tension on the site. Consider use of Velcro wrap around tubings to achieve this.
11. Educate parents around the precautions that are needed with central catheters. Parents/families are not to bathe infants in the area of central catheters.

**CONSIDERATIONS
FOR PERCUTANEOUS
CENTRAL VENOUS**

- CATHETERS:**
1. Ensure stability of the line. Hub of percutaneous line should be secured to limit movement of hub.
 2. Maintain infusion rate in percutaneous catheter at a minimum of 2 ml per hour - maximum rate is 26 ml per hour.
 3. Avoid rapid infusions through the percutaneous line, which may cause catheter rupture.
 4. No platelet transfusions or vassopressors should be given through a percutaneous line.

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DUAL LUMEN
CENTRAL VENOUS

- CATHETERS:
1. Each lumen is separate all the way to the end, so separate infusions can run in each lumen and do not need to be compatible. It is generally best to infuse fluids through both lumens.
 2. Blood may be drawn from either lumen. Once a lumen is chosen to be the blood drawing lumen, every effort should be made to draw blood from the same lumen. The blood drawing lumen should be labeled and identified on the Kardex.
 3. When drawing blood samples from one port, turn off infusate on the other port(s) until blood draw is complete (to avoid contamination of blood samples with IV solutions).

APPROVAL: Nursing Standards Committee

EFFECTIVE DATE: 1/86

REVISION DATES: 8/87, 12/87, 6/88, 7/89, 11/89, 5/90, 4/91, 3/92, 5/92, 11/94, 2/96, 6/99, 11/99, 7/01, 10/01, 5/03, 9/03, 12/04, 7/07, 11/08, 9/09