



TITLE: CENTRAL LINE CATHETER CARE

- Purpose:** To outline RN & Respiratory Care responsibilities for the safe use & maintenance of Central line catheters, including blood sampling, medication administration & IV tubing changes.
- Definition:** Central lines, including umbilical arterial & venous catheters, Broviacs, subclavian, provide vascular access to obtain blood samples for blood gases & lab work, administer parental nutrition & medication administration. Umbilical arterial central lines also provide continuous arterial blood pressure monitoring
- Indications:**
1. To provide vascular access for the infusion for fluids, medications, and/or blood products
 2. To provide vascular access for blood sampling (including blood gases & lab work).
 3. Exchange transfusion (umbilical catheters only).
 4. Continuous blood pressure monitoring (umbilical arterial catheters only).
 5. Vascular access when other sites are not available or suitable.
- Equipment:** Appropriate IVF as ordered by physician. For arterial catheters, a transducer kit, pressure cable & module are required. All central lines require a soluset & appropriate filter, CHG prep pads, 2x2 sterile gauze pads, clean gown from scrub room & kit for central line tubing changes to hang or change IV fluids. Kit includes cap, sterile gloves, mask & sterile pillowcase). Additional equipment needed may include y-connectors and one-way calve caps, padded hemostats, microbore tubing, appropriate size syringe & needed if needed to infuse lipids, stopcock if venous line & using for blood sampling.
- Level of Responsibility:** RN, RT

ESSENTIAL STEPS / Key Points and Precautions:

- A. SET UP & TUBING CHANGES**
1. Wash hands
 2. Collect appropriate equipment for type of lines as outlined above.
 3. Clean bedside table, IV pump & padded hemostats with super sani-clothes & position table close to IV pole. Cover table top with sterile pillowcase.
 4. Open soluset tubing & additional equipment & drop on sterile field.
Do not lay IB bags on sterile field.
 5. Hang TPN, clear IVF & lipids bags (if using soluset for lipids) on IV pole. If using syringe for lipids, open lipids & drop on sterile field.
 6. Wash hands, put on gown, cap & mask. Don sterile gloves.
 7. While remaining sterile & working on sterile field, connect all tubing, filters & transducer (if prepping arterial lines). If using syringe for lipids, connect needle to syringe & withdraw appropriate amount of lipids from lipids bag. Prime microbore tubing for lipids & connect to appropriate infusion port & set aside.



TITLE: CENTRAL LINE CATHETER CARE

8. For venous line, attach a 3 ml syringe of flush solution to the side port of the blood sampling stopcock if line is to be utilized for blood sampling. For arterial lines, prime the side port of the transducer zeroing stopcock & plug with a luer lock plug supplied in transducer kit.
 - a. Remove all air bubbles from the syringe & side port of stopcock.
 - b. For arterial lines, always turn the stopcock off to the transducer or off to the venting path before attaching the luer lock plug.
9. Clamp tubing for TPN & and/or clear IVF, spike bags allowing lower patient side of tubing to rest on sterile field.

Gloves are no longer sterile, however they are clean & all tubing should already be connected.
10. Prime IVF slowly through line making sure to eliminate all air bubbles. Allow fluid to drip on sterile field only. Working over the sterile field, keep the end cap to be connected to the patient's central line on the sterile field.
 - a. An air bubble forced into the patient's bloodstream can cause an embolism.
 - b. Remember air rises, so always allow the fluid to fill from below to reduce air bubbles.
11. After priming is complete, remove sterile gloves. Clean hands with antiseptic foam & don clean gloves. Place sterile 2 x 2 gauze under connection site. Clean connection with CHG prep for 15-20 seconds & allow to dry for 15-20 seconds. Clamp line with padded hemostats, turn stopcock & open connection. Lay aside old tubing line & scrub open end of central line with CHG prep pad for 15-20 seconds. Allow to dry 15-20 seconds. Connect new IV tubing.
12. Adjust IV pumps loading new tubing into pumps & adjusting rates & volume to be infused.
13. Open clamp/stockcock allowing fluids to begin infusing.
14. If connecting arterial line, attach transducer cable to main monitor cable. Then position transducer level with patient's heart. Calibrate monitor.

See monitor manufacturer's directions.
15. Verify accuracy of monitor's pressure reading with cuff blood pressure on insertions & at least every 12 hours.
16. Verify & document on appropriate screen central line placement every shift by cm marking.

B. MAINTENANCE

1. Monitor color, warmth, & movement (sensation) in area distal to the arterial catheter insertion site (lower extremities, groin area, etc.) every hour & document.

If arterial spasm noted (lower waveform on monitor, line not aspirating, mottling, blanching or discoloration of toes, feet, buttocks or over lumbar sacral region) notify physician.
2. Change tubing setup & solution bags every 24 hours if drawing blood from line.
3. Discontinue infusion as ordered by physician.



TITLE: CENTRAL LINE CATHETER CARE

C. BLOOD SAMPLING FROM CENTRAL LINES

1. Order blood gas or labs via Meditech.
2. Notify Respiratory Care if blood draw is for blood gas.
Specimens must be run within 20 minutes.
3. Wash hands, don gloves, assemble equipment, place IV fluids on hold. Place a sterile 2x2 gauze pad under the stop cock. Remove gloves, clean hands with antiseptic hand cleaner & don fresh clean gloves.
4. Scrub stopcock with CHG prep 15-20 seconds & allow to dry (20-30 seconds).
5. Remove flush syringe from stopcock & scrub open end with CHG prep for 15-20 seconds & allow to dry (20-30 seconds).
6. With a 3 ml syringe, withdraw 1-2 ml of blood to clear line. Lay to the side keeping syringe sterile. Use blood gas syringe to withdraw blood gas sample.
 - a. For an ABG or VBG, use blood sample syringe & place directly on ice.
 - b. For other blood specimens, use an appropriate syringe & then transfer blood into the specimen tubs.
7. Replace blood used to clear line, pulsating while instilling blood. It may be necessary to use a flush syringe with needle attached to flush stopcock. Scrub stopcock with CHG prep for 15-20 seconds & allow to dry (20-30 seconds).
8. Open stopcock to IV fluids & restart fluids & continue monitoring pressure if arterial line.
9. Observe monitor immediately for return of waveform (for arterial lines).

Reference: CDC NHSN - http://www.cdc.gov/nhsn/PDFs/pscManual/pscManual_current.pdf
CPQCC - http://www.cpqcc.org/quality_improvement/cpqcc_ccs_healthcare_associated_infection_hair_col
http://www.cpqcc.org/quality_improvement/qi_toolkits/hospital_acquired_infection_prevention_r
AHRQ Culture survey tool: <http://www.ahrq.gov/qual/patientsafetyculture/>
PQCNC: <http://www.pqcnc.org/?q=node/79>
OPQC: <http://www.opqc.net/opqc-toolkit>
IHI: www.ihl.org
CCS-CHCA Neonatal CLABSI: <http://www.dhcs.ca.gov/ProvGovPart/Initiatives/nqi/Pages/default.aspx>
Safer Care website (Peter Provonost): http://safercare.net/Training_Modules/Training_Modules
THA: <http://www.tnpatientsafety.com/>
SHEA: <http://www.journals.uchicago.edu/doi/full/10.1086/591059?cookieSet=1>
Create a culture of safety (Joint Commission):
http://www.jointcommission.org/SentinelEvents/SentinelEventAlert/sea_43.html

Approved Nursing/Neonatology

By: Acute Care

Distribution: NICU