



# Woman's

## Care and Maintenance of Central Venous Lines (BROVIAC and FEMORAL Lines)

### Indications

- Careful attention to central line maintenance can reduce risks of infection and line complications.
- Providing clean barriers between catheter hubs and patient skin assist in protecting line and may help prevent infection.

### Equipment/Supplies

- Clean, non-sterile gloves
- Sterile gloves, as appropriate
- Hat, as appropriate
- Mask, as appropriate
- 2x2 sterile gauze
- 5 mL syringe or 10 ml syringe, as appropriate
- Blood culture bottle, as applicable
- IV tubing, as appropriate
- Micro-clave T-Connector
- Transparent adhesive dressing
- 10% Povidone-Iodine swabs or 2% Chlorhexidine Gluconate/70 % Isopropyl alcohol swabs (CHG swabs)
  - ❖ Refer to Preparation for Skin Puncture, PIV Access procedure, and Invasive Procedures for specific age specifications and use.
- 70% Alcohol pads
- 70% Alcohol infused disinfecting cap(s), as appropriate
- Sterile Saline wipes, as needed
- Hospital approved disinfectant

### Preparation of Equipment

- Inspect all equipment and supplies. If a product is expired, defective, or has compromised integrity, remove it from patient use and obtain appropriate supplies.



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### Procedure

#### 1. Replacing administration sets

- ❖ Sterile priming of central line fluids is performed at a clean location free of interruptions, utilizing sterile technique
- a) Verify orders
- b) Verify patient identity using the two hospital approved identifiers.
- c) Check the fluid bag/syringe with physician orders per policy. Gather priming supplies. Hang fluid bag on IV pole.
- d) Verify date microclave t-connector was last changed. If 7 days, change along with IV tubing.
- e) Clean work area with hospital approved disinfectant and place any syringes (lipids, meds, etc) on work area.
- f) Don hat and mask. Perform hand hygiene and don clean gloves.
- g) Prepare sterile field using wrapper from sterile towels. Towels will be used during procedure. Open supplies onto sterile field. Include one pack of 2x2 sterile gauze.
- h) Perform hand hygiene and don sterile gloves. Assemble all tubing.
- i) With one hand, hold the fluid bag using the sterile towel. With the sterile hand, use the sterile gauze to remove the “tab” from the bag. Spike the bag and prime the tubing.
  - If syringes of meds/lipids: hold syringe with sterile towel and remove stopper using 2x2 gauze. Attach tubing and prime.
- ❖ Do not allow tubing to come into contact with any non-sterile surface (ex. floor, waste receptacle, etc).
- j) Scan IV fluids.
  - Fluids must be scanned prior to hanging/connecting to infant.
- k) Position infant in bed for easy access to central line.
- l) Scrub the connection between the central line and the T-connector with alcohol for 15 seconds. Once cleaned, the connection should not come into contact with non-sterile items.
- m) Disconnect tubing and reconnect new tubing.
  - Place a sterile 2x2 gauze under hub as a barrier if necessary to lay down tubing after cleaning. This provides a clean barrier between the hub and skin/items.



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- n) Set pump rate and volume limits, as ordered.
- o) Trace all new fluids from the point of origin to the catheter site upon connection to the infant.
  - Lines should be traced all the way to the bag/syringe, assessing clamp positions, stopcock positions, and pump settings, etc.

### 2. Administration of Intermittent Infusions

- ❖ Aseptic technique.
  - a. Verify orders
  - b. Verify patient identity using the two hospital approved identifiers.
  - c. Perform hand hygiene and don clean gloves.
  - d. Prime tubing
    - ❖ Do not allow tubing to come into contact with any dirty surface (ie. floor, waste receptacle, etc).
  - e. Position infant in bed for easy access to central line.
  - f. Scrub the hub with alcohol for 15 seconds. Once cleaned, the hub should not come into contact with any non-sterile items.
    - ❖ Place a sterile 2x2 gauze under hub as a barrier if necessary to lay down tubing after cleaning. This provides a clean barrier between the hub and skin/items.
  - g. If fluids are infusing and the medication/fluid is not compatible.
    - 1. Stop the infusion, clamp off T-connector, **remove and discard disinfecting cap or scrub the hub** and flush with 0.5 mL of appropriate solution. If Amphotericin-B is being infused, dextrose solution is used for flush, not saline.
      - ❖ Check with the MD/NNP before stopping continuous infusions.
    - 2. Connect tubing for intermittent infusion, set pump rate and volume limits, and begin infusion.
    - 3. Upon completion of medication/fluid, flush with appropriate solution, unclamp t-connector, and resume continuous fluid.



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- h. If fluids are infusing and medication/fluids are compatible
  1. Remove disinfecting cap or scrub the hub.
  2. Connect tubing for intermittent infusion.
    - ❖ Be sure to flush before and after medication/fluid with appropriate solution. Refer to section "3" Flushing Central Lines regarding the use of 5 ml or larger syringes.
  3. Set pump rate and volume limits.
  4. Upon completing of medication/fluid infusion apply new disinfecting cap.
- i. If fluids are not infusing. (Helplock)
  1. Remove disinfecting cap or scrub the hub
  2. Connect tubing for intermittent infusion.
  3. Set pump rate and volume limits.
  4. Upon completion of medication/fluid infusion apply new disinfecting cap

### 3. Flushing central lines (heparin locks)

- ❖ Aseptic technique
- a. Verify order for flush solution and frequency.
  - Central lines should be flushed before and after all medication infusions and as ordered to maintain to heparin lock.
    - ❖ Use a 5 mL or larger size syringe and use the minimum amount of fluid necessary to clear the line. DO NOT use less than a 5ml syringe – results in excessive pressure to the catheter. Applying excessive force to the catheter can result in central line rupture and embolization.
- b. Verify patient identity using the two hospital approved identifiers.
- c. Perform hand hygiene and don clean gloves.
- e. If using the male adaptor on T-connector
  1. Scrub the hub for 15 seconds or remove disinfecting cap.
  2. Unclamp T-connector.
  3. Flush central line with ordered solution.
  4. Upon completion of medication/fluid infusion scrub and flush, then apply new disinfecting cap.



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- f. If difficulty is encountered while flushing central line and occlusion is suspected, notify physician or NNP and discontinue attempts to flush catheter.
  - A central line should never be forcefully flushed when resistance is met.
- g. Document flush volumes in patient's medical record.

### 4. Blood withdrawal for cultures

- ❖ Aseptic technique
- ❖ Blood withdrawal from the central line should only be performed when obtaining a specimen for culture as ordered; the line should not be used for collection of blood for routine labs.
- a. Verify orders.
- b. Verify patient identity using the two hospital approved identifiers.
- c. Don hat and mask
- d. Perform hand hygiene and don clean gloves.
- e. Position infant in bed for easy access to central venous line.
- f. Scrub the connection between central venous line and T-connector for 15 seconds with alcohol. Once cleaned, the connection should not come into contact with any non-sterile items.
  - Place a sterile 2x2 gauze under the hub as a barrier if necessary to lay down tubing after cleaning. This provides a clean barrier between the hub and skin/items.
- g. If fluids are infusing to the site, stop infusion, clamp off tubing-
  1. Disconnect and cap off tubing
  2. Connect syringe.
  3. Withdraw appropriate amount and insert into a culture bottle.  
An additional 'waste' amount should not be withdrawn.
    - ❖ Prep culture bottle as outlined above for prep of hub
  4. Flush line with appropriate solution
    - ❖ Appropriate solution consists of pre-filled saline or pre-filled heparin syringes for heplock(s).
  5. Scrub the hub and reconnect fluid line.
  6. Resume pump rate and volume limits.



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### 5. Dressing Changes (2 person procedure)

- ❖ Replace the catheter-site dressing when it becomes damp, loosened, or soiled or when inspection of the site is necessary.
- a. Verify that dressing change is due.
  - ❖ Replace dressings at least every 7 days for transparent dressings. Note the next change date on Kardex & document in patient's medical record.  
(Gauze dressing must be changed every 48 hours).
- b. Verify patient identity using the two hospital approved identifiers
- c. Both persons don hat and mask (operator and assistant).
- d. Assistant to perform hand hygiene, don sterile gloves, position infant in bed for easy access to central line, and remove and discard old dressing.
  - ❖ Reminder: If hands are not visibly soiled, may use alcohol-based hand rub as per NICU hand hygiene policy.
- e. Operator to perform hand hygiene, open all packages using sterile technique, and don sterile gloves.
- f. **Refer to Preparation for Skin Puncture, PIV Access procedure, and Invasive Procedures for specific age specifications and use.**
  - ❖ **Use all 3 swabs in package.**
- g. Secure the line using a 'J loop', and place occlusive, transparent dressing over J-loop and insertion site.
  - ❖ Site must be dry before applying dressing. Do not place gauze or cotton balls under occlusive dressing  
Note: If patient is diaphoretic or site is bleeding/oozing, a sterile 2x2 gauze should be used under the occlusive, transparent dressing. If a sterile 2x2 gauze is used, then the dressing should be changed within 48 hrs.
- h. Write date, time and initials on dressing.
- i. Document all necessary information in the appropriate places in patient's medical record.
  - ❖ Documentation should include date, time, site assessment, line position, and patient tolerance



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**Performed by: RN, MD, NNP**

### References

- Association of Women's Health, Obstetric and Neonatal Nurses. (2018). Neonatal Skin Care: Evidence-Based Clinical Practice Guideline. (4th ed.). pp 89-93.
- Felver, L. (2015). Fluids, electrolyte, and acid-base balances. In *Essentials for Nursing Practice* Potter, P., Perry, A., Stockert, P., & Hall, A. (eds., pp. 463 – 516). Elsevier, St. Louis Missouri.
- Gorski, L. (2021). *Infusion therapy standards of practice*. (8th ed.). pp s90-s106. Norwood, MA
- O' Grady, N. P. Alexander, M., Burns, L. et al. (2011) Guidelines for the prevention of intravascular catheter-related infections, 2011. Centers for Disease Control and Prevention.

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