Children's National Hospital
Division of Nursing & Patient Services

Nursing Practice Guideline

Chapter: Vascular Access 2

Date Effective: 11/92
Last Updated: 5/22

Central Venous Therapy

PDI Prevantics© Chlorhexidine (CHG) based disinfectant products, both swabs and swab sticks, have been discontinued by the manufacturer, resulting in a nationwide shortage. See the Nursing Practice Guideline home page for clinical practice changes and updates.

Table of Contents

I. Definitions and Explanations

A. Types of Central Venous Catheters (CVC)

1. **Non-Tunneled Central Venous Catheters** (single, double, and triple lumen) are placed in the common femoral, internal jugular or subclavian vein. The catheters are designed for short-term use. These devices have the highest reported incidence of complications. They are held in place with sutures.
2. **Tunneled Central Venous Catheters** (e.g., Broviac, MedComp, Proline) are long-term (more than 6 months), small bore, flexible silicone or polyurethane catheters which are tunneled under the skin into the vein. They are surgically placed, anchored in the subcutaneous tunnel by scar tissue adhering to a Dacron cuff. This cuff helps prevent infection and dislodgement.
3. **Implanted Vascular Access Ports** (Port-A-Cath, mediport) are for intermittent, long-term access (more than 6 months). The port reservoir is implanted in a pocket under the skin. The catheter is attached at one end to the reservoir (port) with a self-sealing rubber septum. The catheter is tunneled under the skin into the vein. . The port is accessed using a non-coring needle (e.g., Huber or Gripper Micro) through the skin into the port reservoir.
4. **Peripherally Inserted Central Venous Catheters** (PICC) are central catheters usually inserted into the basilic, cephalic or brachial vein. Lower extremity PICCs, primarily seen in neonates, inserted in the common femoral, great saphenous or dorsal veins will terminate in the inferior vena cava. PICCs are good for patients needing 5 days to several months of treatment, caustic/ multiple medications, or TPN, and for patients with unreliable venous access.
5. **Neonatal Peripherally Inserted Central Catheters (Neo PICC**)
    a. PICCs which are small in diameter. They may not be sutured; therefore, loose dressings should be addressed immediately. They are most commonly seen in the NICU.
6. **Umbilical Venous Catheters (UVC)** can be passed through the umbilical vein in newborn infants. The best location for the tip of the catheter is the inferior vena cava near the right atrium. The catheter is sutured to the umbilical stump for maximum use of 14 days. The access site is secured to abdomen with a transparent dressing.
7. **Apheresis Catheters** are large bore central catheters, percutaneously or surgically placed, designed to maintain high flow rates, and accommodate large blood volumes. These catheters may be used in patients who require apheresis of blood components which includes removal of stem cells or white blood cells (leukapheresis), removal of plasma (plasma exchange), and removal of red cells (red cell exchange). These catheters require high concentration heparin. See Section V Apheresis Catheters.
8. **Hemodialysis Catheters** are large bore central catheters, percutaneously or surgically placed, designed to maintain high flow rates and accommodate large blood volumes. Used for patients requiring renal

replacement therapies (e.g., HD, CRRT) for management of acute and chronic renal failure. See Section VI Dialysis Catheters

9. **Transthoracic Cardiac Lines:** Intracardiac catheter placed during open-heart surgery. Tip of catheter is confirmed via chest x-ray. Catheter may terminate in right atrium, left atrium, pulmonary artery or Fontan Conduit. Most patients will have intracardiac dressings separate from but adjacent to the mid sternal dressing. Stress Loops should be included under dressing.
10. **Midline catheters** are inserted into a peripheral vein of the upper arm via the basilic, cephalic, or brachial vein with the terminal tip located at the level of the axilla in children and adults; and may be inserted via a scalp vein or in the lower extremity. They **are not considered Central Venous Catheters for infusion.** Do not use midline catheters for continuous vesicant therapy, TPN, or infusates with extremes of pH or osmolarity. Midline catheters are used generally when alternate venous access has failed and should be protected; therefore, please follow central line guidelines for care.

B. General Information

1. **Tip location:** Confirmed upon placement. Verify placement with interdisciplinary team or 'Ok to Use' communication order placed prior to use. See Parenteral Nutrition policy CHPC:N:03 or CNMC formulary for specific peripheral versus central infusion details.
2. **Notify** LIP to evaluate patient for fever, redness or tenderness at insertion site, purulent drainage, leaks, catheter occlusions, inability to obtain a blood return as expected, an exposed cuff, or skin breakdown. See troubleshooting section.

C. CLABSI (Central Line Associated Blood Stream Infection) Bundle

1. **Daily Discussion**: Occurs with care team[1] at least daily regarding necessity, functionality, and utilization of the central line.
2. **Assessment:** Assess CVC site per unit standard and nursing judgment, *minimally* every 4 hours for signs and symptoms of infiltration, infection and condition of skin and dressing[2]. Assess CVC site at least hourly when infusing irritant or vesicant solutions/medications
3. **Standard Procedures:**
   a. **Hand hygiene:** To minimize bloodstream infections, wash hands with soap and water or use an alcohol-based hand sanitizer before donning gloves whenever caring for or entering central venous catheters. Hand Hygiene Policy for specific recommendations
   b. **Gloves:** Sterile gloves should be worn when performing dressing changes, needleless connector changes, and for implanted port needle access
   c. **Masks** should be worn for all sterile procedures by everyone in the patient zone (3 feet), including the patient

d. **Chlorhexidine Gluconate (CHG)/Alcohol combination** for skin antisepsis unless contraindicated.
    a. Contraindications to CHG include allergy to chlorhexidine; erythema, rash, or breakdown under dressing; open skin wounds, burns, or severe skin problems. Also, contraindicated for procedures involving CSF.
    b. See Appendix B: CVC Dressing Algorithm/ Guide for assistance with clinical decision making. Per FDA labeling requirements, CHG may be used with care in premature infants or infants under 2 months of age. NICU guidelines: May be used with patients greater than 32 weeks gestational age or greater than 30 days of age.
e. Use Antimicrobial disk (CHG or Silver) for all central lines, excluding ports or bleeding sites. For patients with PICC lines, lay disk on top of line at insertion site but do not attempt to wrap sponge around line due to risk of dislodgement.

4. **Line entry:**
    a. Perform hand hygiene, wear clean gloves, and utilize aseptic technique whenever entering any part of the catheter or administration set for drawing blood, changing the bag, priming tubing, attaching medications to the line, and whenever potentially exposed to blood.
    b. Prior to entering any part of the central line or infusion tubing disinfect using friction with 70% isopropyl alcohol with 3.15% chlorhexidine gluconate (CHG). Scrub for 15 seconds and allow complete drying prior to entering the line.
    c. Back-to-back entries (i.e., med/ flush administration) require additional disinfection before each entry as described above. All flushes are a one-time use.
5. **Bathing:**
    a. Daily bathing (bath, shower, or bath wipes) and linen change are recommended in patients with central lines.
    b. Chlorhexidine (CHG) Bathing: recommended for patients with central lines as per care team standard. Do not perform CHG bathing on patients with severe skin disease or burns, with an indwelling lumbar drain or epidural catheter, or with a history of sensitivity to CHG. See Bathing with CHG fact sheet.
    c. Protect CVC site and dressing while bathing using an impermeable moisture barrier (AquaGuard) as needed.

D. Verify patency:

1. Flush with 10 mL diameter preservative-free 0.9% sodium chloride flush prior to use.
2. Aspirate: Placement must be verified by blood return prior to infusing vesicants.
3. Exception: blood should not be aspirated from 1.9Fr PICCs or from the white lumens of 2.6Fr PICCs, to avoid clotting the very small diameter lumen.

4. If unable to obtain a blood return notify LIP. Do not initiate therapy until catheter placement is verified.

E. Securement:

1. Securement devices (e.g., StatLock), may be used to secure central lines under the dressing to prevent accidental dislodgement and displacement of the catheter.
2. Additional securement external to the dressing (e.g. Grip-lock, tape, steri-strips) can be used to alleviate weight on the dressing, prevent pulling and direct lines away from areas of potential contamination.
3. Expandable tubular dressing (e.g., Tubifast) may be used as an additional safeguard to prevent patient manipulation of catheter
4. Avoid tape near connections because it has been implicated in the transmission of bacterial contaminates.

F. **Blue Clamps:** Keep with patient at all times in case of catheter breakage.

G. **High Touch Surface Cleaning:** Disinfect frequently touched surfaces (e.g., computer keyboard, scanner, counter, IV pumps, etc.) in the patient care environment with approved hospital disinfectant to help reduce the transmission of pathogenic microorganisms. Perform appropriate decontamination and disinfection of surfaces and durable medical equipment before central line care.

H. **Line contamination protection:** Protect line-to-line connections, Luer locks and access ports from body fluid contamination. Use an occlusive line connection protector (VALGuard) as needed.

1. Recommend for use with high-risk patients including:
   a. Patients with femoral lines
   b. Patients incontinent of loose stool/diarrhea or urine not contained by diapers.
   c. Patients with upper body CVCs experiencing uncontrolled nausea/vomiting, oral secretions or trach secretions.
   d. Patients with draining wounds, Gtube, etc. in area of CVC
2. Continue to utilize additional methods to secure lines away from areas of potential contamination.
3. Change line connection protector with tubing changes or if contaminated. If tubing/line protector is contaminated with body fluid, clean both with alcohol before removing protector. Clean area under protector with alcohol before applying new protector. Tubing/needleless connector change not needed.

I. My Central line Care sheet : Post at bedside as applicable

II. Assessment and Interventions

A. Fluid and Administration Set Change

1. Perform hand hygiene, wear clean gloves and utilize aseptic technique whenever accessing any part of the catheter or administration set Prime all air from tubing. Secure using luer-lock connections. Cover any open ends with sealed sterile caps. (red caps)
2. All central line hubs/ access points should have a needleless connector (cap, e.g., MicroClave or Tego), including extension sets (syringe pump, bifuse, trifuse). Disinfect needleless connector prior to each use.
3. Do not reuse administration sets/ fluids that were previously connected to a peripheral catheter.
4. Change fluid bags and add on devices such as extension sets, filters, stopcocks, and y-connectors with the changing of the administration set.
5. Label administration sets with infusion type and day/date of tubing change. See Line Reconciliation: Line Tracing and Line Labeling NPG.
6. Document tubing changes in I-View lines, tubes and drains
7. Minimize the use of stopcocks. If used, cap ports with a needleless connector, and disinfect prior to use. Manifolds with bonded needleless connectors preferred. Do not use the same stopcock for both blood draw and medication administration.

Scheduled Central Venous Catheter Care - Frequency					
Administration sets, infusion bag or syringe and associated add-on devices used for:	Every 4 hrs	Every 6 hrs	Every 12 hrs	Every 24 hrs	Every 96 hrs
Blood and blood products, including Albumin	X				
Propofol transferred from its original vial/syringe		X			
Propofol when infused from pre-filled vials/syringes			X		
Intermittent administration of fluids/ medications.				X	
Secondary tubing used for IV medication infusions when disconnected from primary administration set				X	
Administration of lipids				X	
Continuous administration of fluids other than above					X
Closed system Hemodynamic and Arterial Pressure monitoring systems					X
	Every 4 hrs	Every 6 hrs	Every 12 hrs	Every 24 hrs	Every 96 hrs

IV fluid bags:					
With extra additives added in pharmacy or unit. Begin administration within Beyond Use Date (BUD) on label.	May infuse for duration of tubing as above, up to 96 hours, unless additional expiration date/ time due to stability specified on label.				
Manufacturer prepared IV Fluid bags. Begin administration within manufacturer's expiration date.	May infuse for duration of tubing as above, up to 96 hours. Do not infuse past manufacturer's expiration date.				
Needleless Connector (Cap)*: **No more frequently than every 24 hours**	Every 4 hrs	Every 6 hrs	Every 12 hrs	Every 24 hrs	Every 96 hrs
With administration sets for infusing lipids or propofol: For propofol or lipids not infusing daily, cap changes should occur at the end of the infusion				X	
Before drawing CVC blood cultures				X	
With continuous or intermittently infusing administration sets or Heparin locked CVC					X
Weekly cap changes only for patients at home (if not infusing lipids) *See NICU Standard of Practice	Change caps on admission for patients coming in with central lines at home/ outside institution, regardless of date previously changed.				

B. Care of the CVC

1. Dressing Change Frequencies and Special Considerations	
General Considerations	1. For transparent dressings, change every 7 days, or if soiled, loose, or wet. 2. For gauze dressings or gauze placed under transparent dressings, change every 48 hours, or if soiled, loose, or wet. 3. Use sterile technique, mask for everyone in patient zone (3 feet), and use a pre-packaged kit for all dressing changes 4. Use Chlorhexidine Gluconate/Alcohol combination for skin antisepsis unless contraindicated. 5. Additional securement of line outside of dressing via adhesive securement device recommended 6. If an additional securement device is used replace at least every 7 days with routine dressing change, and as needed.

	7. Do not use topical antibiotic ointments or creams on insertion site because of potential to promote fungal infections and antimicrobial resistance 8. See Trouble Shooting section for difficult to adhere dressing 9. See Special Considerations for a PICC. 10. See Special Considerations for Implanted Port

2. A. Routine Care Activity: Central Venous Catheter Dressing Change	
Supplies	Procedural Steps
Gloves (2 pair: 1 clean and 1 sterile Masks for everyone in patient zone **Pre-packaged dressing change kit** • Mask • CHG swabstick • CHG impregnated sponge (Biopatch) • skin prep • transparent dressing • gauze pad • Saline wipes Dressing Change Video Longer Catheter (Broviac) Dressing Change with Loop Video	1. Utilize clean dedicated surface for supplies. 2. Perform hand hygiene. 3. Open all supplies, maintaining sterility. 4. Put on mask and clean gloves. 5. Apply mask to patient and everyone within the patient zone. 6. Remove old dressing, pulling the dressing from the edges towards the center to reduce probability of dislodging the line. Assess insertion site. If tenderness, induration, purulence or bleeding notify the LIP. If purulent drainage, obtain culture. If erythema, follow the CVC dressing algorithm/guide 7. Assess line security. For pulled sutures or line migration concerns, secure site and notify provider to evaluate for tip location. 8. Perform hand hygiene. 9. Put on sterile gloves. 10. If site is soiled, clean with provided saline wipes **before** CHG swabstick. May pat saline dry with sterile gauze pad. Use CHG last. 11. Scrub the skin with a CHG swabstick for 30 seconds around the insertion site in a back and forth, side to side motion with friction. Include the entire area of skin and the length of the catheter that will be under the dressing. If the following conditions exist clean the site for a minimum of 2 minutes: catheters in the groin area, drainage at CVC sites or under dressing, CVC placed within skin folds, or if the dressing is wet or moist. 12. Allow skin to dry completely, at least 30 seconds for dry sites, longer for moist sites. Do not blow or pat dry. 13. Apply CHG impregnated disk with grid side up unless contraindicated. 14. Apply skin barrier (skin prep) solution; let dry. 15. Apply transparent dressing to cover the insertion site and as much of the catheter as possible. Position catheter to exit the dressing to area least likely to be contaminated. Longer catheters (e.g., Broviac) may be looped under dressing per care team standard of practice. 16. Additional securement outside of dressing recommended as needed 17. Remove gloves and perform hand hygiene. 18. Document dressing change procedure, date changed, products used, and skin condition. 19. Report dressing change date at handoff. Label dressing with date changed or post date change at bedside per unit standard. Inform patient/ family of last date changed if discharged with central line.

2. B. Routine Care Activity: Sensitivity Central Venous Catheter Dressing Change	
Supplies	Procedural Steps
Gloves (2 pair:1 clean and 1 sterile Masks for everyone in patient zone **Pre-packaged dressing change kit** • Mask • 3 pack Povidone-Iodine swabsticks • Silver disk • Skin prep • Transparent dressing • Gauze pad • Saline wipes Sensitivity Dressing Change Tips Video	1. Utilize clean dedicated surface for supplies. 2. Perform hand hygiene. 3. Open all supplies, maintaining sterility. 4. Put on mask and clean gloves. 5. Apply mask to patient and everyone within the patient zone. 6. Remove old dressing, pulling the dressing from the edges towards the center to reduce probability of dislodging the line. Assess insertion site. If tenderness, induration, purulence or bleeding notify the LIP. If purulent drainage, obtain culture. If erythema, follow the CVC dressing algorithm/guide 7. Assess line security. For pulled sutures or line migration concerns, secure site and notify provider to evaluate for tip location. 8. Perform hand hygiene. 9. Put on sterile gloves. 10. If site is soiled, clean with provided saline wipes before using povidone-iodine swabsticks. May pat saline dry with sterile gauze pad. 11. Using three povidone-iodine swabs start at insertion site and clean in a circular motion, moving from inside the circle near the catheter to the outside. Continue to enlarge the circle, being careful to continue moving outward and to avoid moving inward. Apply it for a minimum of 30 seconds; make sure to include the entire area of skin and the length of the catheter that will be under the dressing. 12. Let dry for at least 2 minutes until skin is completely dry. Do not blow or pat. 13. Remove dried povidone-iodine with normal saline wipes after drying. May pat saline dry with sterile gauze pad. 14. Apply silver disk to insertion site per manufacturer's directions. 15. Apply skin barrier (skin prep) solution; let dry. 16. Apply transparent dressing to cover the insertion site and as much of the catheter as possible. Position catheter to exit the dressing to area least likely to be contaminated. Longer catheters (e.g., Broviac) may be looped under dressing per care team standard of practice. 17. Remove gloves and perform hand hygiene. 18. Report dressing change date at handoff. Label dressing with date changed or post date change at bedside per unit standard. Inform patient/ family of last date changed if discharged with central line 19. Document dressing change procedure, date changed, products used, CVC length and skin condition.

2. C. Routine Care Activity: PICC/ Non-Tunneled Central Venous Catheter Dressing Change	
Supplies	Procedural Steps: Requires 2 RN's
Gloves (3 pair: 1 clean and 2 sterile) Masks for everyone in patient zone **Pre-packaged dressing change kit** • Regular kit or • Sensitivity kit plus alcohol swabs • Catheter Stabilization device (StatLock) if not sutured Stat Lock Dressing Change Video	Utilize clean dedicated surface for supplies 1. RN #1= Clean ➢ Steps 1-5 per above procedures. (II.2.A. & II.2.B.) ➢ Remove old dressing. Always pull dressing up toward the insertion site, never down, to avoid dislodgement of catheter. ➢ Remove old dressing, pulling the dressing from the edges towards the center to reduce probability of dislodging the line. Assess insertion site. If tenderness, induration, purulence or bleeding notify the LIP. If purulent drainage, obtain culture. If erythema, follow the CVC dressing algorithm/guide ➢ Assess line security. Measure length of catheter from insertion site to start of wing section, carefully maintaining sterility of site. If more catheter is exposed from the insertion site, or if sutured, sutures are loose, notify IR or LIP. 2. RN #1= Sterile ➢ Perform hand hygiene. ➢ Put on sterile gloves. ➢ If site is soiled, clean with provided saline wipes **before** disinfection. May pat saline dry with sterile gauze pad. ➢ Scrub the skin with a CHG swabstick or Povidone-Iodine swabsticks as indicated per above procedures. (II.2.A. & II.2.B.) Make sure to include the entire area of skin and the length of the catheter that will be under the dressing, including Statlock if present. Avoid vigorous scrubbing immediately at insertion site or under section of catheter between insertion site and sutures or Statlock to avoid dislodgement. ➢ Allow skin to dry completely, at least 30 seconds for dry sites, longer for moist sites. Do not blow or pat dry. 3. If sutured skip to step 4. If Statlock is present: ➢ RN #1= Sterile, RN #2= Sterile i. RN #2 applies pressure directly on catheter insertion site. ii. RN #1 uses CHG swabstick (alcohol prep pads if CHG sensitive) to remove Statlock from skin and disinfect skin under Statlock. iii. Open doors on Statlock carefully lift catheter and slide Statlock out. iv. Allow skin to dry completely v. Apply skin barrier (skin prep) solution to area directly under Statlock. vi. Slide new Statlock under CVC wings, align Statlock pegs with holes and close. Place finger under Statlock when closing to avoid pressure directly on patient's skin. vii. Remove backing from Statlock and press into place. 4. RN #2 measures length of catheter from insertion site to start of wing section, carefully maintaining sterility of site.

	5. Apply antimicrobial patch (Biopatch or Silver Disk) to insertion site with split away from catheter to avoid possible dislodgement. 6. Apply skin barrier (skin prep) solution to site; let dry. See troubleshooting section for adhesion issues 7. Apply transparent dressing so that insertion site and Statlock (if present) are entirely covered with the dressing. Must use large dressing if Statlock present. Position catheter to exit the dressing to area least likely to be contaminated. 8. Remove gloves and perform hand hygiene. 9. Report dressing change date at handoff. Label dressing with date changed or post date change at bedside per unit standard. Inform patient/ family of last date changed if discharged with central line 10. Document dressing change procedure, date changed, products used, CVC length and skin condition.

3. Routine Care Activity: Central Venous Catheter Needleless Connector (Cap) Scrub the Hub	
Supplies	Procedural Steps
Clean Gloves • CHG prep pad for each line entry • Syringes/ tubing as needed • **Scrub the Hub Video**	1. Utilize clean dedicated surface for supplies. 2. Perform hand hygiene. 3. Don clean gloves 4. Aseptically open all supplies. 5. Use one CHG prep pad to scrub the silicone seal and grooves at the top of the needleless connector hub with good friction for at least 15 seconds. 6. Allow the needleless connector hub to dry completely. Do not blow on or wave dry. 7. Attach luer connections such as syringes/ tubing straight on (no angle) to needleless connector to avoid dislodging silicone seal. 8. Before attaching each new syringe or tubing, scrub the hub with a new CHG pad & allow to dry completely EACH time.

4. Routine Care Activity: Central Venous Catheter Needleless Connector (Cap) Change	
Supplies	Procedural Steps
Sterile Gloves Mask for everyone in patient zone **Sterile Cap Change Kit** • 2 CHG prep pads, • 1 Needleless Connector,	1. Utilize clean dedicated surface for supplies. 2. Use sterile technique for all central line needleless connector changes. Avoid touch contamination of catheter hub. 3. Perform hand hygiene. 4. Make sure catheter is clamped. 5. Open all supplies, maintaining sterility. 6. Don mask and sterile gloves. 7. Apply mask to patient and everyone within the patient zone. 8. Using sterile 2x2 gauze, hold the catheter line with non-dominant hand 9. Using one CHG prep pad, scrub junction where the catheter hub and needleless connector meet for 15 seconds. Allow to dry completely. 10. Using second sterile 2x2, remove old needleless connector and discard.

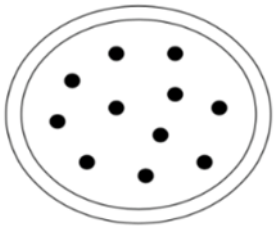
• 2 Sterile 2x2 gauze per lumen Sterile NS syringe if needed **Cap Change Video**	11. Clean outside of catheter hub with second CHG prep pad for 15 seconds and allow to dry completely. Avoid introducing CHG into the catheter. 12. Attach the new needleless connector. *Dead space volume of the MicroClave needleless connector is 0.04 mL. Some patient populations (neonatal/ cardiac) may require priming of the needleless connector. If priming, use a sterile 10 mL preservative-free 0.9% sodium chloride flush and maintain sterility. 13. Document procedure done and date changed

5. Routine Care Activity: Flushing and Medication Locking of Central Venous Catheters	
Supplies	Procedural Steps
Clean Gloves CHG prep pads Normal Saline Flush Heparin Flush Ordered Medication	**General Considerations:** 1. Notify provider for difficulty flushing or aspirating blood return. 2. Use only 10 mL diameter or larger syringes for all CVC flushes. 3. Multi-lumen catheters: each lumen of a double or triple lumen catheter is cared for as a separate catheter and must be flushed/heparinized individually. 4. Flushes are one-time use only. 5. Utilize dedicated surface for supplies. **Flushing:** 1. Flush all catheters with 3-5mL's of preservative-free 0.9% sodium chloride in a 10mL standard syringe prior to drug administration to establish patency, clear the line and prevent fibrin clot formation in the catheter. 2. Flush with 10mL NS following medication administration, blood products or blood draws a. Flush with 5 mL of NS for patients less than or equal to 5kg or with fluid restrictions b. Flush with 3 mL of NS for patients less than or equal to 2.5kg 3. Never use sterile water for flushing CVC. 4. Use D5W followed by NS flush for medications incompatible with sodium chloride. Do not allow dextrose to reside in the catheter lumen as it provides nutrients for biofilm growth. **Heparin locking:** Flush each lumen after every intermittent use and at least every 24 hours when not in use. Heparin flush of continuously infusing lines not necessary. Recommended Heparin flush: Tunneled, Non-tunneled and PICC — 3 mL (10 Units/mL) every 24 hours when not in use and PRN intermittent use Implanted port — 5mL (10 Units/mL) every 24 hours when not in use and PRN intermittent use

	5mL (100 Units/mL) prior to port needle de-access and at least monthly when not in use. *For port needle change with same day re-access, withdraw and discard 5 mL blood prior to flushing to avoid infusing heparin. 1. Heparin adjustments may be made per provider for smaller patient catheter volumes. 2. Recommend KVO fluids in lieu of intermittent heparin locking in patients with frequent line entries. 3. Neo-PICCs: Do not use 1.9 Fr catheter for blood draws or blood infusions. The physician may order a continuous infusion at not less than 1 mL/hour, with a recommended 1 unit/1 mL heparin. 4. Clamp central lines when not in use to prevent bleeding should the needleless connector become dislodged. **Antibiotic Locking: See Formulary for antibiotic lock guidance**

6. Routine Care Activity: Blood Draws from Central Venous Catheters – Excluding Culture	
Supplies	Procedural Steps
Clean gloves (1pr) Chlorhexidine Gluconate (CHG) pads (2) Double stopcock (1) 10mL Syringes (at least 1 for blood specimen, 1 for discard) 10mL normal saline syringe (2) Needleless transfer device Heparin flush (if needed) Appropriate specimen containers/tubes Pt labels/lab slips	1. See maximum allowable blood draw volumes 2. Utilize clean dedicated surface for supplies. 3. Perform hand hygiene and don clean gloves. 4. Aseptically attach the discard syringe to the distal port on the double stopcock and attach the blood specimen syringe to the proximal port on the double stopcock. 5. Attach 10 mL preservative-free 0.9% sodium chloride flush to the end of the double stopcock, prime the stopcock with normal saline. 6. Stop infusions. If multiple lumen catheter, clamp all additional lumens. 7. Scrub the Hub 8. Attach double stopcock to the needleless connector aseptically. 9. Draw back blood/fluid (1-3 mL for neonates, 5 mL for pediatric/adult patients) in syringe distal to the central line connection, and then close the stopcock. This blood will be returned to patient after the specimen is collected, unless contraindicated. If unable to draw blood, see trouble shooting. 10. Draw specimen into the proximal syringe and close the stopcock. Be sure to collect enough blood for all the specimens. If more than one syringe is required, Scrub the Hub, attach another syringe aseptically to the proximal port, draw back the additional blood required. 11. Return blood in the distal syringe **unless longer than one minute has passed or contraindicated** then close stopcock. 12. Flush the catheter with normal saline flush. 13. Disconnect the double stopcock. 14. Scrub the Hub 15. Note: MicroClave needleless connectors do not need to be changed following blood draws due to low dead space volume. 16. Attach IV fluids or flush with the appropriate amount of heparin. 17. Transfer blood specimens to tubes using needleless transfer device at bedside. Label tubes and verify with 2 patient identifiers or PPID. 18. Remove gloves and perform hand hygiene. 19. Document volume of blood withdrawn in the medical record. 20. *****If not using double stopcock method, blood in discard syringe must be wasted, DO NOT return sample to patient. Scrub the Hub before attaching each syringe.

7. Routine Care Activity: Obtaining blood cultures from central venous catheters	
Supplies	Procedural Steps
Clean gloves (1pr) Chlorhexidine pads (2) Double stopcock (1) Syringes (2) 10mL normal saline syringe (2) Blood Culture Device(s) (Angel Wing) (1-3 per lumen, depending on # of culture specimens) Heparin flush (if needed) Appropriate specimen containers Check expiration date on blood culture bottles before using d/t short expiration time. Pt labels/lab slips	1. Utilize clean dedicated surface for supplies. 2. Change needleless connector before drawing cultures**.** (II.B.3) 3. Perform hand hygiene and don clean gloves. 4. **Do not flush line prior to obtaining specimen.** Doing so may remove the microorganisms required to accurately identify bacteria. 5. Attach the discard syringe to the distal port on the double stopcock and at blood specimen syringe to the proximal port on the double stopcock. 6. Attach one 10 mL preservative-free 0.9% sodium chloride flush to the end of the double stopcock, Prime the stopcock with normal saline. 7. Scrub the Hub (II.B.3.) 8. Attach double stopcock to the needleless connector. 9. Draw back blood/fluid per recommended volume below (attach additional syringes if needed) in syringe distal to the central line connection, and then close the stopcock. This blood will be used for the blood culture specimen. If unable to draw blood, see trouble shooting. Avoid flushing catheter before obtaining cultures if possible. 10. If additional specimens are required, draw specimen into the proximal syringe and close the stopcock. Collect enough blood for all specimens. 11. Flush the catheter 10 mL preservative-free 0.9% sodium chloride flush. 12. Disconnect the double stopcock. 13. Scrub the Hub (II.B.3.) 14. Attach IV fluids or flush with the appropriate amount of heparin. 15. Scrub the top of each culture bottle with a fresh CHG swab for at least 15 seconds and let it dry completely before the specimen is introduced to prevent contamination. 16. If both aerobic and anaerobic cultures are needed, inoculate anaerobic first to avoid possible oxygenation of the anaerobic specimen. 17. Inoculate the culture bottles before adding specimen to other lab tubes to prevent cross contamination. For lines with multiple lumens, consider culturing each lumen separately per LIP order. PLEASE NOTE: Blood cultures should be obtained prior to initiation of antibiotic therapy. a. Peripheral cultures are preferred (special considerations for chronic patients with difficult sticks). Blood cultures may be obtained from CVC per physician's order. b. The recommended minimum blood volume for **EACH** culture bottle submitted is based on the patient's age: 1 mL per year of patient age with maximum of 10 mL per bottle (ex, 5-year-old patient requires 5 mL/bottle) c. Fungal culture container requires 1 -2 mL. d. Document the volume of blood withdrawn in the medical record.

8. A. Routine Care Activity: Implanted Port Access	
Supplies	Procedural Steps
Sterile Gloves Mask for everyone in patient zone Non-coring safety needle **Pre-packaged implanted port access kit:** • Mask • CHG swabstick • Sterile 10 mL saline flush • Needleless connector • Skin prep • Transparent dressing • Sterile drape Vary location for needle insertion: 	1. Explain procedure to patient/family. Discuss age-appropriate pain reduction strategies and immobilization of child. 2. Utilize clean dedicated surface for supplies. 3. Perform hand hygiene. Put on clean gloves. 4. Palpate and assess area for access. Never access through area of skin breakdown or compromise. See Port Access Decision Tree. Consult wound team/ IR as needed. 5. Apply topical Lidocaine prior to access unless contraindicated. 6. Hand hygiene, clean gloves to remove lidocaine prior to procedure. 7. Select appropriate gauge and length of non-coring safety needle. 8. Open all supplies, maintaining sterility 9. Apply mask to self, patient and all persons within the patient zone. 10. Perform hand hygiene. 11. Put on sterile gloves. 12. Apply sterile drape as needed 13. Assemble supplies on sterile field 14. Prepare non-coring needle with needleless connector and flush 10 mL preservative-free 0.9% sodium chloride through to needle (leave syringe attached). 15. Scrub the skin with a CHG swabstick or Povidone-Iodine swabsticks as indicated per above procedures. (II.2.A. & II.2.B.) Make sure to include the entire area of skin that will be under the dressing. 16. Stabilize port using non dominant hand on port boundaries. 17. Insert non-coring needle through skin at right angle and push down firmly until needle penetrates septum and contacts back of port 18. Vary access needle location each time you access the port; accessing through the exact same spot can delay skin healing and increase risk for infection. Always insert needle straight down. 19. Apply gentle negative pressure to assess for blood return a. If using GripperMicro® blood return is obtained only once insertion needle is withdrawn. Remove by holding at base and pulling back and up on tab to engage the safety needle. Discard in sharps container. b. If re-accessing post recent de-access with 500-unit Heparin flush, withdraw 5 mL of blood and discard before flushing. 20. After establishing blood return or drawing blood cultures, flush port with at least 10 mL preservative-free 0.9% sodium chloride. Disconnect syringe. 21. If unable to obtain blood return remove needle and attempt with new sterile set up. See Special Considerations below 22. Apply skin prep and occlusive dressing. 23. Attach IV fluids or flush with the appropriate amount of heparin 24. Remove gloves and perform hand hygiene.

	25. Report dressing change date at handoff. Label dressing with date changed or post date change at bedside per unit standard. Inform patient/ family of last date changed if discharged with central line 26. Document access and dressing change procedure, needle size, patient response, date changed for port needle, dressing and cap, products used, and skin condition.

Catheter type	8.B. Special considerations for Implanted Port
Implanted Vascular Access Ports	1. Change needle once a week or as needed 2. Change dressing when the needle is changed and whenever soiled, loose or wet. 3. Assess: Assess port site in preparation for port access: observe/palpate for swelling, pain, erythema, and drainage; presence of venous collaterals on the chest wall that may signal occlusion; erosion of the portal body through the skin; or signs of CA-DVT. See Port Access Decision Tree 4. Select needle: **a.** Access the port with the smallest-gauge non-coring needle to accommodate the prescribed therapy **b.** Reduce the risk of needle dislodgement after access; use a non-coring needle of length that allows the external components (e.g., wings, needle housing) to sit level with the skin and securely within the port (needle touches bottom of port upon insertion). 5. The clinician caring for the patient will be allowed two port access attempts. - If unsuccessful, another clinical resource should be consulted. - If an additional two attempts by clinical resource are not successful, notify LIP and IR to determine course of action. 6. Newly placed ports: - If the incision will be covered by the port dressing, place non-adherent dressing (Telfa) over incision for the first two weeks to prevent Dermabond from being pulled from incision. - If the incision is not covered by the dressing, place an adhesive, non-woven dressing (Primapore) over incision. May remove after 3-5 days if patient is not at risk for removing Dermabond.

8. C. Routine Care Activity: Implanted Port Needle De-Access	
Supplies	Procedural Steps
• Clean Gloves • Adhesive remover as needed • CHG prep pad	1. Utilize clean dedicated surface for supplies 2. Perform hand hygiene and don clean gloves. 3. Place the patient supine or in a position of comfort. 4. Scrub the Hub and flush with 10 mL sterile preservative-free 0.9% sodium chloride

• NS 10 mL flush • Heparin Flush 500 units/5mL (100unit/mL concentration) • 2 x 2 sterile gauze • Bandage as needed	5. Scrub the Hub and lock with Heparin 5 mL (100 Units/mL) prior to port needle de-access 6. Remove dressing carefully using adhesive remover as needed 7. With the nondominant hand, apply gentle, stabilizing pressure to the port while removing the needle. Pull the needle straight up and out in a firm and continuous motion, engage the safety mechanism as applicable, and discard in sharps container. 8. Inspect the port site for signs of skin breakdown, infiltration, or infection. Report concerns to provider 9. Apply pressure over the puncture site with 2 × 2-inch gauze until the bleeding stops. Apply dressing if needed (Bandage, Primapore) 10. Discard supplies, remove PPE, and perform hand hygiene. 11. Document the procedure in the patient's record.

III. NeoPICC

Special Considerations for a 1.9Fr CVC (Neo PICC)		
	Unsutured	**Sutured**
Initial Placement	Typically placed by trained staff members	Typically placed by IR
Assessment for condition of site, skin, swelling along track, and dressing integrity	**Hourly**	Per unit standard and nursing judgment but minimally every 4 hours
Dressing changes by trained staff who have completed the competency	Every 7 days **See unsutured NeoPICC competency**	**See PICC/ Non-Tunneled Central Venous Catheter Dressing Change**
Need for Continuous Infusion instead of locking	• NeoPICCs should not be locked with heparin due to risk of clotting. • The physician should order a continuous infusion at greater than or equal to 1 mL/hour for NeoPICCs. It is recommended that these slow infusions be heparinized with at least 1 unit/1 mL.	
Flushing	Syringe pumps should be used to flush 1.9 Fr catheters.	
Special Procedures and events (OR, Codes, IV contrast, blood draws)	• Do not use a syringe smaller than 5 mL due to risk of damage to the line. • Contrast should never be infused through a NeoPICC, IV access should be established for contrast • Blood should not be administered nor aspirated via a NeoPICCs, to avoid clotting the lumen.	

IV. Peripherally Inserted Central Venous Catheters (PICCs)

Special Considerations for a PICC	
Phlebitis	1. In the first 72 hours after insertion, phlebitis may be seen as a red streak without induration or cording. 2. Phlebitis that continues should be monitored carefully for infection. 3. When the catheter is too large for the vein, blood flow around the catheter is decreased and phlebitis may occur slowly. 4. If phlebitis continues the catheter should be removed. 5. If the patient develops mechanical phlebitis, apply warm, moist compresses to the upper arm, elevate the extremity, and restrict activity. 6. Ibuprofen may help decrease phlebitis. Consider platelet level and anticoagulation prior to ibuprofen administration.
Care of the PICC	1. PICCs can be easily dislodged, should be secured with sutures or an external stabilization device (StatLock) per unit standard 2. No BPs on the extremity of the PICC. 3. No tourniquets or venipunctures on the extremity of the PICC. 4. Check the neck, arm and back for swelling daily. 5. Extension sets are not required nor recommended.
Dressing/ Securement	1. May keep PICC covered with a tubular dressing. **Avoid use of rolled bandages with or without elastic properties (i.e., ace wrap, kling, kerlex).** PICC will initially be covered with an ace wrap by IR as a pressure dressing. Ace wrap should be removed after 24 hours if there is no evidence of bleeding. 2. If a securement device (Statlock) is used, replace it with dressing changes, at least every 7 days with routine dressing change 3. Monitor catheter length outside the insertion site from skin entry to wings and do not attempt to reposition catheter. 4. Unsutured PICCs require two RN/LIP to change dressing and securement device; one to hold and stabilize the line, one to perform the change. 5. Apply the antimicrobial disk to PICC with split away from catheter. Do not attempt to wrap the disk around the PICC line. This will minimize the risk of dislodgement.

Special Considerations for a PICC	
	  
Blood draws/ administration	1. Do not use 1.9 Fr catheters for blood draws or blood infusions. 2. 2.6Fr PICCs: blood return is only expected from red lumen.

V. Apheresis Catheters

SAFETY ALERT - Always withdraw 5 mL waste blood to clear heparin from apheresis catheter before use. Do not re-infuse waste blood.

Care of the Apheresis Catheter	
Special Consideration for Apheresis Catheters	1. Standard Catheters cannot be used for apheresis as they are too pliable and collapse during apheresis 2. CVC must be suitable for apheresis. Check with Apheresis Team if you are unsure of type of catheter.
Heparin Flushing for various Apheresis Catheters	1. Temporary Non-tunneled Apheresis catheters: • Double lumen IJ/femoral- 1000 units/mL Heparin per volume marked on lumen • 5 French Cook TurbofloPICC- 3 mL of 10 units/mL heparin 2. Tunneled Apheresis Catheters: • Double Lumen Tunneled Catheter (MedComp)- 1000 units/mL Heparin per volume marked on each lumen. • High Flow Apheresis Port (AngioDynamics Vortex, Smart Port)- 2.3 mL of 1000 units/mL Heparin **when accessed with a MicroGripper needle.**
High Flow Port (Vortex) for Apheresis Procedure *Done by Apheresis Team	1. Port access is performed by nurses or LIPs trained in the care of implanted VADs and use of High Flow, Non-Coring Needle. **2.** High Flow Apheresis Port (AngioDynamics Vortex)- 3 mL of 1000 units/mL Heparin **when accessed with the Apheresis, 16 gauge straight, High Flow, Non-Coring Needle.** 3. High Flow, Non-Coring Needles must be removed post procedure after heparin flush.
Use of catheters for non-apheresis indications (lab draws, med administration, infusions)	1. Apheresis catheters may be used for other indications as needed, although it is preferable not to use the line unless necessary. Page Apheresis Team before using. IV Fluid and blood products may be infused; avoid TPN and lipids. Minimum KVO rate is 10 mL/hr. 2. Always lock catheters with heparin concentration/ volumes as listed above, even when used for non-apheresis reasons. 3. A standard non-coring port access (Huber) needle may be used to access the Vortex port (or Smart Port) when not being used for apheresis but should always be flushed with the high concentration heparin as above whether de-accessing or between infusions. 4. **Always withdraw 5 mL waste blood to clear heparin from apheresis catheter before use. Do not re-infuse waste blood.**
Dressing Changes	Follow **Routine Care Activity: Central Venous Catheter Dressing Change** **as** applicable. Do not attempt to loop shorter apheresis catheters.
Needleless Connector (cap) Changes	Tego Needleless Connectors (caps) used during apheresis may remain on the line between procedures. Follow **Needleless Connector (Cap) change frequency** guidance when inpatient. May be changed weekly at home.

VI. Dialysis Catheters

SAFETY ALERT - Always withdraw 5 mL waste blood to clear heparin from dialysis catheter before use. Do not re-infuse wasted blood.

Care of the TEMPORARY Dialysis Catheter	
Special Considerations	1. A temporary dialysis catheter is placed for Acute HD, CRRT and/or Apheresis needs. 2. A standard catheter cannot be used for dialysis as they are too pliable and collapse during procedure. CVC must be suitable for dialysis. 3. Check with Nephrology Team if you are unsure of type of catheter.
Heparin Flushing	1. Double lumen catheter – use 1000 units/mL heparin per volume marked on lumen plus 0.1 mL
Use for non-dialysis Care	1. Dialysis catheters may be used for other indications as needed, although it is preferable not to use the line unless otherwise indicated by MD Communication Order. 2. Minimum KVO rate is 10 mL/hr. 3. Always lock catheters with heparin concentration/ volumes as listed above, even when used for non- dialysis reasons. 4. Always withdraw 5 mL waste blood to clear heparin from apheresis catheter before use. Do not re-infuse wasted blood.
Dressing Changes	1. Follow Routine Care Activity: Central Venous Catheter Dressing Change for dressing change.
Care of the PERMANENT Dialysis Catheter	
Special Considerations	1. A permanent tunneled dialysis catheter is placed for chronic HD needs. 2. Check with Nephrology Team if you are unsure of type of catheter. 3. PERMANENT Hemodialysis Catheters are never to be used (see exception below) for any reason by anyone except a Dialysis Nurse or a HKU nurse who has completed an annual HD Catheter Competency. Only the Nephrology Attending can give permission to use a HD catheter. 4. EXCEPTION: After receiving a kidney transplant a PICU nurse or HKU nurse can use a permanent dialysis catheter as needed. Follow routine care per Central Venous Therapy NPG. 5. Minimum KVO rate is 10 mL/hr. 6. Heparin lock with 1000 units/mL heparin per volume marked on lumen plus 0.1 mL. 7. Always withdraw 5 mL waste blood to clear heparin from apheresis catheter before use. Do not re-infuse wasted blood 8. For more information on care of the PERMANENT Dialysis Catheter please refer to the Dialysis Unit Resource page https://cnmc.sharepoint.com/sites/dialysis-unit/SitePages/resources.aspx

VII. Transthoracic Cardiac Lines

Special Considerations for a Transthoracic Cardiac Line	
Transducer	All Cardiac lines should be transduced at all times. The exception is a "double lumen UVC" catheter being used as an intracardiac line. In that situation- the distal port should be transduced
Flushing	Intracardiac lines should not be flushed on a regular basis. Heparinized saline must be used to maintain patency of the catheter. Blood return should be assessed at each shift change unless inotropes are infusing.
Catheter Breakage	Unusual tension may result in separation of the inner and outer cannulas of the intracardiac catheter. It is necessary to clamp the inner cannula proximal to the separation and page CV Surgery for evaluation and repair. Stress Loops are placed under dressing to reduce potential for separation.
Dressing Change	1. Original dressing from operating room is left in place for 48 hours. 2. Subsequent dressing changes are to follow CVC guidelines. 3. Apply CHG impregnated sponge with grid side up. 4. Utilize "stress loops" to absorb tension and prevent kinking.
Needleless Connector and add- on devices	Needleless connectors are not used on transthoracic cardiac lines. When entering lines without needleless connectors, connection points should be disinfected as per Scrub the Hub and lines attached aseptically.

VIII. Troubleshooting

COMPLICATIONS	PREVENTION	SIGNS & SYMPTOMS	INTERVENTIONS
CATHETER BREAKAGE	• Secure line appropriately (Never use pins) • Clamp CVC at reinforced section of catheter • Use at least 10 mL standard syringe or pre-filled syringe that has 10 mL diameter for flushing	• Chest pain • Fluid or blood leakage • See signs of infiltration below if catheter breaks internally • Ballooning of catheter at weakened section	• Clamp catheter proximal to breakage • Keep blue clamp easily accessible to patient at all times in case of line disconnection or breakage • Notify LIP for assessment and possible repair • Follow manufacturer's guidelines for usage after repair: If necessary, the catheter may be used for infusion after 4 hours. The joint will

COMPLICATIONS	PREVENTION	SIGNS & SYMPTOMS	INTERVENTIONS
			not achieve full mechanical strength for 48hrs.
CATHETER OCCLUSION	• Flush before and after administering medications and drawing blood. • Flush line with heparin solution when not in use, as noted above.	• Resistance felt during flush • Inability to aspirate blood • Inability to infuse fluid • Sluggish flow • Frequent infusion pump alarms	• Assess for kinked tubing visually and on x-ray, confirm clamps are all open. • Reposition patient, have pt. cough/deep breath. Reposition arm on same side as line. • Repeat turbulent flush and then attempt to slowly withdraw blood with smaller size syringe. • Change needleless connector. • Determine type of occlusion (mechanical, drug/mineral precipitate or blood & fibrin clot) • Discuss POC with LIP: see catheter occlusion guideline on the formulary for appropriate occlusion management. • Dye studies may be ordered to evaluate line patency/integrity • Recommend chest x-ray to evaluate tip location • Alteplase if indicated, repeat if needed. • Unclogging may take multiple attempts over a couple of days.
CATHETER TIP IMPINGING ON VEIN WALL OR BENT	• Tip placement in SVC	• Ability to flush but not aspirate • Inability to infuse • Sluggish flow • Frequent infusion pump alarms	• Reposition patient • Coughing/deep breathe • Obtain X-ray or dye study

COMPLICATIONS	PREVENTION	SIGNS & SYMPTOMS	INTERVENTIONS
CATHETER EMBOLI	• Never use forceful injection or excessive pressure when flushing • Always clamp lumens when not in use	• Shortness of breath • Tachypnea • Tachycardia • Hypotension • Agitation	• Obtain x-ray • Monitor VS • Position on left side
INFILTRATION	• Secure lines adequately • Assess site/dressing minimally every 4 hours • Assess site more frequently when infusing irritant/vesicant • Use appropriate length non-coring needle length	• Discomfort • Redness • Swelling • Tenderness • IV fluid leakage under dressing • Blanching • Cool to touch	• Stop infusion • Assess site • Attempt to aspirate any fluid in catheter • Notify LIP • See CNH formulary and Patient Care Policy: M39: Antineoplastic Process for specific recommendations
CATHETER MIGRATION	• Assess correct tip position at the time of insertion • Secure CVC	• Pain, swelling, redness • Inability to flush, infuse or aspirate • Sluggish flow • Frequent infusion pump alarms	• Chest x-ray to confirm position • May warrant removal
LOCAL INFECTION	• Keep dressing clean, dry and intact	• Red, warm, tender and/or swelling, exudate or purulent material • Fever, chills	• Monitor temperature • Culture site as necessary • Change dressing per LIP orders • Consult Wound Team if severe and non-healing • May warrant removal
BLOOD STREAM INFECTION	• Follow CLABSI bundle • Remove unnecessary CVCs • Strict aseptic technique when	• Fever Hypothermia • Decreased BP • Leukocytosis • Nausea/vomiting • Shaking chills during or	• Draw blood cultures using stopcock method and strict aseptic technique • Treat with appropriate antibiotics

COMPLICATIONS	PREVENTION	SIGNS & SYMPTOMS	INTERVENTIONS
	changing fluids and tubing or entering line • Keep the system closed as much as possible	immediately after flushing.	• If multiple lumens are present, consider alternating antibiotics in all lines • Remove CVC as indicated • Antibiotic Lock- see Formulary Guideline
SUTURE DISLODGEMENT	• Keep Tubifast over PICC • Use additional securement to prevent pulling on PICC/CVC • Check suture integrity with every assessment	• Increased exposed catheter length • Loose dressing • Suture not attached to skin	• Note exposed length • Use external stabilization device (StatLock) if sutures not intact • Notify LIP • Confirm PICC tip location by CXR.
DIFFICULT TO ADHERE DRESSING	• Make sure skin is clean and dry after CVC site cleansing • Apply skin protectant (Cavilon AP) around line where dressing will be placed. • Apply dressing to skin making sure you achieve a good seal, secure with warmth of hand	• Dressing border edges peeling- may reinforce with border tape • Transparent center window not occlusive, complete dressing change required	• Apply Mastisol to back of CVC dressing in random places before applying to site already prepped with skin protectant • May need border tape (Hypafix) to make sure the edges are not peeling

IX. Patient & Family Education

The patient/family will be educated regarding line placement and rationale, routine care, supplies needed, signs of infection, troubleshooting and emergency management. Document all patient/family education in the electronic medical record.

Central Line Teaching handouts available on the Intranet:

- **Tunneled Central Catheter Care at Home**
- **Tunneled Central Catheter Care at Home (Spanish)**
- **Tunneled Central Catheter Care at Home (Arabic)**

- **PICC Line Care at Home**
- **PICC Line Care at Home (Spanish)**
- **Port-Accessing a Port at Home Booklet**
- **Port-Accessing a Port at Home Booklet (Spanish)**
- **Port Basics-English**
- **Port Basics-Spanish**
- **Port-Care of Accessed Port at Home**
- **Port-Care of Accessed Port at Home (Spanish)**
- **Giving Meds through Central Line at Home**
- **Giving Meds through Central Line at Home (Spanish)**

Patient/Family Education Resources on the Get Well Network:
Central Line and PICC care videos for families.

X. Documentation

Location: I-View • Intake and Output • Intake total	**Document:** • Continuous infusions ○ Chart volume infused hourly • Verify meds signed off on MAR transfer accurately

Location: I-View
• **Lines Tubes and Drains**
• **Central Lines**
• **Location of line**
	Document:
	• Number of lumens
	• What is infusing in each lumen
	• Activity/flow of each lumen
	• Line care performed on each lumen: i.e.:
	  ○ Cap change & cap change date/ time
	  ○ Tubing change- specify type
	  ○ Port access/ needle change & date/time
	• Dressing activity: i.e.:
	  ○ C/D/I, loose, drainage, etc.
	  ○ Changed & changed date/time, products used with dressing change
	  ○ Reinforced
	  ○ PICC line measurement
	• Site Condition: Note any erythema, skin breakdown, warmth, edema, drainage or tenderness, sutures if present.
	
	Document condition of site, skin and dressing per unit standard and nursing judgment but *minimally* every 4 hours.

COMPLICATIONS	Document description and actions taken if the patient has any complications including phlebitis, catheter occlusion, infiltrate/

	extravasation, exit-site infection or catheter thrombus. Document physician notifications
CATHETER REMOVAL	Document if a central line catheter is removed.

XI. Nursing Skills Checklists

- **A.** Tunneled central venous catheter (CVC) dressing change Skills Validation Checklist
- **B.** Peripherally inserted central venous catheter (PICC) or Non-Tunneled Central Venous Catheter (CVC) dressing change Skills Validation Checklist
- **C.** Care of the Central Venous Catheter: Scrub the Hub, cap change, and flushing/ heparin locking
- **D.** Obtaining Blood Specimen from CVC Skills Validation Checklist
- **E.** Obtaining Blood Cultures from CVC Skills Validation Checklist
- **F.** Accessing the Implanted port Skills Validation Checklist

XII. References

Articles:

Association for Vascular Access. (2015). Best Practice Guidelines in the Care and Maintenance of Pediatric Central Venous Catheters. (Level I)

Bell, T. and O'Grady, N. 2017. Prevention of central line-associated bloodstream infections. *Infect Dis Clin North Am, 31(3): 551-559.* (Level V).

Center for Disease Control. (2017). Guidelines for the Prevention of Intravascular Catheter Related Infections. (Level I)

Da Costa ACC et al. 2019. Interventions for occluded central venous catheters: A meta-analysis. *Pediatrics; 144 (6).*

Frey, A. M. (2003). Drawing Blood Samples from Vascular Access Devices: Evidence-based Practice. *Journal of Infusion Nursing, 26* (5), 285-293. (Level I)

Gabriel, J. (2010). Vascular access devices: securement and dressings. *Nursing Standard, 24(52):41-6*.

Gavin, N.C. et al. 2016. Frequency of dressing changes for central venous access devices on catheter-related infections (Review). *The Cochrane Library, Issue 2, 1-41*. Level I.

Gibson F, Bodenham A. (2013) Misplaced central venous catheters: applied anatomy and practical management. *Br J Anaesth;110(3):333-46* (Level V)

Gorski, L. et al., M. (2021). Infusion Therapy Standards of Practice, 8th Edition. *Journal of Infusion Nursing* (Level I*)*

Roldan, C. and Paniagua, L. (2015) Central Venous Catheter Intravascular Malpositioning: Causes, Prevention, Diagnosis, and Correction. *West JEM; 16(5)* (Level V)

Hong, H. (2013). Disinfection of needleless connectors with chlorhexidine-alcohol provides long-lasting residual disinfectant activity. *AJIC: American Journal of Infection Control, 41(8), e77-e79 (*Level II)

Kusminsky, RE. (2007) Complications of Central Venous Catheterization. *J Am Coll Surg,204 (4), 681-696.* (Level V)

Leung, T.K. (2011). A retrospective study on the long-term placement of peripherally inserted central catheters and the importance of nursing care and education. *Cancer Nursing, 34(1):E25-30.* (Level III)

Lorente L: Does Chlorhexidine-Impregnated Dressing Reduce the Risk of Catheter-Related Bloodstream Infection in All Vascular Access? Crit Care Med 2015; 43:e50–e51

Lutwick, L. et al. 2019. Managing and preventing vascular catheter infections: A position paper of the international society for infectious diseases. *International Journal of Infectious Diseases 84: 22-29.*

Marschall, J., Mermel, L.A., Fakih, M. et al. (2014). Strategies to Prevent Central Line–Associated Bloodstream Infections in Acute Care Hospitals: 2014 Update. Infection Control & Hospital Epidemiology, 35, pp 753-771. doi:10.1086/591059.

Mathew A., Gaslin T., Dunning K., Ying J. (2009). Central catheter blood sampling: the impact of changing the needleless caps prior to collection.*J Infus Nurs*. 32(4):212-8.

Mermel, L. A. et al. (2009). Clinical Practice Guidelines for the Diagnosis and Management of Intravascular Catheter-Related Infection: 2009 Update by the Infections Diseases Society of America. *Clinical Infectious Diseases,* 49 (1 Jul), 1-45. *(*Level I*)*

Pediatrics Vascular Access Network. (2010). Best Practice Guidelines in the Care and Maintenance of Pediatric Central Venous Catheters. *(*Level I*)*

Sandora, T.J. (2014). Impact of needleless connector change frequency on central line associated bloodstream infection rate. *American Journal of Infection Control 4: 485-9* (Level III)

Mathew A., Gaslin T., Dunning K., Ying J. (2009). Central catheter blood sampling: the impact of changing the needleless caps prior to collection.*J Infus Nurs*. 32(4):212-8.

Books:

Hockenberry, M. J., Wilson, D. (Eds.). (2019). *Wong's nursing care of infants and children*, 11th *ed*. Philadelphia, PA: Mosby.

Woods, S., Froelicher, E., Motzer, S., & Bridges, E. (2021). Cardiac Nursing,[7th]ed. Baltimore, MD: Lipincott Williams and Wilkins.

Website:

Food and Drug Administration https://www.fda.gov/safety/medical-product-safety-information/drug-safety-related-labeling-changes

The Joint Commission. Preventing Central Line–Associated Bloodstream Infections: Useful Tools, An International Perspective. Nov 20, 2013. Accessed 4/2015 http://www.jointcommission.org/CLABSIToolkit

XIII. ***Reviewers***

- **A.** Shared Nursing Leadership Practice Council – Systems Level
- **B.** Unit Based Nursing Practice Council – HOCU,
- **C.** Professional Practice Specialists for HOCU, IRU, NICU
- **D.** HAC CLABSI team
- **E.** Office of Infection Control/Epidemiology
- **F.** Interventional Radiology NP
- **G.** Wound Team NP
- **H.** CICU NP Team
- **I.** Apheresis Manager
- **J.** Dialysis Unit Manager

XIV. ***Legal Statement***

The nursing practice guidelines are intended to serve as a reference for the nurses in their practice. The compilation of information provided is drawn from relevant literature research from juried, reliable, and respected sources. The guidelines are not intended to replace individual judgment but instead to inform decision making. The material is updated approximately every 12- 24 months.

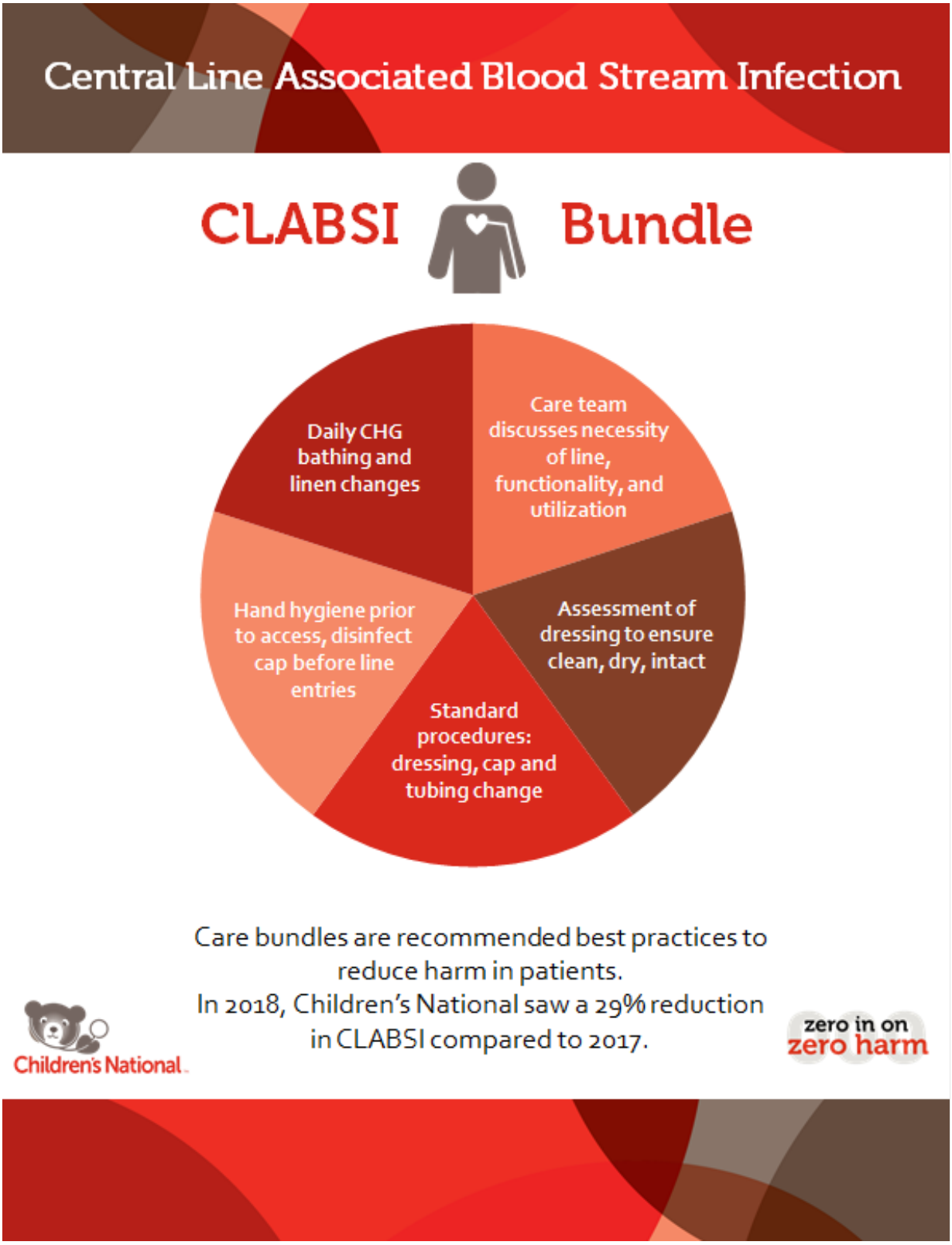
XV. ***Approval***

_____ _____

Senior Vice President & Chief Nursing Officer Date

Original date: 11/92
Revised date: 06/98 (merged Nursing Policy # 1200, 1201. 1202)
Revised date: 05/00, 03/02, 08/03, 12/06, 06/08, 09/09, 11/10, 12/10, 1/12, 1/13, 2/14, 3/15, 4/16, 5/16, 10/16, 7/17, 7/18, 1/20, 5/22

Appendix A: CLABSI Bundle



Appendix B: Central Line Care Sheet Sign

MY CENTRAL LINE CARE SHEET!!!

I have the following line(s):

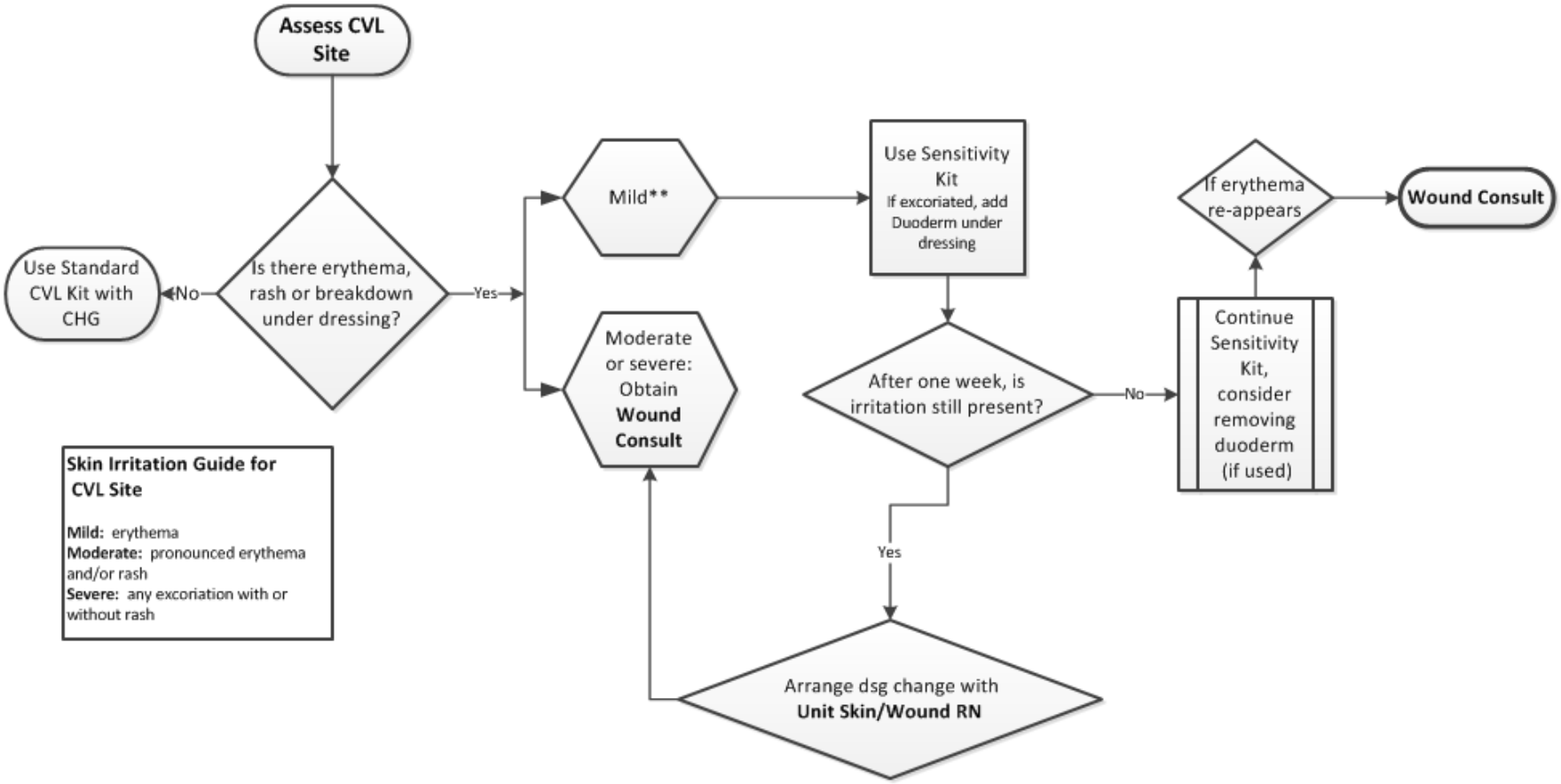
Circle/Check all items that apply to help properly care for my:

☐ Broviac/ Medcomp	☐ PORT	☐ PICC	☐ Apheresis Line	☐ NEO- PICC
Single/Double Lumen ***CHANGE MY DRESSING ON:** _____ ***For routine flush, use 30 units/ 3 mLs HEPARIN!** *My "Broviac" is any tunneled line centrally located, not being used for apheresis purposes*	**Single/Double Lumen** ***REACCESS ME ON:** _____ **NEEDLE SIZE:** _____G _____" ***For routine HEPARIN flush use 50 units/ 5 mLs** *** For De-Access use 500units/ 5mLs of HEPARIN** *My "port" may be a "vortex" or power port- fill this section out if not being used for apheresis*	**Single/Double Lumen** ***CHANGE MY DRESSING ON:** _____ ***For routine flush, use 30 units/ 3 mLs HEPARIN!** Catheter size: _____ Fr Catheter Length: _____cm	***ALWAYS withdraw 5mLs waste BEFORE use*** ***CHANGE MY DRESSING /REACCESS ME ON:** _____ ***For routine flush/de-access use ____ mLs in ____lumen use ____mLs in ____lumen of 1000units/mL HEPARIN!** (enter lumen volumes/colors) * Apply these guidelines when any power line (medcomp/vortex) is being used for apheresis at any time*	**Size/Location:** _____ ***CHANGE MY DRESSING ON:** _____ **(if sutured and placed by IR)** ***There are ___ black markings visible** *No blood pressures in this extremity *Please do not draw or infuse blood in my line * Always infuse HEP/NS in my line. It clots easily and cannot be TPA'd *If not placed by IR, the NEO PICC team members must change dressing)

- ***Change caps with IV tubing every 96h, every 24h for IL or before drawing blood cultures; at most once every 24h!***
- ***NICU Changes Caps every 7 days***
- ***Document in Lines, Tubes & Drains section of IView***

Updated 9/2019 SL Practice Council

CVL Dressing Algorithm/Guide



Skin Irritation Guide for CVL Site

Mild: erythema
Moderate: pronounced erythema and/or rash
Severe: any excoriation with or without rash

For questions or assistance, ask your **Unit Skin/Wound RN

Standard CVL Kit
- NS wipes & CHG*
- Biopatch*
- No-sting Skin Prep
- Tegaderm IV Advance Dsg

Sensitivity CVL Kit
- Betadine/Sterile NS Wipes
- Silver disc*
- No-sting Skin Prep
- Tegaderm IV Advance Dsg

**** for patients who are > 32 weeks gestational age or > 30 days of age***

5/2016 sachse

Bathing with Chlorhexidine (CHG) Fact Sheet

What is Chlorhexidine?
Chlorhexidine (CHG) is a disinfectant that reduces skin and mucosal membrane colonization and inhibits organism growth. Chlorhexidine is safe and has been used for 50 years as a cleanser for wounds and skin before surgery as an anti-germ hand rinse and as an antibacterial dental rinse.

Why bath patients with Chlorhexidine?
Studies in adult intensive care units demonstrate that bathing patients with Chorhexidine once a day decreases the number of harmful bacteria on the skin of patients. Chlorhexidine daily baths helped prevent some infections in sick, adult patients. We aim to provide the same protection for children.

DO NOT USE Chlorhexidine Cloths on Patients:

- With severe skin disease or burns
- With an indwelling lumbar drain or epidural catheter
- With a history of hypersensitivity to chlorhexidine

General Instructions for the Chlorhexidine Bathing:

- CHG is permissible for premature infants who are either >32 weeks corrected age or > 1 month old.
- Use cloths from the neck down. Do not apply to face, eyes, ears, or perianal area
- Use specified number of cloths according to patient's weight (see chart below)
- If more cloths are needed- give patient a regular bath first, then wipe down with CHG cloths
- Let patients air dry after bath
- Use lotion provided by the hospital to moisturize skin

Cloth	<10 kg	10-30 kg	>30 kg
#1	Chest, Both Arms, Back	Chest, Both Arms	Chest, Both Arms
#2	Both Legs, Buttocks, Perineum	Back, Buttocks	Right Leg
#3	----------	Both Legs	Left Leg
#4	----------	Perineum	Back
#5	----------	----------	Buttocks
#6	----------	----------	Perineum

Side Effects:

- Side effects are usually rare
- Most common- dry or irritated skin.
- **If side effects are severe, discontinue use of CHG cloths on the patient**
- **Document all rashes and side effects**

DRESSING CHANGE PROCEDURE FOR BLEEDING CENTRAL VENOUS LINE

Supplies	Procedural Steps
Clean gloves (2 pairs) Sterile gloves (2 pairs) Sterile NS flushes Masks Non-adhering dressing (Telfa) Sterile gauze (multiple 4x4 or 2x2 packages) Surgicel, Thrombin disc, or Thrombin powder, as ordered Clear Occlusive dressing Pre-packaged CVC dressing change kit.	1. Perform hand hygiene. Don clean gloves. 2. **Hold pressure with folded gauze at venous insertion site, over dressing for 10 minutes. For tunneled central lines this is at the venotomy site on the neck**. 3. Release pressure and assess for further bleeding. If bleeding has stopped, wait 4 hours, then perform standard dressing change dressing. 4. If continued bleeding, hold pressure for additional 10 minutes, then continue to #5. 5. Utilize clean dedicated surface for supplies. 6. Open all supplies, maintain sterility 7. Don mask and clean gloves 8. RN#2 removes old dressing while RN#1 continues to hold pressure at insertion site. If dried clot is adhering to dressing, may gently saturate with sterile saline to loosen dressing. Do not disturb clot which is maintaining hemostasis. Assess site for signs of infection and notify LIP if present. 9. Assess line security. If Statlock securement device is present, do not remove until bleeding is resolved to avoid manipulation of line and disturbing clot formation. 10. RN#2 removes gloves and performs hand hygiene. Dons sterile gloves. 11. RN#2 performs skin asepsis per CVC NPG. RN#1 removes gloves, performs hand hygiene, dons sterile gloves, then uses sterile gauze to continue to hold pressure. 12. If site continues to bleed, topicals such as Surgicel, thrombin discs or thrombin powder are placed directly to bleeding site. See CNMC Formulary for application information. DO NOT USE BIOPATCH. 13. Cover topical with Telfa dressing or gauze. Cover with folded sterile gauze to provide pressure dressing to the site. 14. Apply clear, occlusive dressing over gauze. 15. Apply pressure dressing overlying CVC dressing – using folded 4x4 gauze and tight adhesive dressing. Although ace bandages can be used to aid in keeping these intact, ace wraps should not be used for pressure dressings. 16. If bleeding stops, pressure dressing overlying CVC dressing can be removed in 24 hours. Change CVC dressing in 48 hours. 17. If bleeding continues, hold pressure and repeat process. Consider aggravators such as anti-coagulation medications. 18. Document in chart per hospital policy.

Central Line Erythema Troubleshooting GUIDE

Troubleshoot using recommendations below. Contact Wound Team if not seeing improvements within 1 week

	INFECTIOUS	ALLERGIC/SENSITIVITY	MOISTURE-RELATED
Symptoms	Erythema, warmth, swelling, tenderness, induration, purulent drainage, fever	Erythema often with well-demarcated borders in alignment with adhesive dressing, pruritis, excoriation	Erythema, denuded skin, wet appearance, visible drainage
Approach to management	Consider the following: - Culture site - I+D - Antibiotics - Line Removal	Consider the following: - Identify/remove allergen - PO antihistamine or topical steroid for pruritis - Patch testing - Minimize patient scratching (arm boards/mittens/Tubifast or mesh garment, ACE wrap…etc.)	Consider sources of moisture - Purulent drainage - Non-infectious drainage (serous or sanguinous) - Sweating - Products used to clean/dry skin not allowed to fully dry (betadine, CHG…etc.). Ensure line is well-secured. If not, risks widening of insertion site contributing to drainage.
Goal of care – skin management	Reduce moisture in contact with skin if with purulent drainage to prevent skin breakdown.	Minimize exposure to allergen and reduce allergic response.	Reduce moisture in contact with skin to prevent skin breakdown.
Dressing Recommendations. All products listed to be applied using sterile technique to CVL site that has been cleaned/dried per NPG. See Appendix A for dressing photos.	If no drainage present: - continue current CVL regimen If drainage present: - goal is to absorb/dry out. - Can implement **CVL standard kit** (or **CVL sensitive kit** if already using) + any combination of the following. **Silver powder** - Silver has antimicrobial properties - Can facilitate in reduction of bleeding - Useful when site with minimal to small amount of drainage - Apply light dusting + seal with Cavilon No Sting barrier wipe **Aquacel AG** - Silver has antimicrobial properties - Useful to absorb bleeding or drainage - Useful in when site with moderate drainage	**CVL standard kit/ CVL sensitive kit** Other occlusive dressings that can be used with either CVL standard or sensitive kit - **Tegaderm** (included in kits) - **Sorbaview** - **Suresite** - **IV 3000** (Not carried in house. Requires special order) **Clobetasol 0.05% foam or solution** – **Emollient Free.** As of May 2022, pending final approval from pharmacy to carry in-house. Until approved, must order as non-formulary or have patient bring in from outside pharmacy. - Do not order topical steroid ointment in place of these as it will make site too greasy and occlusive dressing will not adhere. - Foam: consistency like hair mousse. With clean hands spray a small amount onto sterile gauze. Once sterile, apply	If drainage present: - see infectious algorithm If with sweating, consider: **Tegaderm Diamond** - not carried in house and requires special order.

	- Cut square with slit and apply around insertion site (similar to GT dressing) after site cleaned. **Drawtex** - Very absorptive - Useful for moderate to large amounts of drainage - Cut as described for Aquacel AG above. **Cavilon Advanced skin protectant** - Once skin clean/dried may apply - Allow to dry for 60 seconds - One application should last several days. May re apply 2-3 x week. - OK to apply over irritated/broken-down skin - For in-hospital use only. **Hemostatic agents: Surgicel or Quick Clot** - These products can be cut & applied over oozing/bleeding skin beneath CVL dressing. See Dressing change for bleeding site. Duration of use determined case by case.	thin layer to cleaned/dried skin and allow to fully dry before proceeding with dressing change. - Solution: consistency like water. With clean hands pour onto sterile gauze. Once sterile dab onto cleaned/dried skin and allow to fully dry before proceeding with dressing change. - Apply either product with dressing changes (i.e., weekly/bi-weekly…etc.). May be applied for several weeks until rash resolves **Non adherent pad**. - Cut strips to create frame/window around insertion site. Idea is to reduce adhesive in contact with skin. - Place occlusive dressing overtop and only perimeter should be stuck to skin. May require more than one dressing.	
Key points to remember	1.Dressing applied is intended to maintain skin integrity in the setting of infection and will not treat infection. 2. If with confirmed infection, oral or IV antibiotics are what will treat infection. 3. Topical antibiotic ointments not typically used for the following reasons - Make dressing adherence difficult - Make site too moist. - Patient usually already on IV/PO abx 4. Consider increasing frequency of dressing changes from weekly to bi-weekly (or more) if with	1. Introduce one intervention at a time and allow for a few days of exposure to product to evaluate skin response 2. Before modifying dressing regimen, first ensure products applied to skin (CHG or Betadine) fully dry before occlusive dressing placed. This is a common cause of skin reactions. 3. Shift dressing placement with each change to give skin a break 4. CVL Standard kit vs Sensitive kits. When to use each? **CVL standard kits**: - 1st choice- CHG superior antimicrobial agent	1. If skin is too moist, goal is to dry out. 2. Consider increasing frequency of dressing changes from weekly to bi-weekly (or more) if with concerns for increased moisture due to drainage…etc.

	concerns for increased moisture due to drainage…etc	**CVL Sensitive Kit** - should be reserved for cases of allergy/sensitivity to Chlorhexadine (CHG). - Sensitive kits don't provide added benefit in cases of infection or moisture-related erythema.	

Products carried at CNH – available from central supply or most unit supply rooms

CVL Standard Kit (CHG impregnated disc/biopatch + CHG swab)	Aquacel AG 	Surgicel (Need Rx, from pharmacy) 
CVL Sensitive Kit (Silvasorb disc + Betadine swab)	Drawtex 	Quick Clot (From ECMO specialist/ PICU) 
Tegaderm 	Curad Non-Adherent Pad 	Tubifast Garment 
Sorbaview 	Silver Powder 	Curad tubular elastic net dressing 
Cavilon Advanced Skin Protectant 	Cavilon no sting wipes 	Suresite 

Products not carried at CNMC and how to obtain.

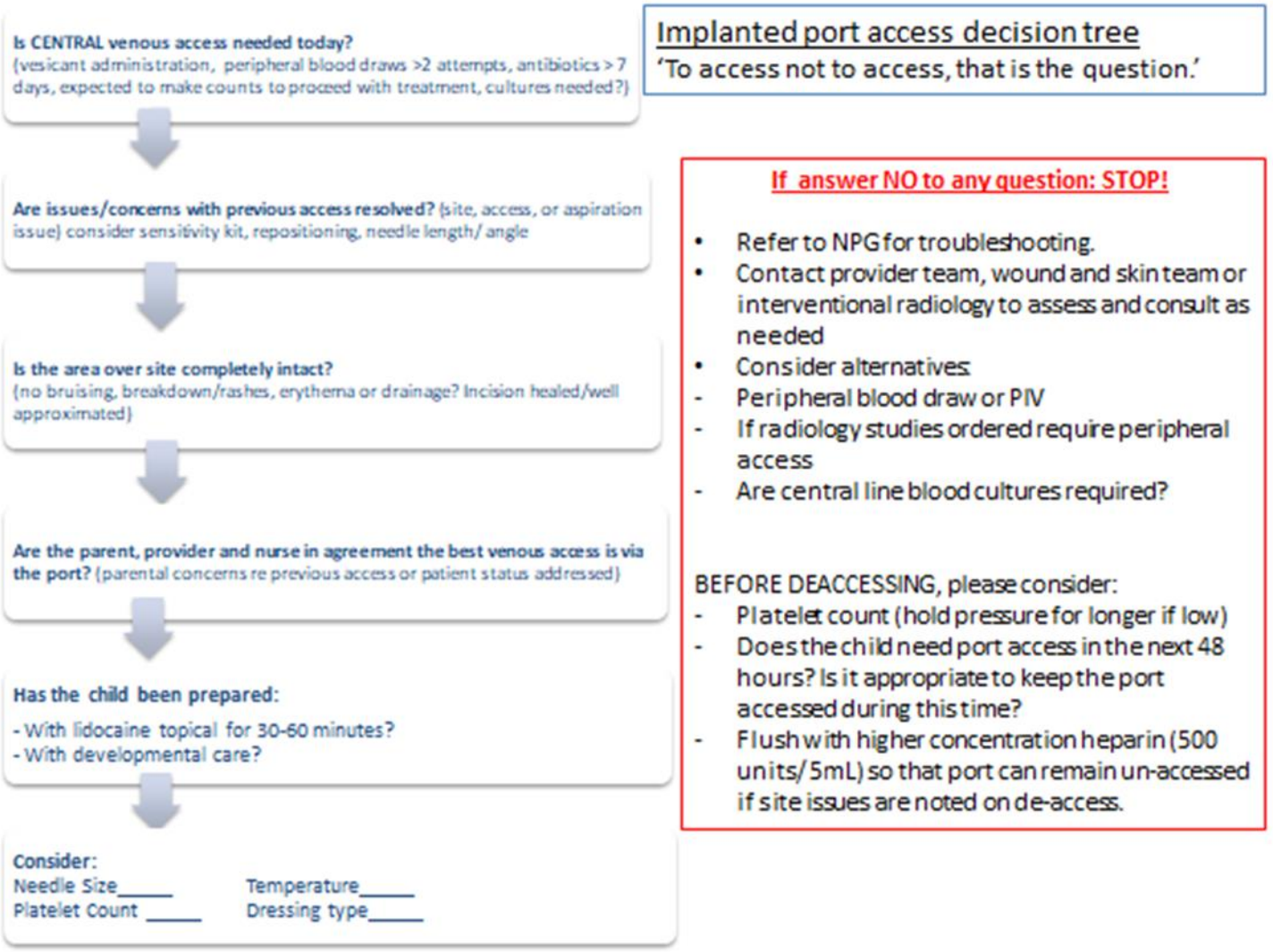
Clobetasol 0.05% solution or foam - Patients must pick up at their outpatient pharmacy and bring to the hospital. - Option to have parents pick up at Walgreens on 1st floor CNMC main.   	Tegaderm Diamond Pattern - 3M.com/Tegaderm. - Contact the 3M Health Care Customer Helpline at 1-800-228-3957. 	IV 3000 - https://www.smith-nephew.com/professional/products/advanced-wound-management/iv3000/ - Contact the Smith and Nephew customer helpline at 727.392.1261  

References:

Doughty, D. B., & McNichol, L. L. (2016). *Wound, Ostomy, and Continence Nurses Society core curriculum*. Philadelphia: Wolters Kluwer.

Developed by CNH Wound team Advance Practice Nurses 2021-11

Port Access Decision Tree



CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skills Validation Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: **Tunneled central venous catheter (CVC) dressing change**

OBJECTIVE: Demonstrates tunneled CVC dressing per CNH Central Venous Therapy Nursing Practice Guideline

Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding central venous catheter use and care.	VF D		
Verbalizes technique when chlorhexidine contraindicated. See CVL NPG- Sensitivity CVC dressing change.	VF D		
Demonstrates dressing change using sterile technique: • Utilizes clean dedicated surface for supplies. • Performs hand hygiene • Opens all supplies, maintaining sterility. • Dons mask. Masks all in the patient zone including patient. • Wearing clean gloves, removes old dressing, pulling up toward exit site. Utilizes adhesive remover as necessary. • Assesses site for signs of infection, bleeding, skin condition & line security. • Removes clean gloves & performs hand hygiene • Dons sterile gloves. • Scrubs with a CHG swabstick for 30 seconds around the insertion site, including entire area of skin and the length of the catheter that will be under the dressing. Describes conditions for 2 minutes scrub time. • Allows skin to dry completely, does not blow or pat dry. • Applies antimicrobial disk. • Applies skin barrier (skin prep) solution; let dry. • Applies transparent dressing to cover the insertion site and as much of the catheter as possible. Positions catheter to exit the dressing to area least likely to be contaminated. • Additionally secures catheter in an age-appropriate manner. • Remove gloves and perform hand hygiene. • Documents dressing change procedure, date changed, products used, and skin condition. • Reports dressing change date at handoff. Labels dressing with date changed or posts date change at bedside per unit standard. • Provides patient/family education regarding CVC dressing change. • Informs patient/ family of last date changed if discharged with central venous catheter.	OB RD VF D		

Name (print)	Initials

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skill Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: **Peripherally inserted central venous catheter (PICC) or Non-Tunneled Central Venous Catheter (CVC) dressing change**

OBJECTIVE: Demonstrates PICC/ Non-Tunneled CVC dressing change

Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding central venous catheter use and care.	VF D		
Verbalizes technique when CHG contraindicated. See CVL NPG-Sensitivity CVC Dressing Change	VF D		

Demonstrates dressing change using sterile technique:
• Utilizes clean dedicated surface for supplies.
• Performs hand hygiene.
• Opens all supplies, maintaining sterility.
• Dons mask. Masks all in the patient zone including patient.
• Wearing clean gloves, removes old dressing, pulling up toward exit site. Utilizes adhesive remover as necessary.
• Assesses site for signs of infection, bleeding, skin condition & line security. Measures length of catheter from insertion site to start of wing section, maintaining site sterility
• Removes clean gloves & performs hand hygiene.
• Dons sterile gloves.
• Scrubs with a CHG swabstick for 30 seconds around the insertion site, including entire area of skin, the length of the catheter and any securement devices under the dressing. Avoids vigorous scrubbing immediately at insertion site or under section of catheter between insertion site and sutures or securement device to avoid dislodgement. Describes conditions for 2 minutes scrub time.
• Allows skin to dry completely, does not blow or pat dry.
• If securement device (Statlock) utilized, 2nd sterile RN applies pressure directly on catheter insertion site.
• Uses CHG swabstick or alcohol prep pads if CHG sensitive to remove Statlock from skin and disinfect skin under Statlock.
  • Opens doors on Statlock carefully lift catheter and slide Statlock out.
  • Allows skin to dry completely
  • Apply skin barrier (skin prep) solution to area directly under Statlock.
  • Slides new Statlock under CVC wings, align Statlock pegs with holes and close. Place finger under Statlock when closing to avoid pressure directly on patient's skin.
	OB RD SM
	VF D		

• Removes backing from Statlock and press into place. • 2nd RN measures length of PICC from insertion site to start of wing section, carefully maintaining sterility of site. • Applies antimicrobial disc to insertion site with split away from catheter to avoid possible dislodgement. • Applies skin barrier (skin prep); let dry. • Applies transparent dressing so that insertion site and Statlock (if present) are entirely covered with the dressing. • Removes gloves and performs hand hygiene. • Label dressing with date, time, and initials. • Document dressing change procedure, date changed, products used, CVC length, and skin condition. • Reports dressing change date at handoff. Labels dressing with date changed or posts date change at bedside per unit standard. • Provides patient/family education regarding CVC dressing change.	VF RD SM		

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

Name (print)	Initials

Updated 5/2022 SNL Practice Council

CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skills Validation Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: Care of the Central Venous Catheter
OBJECTIVE: Demonstrates CVC needless connector Scrub the Hub, needleless connector (cap) change, and flushing and heparin locking per CNH Central Venous Therapy NPG

Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding central venous catheter use and care.	VF D		
Demonstrates Needleless Connector Scrub the Hub: • Utilizes clean dedicated surface for supplies. • Performs hand hygiene. • Dons clean gloves. • Aseptically opens all supplies. • Uses one CHG prep pad to scrub the silicone seal and grooves at the top of the needleless connector hub with good friction for at least 15 seconds. • Allows the needleless connector hub to dry completely. • Attaches luer connections such as syringes/tubing straight on (no angle) to needleless connector to avoid dislodging silicone seal. • Before attaching each new syringe or tubing, scrubs the hub with a new CHG pad & allow to dry completely EACH time.	VF RD OB		
Demonstrates Central Venous Catheter Needleless Connector Change: • Utilizes clean dedicated surface for supplies. • Uses sterile technique for all central line needleless connector changes. Avoids touch contamination of catheter hub. • Performs hand hygiene. • Makes sure catheter is clamped. • Opens sterile cap change kit, maintaining sterility. • Dons mask. Masks all in the patient zone including patient. • Dons sterile gloves. • Using sterile 2x2 gauze, holds the catheter line with non-dominant hand. • Using one CHG prep pad, scrubs junction where the catheter hub and needleless connector meet for 15 seconds. Allows to dry completely. • Using second sterile 2x2, removes old needleless connector and discards. • Cleans outside of catheter hub with second CHG prep pad for 15 seconds and allows to dry completely. Avoids introducing CHG into the catheter. • Attaches the new needleless connector. Priming not required as dead space volume of the MicroClave needleless connector is 0.04 mL. If patient population (neonatal/ cardiac) requires priming of the needleless connector, uses a sterile 10 mL preservative-free 0.9% sodium chloride flush and maintains sterility. • Verbalizes frequency of needleless connector change. • Documents procedure done and date changed.	VF RD OB		

Demonstrates Central Venous Catheter Flushing:
• Utilizes clean dedicated surface for supplies.
• Performs hand hygiene, dons clean gloves.
• Scrubs needleless connector hub with CHG for 15 seconds and allow to air dry completely.
• Attach syringe aseptically to needless connector.
• Assess patency. Flush catheter.
• Flushes all catheters with 3-5mL's of preservative-free 0.9% sodium chloride in a 10mL standard syringe prior to drug administration to establish patency, clear the line, and prevent fibrin clot formation in the catheter.
• Flushes with 10mL NS following medication administration, blood products or blood draws.
  ○ Flushes with 5 mL of NS for patients ≤ 5kg or with fluid restrictions.
  ○ Flushes with 3 mL of NS for patients ≤ 2.5kg.
• Verbalizes uses of D5W followed by NS flush for medications incompatible with sodium chloride and never using sterile water for flushing CVC.
	VF RD OB		

Demonstrates Central Venous Catheter Heparin Locking:
• Utilizes clean dedicated surface for supplies.
• Performs hand hygiene, dons clean gloves.
• Cleans needleless connector hub with CHG for 15 seconds and allow to air dry.
• Attach heparin syringe aseptically to needless connector.
• Assess patency. Flush catheter with heparin.
• Flushes each lumen after every intermittent use and at least every 24 hours when not in use. Heparin flush of continuously infusing lines not necessary.
• Discusses recommended Heparin flush:
  ○ Tunneled, Non-tunneled and PICC: 3 mL (10 Units/mL) every 24 hours when not in use and PRN intermittent use
  ○ Implanted port:
  ▪ 5 mL (10 Units/mL) every 24 hours when not in use and PRN intermittent use
  ▪ 5mL (100 Units/mL) prior to port needle de-access and at least monthly when not in use.
  ▪ *For port needle change with same day re-access, withdraw and discard 5 mL blood prior to flushing to avoid infusing heparin.
• Verbalizes potential complications, troubleshooting, and reference location.			

Name (Please Print)	**Initials**	**Name (Please Print)**	**Initials**

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

Updated 5/2022 SNL Practice Council

CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skills Validation Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: Obtaining Blood Specimen from CVC

OBJECTIVE: Demonstrates CVC specimen withdrawal per CNH Central Venous Therapy Nursing Practice Guideline

Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding specimen collection from CVCs.	VF D		
Verbalizes use of aseptic technique.	VF D		
Verbalizes management of IVF for SL or DL catheter.	VF D RD		
Verbalizes reference to maximum allowable blood draw volumes.	VF D		

Demonstrates specimen collection:
• Scans patient ID band or using 2 patient identifiers, verifies orders, labels, and appropriate tubes
• Utilizes clean dedicated surface for supplies.
• Performs hand hygiene, dons clean gloves.
• Assembles double stopcock using (2) 10 mL syringes, and (1) 10 mL preservative-free 0.9% sodium chloride flush.
  o Aseptically attaches the discard syringe to the distal port on the double stopcock and the blood specimen syringe to the proximal port on the double stopcock.
  o Aseptically attaches 10 mL NS flush to the end of the double stopcock, primes the stopcock with normal saline.
• Stops infusions. Clamps additional lumens, if present.
• Scrubs the Hub.
• Attaches double stopcock to the needleless connector aseptically.
• Draws back blood/fluid in syringe distal to the central line connection, and then closes the stopcock.
• Draws specimen into the proximal syringe and closes the stopcock. If more than one syringe is required, Scrubs the Hub, attaches another syringe aseptically to the proximal port, draws back the additional blood required.
• Returns blood in the distal syringe unless longer than one minute has passed or contraindicated, then closes stopcock.
• Flushes the catheter with normal saline flush.
• Disconnects the double stopcock.
• Scrubs the Hub.
• Attaches IV fluids or flushes with appropriate amount of heparin.
• Uses needleless transfer device to transfer specimens to tubes at bedside. Labels tubes, verifying with 2 patient identifiers or PPID.
• Removes gloves and performs hand hygiene.
• Documents volume of blood withdrawn in the medical record.
	VF RD
	OB		

Name (Please Print)	**Initials**	**Name (Please Print)**	**Initials**

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skills Validation Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: Obtaining Blood Cultures from Central Venous Catheters

OBJECTIVE: Demonstrates CVC blood culture specimen withdrawal per CNH Central Venous Therapy NPG

Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding specimen collection from CVCs.	VF D		

Demonstrates blood culture specimen collection:
• Scans patient ID band or using 2 patient identifiers, verifies orders, labels, and appropriate tubes.
• Utilizes clean dedicated surface for supplies.
• Changes needleless connector before drawing cultures.
• Performs hand hygiene, dons clean gloves.
• Assembles double stopcock using (2) 10 mL syringes, and (1) 10 mL sodium chloride (NS) flush.
  o Aseptically attaches the discard syringe to the distal port on the double stopcock and attaches the blood specimen syringe to the proximal port on the double stopcock.
  o Aseptically attaches 10 mL NS flush to the end of the double stopcock, primes the stopcock with normal saline.
• Scrubs the Hub.
• Attaches double stopcock to the needleless connector aseptically.
• Draws back blood/fluid per recommended volume below (attach additional syringes if needed) in syringe distal to the central line connection, and then closes the stopcock. This blood will be used for the blood culture specimen. If unable to draw blood, see trouble shooting. Avoid flushing catheter before obtaining cultures if possible.
• If additional specimens are required, draws specimen into the proximal syringe and closes the stopcock.
• Flushes the catheter 10 mL NS flush.
• Disconnects the double stopcock.
• Scrubs the Hub.
• Attaches IV fluids or flushes with heparin.
• Scrubs the top of each culture bottle with a fresh CHG swab for at least 15 seconds and lets it dry completely before the specimen is introduced to prevent contamination.
• If aerobic and anaerobic cultures drawn, inoculates anaerobic first.
• Inoculates the culture bottles before adding specimen to other lab tubes to prevent cross contamination. For lines with multiple lumens, consider culturing each lumen separately per LIP order.
• Documents the volume of blood withdrawn in the medical record.
	VF RD
	OB		

Name (Please Print)	**Initials**	**Name (Please Print)**	**Initials**

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

CHILDREN'S NATIONAL HOSPITAL
DEPARTMENT OF NURSING STAFF DEVELOPMENT & RESEARCH
Skills Validation Checklist

NAME:	**UNIT:**
EMPLOYEE ID:	**DATE:**

SKILL TITLE: Accessing the implanted port central venous catheter.
OBJECTIVE: Demonstrates access and care of implanted port central venous catheter.
Instructions: Please circle method of validation and initial each line

Performance Criteria	**Method of Validation**	**Validator Initials**	**Comments**
Describes and identifies CNH Nursing Practice Guideline regarding central venous catheter use and care.	VF D		
Discusses age-appropriate pain reduction strategies and immobilization of child.	OB D		
Palpates and assesses area for access. Verbalizes implanted port access decision algorithm for site concerns.	OB RD		
Discusses use of topical lidocaine prior to access. Applies to site per manufactures recommendations. Wipes off prior to procedure	VF D RD		
Verbalizes technique when CHG contraindicated. See CVL NPG-Sensitivity CVC Dressing Change	VF D RD		
Selects appropriate length and gauge of non-coring needle (Huber). Utilizes sterile Port Access Kit.	OB RD D		
Demonstrates implanted port access using sterile technique: • Utilizes clean dedicated surface for supplies. • Dons Mask (all in patient zone, including patient) • Dons Sterile gloves. Applies sterile drape as needed • Demonstrates preparation of materials on sterile field. Prepares non-coring needle with needleless connector and flushes 10 mL preservative-free 0.9% sodium chloride through to needle, leaving syringe attached • Scrubs site with a CHG swabstick or Povidone-Iodine swabsticks as indicated, including the entire area of skin that will be under the dressing • Stabilizes port housing using non dominant hand. • Inserts non-coring needle through skin at right angle & pushes down firmly until needle penetrates septum & contacts back of port. Verbalizes varying needle entry location. • Applies gentle negative pressure to assess for blood return • If using GripperMicro® blood return is obtained only once inserter is removed. Remove inserter by holding at base and pulling back and up on tab to engage the safety needle • If re-accessing post recent de-access with 500-unit Heparin flush, withdraw 5 mL of blood and discard before flushing. • After establishing blood return or drawing blood cultures, flushes port with at least 10 mL preservative-free 0.9% sodium chloride and disconnects syringe. • Applies skin prep & occlusive dressing. • Attaches IV fluids or flushes with the appropriate amount of heparin. • Removes gloves and performs hand hygiene.	OB RD VF D		Dates of successful access: 1. 2. 3.

• Documents port access procedure and date, needle size, patient response, dressing change procedure and date, products used, skin condition, cap change procedure and date.	OB RD D		
• Reports port access and dressing change date at handoff. Labels dressing with date changed or posts date change at bedside per unit standard	VF D RD		
Discusses frequency of Implanted Port care: • Re-access/needle change/ dressing change • Heparin flush • Needleless Connector (cap) change	VF D		
Demonstrates de-access of implanted port with adequate heparin concentration per Implanted Port Needle De-Access procedure	VF D OB RD		

Validation Key: VF=verbal feedback; OB=observation; D=discussion; RD=return demonstration; SM=simulation

Validator's Name (print)	Initials

Updated 5/2022 SL Practice Council