
CENTRAL VENOUS CATHETERS (CVCs)
(Subclavian, Internal Jugular, Femoral, CT Compatible)

PURPOSE:

To serve as a route for administration of large volumes of fluid, medication, and parenteral nutrition.

To monitor central venous pressure.

POLICY:

1. Physician's Responsibility

The physician shall be responsible for the following:

- a. obtaining an informed consent prior to insertion.
- b. inserting and removing the central venous catheter.
- c. ordering and reviewing "STAT" post-procedure chest x-ray to verify correct catheter placement, except for femoral access placement.
- d. Writing an order specifying the type of IV fluids to be administered, additives, and rate of administration.

Note: Registered Nurses in Specialty Units (BMT, PACU and the Renal Unit) and/or Intensive Care Units may remove central venous catheters as defined by individual Unit Policy, approved by their Director, and provided they have evidence of the necessary knowledge, skills and ability to perform this procedure.

See Nursing Policy P-80: Procedures Not Permitted

2. IV Fluids and Medications

IV fluids and medications shall be administered via a controlled infusion device.

3. IV Tubings, Dressings, and Cleaning Insertion Sites

I.V. tubings and dressings shall be changed at least every 96 hours by an RN or an RN Applicant, and/or when device is removed or replaced or the dressing becomes damp, loose or soiled, with date and time appropriately documented in the medical record. The initial dressing after removal of the CVC should be occlusive and should be maintained for a minimum of 24 hours to prevent air embolism. The insertion site shall be cleansed with an approved antiseptic, i.e. Chloraprep, Chlorhexidine or Betadine. A sterile dressing is applied. Dressings for central venous lines may be either sterile gauze and tape or transparent dressing.

Exception: Change tubing used to administer blood, blood products, or lipid emulsions per policy.

Nursing Policy B-13 Transfusions

Nursing Policy H-35 Hyperalimentation – Total Parenteral Nutrition (TPN)

Nursing Policy P-35 Peripheral Intravenous Nutrition (PIN)

4. Signs of Infection and/ or Other Problems

Signs of infection and/or other problems with CVCs shall be reported immediately to the M.D. and documented.

5. Less than Optimal Settings

When a central venous line is started in less than optimal settings (i.e. Codes, Emergencies), the site shall be changed as soon as possible when the patient is stable and/or within 24 hours.

6. Constant Infusions, IV Lock, and TPN Infusion

A central venous catheter may be utilized for constant infusions or converted to an Intermittent IV Lock as ordered by the physician. One port, usually the medial port, shall be dedicated to TPN infusion, provided TPN is ordered by the physician.

7. Flushing Ports (used as IV Locks) with Sterile Normal Saline

Ports utilized as intermittent IV Locks shall be flushed with 3cc of Sterile 0.9% Sodium Chloride (**Do not flush catheter with any syringe smaller than 10 cc because of excess pressure generated by smaller syringes**) following each use and/or at least every eight (8) hours (tubing shall be clamped after each flush) unless otherwise ordered by the M.D. and documented.

8. Blood Specimen Collection

Nurses shall have documented competency to draw blood from a CVC. Strict aseptic technique shall be maintained when drawing a blood specimen from a CVC, to prevent the introduction of microorganisms into the catheter. If routine labs are to be drawn, a schedule shall be established to limit the number of times the catheter is accessed. This will reduce the risk of contamination and the amount of blood discarded as waste.

NOTE: Sterile 0.9% Sodium Chloride is utilized as the flush for IV locks in adult patients only, unless otherwise ordered by the physician. Heparin flush solution can continue to be used with pediatric patients, unless otherwise ordered by the physician. Standard saline and heparin flushes obtained from pharmacy are not sterile and should not be dropped onto a sterile field. Check with the pharmacy to see if sterile saline flushes are available.

9. Radiology Non-Use of Med Rad Injector

Med Rad injector may be used with Power injectable central venous line **only**. The Central Venous Catheter will have company imprinted labeling that designates it as power injectable. Non-labeled Central Venous Catheters may not be used.

Exception: Radiology may use CT Compatible Central Venous Catheters for the power injection of contrast dye. These catheters can be inserted by Radiology and may be used by nursing before and after radiological procedures. Power injectable Central Venous Catheters may be used in the same manner as non-power injectable Central Venous Catheters.

10. Code Use for Hemodialysis or Apheresis Catheters

Hemodialysis or apheresis catheters **shall not** be used for other purposes by nursing staff except in code situations. **Exception: Intensive Care Units shall follow unit specific policies. See Nursing Policy H-08: Hemodialysis Catheters (Acute Femoral)**

11. Hickman Catheters

See Nursing Policy H-15: Hickman Catheters for more information

12. Central Lines and Introducers

The venous sheaths and the Cordis shall be removed prior to the patient being transferred to a general care unit.

I. INSERTION OF A CENTRAL VENOUS CATHETER**EQUIPMENT**

1. Central Venous Catheter Kit or CT Compatible Central Venous Catheter Kit
2. 1% Xylocaine
3. 2-0 Silk suture with cutting needle
4. IV solution with primed tubing
5. Chloraprep, Chlorhexidine or Betadine
6. Sterile gloves, gown, mask, caps, goggles (if splashing could occur)
7. Sterile dressing (either gauze and tape or transparent dressing)
8. 3 (10 cc) syringes
9. Infusion Pump
10. Large sterile drape
11. *Saline Flush Solution (Defined as 0.9% Sterile Sodium Chloride Injection)
12. 3 Needleless Intermittent IV Locks

RESPONSIBLE PARTY	ACTION	RATIONALE
MD	1. The physician's order shall contain: <ol style="list-style-type: none"> a. Amount, type and IV fluid additives to be administered, b. rate of administration, c. frequency of CVP readings if indicated; type of fluid to be infused. 	
MD, RN, RN Applicant	2. Explains procedure to patient.	
MD	<ol style="list-style-type: none"> 3. Obtains informed consent and conducts a "Time Out" procedure. 4. Washes hands with soap. 5. Assembles equipment. 6. Obtains and records blood pressure, respirations, pulse and temperature. 	6. To obtain baseline vital signs.

MD, RN, RN Applicant, LPN	<p>7. Places shoulder roll between shoulders, except for femoral and internal jugular CVC. Clips hair if appropriate.</p> <p>8. Opens equipment-maintaining sterility.</p> <p>9. Places patient in Trendelenberg position, except for femoral CVC.</p>	<p>7. Shaving is not done because it increases risk of infection.</p> <p>9. To dilate veins and reduce the risk of air embolism.</p>
MD	<p>10. Dons surgical mask and cap.</p> <p>11. Performs surgical scrub with Hibiclens X 6 minutes.</p> <p>12. Dons sterile gloves, gown (goggles if splashing is anticipated)</p> <p>13. Preps insertion site with Chloraprep, Chlorhexidine 4%, or Betadine using the procedure “Skin Prep for Invasive Procedures” in the Infection Control Bit. Documents site prep product used.</p> <p>Note: The product used to prep the insertion site shall also be used for dressing changes.</p> <p>14. Drapes patient, preparing a large sterile field.</p> <p>15. Inserts central venous catheter.</p>	<p>14. A large sterile field can help reduce the risk of infection.</p> <p>15. Sterile insertion and maintenance technique along with limited manipulations of the catheter reduces risk of infection.</p>
MD, RN, RN Applicant	<p>16. Places intermittent IV lock on CVC and flushes port, connects IV tubing to CVC and adjusts to prescribed rate for femoral line.</p>	

MD, RN, RN Applicant, LPN	<p>17. Applies sterile dressing; either transparent dressing, or gauze and tape over insertion site.</p> <p>18. Assists patient to comfortable position.</p> <p>19. Removes drapes, disposes of soiled equipment in appropriate containers.</p>	
MD	<p>20. Orders portable chest x-ray and verifies catheter placement, except for femoral CVC.</p>	
MD, RN, RN Applicant	<p>21. Connects IV tubing to intermittent IV lock and adjusts to prescribed administration rate if applicable.</p> <p>Note: <u>IV fluids shall not be given until placement of subclavian or internal jugular line can be verified on x-ray. The physician shall provide orders to use the CVC.</u></p>	
MD	<p>22. Removes gown, cap, masks, and gloves. Washes hands.</p>	
RN, RN Applicant	<p>23. Labels dressing and IV tubing with date, time and initials.</p> <p>24. Obtains and records post insertion blood pressure, pulse, and respirations.</p> <p>25. Documents on patient's record:</p> <ol style="list-style-type: none"> a. type of catheter inserted. b. site location. c. type of IV fluid, amount, additives and rate. d. patient's tolerance to procedure. e. baseline and post insertion vital signs <p>26. Evaluates IV site condition at least every shift and documents in the 24 Hour Nurses Progress Notes.</p>	<p>24. To obtain baseline post insertion vital signs.</p>

RN, RN Applicant	27. Notifies physician for any problems related to catheters and/or if infection is suspected (ex. Rapid pulse from baseline, chills, hyperthermia, erythema, drainage, hypothermia, presence of edema, malaise, leukocytosis and altered levels of consciousness.	
MD	28. Discontinues central venous catheter. Cultures tip/intracutaneous segment of Catheter if infection is suspected. Note: Registered Nurses in Specialty Units (BMT, PACU and the Renal Unit) and/or Intensive Care Units may remove central venous catheters as defined by individual Unit Policy, approved by their Director, and provided they have evidence of the necessary knowledge, skills and ability to perform this procedure. See Nursing Policy P-80: Procedures Not Permitted	
<p>II. DRESSING CHANGE</p> <p>EQUIPMENT: Chloraprep applicator, Chlorhexidine 4% solution, or Betadine Sterile Occlusive Dressing (either gauze and tape <u>or</u> transparent dressing)</p>		
MD, RN, RN Applicant	<ol style="list-style-type: none"> 1. Assembles equipment. 2. Washes hands thoroughly. 3. Using non-sterile gloves, removes dressings and discards into appropriate trash receptacle. 4. Removes gloves. 	
MD, RN, RN Applicant	<ol style="list-style-type: none"> 5. Dons sterile gloves. 6. Cleanses site with Chloraprep, Chlorhexidine 4%, or Betadine using the procedure “Skin Prep for Invasive Procedure” in the Infection Control Bit and allows to dry. Documents site prep product used. 	

MD, RN, RN Applicant	<ol style="list-style-type: none"> 7. Applies sterile dressing (either gauze and tape or transparent dressing). 8. Changes dressing at least every 96 hours. 9. Labels dressing and IV tubing with date, time, and initials. 10. Documents procedure and findings in the medical record. 	
<p>III. BLOOD SPECIMEN COLLECTION</p> <p>EQUIPMENT: 10 cc Syringes (do not use smaller syringes to flush or aspirate) 10 cc Sterile 0.9% Saline Sterile Gloves Sterile 3X3 Gauze Appropriate vacutainer tubes for specific labs ordered Blood Transfer Device Appropriate size syringe for total volume needed \geq 10 cc syringe Povidine-Iodine, Tincture of Iodine, or Chloraprep Swabs Alcohol Pads</p>		
MD, RN, RN Applicant	<ol style="list-style-type: none"> 1. Assembles equipment. 2. Washes hands with antimicrobial soap. 3. Dons sterile gloves. 4. Stops IV solutions infusing through other ports and clamps the lumens of the central line to prevent dilution of the specimen. <p>Note: DO NOT stop life sustaining (vasoactive, etc) drugs or other medications that would adversely affect the patient's condition if stopped, even momentarily.</p>	

MD, RN, RN Applicant	<ol style="list-style-type: none"> 5. Cleans injection cap and hub of distal port with alcohol pad and swabs with Povidine-Iodine, Tincture of Iodine or Chloraprep. Allow the solution to dry for: Povidine Iodine – 2 Minutes Tincture of Iodine – 30 Seconds Chloraprep – 15 Seconds 6. Places sterile 3x3 gauze over cap. 7. Attaches an empty syringe to distal port and aspirates 6 cc of blood as waste to prevent dilution of the sample. 8. Attaches an empty syringe (size according to volume needed) and aspirates the appropriate volume of blood needed for all labs ordered. 9. Using the blood transfer device transfers the blood to correctly labeled vacutainers. Writes control numbers on specimens or uses the lab labels. Places specimens in lab bags for transport to the clinical lab. 10. Flushes with 10 cc Sterile 0.9% Saline. 11. Re-starts infusions. 12. Disposes of soiled equipment in appropriate containers. 13. Washes hands. 	
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REFERENCES:

Hospital Policy: 4.8. Skin Preparation

Nursing Policy: B-13 Transfusions

Nursing Policy: H-15 Hickman Catheters

Nursing Policy: H-35 Hyperalimentation – Total Parenteral Nutrition (TPN)

Nursing Policy: P-35 Peripheral Intravenous Nutrition

Nursing Policy: P-80 Procedures Not Permitted

Infection Control Manual: IC: 15.0 Methods to Prevent Nosocomial Intravascular Device-Related Infections.

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