**Georgetown University Hospital**
**MedStar Health**

## Nursing Department

**Title:** **Care of the Patient with Central Venous Vascular Access Devices**
**Policy/Procedure Number:** **Page:**
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**Purpose:** Care of the Central Venous Vascular Access Devices (VAD) includes maintenance of the device, site care, and accessing the line for blood samples. Clearing central venous VADs occlusions will be written as a separate procedure.^

**Definitions:** Central Venous Vascular Access Devices are divided into two types, tunneled and non-tunneled. **Tunneled** catheters are surgically inserted through a tunnel made in the subcutaneous tissue with the catheter tip inserted through the cephalic, internal or external jugular vein or other large vein and threaded into the right atrium. **Tunneled** catheters include Groshong, Hickman, Broviac and implantable ports. **Non-tunneled** catheters are inserted directly through the skin, into a large vein and threaded into the right atrium. **Non-tunneled** catheters include central venous catheters (subclavian, internal jugular) and peripherally inserted central catheters (PICC).

### I. NON-TUNNELED CATHETERS

#### A. Central Venous Catheters

##### 1. Catheter care (Steps of Procedure)

a) Do not use single lumen catheters that are used for hyperalimentation for any other purpose (e.g. administration of drugs, blood sampling, blood or blood products).*
b) If a multilumen catheter is used for parenteral nutrition, label the port and do not use for any other purpose.
c) Needleless injection caps will be placed on each luer lock port of the central venous catheter, including those with continuous infusions.
d) Cleanse the injection cap and luer lock catheter hub with alcohol before accessing the system.

##### 2. Flushing the central venous catheter (Steps of Procedure)

a) The catheter must be flushed using the SASH (saline, administer, saline, heparin) method, as described below, when administering medications, during blood sampling and every 12 hours when not in use.
b) Flush catheter with 10cc normal saline (NS). Never use less than a 5cc syringe for accessing a central venous catheter.*
c) Administer drug.
d) Flush vigorously with 10cc normal saline.*
e) Follow with 3cc of Heparin flush solution of 10Units/cc.
f) Maintain positive pressure when flushing and clamping to prevent backflow of blood and clotting of the catheter.

**3. Dressing changes and site care**

a) Dressings in the inpatient setting will be changed by a registered nurse or licensed practicing nurse.
b) Sterile occlusive gauze dressings used when there is drainage at the site will be changed every 24 hours after insertion.
c) Transparent occlusive dressings will be changed **every Thursday.**
d) Dressings are changed when damp, loosened and/or with drainage as needed.

**Steps of Procedure**

a. Wash hands and apply clean gloves.
b. Mask self and have patient turn head away from insertion site.
c. Carefully remove old dressing in the direction the catheter was inserted and discard in hazardous waste bag. If catheter is not sutured, secure the catheter while removing the dressing. Remove gloves and discard with dressing.
d. Using sterile technique, open dressing kit and don sterile gloves.
e. Clean the insertion site with alcohol swabs by starting from inside and moving out in circular motion. Maintain sterile technique.
f. Repeat Step 5 using betadine swabs. Allow to dry for 2 minutes.
g. Use sterile steri-strips to anchor an unsutured catheter.
h. Redress the site using transparent dressing unless there is drainage.
i. Label date, time of dressing change and nurse signature.

**4. Injection cap change**

a. Needleless injections caps are changed after each blood draw, with dressing changes, daily with TPN tubing changes and every 7 days during long term care.
b. Injections caps are changed by a registered nurse using strict aseptic technique.
c. Clean the connection site with alcohol or betadine swab.
d. Clamp the tubing while changing the cap to prevent air from entering the catheter.

**5. Sampling of blood from central venous catheter**

**Steps of Procedure**

a. **Stop all IV infusions in all ports and turn off infusion pumps.**
b. Wash hands and apply clean gloves.
c. Use alcohol to clean injection cap. **Use betadine to clean injection cap when blood culture specimens are drawn.**
d. Flush catheter with 10cc normal saline.*
e. Using 5cc syringe aspirate 5cc of fluid slowly and discard.*
f. Insert new syringe and withdraw necessary blood for samples.* **Do not use vacutainer for blood withdrawals from central catheters.**
g. Flush vigorously with 10cc of normal saline using positive pressure.
h. Using a 5cc syringe flush with Heparin 3cc (10Units/cc).

i. Clamp catheter or extension tubing and apply a new **injection cap** using strict aseptic technique.
j. If using a multilumen catheter, use the proximal port for blood sampling. Infusions through distal ports should be stopped prior to obtaining blood samples.

**Expected Outcomes**
Site is intact, no redness, tenderness or swelling.
No signs of systemic infections.
Catheter remains patent.
Patient/family can explain purpose of therapy and perform home care if necessary.

**Unexpected Outcomes**
Local or systemic infection occurs.
Catheter becomes occluded.
Patient/family unable to perform home care.

**Patient Monitoring and Care**
1. Routinely assess patient's temperature.*
2. Observe site every 8 hours for inflammation and infection.*
3. Monitor catheter site and equipment for replacement times.

**Patient/Family Teaching** (list only what is specific to this policy/procedure)
1. Purpose of central venous catheter and therapy.
2. Signs and symptoms of infection
3. Avoidance of manipulation of catheter devices, dressings, tubings and infusion pumps.

**Documentation**
Documentation should include the following:
1. Condition of insertion site including assessment for phlebitis, infiltration/extravasation, and signs of infection every shift.
2. Dressing changes and injection cap changes.
3. Maintenance flushes, including date, time, and flushing solutions and amounts are documented on the Medication Administration Record.

References

1. Lynn-McHale, DJ, KK Carlson, ed. *AACN Procedure Manual for critical Care, Fourth Edition.* Philidelphia, Pennsylvania. W.B. Sounders Company. 2001:405-408
2. Intravenous Nurses Society. Infusion nursing: standards of practice. *Journal of Intravenous Nursing.* 2000;23:6S
3. Perry, AG, PA. Potter. *Clinical Nursing Skills and Techniques, Fifth Edition.* St Louis. Mosby. 2001: 599-616.
4. US Department of Health and Human Services. Public Health Service. Centers for Disease Control and Prevention. Guideline for prevention on intravascular device-related infections. *American Journal Infection Control*. 1996; 24: 262-93.


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Chairperson, Practice Council Date VP Nursing and Patient Care Services Date

# Attachment A: ADDENDUM FOR GENERAL PEDIATRIC, PEDIATRIC HEMATOLOGY/ONCOLOGY, AND PEDIATRIC INTENSIVE CARE PATIENTS

## NON-TUNNELED CATHETERS

**A. Central Venous Catheters**

**1. Catheter care (steps of procedure)**

a) Administration of medications into a single-lumen catheter which is infusing hyperalimentation is permitted based upon solution / medication compatibility. Blood products may be infused through the single-lumen catheter if the infusion of hyperalimentation is temporarily discontinued and the line is flushed with normal saline before and after the blood product infusion.

**2. Flushing the central venous catheter (steps of procedure)**

b) Flush catheter with the following volume of normal saline flush according to the patient's weight:

| | | |
|---|---|---|
| 3 – 10 kg | = | 3cc |
| 10 – 30 kg | = | 5cc |
| 30+ kg | = | 10 cc |

d) Flush vigorously with the volume of normal saline used in step I.A.2.b

**5. Sampling of blood from central venous catheter**

d) Flush catheter with volume of normal saline used in step I.A.2.b
e) Using a 5cc syringe aspirate 3cc of fluid slowly and discard
g) Flush vigorously with positive pressure using volume of normal saline used in step I.A.2b

**Patient Monitoring and Care**

1. Routinely assess patient's temperature every 4-8 hours with vital signs
2. Observe catheter insertion site every 2-4 hours for inflammation and infection.

Reference

Hazinski, M.F., ed. (1992). Nursing care of the critically ill child, 2nd edition. Mosby Year Book: St. Louis. 1075-1078.