

NATIONAL INSTITUTES OF HEALTH
CLINICAL CENTER
CLINICAL CENTER NURSING DEPARTMENT

Standard of Practice: Care of the Patient with a Central Venous Access Device (CVAD)

SUMMARY OF SIGNIFICANT CHANGES SINCE LAST REVIEW

- ❖ Included language for new needle free connector, chlorhexidine impregnated sponges, alcohol tips, and alcohol caps
- ❖ Clarification of timeframes for dressing changes
- ❖ Saline flush now to be considered a medical device, so order not required
- ❖ Order required for heparin flush continues
- ❖ Adding cleansing with CHG cloths for inpatients with CVADs
- ❖ Information added for HAI Prevention Bundle
 - Wiping of high-touch areas
 - 2-nurse dressing change

Clinical Nurse Specialist: Ellen Eckes
Primary Stakeholder(s): Kim Adao

Deletes or Replaces - [Central Venous Access Device \(CVAD\) \(05/12\)](#)
[Table of Evidence- Central Venous Access Device \(05/12\)](#)

NATIONAL INSTITUTES OF HEALTH
CLINICAL CENTER
CLINICAL CENTER NURSING DEPARTMENT

Standard of Practice: Care of the Patient with a Central Venous Access Device (CVAD)

Essential Information:

1. Central Venous Access Device (CVAD) Care and Maintenance Competency is required. For infusion therapy guidelines, refer to SOP: Care of the Patient Receiving an Intravenous Infusion.
2. See “Hospital Acquired Infection (HAI) Prevention Policy for expectations.
3. In the case of catheter breakage, apply a pair of no teeth green occluding forceps (CHS # 00134) to the catheter between the patient and the area of breakage, proximal to the break. Then contact the Procedures, Vascular Access, and Conscious Sedation Services (PVCS) team for a catheter repair. When the PVCS team is not in house, there is a “VAD person” on call 24 hours a day, 7 days a week, via the page operator. Do not attempt to repair the catheter yourself.
4. Prior to accessing any CVAD, vigorously scrub the hub and allow to completely air dry.
5. All inpatients with a CVAD will cleanse with Chlorhexidine (CHG) cloths a minimum of every 24 hours.

I. Assessment:

- A. The CVAD exit site in the adult inpatient population is objectively and subjectively assessed a minimum of every eight (8) hours and in accordance with patient’s clinical status for signs and symptoms of complications (and upon every outpatient visit).
- B. The CVAD exit site is objectively assessed every four (4) hours in the pediatric population and high risk patients (i.e. risk for infection, skin impairment, infiltration, or dislodgement).
- C. Assessment of CVADs will include:
 1. CVAD exit site for signs and symptoms of complications, including but not limited to; redness, swelling and exudate
 2. Site assessment, including visualization of catheter length if dressing permits
 3. CVAD patency prior to use¹
 4. Assessment for blood return.
 5. Ease of flushing

II. Interventions:

- A. Luer lock needle-free system will be used with all intravenous devices and infusions.^{1,2}
- B. Alcohol caps are applied to all access ports on tubing for CVADs and are changed every 72 hours with new tubing. When the CVAD is not in use, the alcohol cap is applied to the needle free connector (Microclave™). Alcohol caps are for single use only.⁴
- C. Alcohol tips are applied to the end of all idle IV tubing. Alcohol tips are for single use only.⁴
- D. When hair removal is necessary for vein/site assessment, catheter placement, or dressing maintenance, hair will be clipped. Shaving and depilatories may cause abrasions or irritation.^{1,2}
- E. Flushing:

1. Prior to flushing a CVAD, assessment of blood return should be performed. If unable to obtain blood return, CRN will refer to CVAD Occlusion Verification Tree (Appendix A of PRO: CVAD Restoring Patency of an Obstructed Central Line).
 2. Prior to flushing lines used for dialysis or apheresis catheters that are locked with heparin 1000units/ml or greater, the fill volume must be discarded.
 3. All CVADs are flushed before and after every entry, according to manufacturer's guidelines and as per Licensed Independent Practitioner (LIP) orders. Refer to the PRO: CVAD Flushing a Central Line, Apheresis or Dialysis Catheter.
 4. All CVADs and ports should be flushed using the push-pause technique.¹
 5. Heparin flushes require a medical order.
 6. When flushing a multi-lumen catheter, a new 10mL syringe must be used for each lumen.
- F. Measure the external length of any non-tunneled CVAD (ex., PICC, SICC) with each dressing change or whenever there is suspicion the position of CVAD has been altered. If external catheter length increases or decreases by greater than or equal to 2 cm, CRN will notify LIP to obtain a possible order for a chest x-ray to confirm tip location.
- G. All patients with a CVAD will cleanse with Chlorhexidine (CHG) cloths a minimum of every 24 hours, unless contraindicated (See Appendix A).
- H. Dressings:
1. Prepare the environment prior to setting up for dressing change by cleaning bedside table with hospital approved wipes per CCND Policy. This helps minimize the microbial bioburden of the area.
 2. Dressings are labeled with external length, time and date of change.
 3. For all CVADs and ports (accessed subcutaneous venous access devices), transparent semi-permeable dressings are changed every seven (7) days, or when integrity of dressing is compromised.
 4. 2-Nurse dressing changes are done on specific patients (See Appendix B).
 5. Non-transparent dressings or gauze dressings must be changed every 48 hours² or sooner if the integrity of the dressing is compromised.
 6. Chlorhexidine scrub is utilized to cleanse the exit site and surrounding area in a bidirectional method. If a patient has sensitivity to a chlorhexidine product then povidone-iodine³ or alcohol products are used after consultation with the LIP and Wound Nurse. For patients who cannot use alcohol based cleaners, povidone-iodine is to be used. If chlorhexidine scrub is not used, transparent dressings are changed every 72 hours.
 7. Chlorhexidine impregnated sponge is applied to exit site per manufacturer's instructions.⁵
 8. Anchoring devices (e.g.: Stat-lock™, Grip-Lok™)
 - a. Anchoring devices are changed when integrity of device is compromised
 - b. If anchoring devices are located beneath the dressing, the anchoring device will be changed with each dressing change
 - c. If present, Steri-strips™ are changed with each dressing change
- I. For ports, a non-coring needle with tubing is changed a minimum of every seven (7) days. With each new access and re-access of the port, all associated fluids and tubing and devices must also be changed.³
- J. For all new CVAD insertions, including ports, all new tubing, fluids, and associated devices will be utilized.²

- K. Needle free connectors (ex., Microclave™) are changed every 72 hours when catheter is in use. When CVAD is not in use, needle free connectors are changed every seven (7) days or if there is blood or debris within the device. There is no need to prime the needle free connectors.^{1,2} Alcohol caps are applied to the needle free connectors when idle.⁴
- L. Education materials are available for patients who are in need of instruction on the care of their catheter at home. These can be accessed from the NIH CC Intranet, Research Participant website.
- M. Patient/family teaching standards:
 - a. Daily Bathing with CHG cloths
 - b. Needle free connector change
 - c. Flushing technique, if appropriate
 - d. Dressing changes for tunneled CVADs
 - e. Patients with non-tunneled CVADs must be discharged to their home physicians or a home health care provider for sterile dressing changes prior to leaving the Clinical Center
 - f. Site assessment
 - g. Use of moisture barrier apparatus for over line dressing
 - h. Complications, including use of clamps in emergency and contact information

III. Documentation:

- A. Use of CHG cloths for inpatients with CVADs.
- B. Assessment of the CVAD site, in the inpatient adult population, is documented a minimum of every eight (8) hours and in accordance with patient's clinical status.
- C. Outpatients with CVADs not in use need objective and subjective assessment data documented with each visit.
- D. Assessment of the CVAD exit site, in the pediatric population and high risk patients (i.e. risk for infection, skin impairment, infiltration, or dislodgement) is documented every four (4) hours.
- E. Patient/Family teaching
- F. Interventions provided as appropriate and related to:
 - 1. Dressing change
 - 2. Needle free connector change
 - 3. CVAD dysfunction
 - a. Catheter occlusion and effectiveness of treatment
 - b. Site infection
 - c. Unplanned removal
 - d. CVAD repair
 - 4. Any measurements of external catheter length
 - 5. Flushes administered
 - 6. CVAD patency
 - 7. Catheter removal and rationale for catheter removal
 - 8. Port access and de-access
 - 9. Place an ORS for catheter dysfunction

IV. References:

- 1. Infusion Nursing Standards of Practice. (2011), *Journal of Infusion Nursing*, 34 (1Suppl) S55-56.

2. O'Grady NP, Alexander M, Burns LA, et al. (2011). Guidelines for the prevention of Intravascular Catheter-Related Infections: Centers for Disease Control and Prevention. Accessed on CDC website. Last updated April 4, 2011.
3. Scales, K. (2010). Central venous access devices part 1: Devices for acute care. *British Journal of Nursing*, 19(2), 88-92.
4. Kamboj M, Blair R, Bell N, Son C, et al. (2015). Use of Disinfection Cap to Reduce Central-Line Associated Bloodstream Infections and Blood Contamination among Hematology-Oncology Patients. *Infect. Control Hosp. Epidemiology*, 8(0):1-8.
5. Broadhurst D., Moureau N, and Ullman AJ. (2016). Central venous access devices site care practices: an international survey of 34 countries. *Journal of Vascular Access*, 17(1): 78-86. DOI: 10.5301/jva.5000450. Epub 2015 Sep 3

III. Contributing Policy, Procedure, Standard of Practice, and Education Documents

1. Appendix A in PRO: CVAD Restoring Patency
2. PRO: Flushing Central line, Apheresis or Dialysis Catheter
3. PRO: CVAD Flushing a Central Line, Apheresis or Dialysis Catheter
4. CCND Hospital Acquired Infection (HAI) Prevention Policy
5. NRPEC – CHG Daily Baths

//s//

Gwenyth R. Wallen, PhD, RN
Chief Nurse, Clinical Center Nursing Department

Formulated: 04/1996
Implemented: 12/1996
Reviewed: 10/2007, 01/2010, 03/2016, 4/2018
Revised: 05/1999, 07/2001, 12/2001, 01/2005, 10/2007, 5/2010, 7/2010, 5/2012, 10/2015, 3/2016, 9/2016, 4/2018