

NATIONAL INSTITUTES OF HEALTH  
CLINICAL CENTER  
CLINICAL CENTER NURSING DEPARTMENT

**Procedure: Central Venous Access Device: Removing a Non-Tunneled Central Venous Catheter**

**SUMMARY OF SIGNIFICANT CHANGES SINCE LAST REVIEW**

- ❖ Added description of how CVAD length is measured and where it is documented. Included appendix with pictures to illustrate measurement points.
- ❖ Reference list cleaned and updated
- ❖ Minor format/verbiage Changes
- ❖ Included information regarding removal of apheresis catheter
- ❖ Information added for HAI Prevention Bundle
  - Wiping of bedside area before using

**Clinical Nurse Specialist:** Ellen Eckes  
**Primary Stakeholder(s):** Jamie Kerns

Deletes or Replaces - [CVAD Removing a Non-Tunneled Central Venous Catheter \(05/12\)](#)  (66 KB) **PRO**

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**Procedure: Central Venous Access Device: Removing a Non-Tunneled Central Venous Catheter**

Approved:

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Formulated: 4/1995  
Implemented: 6/1995  
Reviewed: 10/2008, 11/2009, 5/2012, 8/2015, 4/2018  
Revised: 4/1996, 7/1998, 5/1999 (implemented 6/1999), 2/2001, 5/2001, 12/2001, 10/2002, 02/2003, 10/2003; 05/2005, 10/2008, 11/2009, 5/2012, 9/2016, 4/2018

**Procedure: Central Venous Access Device; Removing a Non-Tunneled Central Venous Catheter**

**Essential Information**

1. Central Venous Access Device (CVAD) Care and Maintenance Competency is required.
2. A medical order to remove a Central Venous Access Device (CVAD) is required.
3. Please check coagulation and platelets before removal of any central line.
4. Review from VAD structured note titled: **Central VAD Insertion/Removal/Repair** in chart to obtain total length of catheter. This note is entered by VAD at time of procedure and is measured from hub to tip. External length is measured from hub to insertion site (in cm).
5. Chlorhexidine may cause a chemical burn if it is not allowed to completely dry prior to application of skin prep or dressing.

**Equipment**

1. Sterile, disposable suture removal set (if necessary)
2. Mask
3. Sterile Scissors (if culturing catheter tip)
4. Non-Sterile gloves
5. 4 X 4s (3 pkgs.)
6. One Chlorhexidine/alcohol applicator (ChlorPrep®) (3mL)
7. Sterile gloves
8. Transparent sterile occlusive dressing
9. Sterile drape/barrier
10. Alcohol pads (optional)
11. Sterile specimen container (if culturing catheter)
12. Goggles (optional)
13. Water resistant pad (optional)

<b>Steps:</b>	<b>Key Points/Rationale:</b>
1. Position the patient in bed at a 10-20 degrees Trendelenburg position. If patient cannot tolerate Trendelenburg, recline the patient in the supine position. <sup>1-3</sup>	1. Trendelenburg position elevates venous pressure above atmospheric pressure, reducing the risk of air entry into the wound.  Have patients perform Valsalva maneuver to increase intrathoracic pressure.  Central lines should NOT be removed with the patient in a non-reclining chair or upright position.
2. If a femoral line is being removed, positioning the patient in a bed is required.	2. N/A
3. Apply mask.	3. N/A
4. Prepare the environment by wiping surfaces with hospital approved wipes per CCND Policy	4. Minimizes microbial bioburden of the area.
5. Perform hand hygiene.	5. See Appendix B

<b>Steps:</b>	<b>Key Points/Rationale:</b>
6. Set up sterile field and put on non-sterile gloves.	6. N/A
7. Remove the dressing and anchoring devices other than sutures.	7. Patients should be instructed to turn head away from insertion site or put mask on. <sup>1,3</sup>
8. Remove non-sterile gloves and perform hand hygiene.	8. Hands could become contaminated when removing old dressing.
9. Put on sterile gloves	9. N/A
10. Cleanse exit site area around catheter insertion and sutures with chlorhexidine/alcohol swab applicator using a bidirectional scrub.	10. Chlorhexidine/alcohol swab applicators should be applied to the site as follows: a. 30 seconds for dry surgical sites such as arm or abdomen. b. 2 minutes for moist sites such as inguinal or femoral. c. Allow site to dry completely. Do not blot, blow, fan, or wipe dry.
11. Remove sutures, if present.	11. N/A
12. Fold two 4 x 4 gauze pads in half and place over the catheter exit site	12. N/A
13. <b>If removing an internal jugular (IJ) or subclavian (SC) or thoracic apheresis line:</b> a. Place patient at 10-20 degrees position. b. Patient should be instructed to perform a Valsalva maneuver or to hold their breath. <sup>3</sup> c. If patient is unable to follow commands, (e.g. the ventilated patient) remove catheter during end exhalation. <sup>3</sup> d. While holding slight pressure over the site, slowly and steadily remove the catheter	13. Educate patient on how to perform Valsalva maneuver and anticipatory teaching about catheter removal.  If resistance is met while pulling the catheter, stop, apply dressing, and notify the Licensed Independent Practitioner (LIP).
14. <b>If removing femoral lines or femoral apheresis lines:</b> a. Position patient flat in bed b. Patient should be instructed to perform a Valsalva maneuver or to hold their breath. <sup>3</sup> c. If patient is unable to follow commands, (e.g. the ventilated patient) remove catheter during end exhalation. <sup>3</sup> d. While holding pressure over the site, slowly and steadily remove the catheter.	14. Educate patient on how to perform Valsalva maneuver and anticipatory teaching about catheter removal.  If resistance is met while pulling the catheter, stop, apply dressing, and notify the LIP.

Steps:	Key Points/Rationale:
<p>15. <b>If removing a PICC:</b></p> <ul style="list-style-type: none"> <li>a. Position patient's arm so it is gently extended outwards.</li> <li>b. Grasp the catheter just below the hub and withdraw the PICC, re-grasping catheter closer to insertion site with removal.<sup>3</sup></li> <li>c. Using a gentle downward motion, steadily remove catheter away from the body toward the patient's hand.</li> <li>d. If resistance is encountered, stop catheter withdrawal, reposition patient's arm, and try again.</li> <li>e. If resistance persists, cover the insertion site with a temporary sterile dressing and apply a warm pack to the upper arm for 15-30 minutes to relax the spasm and allow easier catheter removal.<sup>51,3</sup></li> </ul> <p>Reattempt removal.</p>	<p>15.</p> <p>If 2<sup>nd</sup> attempt fails, cover site with temporary sterile dressing, notify LIP and do not reattempt catheter removal.</p>
<p>16. If a catheter tip is to be cultured, hold it over sterile specimen container and using sterile scissors, cut a two (2) inch segment of the tip. Cover the container and send to the lab at the completion of the dressing change.</p>	<p>16. It is important to maintain homeostasis, so catheter tip can be placed on sterile field until homeostasis is obtained, or a second nurse could assist at this point to obtain catheter tip for culture and ensure homeostasis maintained.</p>
<p>17. When catheter is out, apply firm pressure to the catheter exit site until hemostasis has been achieved.</p> <ul style="list-style-type: none"> <li>a. If bleeding is noted, continue to apply pressure, checking at 5minute intervals until hemostasis has occurred</li> <li>b. Measure length from hub to tip</li> </ul>	<p>17. Always inspect catheter tip to ensure it is intact, smooth and not jagged and that the length corresponds to total catheter length upon insertion for lines placed at NIH.<sup>2,3</sup> For lines placed outside of NIH with no documentation of total catheter length inspect the tip for uneven, jagged edges which may indicate a broken catheter. If you suspect a broken catheter obtain order for chest x-ray.</p>
<p>18. Once hemostasis has occurred, apply fresh sterile gauze and a sterile transparent occlusive dressing over the gauze.<sup>1-3</sup></p>	<p>18. Patients should be advised not to cough, laugh or sneeze post catheter removal</p> <p>If patient develops symptoms of air embolism; sudden dyspnea, pallor, tachycardia or coughing, place patient immediately on left side in Trendelenburg position, call a code and stat page the LIP.</p>
<p>19. The patient must remain in bed/chair for the following time periods:</p> <ul style="list-style-type: none"> <li>a. PICC, Subclavian, and Internal Jugular between 30 minutes to one hour.</li> <li>b. Femoral lines – a minimum of one hour with assessment of bleeding/hematoma every fifteen minutes.<sup>3</sup></li> <li>c. Reassess site after patient has been out of</li> </ul>	<p>19. Once hemostasis achieved, head of bed (HOB) may be elevated 30 degrees.</p>

<b>Steps:</b>	<b>Key Points/Rationale:</b>
bed.	
20. <b>For outpatients</b> – Instruct the patient to leave the dressing in place for a minimum of 24 hours and to check the dressing every few hours for signs of bleeding.  <b>For inpatients</b> – Dressing should be changed 24 hours post catheter removal and site assessed every 4 hours until site is epithelialized. <sup>2</sup> Apply new dressing as needed.	20. If bleeding is noted, instruct the patient/family member to hold pressure over the site and call the responsible LIP for further instructions.
21. Document in approved electronic medical record.	21. N/A

**References:**

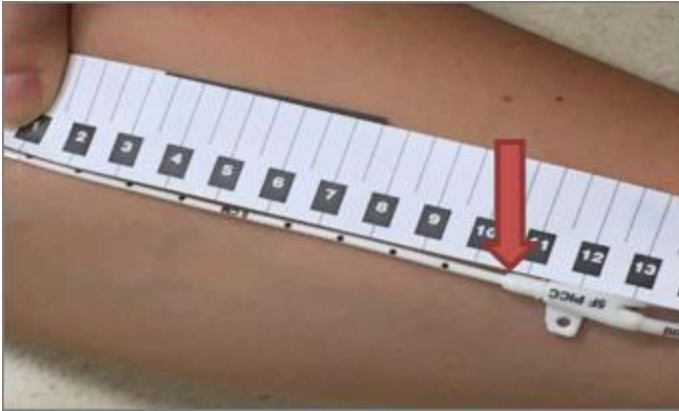
1. Infusion Nurses Society. (2011). Infusion Nursing Standards of Practice. *Journal of Infusion Nursing*, 34 (1Suppl) S57-59.
2. Infusion Nurses Society. (2011). *Policies and Procedures for Infusion Nursing*, (4<sup>th</sup> Ed.): 92-94.
3. Camp-Sorrel, D. (Ed). (2011). Chapter II. Vascular Access Devices. In *Access Device Guidelines- Recommendations for Nursing Education and Practice*, 3<sup>rd</sup> Ed., (pp. 8t). Oncology Nursing Society, PA: Pittsburgh.

**Contributing Policy, Procedure, Standard of Practice:**

1. SOP: CVAD
2. PRO: CVAD Dressing Change
3. CCND Hospital Acquired Infection (HAI) Prevention Policy

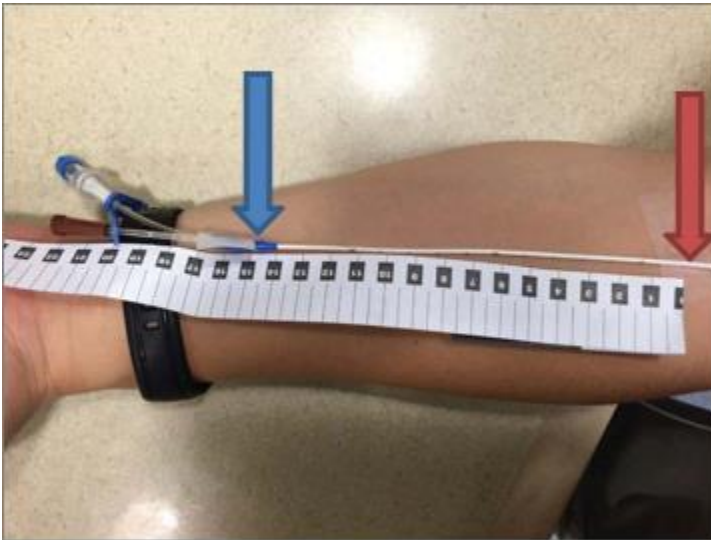
### Appendix A How to measure length of catheter

Measure all catheters to the body of catheter.



**Red** = Beginning of body of catheter

**Non-tunneled catheter**



**Red** = exit site  
**Blue** = external catheter length

**Tunneled catheter**

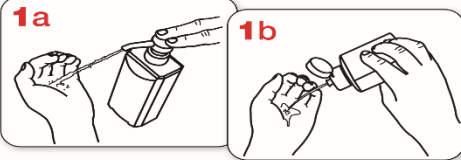


**Orange** = exit site  
**Blue** = external length

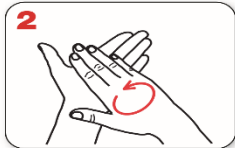
**Appendix B**

**How to Perform Hand Hygiene**

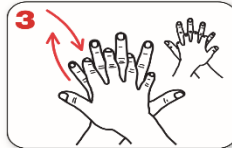
**How to handrub?  
WITH ALCOHOL-BASED FORMULATION**



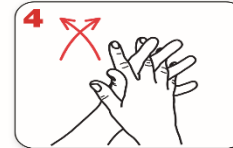
Apply a palmful of the product in a cupped hand and cover all surfaces.



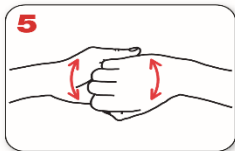
Rub hands palm to palm



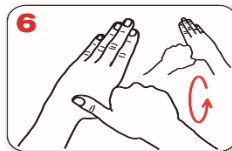
right palm over left dorsum with interlaced fingers and vice versa



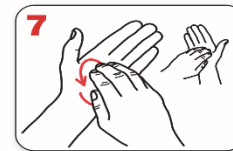
palm to palm with fingers interlaced



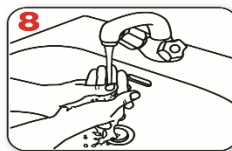
backs of fingers to opposing palms with fingers interlocked



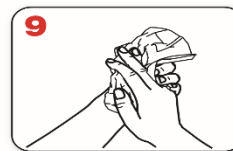
rotational rubbing of left thumb clasped in right palm and vice versa



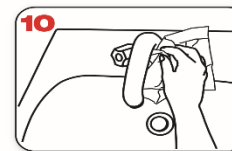
rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa



rinse hands with water



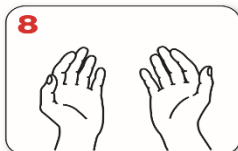
dry thoroughly with a single use towel



use towel to turn off faucet



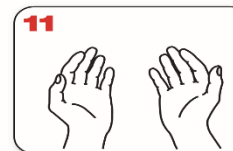
20-30 sec



...once dry, your hands are safe.



40-60 sec



...and your hands are safe.



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