NATIONAL INSTITUTES OF HEALTH
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Procedure: Central Venous Access Devices - Accessing and Deaccessing Subcutaneous Ports

SUMMARY OF SIGNIFICANT CHANGES SINCE LAST REVIEW

- Deleted: sterile technique for de-access, injection cap and blunt needle adaptor and replaced with needleless connector (Microclave™), alcohol caps
- Included new Algorithm for port identification
- Updated references
- Included information regarding when to change dressings and port needles
- Included information regarding chlorhexidine impregnated sponge

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Deletes or Replaces - CVAD Accessing and Deaccessing Subcutaneous Ports (04/18) PDF PRO

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Procedure: Central Venous Access Devices - Accessing and Deaccessing Subcutaneous Ports

Approved:

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Formulated: 4/1995
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Reviewed: 10/2008, 11/2009, 5/2012, 4/2018
Revised: 4/1996, 7/1998, 5/1999, 2/2001, 5/2001, 12/2001, 10/2002, 02/2003, 10/2003; 01/2005, 11/2009, 4/2010, 5/2012, 11/2012, 9/2013, 8/2015, 9/2016, 4/2018, 3/2019

Procedure: Central Venous Access Devices - Accessing and Deaccessing Subcutaneous Ports

Essential Information

1. Central Venous Access Device (CVAD) Care and Maintenance Competency is required.
2. Ports not in use must be accessed and flushed every 30 days.
3. Prior to access and use, port devices must be identified for power versus non-power (type) and manufacturer (brand) per the following criteria: See Appendix A.
    a. Power port product ID card in the form of a wallet card, bracelet or key fob
    b. Medical record documentation in the form of an operative note indicating the port type and brand.
    c. Palpable identifiers, applicable to Bard power port only.
4. Bard power ports require 2 identifiers in the form of:
    a. Power port product ID card in form of wallet card, bracelet or key fob.
    b. Medical Record documentation
    c. Triangular Shape
    d. 3 separate palpable bumps on rim of port surface.
5. After identification, port devices must be accessed with the NIH Clinical Center designated and manufacturer specified compatible right angle non-coring needle set.
6. Power ports being used for contrast dye power injection in an imaging area must be accessed with the appropriate power injection needle:
    a. AngioDynamics LifeGuard Safety™ Infusion Set with AngioDynamics Power Ports
    b. Bard PowerLoc Safety® Infusion Sets with Bard power ports and all other brand power ports.
    c. Verification of power port is obtained through two identifiers utilizing Port Device Identification and Non-Coring Needle Selection Algorithm (see Appendix A):
    d. If the patient doesn't have at least one of the identifiable items to identify their port, the port must be considered a non-power port and accessed with the appropriate needle: The Bard Non-Power SafeStep® Needle Set.
7. For non-power ports, the needle to be used is the Bard Non-Power SafeStep® Needle Set.
8. Chlorhexidine may cause a chemical burn if not allowed to completely dry prior to application of skin prep or dressing.
9. Needles are changed minimally every seven (7) days or as needed.
10. New IV tubing/fluids are required minimally every 72 hours and with each new needle access.
11. When accessing a port for short time do not place a chlorhexidine impregnated sponge. Should the research participant be admitted, a chlorhexidine impregnated sponge will be placed when the dressing and needle are changed (in 7 days).

12. A 2010 FDA safety investigation reported (Huber) needles labeled as non-coring to be taking cores out of port septum. A full FDA investigation of all non-coring port needles continues. October 2010 FDA update continues to recommend users take precautions when using any Huber needle to avoid accidentally introducing a cored piece of septum into the research participant. These recommendations include when possible, to discard the syringe used for blood return verification.

ACCESSING A SUBCUTANEOUS PORT

Equipment

1. Port Access Kit
    - Two (2) Masks (outside sterile wrapping in kit)
    - Two (2) Sterile field ready prefilled 10mL saline syringe
    - Chlorhexidine/gluconate (ChloraPrep®) swab applicator
    - Protective skin barrier swab stick
    - 4 x 5 transparent dressing
    - Alcohol pad
    - Needleless connector (Microclave™)
    - Hand sanitizer wipe (outside sterile wrapping of kit)
2. One (1) pair of sterile gloves
3. Right angle non-coring (Huber) needle
4. Adhesive Remover
5. Chlorhexidine impregnated sponge (if appropriate)

Optional Additional Supplies

1. Two (2) pair non-sterile gloves (if impaired skin integrity or removing topical anesthetic)
2. Steri Strips
3. Additional prefilled saline syringe (non-sterile field ready)
4. Prefilled flush solution or if ordered heparin for flush or catheter lock
5. Alcohol pad
6. Gauze 2 x 2 (for removal of anesthetic)

Steps:	Key Points/Rationale:
1. If indicated, obtain order for topical anesthetic. Apply anesthetic, leave on for prescribed time and remove prior to needle access.	1. Allow appropriate timing for anesthetic effect. Use gloves and gauze for removal of anesthetic.
2. Prepare the environment by wiping surfaces with hospital approved wipes per CCND Policy.	2. Minimizes microbial bioburden of the area.
3. Perform hand hygiene.	3. See Appendix B

Steps:	Key Points/Rationale:
4. Position research participant so port area is easily viewed and accessed**.** If port is in the upper arm, extend arm at a 45-90 degree angle.[1]	4. Semi-Fowler or supine positions are easiest for chest ports. You may place a towel or pillow underneath the arm for positioning support.
5. Palpate over the site of the implanted device to confirm the septum's location and port type. Verify Port Device identification and select appropriate non-coring needle using the Port Device Identification and Non-Coring Needle Selection Algorithm (See Appendix A).	5. Palpation helps determine the length of needle to be used. Additionally, ask the research participant what needle length has been used in the past and reference previous VAD documentation.
6. Assess skin and tunnel, for signs and symptoms of infection: redness, swelling, tenderness, infiltration, discharge, venous distension, or collateral circulation.	6. If integrity of the skin, tunnel, or vein appears compromised, notify Licensed Independent Practitioner (LIP) before proceeding.
7. Perform hand hygiene.	7. See Appendix B
8. Put on mask and place hand sanitizer wipe to side for use later.	8. N/A
9. Open port access kit, using the sterile inner surface of the wrap to create a sterile field. Add non-coring needle, needless connector (Microclave™) and two sterile field ready (SF) saline syringes onto sterile field.	9. Only add prefilled syringes labeled as sterile on their outside to the sterile field.
10. Instruct research participant to wear mask or turn head away from insertion site.	10. This is to prevent any site contamination.
11. Don non-sterile gloves to remove old dressing, if applicable.	11. N/A
12. Use hand sanitizer wipe to perform hand hygiene and don sterile gloves.	12. Hands can become contaminated when removing old dressing.
13. Clean the site over the VAD and surrounding skin with Chlorhexidine gluconate swab applicator using a bidirectional scrub.	13. Chlorhexidine gluconate swab applicator should be applied to the site as follows: a. 30 seconds scrub b. Allow 2 minutes to dry completely. Do not blot, blow, fan, or wipe dry.
14. Apply protective skin barrier windowing area under the dressing, and allow area to dry.	14. Protective skin barrier is recommended.
15. Prime the non-coring needle and extension tubing with the sterile prefilled saline syringe.	15. Priming needle is required to avoid introducing air embolus into port. a. May optionally prime through needle free connector (Microclave™) by attaching connector to non-coring needle extension tubing.

Steps:	**Key Points/Rationale:**
16. With dressing change at seven (7) days, place chlorhexidine impregnated sponge in place around non-coring needle for placement, if applicable.	16. This is "preloading" the non-coring needle in which to place the chlorhexidine impregnated sponge. This is for when a port is accessed more than seven (7) days. May need to use larger sized non-coring needle when putting the chlorhexidine impregnated sponge in place.
17. With dominant hand, grasp non-coring needle and syringe.	17. Maintain sterile technique.[2,3]
18. With thumb and first two fingers of non-dominate hand, palpate and stabilize port septum.	18. Maintain sterile technique.[2,3]
19. With dominant hand, position non-coring needle above port septum and insert perpendicular to the port septum. Apply steady pressure until the needle touches the base of the port reservoir.	19. Firm pressure is needed to penetrate the septum. Do not rock or rotate needle once in place as this can damage the septum.
20. Apply dressing over port and needle. Form an occlusive seal by pinching adhesive portion of the dressing around the catheter which extends out from the dressing.	20. N/A
21. Using saline syringe aspirate for a free-flowing blood return.	21. If blood return is brown with fibrin clots (which may occur when the port has not been used recently), continue to aspirate until bright red blood appears in the syringe. **Do not** re-infuse fibrin clots.
22. Discard syringe with contents and attach new prefilled saline syringe for flush.	22. Per FDA recommendations to avoid introducing cored silicone septum into research participant. This step may recapture the silicone sliver.[4]
23. Using new saline syringe, flush using push-pause technique per CVAD flush procedure and guidelines.	23. Refer to PRO: Central Venous Access Devices Flushing a Central Line, Apheresis or Dialysis Catheter; and Appendix A: CVAD Flushing Guidelines Table, Adult and Pediatric.
24. Observe for swelling or discomfort with flush.	24. If swelling or pain is observed, contact LIP. This may indicate the needle is not in the port, but in surrounding subcutaneous tissue, or there is a tear in the catheter.

Steps:	Key Points/Rationale:
25. If blood return is not obtained or resistance is met: a. Verify needle placement by applying pressure on the needle until the reservoir's base is felt and reposition the research participant. b. May attempt gentle flush with saline prior to aspiration attempt. c. Reposition research participant and instruct to cough and deep breathe or perform Valsalva maneuver.	25. Refer to PRO: Restoring patency of an obstructed central line, Appendix A: CVAD Occlusion Verification.
26. If above attempts fail to yield blood return, re-access port starting with step 2.	26. If there is no blood return after two attempts, notify LIP.
27. Once patency and needle placement is confirmed, remove syringe and apply needleless connector (Microclave™), if not already connected.	27. N/A
28. Proceed to CVAD interventions, for example blood draw or infusion.	28. Perform blood draw and/or infusion through needleless connector (Microclave™). Refer to PRO: Central Venous Access Devices, Obtaining a blood specimen.[1,3]
29. If research participant is not receiving continuous infusion, flush port with appropriate solution per Procedure, Flushing Guidelines and LIP order. Apply alcohol cap to the end of needleless connector (Microclave™).	29. See Pro: Central Venous Access Devices: Flushing a Central line, Aphaeresis or dialysis Catheter, and Appendix A: CVAD Flushing Guidelines Table, Adult and Pediatric.
30. Remove gloves and mask.	30. N/A
31. Document on dressing the date the port was accessed.	31. Port needles are changed every seven (7) days regardless of when the dressing was changed.
32. If the dressing is loose around the edges and non-occlusive, change the dressing and place the date the port needle was accessed on the dressing.	32. Note in documentation the dressing was changed only, utilizing "Modify Row" label or "Edit Text".
33. If dressing is entirely off leaving port needle and insertion site exposed, change both port needle and dressing.	33. Note in documentation the dressing was changed only, utilizing "Modify Row" label or "Edit Text".
34. Document in approved electronic medical record.	34. Document date port was accessed and date dressing was changed.

DEACCESSING A SUBCUTANEOUS PORT

Equipment List:

1. One (1) pair non-sterile gloves
2. One (1) sterile 2 x 2 gauze pad
3. Prefilled syringes with appropriate solutions per CVAD Flushing Guidelines
4. Band-Aid
5. Alcohol pads
6. Goggles (optional)

1.	Prepare the environment by wiping surfaces with hospital approved wipes per CCND Policy.	1.	Minimizes microbial bioburden of the area.
2.	Perform hand hygiene.	2.	See Appendix B
3.	Apply non-sterile gloves.	3.	N/A
4.	Flush subcutaneous port with appropriate flush solution per LIP order and PRO.	4.	Refer to PRO: CVAD Flushing a Central Line, Aphaeresis or Dialysis Catheter, and Appendix A: CVAD Flushing Guidelines Table, Adult and Pediatric.
5.	Research participants should be instructed to turn head away from insertion site	5.	This is to prevent any site contamination.
6.	Remove dressing.	6.	N/A
7.	Stabilize the port and base of needle with the thumb and index finger of non-dominant hand. Raise needle cover 90 degrees.	7.	N/A
8.	Withdraw the non-coring needle by pulling straight out, perpendicular to the skin.	8.	Ensure safety mechanism, if present, is activated per manufacturer guidelines.
9.	Utilizing the sterile gauze pads, apply pressure to the puncture site until bleeding stops.	9.	N/A
10.	Examine port site for tenderness or erythema.	10.	N/A
11.	Apply small bandage over needle puncture site.	11.	N/A
12.	Perform hand hygiene.	12.	N/A
13.	Document in approved electronic medical record.	13.	N/A

References:

1. Rosenthal K. (2006). What you need to know about ports. *Nursing. 36*(1):20-21.
2. Infusion Nursing Standards of Practice. (2011). *Journal of Infusion Nursing 34*(1 Suppl):S1-108.
3. Arch P. (2007). Port navigation: let the journey begin. *Clinical Journal of Oncology Nursing 11*(4):485-488.

4. Camp-Sorrell, D. (2009). Accessing and deaccessing ports: where is the evidence? *Clinical Journal of Oncology Nursing 2009 13*(5):587-589
5. Burris. J. and Weis. M. (2014). Reduction of erosion risk in adult patients with implanted venous access ports. *Clinical Journal of Oncology Nursing 2014 18*(4):403-405
6. Earhart, A. and McMahon, P. (2011). Vascular access and contrast media. *Infusion Nursing Society 34*(2):97-105.

Contributing Policy, Procedure, Standard of Practice:

1. Appendix A: Port Device Identification and Non-coring Needle Selection Algorithm
2. PRO: CVAD Flushing a Central line, Aphaeresis or Dialysis Catheter
3. CVAD Flushing Guidelines Table
4. PRO: CVAD Restoring Patency
5. Appendix A: CVAD Occlusion Verification
6. PRO: CVAD Obtaining a Blood Specimen
7. CCND Hospital Acquired Infection (HAI) Prevention Policy

Additional Resources:

1. Policies and Procedures for Infusion Nursing 4th edition, 2011. Infusion Nursing Society
2. Mosby's Nursing Skills Online Manual

Appendix B

How to Perform Hand Hygiene