DESCRIPTION/OVERVIEW
The purpose of these procedures is to standardize VAD maintenance, including Central Venous Lines (CVL), for continuity of care and the prevention of Central Line Associated Bloodstream Infections (CLABSI). This will incorporate vascular assessment, vein preservation and infection prevention into all maintenance practices.

REFERENCES
- Society for Healthcare Epidemiology of America (SHEA) *Strategies to Prevent Central line-Associated Bloodstream Infections in Acute Care Hospitals*: 2014 Update

AREAS OF RESPONSIBILITY
All patient care areas that are responsible for maintenance of VAD, by personnel whose license and scope of practice allows, and qualified assistants.

SUBPROCEDURE LIST
- CVL Access Procedure (Attachment 1)………………………………………… Page 4
- CVL Needleless Connector Change Procedure (Attachment 2)…………………. Page 5
- CVL Dressing Change Procedure (Attachment 3)………………………………. Page 7
- Maintenance of Implanted Ports (Attachment 4)………………………………… Page 9
- Venous Access Catheter Reference Grid, Adult (Attachment 5A)……………….. Page 12
- Venous Access Catheter Reference Grid, Pediatric (Attachment 5B)…………….. Page 13
- Pediatric and Neonatal Heparin Flush Protocol (Attachment 6)…………………. Page 14
- CVL Removal Procedure (Attachment 7)………………………………………… Page 15
- Use of Disinfecting Caps for Needleless Connectors and Luer-Activated Ports (Attachment 8)……………………………………………………………………………………………. Page 17
- Management of Male Luer Ends of IV Tubing (Attachment 9)………………….. Page 19
- Documentation of Temporary Central Line Indication (Attachment 10)…….. Page 20
- Guideline for Vascular Access Site Assessment (Attachment 11)……………….. Page 22

PROCEDURE
**Peripheral Venous Line:** Standard of practice reference material specified by UNMH is to be used for peripheral vascular access maintenance.
Central Venous Line Maintenance Bundle
Hand Hygiene
Standardized access procedure
Standardized needleless connector change procedure
Standardized dressing change procedure
Daily chlorhexidine bathing in ICUs (excluding NBICU)
Daily multidisciplinary assessment of line need

Special Considerations
Patients arriving to UNMH with VAD: Assess line for patency and need for dressing change, then consult with LIP. Prior to use, perform Radiographic confirmation of CVL upon admission, unless confirmation is otherwise available. If there are infusions, consult LIP and pharmacy.

DEFINITIONS
Types of Venous Access Devices:
- Peripheral
- Midline
- Peripherally Inserted Central Catheter (PICC)
- Non-tunneled
- Tunneled
- Implanted Ports
- Tunneled Dialysis Catheter (TDC)
- Temporary Dialysis Catheter (TC)

SUMMARY OF CHANGES
Removal of CVL Insertion Bundle and insertion of CVL Maintenance Bundle. Procedures removed from text and added as attachments. Replaces “Central Venous Line (CVL) Care”, 3/2013. As of 11/2016:
- Added list of subprocedures with links to specific subprocedures on initial page of procedure.
- Added Use of Disinfecing Caps for Needleless Connectors (Attachment 8) and Management of Male Luer Ends of IV Tubing (Attachment 9).
- Updated Adult and Pediatric Grids.
- Updated Maintenance of Implanted Ports (Maintenance Flushing Section, #5).
As of 5/2017:
- Removed “bundle” as a definition because this is now defined in PPG definitions.
- Updated PICC Team lead to reflect change in leadership.
- Updated Venous Access Catheter Grid, Adult.
- Added Documentation of Temporary Central Line Indication (Attachment 10)
- Added Guideline for Vascular Access Site Assessment (Attachment 11)

RESOURCES/TRAINING
Video learning of specific CVL Maintenance Procedures uploaded on Intranet. Skills validation of Bundle procedures for all RN staff. Annual online competency in Learning Central for RNs. CVL Self-Study Module.

<table>
<thead>
<tr>
<th>Resource/Dept</th>
<th>Contact Information</th>
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<tr>
<td>HAI Leadership Team-CLABSI, Maintenance</td>
<td>Meghan Brett, 505-272-6335</td>
</tr>
<tr>
<td>PICC/Sedation Team</td>
<td>Tiffany Grice, 505-925-7530</td>
</tr>
<tr>
<td>Skills Validation &amp; Online Competencies</td>
<td>Clinical Education</td>
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### DOCUMENT APPROVAL & TRACKING

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<th>Date</th>
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<td>Unit Director PICC/Sedation</td>
<td></td>
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<tr>
<td>Consultant(s)</td>
<td>Meghan Brett, MD, Hospital Epidemiologist; Infection Prevention and Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committee(s)</td>
<td>HAI Leadership Team: CLABSI-Maintenance, Clinical Operations PP&amp;G Committee, Nursing PP&amp;G Subcommittee; Infection Control Committee</td>
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<td>Y</td>
</tr>
<tr>
<td>Nursing Officer</td>
<td>Sheena Ferguson, RN, Chief Nursing Officer</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Medical Director</td>
<td>Eli Torgeson, MD Anesthesiology</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Official Approver</td>
<td>Sheena Ferguson, MSN, CNS, CCRNr, CNO</td>
<td></td>
<td>Y</td>
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<tr>
<td>Official Signature</td>
<td>On SharePoint</td>
<td>Date: 11/14/2017</td>
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<td>Effective Date</td>
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### ATTACHMENTS

Attachment 1: CVL Access Procedure  
Attachment 2: CVL Needleless Connector Change Procedure  
Attachment 3: CVL Dressing Change Procedure  
Attachment 4: Maintenance of Implanted Ports  
Attachment 5A/B: Venous Access Catheter Reference Grid, Adult/Pediatric  
Attachment 6: Pediatric and Neonatal Heparin Flush Protocol  
Attachment 7: CVL Removal Procedure  
Attachment 8: Use of Disinfecting Caps for Needleless Connectors  
Attachment 9: Management of Male Luer Ends of IV Tubing  
Attachment 10: Documentation of Temporary Central Line Indication  
Attachment 11: Guideline for Vascular Access Site Assessment
Attachment 1

CVL ACCESS PROCEDURE

The Short Story: (goals)

- Keep needleless connector hub contaminate free
- Maintain clean technique throughout procedure

The Long Story: (how to get it done)

1. Gather supplies (alcohol or CHG pads, flushes, port protector and any other items needed)
2. Perform hand hygiene
3. Don clean gloves
4. Identify patient
5. Hold the needleless connector between the thumb and forefinger and remove port protector
6. If port protector is not present, scrub needleless connector with alcohol (or CHG) pad for 15 seconds (like you are juicing an orange) and allow to dry completely
7. Check patency: aspirate with 10 cc syringe or larger to assess for a brisk blood return in the lumen; do not aspirate blood into the needleless connector; if this happens the needleless connector must be changed
8. Using Saline>Administer>Saline method (SAS) with push pause technique, perform desired procedure (i.e., medication administration, blood draw, flush, etc.) Do not lay needleless connector down once you have picked it up. If needleless connector is laid down or touched by anything then it must be re-prepped with alcohol (or CHG) with a 15 second scrub and complete dry time
9. Place new port protector on needleless connector after final flush

For NBICU & ICN see unit specific procedure.
Attachment 2

CVL NEEDLELESS CONNECTOR CHANGE PROCEDURE

The Short Story: (goals)

- Keep catheter hub and end of new needleless connector contaminate free
- Maintain aseptic technique throughout procedure

Supplies:

- Disinfectant wipe for procedure table
- Clean gloves, sterile gloves, masks and hats (for anyone within 3 ft of pt)
- Hand gel
- Needleless connectors and 10 ml sterile saline syringes for each connector to be changed
- Sterile 4x4s or drape
- Alcohol or CHG pads
- Tape
- Port protectors

The Long Story: (how to get it done)

1. Gather supplies
2. Close room door or pull curtain
3. Perform hand hygiene and don clean gloves
4. Identify patient
5. Don mask and hat for practitioner
6. Clean bedside table with wipe, allow to dry
7. Don mask and hat for patient and anyone within 3 ft of patient bed
8. Designate a clean area for supplies and a dirty area for discards; prepare supplies
9. Place sterile drape or 4X4s under cap/caps to be changed. Note: 4x4s now clean, not sterile
10. Open sterile gloves; open alcohol or CHG pads for each cap to be changed keeping pad sterile

Note: Packaging is not sterile; may tape to bedside table or drop pads onto sterile area

11. Obtain needleless connector and 0.9% NaCl syringe for each lumen that is to be changed; open access end of package and prime connector with 0.9% NaCl, keeping end in package and sterile. Remove blue end cap, in package. Leave saline syringe attached to each cap (Saline syringes are not sterile)
12. Loosen each needleless connector, leaving them attached. If line has a clamp, clamp line.
13. Remove procedure gloves, perform hand hygiene and don sterile gloves
14. For each connector to be changed:
   a. Holding lumen with one hand, take gauze with other hand and remove needleless connector
   b. Using a different pad for each lumen, scrub the hub of the lumen with alcohol (or CHG) for 15 second scrub, and allow to dry completely
   c. Using gauze to hold syringe, place new needleless connector on lumen, keeping tip sterile and leaving syringe attached
   d. Repeat a-c for each lumen
15. Check Patency; aspirate to assess for brisk blood return on each lumen; do not aspirate blood into the needleless connector; if this happens the needleless connector must be changed
16. Place new port protectors on needleless connectors after final flush

   For NBICU & ICN see unit specific procedure.
Attachment 3

CVL DRESSING CHANGE PROCEDURE

The Short Story: (goals)

• Keep insertion site contaminate free
• Prevent catheter migration
• Maintain aseptic technique throughout procedure

Supplies:

• Disinfectant wipe for bedside table
• Hat & mask (for everyone within 3ft of pt) clean and sterile gloves for primary RN/LPN (1st) and Assistant (RN/LPN or trained staff* )
• Sterile dressing change kit
• Sterile items to secure catheter (gauze is in kit)
• Hand gel (if not in pt’s room)
• Adhesive remover (if desired)

The Long Story: (how to get it done)

Primary RN (1st) gathers equipment and supplies for dressing change procedure and finds assistant (RN or qualified staff)

1. Close room door or pull curtain
2. 1st & assistant perform hand hygiene and don clean gloves
3. 1st identify patient
4. 1st & assistant don mask and hat for practitioner and assistant
5. Assistant clean bedside table with wipe and allow to dry
6. Don hat and mask to patient and anyone within 3 feet of patient bed
7. 1st & assistant position patient for procedure
8. 1st prepares sterile dressing change kit and sterile gloves
9. Assistant performs hand hygiene and dons sterile gloves (prepares to secure catheter and lumens as needed to prevent catheter migration, while maintaining aseptic technique; may use sterile gauze, cotton tipped applicator or other sterile item)
10. 1st removes dressing to be changed; assistant secures lumens
• Remove notched tape from under lumens; carefully loosen transparent dressing by stretching lower edges.
• Beginning at distal end, remove dressing toward insertion site (may use adhesive remover or hand gel to release); place in dirty area or trash

**Warning:** Care must be taken to ensure the CVL\PICC does not migrate during dressing removal. Do NOT push the catheter back in.

• Assistant secures catheter as needed
• Remove securement device, if applicable, and assess the site
• Remove clean gloves

11. 1st Performs dressing change

• Perform hand hygiene (gel) & don sterile gloves
• Clean site as follows:
  o Use alcohol to clean site, catheter and lumens, and for removal of dried blood and exudate.
  o Assistant use only sterile items to secure catheter
  o Apply chlorhexidine prep, unless contraindicated or NICU, to cover entire dressing area using back and forth motion from insertion site out to surrounding area, for 30 second scrub time; use 2 minute scrub for femoral
  o Allow 30 second dry time, or until visibly dry; **do not fan or blow on area**
• Place chlorhexidine impregnated disc around insertion site, with slit toward lumen/lumens of catheter, blue side up
• Apply skin prep where dressing and stat lock will adhere; allow to dry
• Attach catheter to securement device, and apply securement device, if applicable
• Apply dressing to completely cover insertion site and securement device or proximal sutured device
• Seal dressing under lumens with white notched tape strip, supplied with dressing; in pediatrics, use chevron technique.
• Document date, time and initials on dressing
• Document dressing change, any problems encountered, and actions taken, in EMR

For NBICU & ICN see unit specific procedure.

*Assistant may be RN, LPN or staff trained in sterile technique with responsibility to maintain sterile technique during dressing procedure and prevent catheter migration.*
Attachment 4
MAINTENANCE OF IMPLANTED PORT

Access of an Implanted Port:

1. Obtain order to access and or remove old needle and discard in sharps container if currently accessed. Hand Hygiene and clean gloves required prior to removing old needle.
2. Perform Hand Hygiene.
3. Explain procedure to the patient and/or family.
4. Inquire about patient preference for topical anesthetic and obtain order. Apply according to LIP orders and manufacturer instructions. Allow appropriate time for anesthetic to work. If cream anesthetic, remove with gauze and clean gloves prior to port access. If using topical anesthetic spray, please see steps 14 & 22.
5. Clean bedside table/surface other than bed with appropriate cleanser. Allow to dry.
6. Assemble supplies for accessing port:
   a. Non-coring needle.
   b. Central line dressing change kit.
   c. Face masks for patient and all persons in the room.
   d. Sterile needleless connector(s).
   e. Prefilled 0.9% NaCl syringe(s).
   f. New tubing set and IV fluid.
   g. Heparin solution if applicable.
7. Position patient in a supine position. Young patients may sit on parent’s lap.
8. Perform hand hygiene and apply clean gloves.
9. Ensure all in room don face mask.
10. Open dressing change kit, keeping contents sterile.
11. Open non-coring needle set into sterile field (dressing change kit).
12. Open needleless connector(s) onto sterile field.
13. Open prefilled saline syringes (prefilled syringes not sterile) and place on supply table in area separate from other sterile materials.
14. At this point it may be appropriate to have the assistance of a second qualified person or extra sterile gloves in order to maintain a sterile field. If you are utilizing topical anesthetic spray, you must use a second person as the spray can is not sterile.

15. Apply sterile gloves.

16. Open contents of central line kit (biopatch, skin prep, dressing) and leave in sterile field.

17. Attach needleless connectors to non-coring needle set.

18. Attach the saline syringe to cap(s) using the lure connection. Saline syringe not sterile. If single person technique is used, sterile gloves must be changed after handling syringe. Second person assist is recommended.

19. Flush through the needleless connector(s) and leave the saline syringe attached. Set prepared non-coring needle onto the sterile field. Distal end with syringe is clean rather than sterile so place off to side at edge of packaging.

20. Use alcohol swab to cleanse skin over and around port area, allow to dry.

21. Follow this with CHG/Alcohol scrub to skin over port and surrounding skin area for 30 seconds followed by 30 seconds air dry time.

22. If utilizing topical anesthetic spray, utilize second qualified person to apply spray according to manufacturer instructions.

23. Access the port:
   a. Locate the port septum by palpation. (this hand now clean).
   b. Triangulate the port between the thumb and first fingers of the non-dominant hand.
   c. Insert the non-coring needle aiming for the central part of the port septum that has been secured with your fingers.
   d. Insertion should be perpendicular to the port septum advancing through the skin and the septum until reaching the back of the port.

24. Verify placement:
   a. Using clean hand, attempt to aspirate blood to verify placement of the non-coring needle.
   b. If blood cannot be aspirated, use a pull-push technique with the saline syringe to attempt to initiate blood flow. Do not use force to flush port.
   c. If blood return still cannot be obtained, consider re-accessing the port. Consider asking LIP for flow study or refer to Alteplase policy.
d. If blood is successfully aspirated, flush with 3-10mL saline and continue with procedure.

25. Using sterile hand, apply the antimicrobial disk and dressing to the insertion site (blue side up).

26. Apply occlusive dressing to the entire site.

27. Label and document with date, time and initials. Place sticker on dressing from non-coring needle set to indicate if power line.

28. Document in EMR.

**General Dressing Maintenance for Implanted Ports**

1. Occlusive dressing and port needle should be changed every 7 days and PRN
2. If gauze placed under occlusive dressing, dressing should be changed every 48 hours.
3. Tubing and IV Therapy should be changed with each port needle re-access

**Maintenance Flushing/De-accessing Implanted Port**

1. Every 4 weeks when not accessed.
2. If not in use, access port with needle set according to guidelines.
3. Flush with 3-20mL 0.9% NaCl.
4. Instill with heparin lock flush appropriate for patient population. Please refer to Adult or Pediatric Venous Access Device Reference Guide for flushing recommendations.
5. Anchor port to patient and gently pull needle out. If de-accessed prior to heparin flush, the port must be re-accessed in order to properly heparinize.
6. Activate safety to needle.


For NBICU & ICN see unit specific procedure.
## ATTACHMENT 5A - ADULT VENOUS ACCESS DEVICE REFERENCE GUIDE

<table>
<thead>
<tr>
<th>Tip Location</th>
<th>Peripheral</th>
<th>Midline</th>
<th>PICC</th>
<th>Non-Tunneled: IJ, Subclavian, Femoral</th>
<th>Tunneled</th>
<th>Implanted Ports</th>
<th>Tunneled Dialysis Catheter (TDC) Temporary Dialysis Catheter (TC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order required for lower extremity insertion</td>
<td>Upper Extremity; Pre-axillary fold</td>
<td>Lower third of SVC or caval-atrial junction</td>
<td>Minimum 10 ml of 0.9% NaCl</td>
<td>Minimum 10 ml 0.9% NaCl</td>
<td>If not accessed: Minimum q month. 3-20 ml of 0.9% NaCl. Heparin flush protocol: Heparin soln 500 units/5ml when line not in use. For frequently used port: Consider IV line at TKO (order required)</td>
<td>IJ: Caval-atrial junction</td>
<td></td>
</tr>
<tr>
<td>Flushing Protocol (q shift minimum)</td>
<td>3-10 ml of 0.9 % NaCl</td>
<td>Minimum 10 ml of 0.9 % NaCl</td>
<td>Minimum 10 ml of 0.9% NaCl</td>
<td>Minimum 10 ml of 0.9% NaCl</td>
<td>Heparin per LIP order</td>
<td>Only performed by Dialysis nurse or Designated RN</td>
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</tr>
<tr>
<td>Patency Check (Prior to access, q shift minimum)</td>
<td>*For all CVL: sluggish flow/no blood return → initiate “Alteplase for Central Vascular Access Device” Procedure</td>
<td>*Vasoactive medications may override patency check</td>
<td>If no blood return, okay to use if no signs of phlebitis, infection or malfunction</td>
<td>All lumens</td>
<td>Aspirate prior to flush for heparinized line</td>
<td>Only performed by Dialysis nurse or Designated RN</td>
<td></td>
</tr>
<tr>
<td>Needleless Connector (NC)</td>
<td>Maintain extension set on catheter hubs at all times; Change with each PIV change</td>
<td>Change every 96 hours</td>
<td>Exception: Change every 24 hours ONLY for complete parenteral nutrition (CPN) and lipids</td>
<td>Change ONLY prior to blood cultures draws (NOT needed for routine blood work or after blood product administration)</td>
<td>Only performed by Dialysis RN or Designated RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration Set (Tubing)</td>
<td>Change all tubing, including extension sets and filters every 96 hours or with new vascular access device insertion (e.g., PIV, port, CVC, PICC, etc.)</td>
<td></td>
<td></td>
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<td>Only performed by Dialysis nurse or Designated RN</td>
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<tr>
<td>Dressing Change</td>
<td>Change dressing at least every 7 days (or every 48 hours for gauze); Change dressing if not clean, dry or intact; Label all dressings with date</td>
<td></td>
<td></td>
<td></td>
<td>Call dialysis RN</td>
<td></td>
<td></td>
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<tr>
<td>Blood Sampling</td>
<td>For blood cultures, peripheral preferred. If unable to obtain, needleless connector must be changed prior to draw</td>
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<td></td>
<td>Only performed by Dialysis nurse or Designated RN</td>
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<tr>
<td>Catheter Duration</td>
<td>Changed only when clinically indicated (refer to att. 13)</td>
<td>29 days</td>
<td>1 year</td>
<td>7-14 days, longer if functional and necessary</td>
<td>2-3 years</td>
<td>Up to 2000 access punctures Use accessing needle (non-corning) up to 7 days</td>
<td>TC: up to 2 weeks TDC: indefinite</td>
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<tr>
<td>Catheter Removal</td>
<td>Remove all unnecessary or nonfunctional venous lines ASAP; Apply pressure after removal</td>
<td>Qualified RN/LIP; LIP order required. Apply petroleum ointment and occlusive sterile dressing</td>
<td>LIP Only (surgical procedure)</td>
<td>TC: Qualified RN/LIP; order required TDC: LIP Only (surgical procedure)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing Considerations</td>
<td>Port protectors on all lines; No hemostats or clamps with sharp edges. Pre-attached clamps to remain locked with lumen not in use</td>
<td>Not appropriate for irritants, vesicants or TPN</td>
<td>Not appropriate for irritants, vesicants or TPN No tourniquet/BP cuffs on extremity</td>
<td>Appropriate for irritants, vesicants or TPN No tourniquet/BP cuffs on extremity w/</td>
<td>Appropriate for irritants, vesicants or TPN</td>
<td>Maintenance to be performed by dialysis/designated RN</td>
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Title: Venous Access Device (VAD) Maintenance  
Owner: Director, PICC/Moderate Sedation Teams  
Effective Date: 11/14/2017
### ATTACHMENT 5B- PEDIATRICS VENOUS ACCESS DEVICE REFERENCE GUIDE; Does NOT apply to NBICU & ICN (see unit specific guide)

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<tr>
<th>Peripheral</th>
<th>PICC</th>
<th>Non-Tunneled: IJ, Subclavian, Femoral</th>
<th>Tunneled Catheter: Broviac</th>
<th>Implanted Ports</th>
<th>Tunneled Dialysis Catheter (TDC) Temporary Dialysis Catheter (TC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tip Location</strong></td>
<td>Upper extremity preferred; lower extremity, or scalp in infants</td>
<td>Lower third of SVC or caval-atrial junction</td>
<td></td>
<td></td>
<td>IJ: Caval-atrial junction</td>
</tr>
<tr>
<td><strong>Flushing Protocol (q shift minimum)</strong></td>
<td>Each lumen 1-10 ml of 0.9% NaCl, Age appropriate volume</td>
<td>Each lumen 1-10 ml 0.9% NaCl, Age appropriate volume</td>
<td>Use Pediatric and neonatal Heparin Flush Protocol</td>
<td>Each lumen 1-10 ml 0.9% NaCl, Age specific volume</td>
<td>Use pediatric and neonatal Heparin Flush Protocol</td>
</tr>
<tr>
<td><strong>Patency Check (Prior to access, q shift minimum)</strong></td>
<td>*For all CVL: sluggish flow/no blood return → initiate “Alteplase for Central Vascular Access Device” Procedure; *Vasoactive medications may override patency check</td>
<td>All lumens if continuous medication infusing, aspirate from proximal port until blood return visualized</td>
<td>Aspirate prior to flush for heparinized line</td>
<td></td>
<td>Only performed by Dialysis nurse or Designated RN</td>
</tr>
<tr>
<td><strong>Needleless Connector</strong></td>
<td>Maintain extension set on catheter hubs at all times; Change with each PIV change</td>
<td>Change every 96 hours</td>
<td>Only performed by Dialysis nurse or Designated RN</td>
<td>Change prior to blood cultures draws (NOT needed for routine blood work or after blood product administration)</td>
<td></td>
</tr>
<tr>
<td><strong>Administration Set (Tubing)</strong></td>
<td>Change all tubing, including extension sets and filters every 96 hours or with new vascular access device insertion (e.g., PIV, port, CVC, PICC, etc.)</td>
<td></td>
<td></td>
<td></td>
<td>Only performed by Dialysis nurse or Designated RN</td>
</tr>
<tr>
<td><strong>Dressing Change</strong></td>
<td>Change dressings at least every 7 days (or every 48 hours for gauze); Change dressing if not clean, dry or intact; Label all dressings with date</td>
<td></td>
<td></td>
<td></td>
<td>Call dialysis RN</td>
</tr>
<tr>
<td><strong>Blood Sampling</strong></td>
<td>For blood cultures, peripheral preferred. If unable to obtain, needleless connector must be changed prior to draw</td>
<td>Aspirate 3-5 ml of blood and discard (unless pt is volume comprised); Withdraw specimen using syringe or vacutainer technique; Use distal or red lumen for blood sampling</td>
<td></td>
<td></td>
<td>Only performed by Dialysis nurse or Designated RN</td>
</tr>
<tr>
<td><strong>Catheter Duration</strong></td>
<td>Changed only when clinically indicated (refer to att. 11)</td>
<td>1 year</td>
<td>7-14 days, longer if functional and necessary</td>
<td>2-3 years</td>
<td>Up to 2000 access punctures Use accessing needle (non-coring) up to 7 days</td>
</tr>
<tr>
<td><strong>Catheter Removal</strong></td>
<td>Band-Aid or gauze dressing</td>
<td>Qualified RN/LIP; LIP order required. Apply petroleum ointment and occlusive sterile dressing</td>
<td>LIP Only (surgical procedure)</td>
<td>TC:: Qualified RN/LIP; order required TDC: LIP Only (surgical procedure)</td>
<td></td>
</tr>
<tr>
<td><strong>Nursing Considerations</strong></td>
<td>Port protectors on all lines; No hemostats or clamps with sharp edges. Pre-attached clamps to remain locked with lumen not in use</td>
<td>Not appropriate for irritants, vesicants or TPN</td>
<td>Appropriate for irritants, vesicants or TPN No tourniquet/8P cuffs on extremity w/ device</td>
<td>Appropriate for irritants, vesicants or TPN</td>
<td>Maintenance to be performed by dialysis/designated RN</td>
</tr>
</tbody>
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Title: Venous Access Device (VAD) Maintenance  
Owner: Director, PICC/Moderate Sedation Teams  
Effective Date: 11/14/2017
## Attachment 6

### PEDIATRIC AND NEONATAL HEPARIN FLUSH PROTOCOL

1. Organized by type of line and intermittent vs. lock procedures
2. Lock used if line/lumen used less frequently than every 24 hours
3. IV fluids/tko rate if line used more frequently than 6 times per 24 hours
4. For broviacs, ports, piccs- use flush volume patient weight guideline

**Pediatric Units**: for GPU/6east/CTH/PICU/Peds clinic/Peds ED

<table>
<thead>
<tr>
<th>type</th>
<th>Intermittent (Inpatient)</th>
<th>Lock (For discharge only)</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>picc &lt;2fr</td>
<td>1ml, heparin 10unit/ml, flush minimum q12hr</td>
<td>na</td>
<td>heparin drip as inpatient 3 ml/hr, 1 unit/ml, no blood draws</td>
</tr>
<tr>
<td>picc&gt;2fr</td>
<td>1-1.5ml, heparin 10unit/ml, flush minimum q24hr</td>
<td>1-1.5 ml, heparin 100unit/ml</td>
<td>flush volumes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Single lumen:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.4 fr = 1ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 fr or &gt; = 1.5 ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 fr = 1.5 ml per lumen</td>
</tr>
<tr>
<td>cvl- non tunneled- pediatric</td>
<td>2 ml, heparin 10unit/ml, per lumen, flush minimum q24hr</td>
<td>na</td>
<td>Not locked, not for home use</td>
</tr>
<tr>
<td>Broviac:</td>
<td>0.5-3.5 ml, heparin 10unit/ml, flush minimum q24</td>
<td>0.5-3.5 ml, heparin 100unit/ml</td>
<td>flush volumes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Single lumen:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;4kg- 0.5ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4-20kg = 1.5ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;20kg = 3.5 ml</td>
</tr>
<tr>
<td>Port:</td>
<td>2-3.5ml, heparin 10unit/ml, flush minimum q24</td>
<td>2-3.5 ml, heparin 100unit/ml</td>
<td>flush volumes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;10kg = 2 ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-20 kg = 3ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;20 kg = 3.5 ml</td>
</tr>
</tbody>
</table>

**Neonatal Units**: NBICU, ICN -1:1 heparin/NSS flush will be used, same volumes as above for > term infants.

For Broviacs: 10units/ml flush may be ordered per special order

CENTRAL VENOUS LINE (CVL) REMOVAL PROCEDURE

The Short Story: (goals)

- This procedure is for removing PICCS and non-tunneled Central Venous Lines (CVLs; examples include subclavian, internal jugular, and femoral CVLs) and Peripherally Inserted Central Catheters (PICCs).
- Remove all CVLs when no longer needed for vascular access.
- Examples of reasons to remove non-tunneled CVLs:
  - Patient condition
  - Completion of therapy
  - Presence of infectious or inflammatory process (e.g., sepsis)
  - Catheter malposition
  - Catheter dysfunction

The Long Story: (how to get it done)

1. Gather supplies:
   - Clean gloves (2 pair)
   - Petroleum-based ointment
   - Sterile gauze (extra gauze if high risk for bleeding)
   - Sterile dressing
   - Suture removal kit (for non-tunneled CVLs ONLY)
   - Disinfectant wipes
2. Confirm communication order by provider for CVL removal.
   * If PICC line, confirm length of inserted catheter and document catheter length after removal.
3. Perform hand hygiene.
4. Don clean gloves.
5. Clean bedside table with disinfectant wipe.
6. Identify patient.
7. Position patient where insertion site is at or below the level of the heart to reduce the risk of air embolus.

<table>
<thead>
<tr>
<th>Line Site</th>
<th>Position of Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Femoral CVL</td>
<td>Flat/supine</td>
</tr>
<tr>
<td>Internal Jugular or Subclavian CVL</td>
<td>Slight Trendelenberg</td>
</tr>
<tr>
<td>Upper Extremity PICC</td>
<td>Supine with arm extended to 45 – 90 degree angle from body</td>
</tr>
</tbody>
</table>
8. Prepare supplies on cleaned bedside table.
9. Remove dressing AND securement device (PICCs) or sutures (CVLs).
10. Remove clean gloves and perform hand hygiene; don new set of clean gloves.
11. Apply petroleum based ointment to folded gauze.
12. If removing an internal jugular or subclavian catheter, ask the patient to take a deep breath in and hold it. (to reduce risk of air embolism).
13. Withdraw the catheter, pulling parallel to the skin.
14. Apply pressure with folded gauze (with petroleum ointment) to insertion site until hemostasis is achieved:
   a. 30-second minimum for PICC Lines
   b. 5-minute minimum for internal jugular, subclavian and femoral CVLs
15. Apply sterile dressing over gauze to access site; document date and time on dressing.
16. Assess catheter tip to ensure it is intact.
17. Patient must remain on bed rest for 30 minutes after removal to prevent bleeding.
18. Keep dressing in place and clean for 24 hours. If patient is being discharged, instruct the patient to leave the dressing in place for 24 hours.
19. Document procedure in Powerchart in IVview under Vascular Access. Document reason for removal (i.e. end of treatment, malposition, infection, thrombus, patient pulled out, etc.).
   If PICC, document length of catheter.

Troubleshooting:

If resistance is encountered during removal, do not force. Reposition patient and attempt again. If you still meet resistance, then call licensed independent practitioner (LIP) for next steps.

For NBICU & ICN see unit specific procedure.
Attachment 8

Use of Disinfecting Caps for Needleless Connectors and Luer-Activated Ports

The Short Story: (goals)

The purpose of this procedure is to standardize the care of all intravenous lines with needleless connectors by using alcohol-impregnated caps (Curos® Disinfecting Caps for Needleless Connectors) to aid in the prevention of blood stream infections, including Central Line-Associated Bloodstream Infections (CLABSIs).

References:

- 3M Curos® Disinfecting Caps Safety Data Sheet (SDS): http://multimedia.3m.com/mws/mediawebserver?mwsId=SSSSSuUn_zu8l00xm8teNY_ B4v70k17zHvu9lxtD7SSSSSS-- (link last accessed 11/28/16)

AREAS OF RESPONSIBILITY
UNMH Patient Care Areas

PROCEDURE
1. Inpatient use of disinfecting caps
   a. During admission, the following vascular access devices (VAD) require disinfecting caps at the time of placement or upon admission:
      i. Peripheral intravenous catheters (PIVs)
      ii. Midline intravenous catheters (midlines)
      iii. Central venous catheters (CVCs)
      iv. Peripherally inserted central catheters (PICCs)
      v. Implanted ports
      vi. Broviacs or Hickman catheters
      vii. Umbilical arterial or venous catheters
   b. All intravenous (IV) tubing with luer-activated ports also require disinfecting caps.
2. Outpatient use of disinfecting caps
   a. Use at outpatient clinic visits will be at the discretion of the provider.
3. Procedure for disinfecting cap use
   a. Apply disinfecting caps by twisting and pushing the cap onto the end of the luer-activated port on intravenous (IV) tubing or needleless connector of the VAD.
b. When ready to access the tubing or VAD, simply remove the port protector and discard. The line should be accessed with aseptic technique (see CVL Access Procedure, Attachment 1).

c. Disinfecting caps should be discontinued when patient is sent home.

d. The disinfecting cap is single use only. It will be replaced with a cap if removed for any reason OR at least every 7 days. Replacement will also be in conjunction with tubing and needleless connector changes.

e. The cap must be in place for one (1) minute to be effective (i.e., enough contact time for killing microorganisms). If there has been 1 minute of contact time, then the needleless connector or luer-activated port does not need to be scrubbed prior to access.

f. Scrubbing luer-activated ports or needleless connectors is needed when:
   i. The disinfecting cap is missing,
   ii. The needleless connector or luer-activated port is visibly soiled, or
   iii. The disinfecting cap has been in place for less than 1 minute

g. When scrubbing is necessary, scrub with either alcohol pad or chlorhexidine gluconate (CHG) for 15 seconds and allowed to air dry without fanning.

h. A disinfecting cap must then be placed once access is completed.

4. Availability and Storage of disinfecting caps
   a. Disinfecting caps are available as a single item or on a strip that may be hung from an IV pole at the patient’s bedside.
   b. The expiration date for Curos® disinfecting caps is the top number stamped on each of the port protectors. (e.g. 0515 is May, 2015). Do not use disinfecting caps if expired.
   c. Strips should not be stored in pockets.

5. Cautions when using the Curos® Disinfecting Caps
   a. Curos® disinfecting caps are small, green caps that may be a choking hazard especially for young children. Use of the Curos® Port Protectors will be at the discretion of the care team for this purpose.
   b. Patients and family will be educated about the purpose of the Curos® caps and the choking hazard risk.
Attachment 9

Management of Male Luer Ends of IV Tubing

The Short Story: (goals)
The purpose of this procedure is to standardize the care and maintenance of the male luer ends of intravenous line (IV) tubing. This helps in reducing bloodstream infections, including Central Line-Associated Bloodstream Infections (CLABSIs).

References:
- Disinfecting Cap Strips for Male Luers (Curos® Tips™): [http://multimedia.3m.com/mws/media/1268909O/how-to-use-curos-tips-disinfecting-cap-strip-for-male-luers.pdf](http://multimedia.3m.com/mws/media/1268909O/how-to-use-curos-tips-disinfecting-cap-strip-for-male-luers.pdf) (last access 11/28/16)

AREAS OF RESPONSIBILITY
UNMH Patient Care Areas

PROCEDURE
1. With intermittent use of IV tubing, a new, sterile, compatible covering device should be used to cover the male luer end of the administration set after each use.
2. Approved covering devices include:
   a. Curos® disinfecting tips for male luer ends of IV tubing (preferred, if possible).
   b. Sterile blue end caps.
   c. Arterial (red) caps for arterial lines only.
3. If one of the covering devices is not possible, then you must use new tubing with every infusion.
4. IV tubing should not be looped upon itself (i.e., attaching the exposed male luer end of the administration set to a port on the same set).
5. Procedure for Curos® disinfecting tips for male luer ends
   a. After each intermittent use, a Curos® disinfecting tip should be removed from the foil strip and twisted onto the male luer end of the IV tubing.
   b. The tip should be left on the male luer end for at least one (1) minute for disinfection to occur.
   c. Tips may be left in place for up to 7 days.
   d. Tips are one-time use only. Discard after each use.
   e. If male luer end is heavily soiled, clean with chlorhexidine gluconate or alcohol prior to applying disinfecting tip.
   f. These are small, green “tips” that may be a choking hazard especially for young children. Use of the Curos® Tips™ will be at the discretion of the care team for this purpose.
Attachment 10

Documentation of Temporary Central Line Indication

The Short Story: (goals)
The purpose of this procedure is to establish standardized documentation for the reason that temporary central lines remain in place each shift. By assessing indication, this will help improve upon the process of removing temporary central lines when no longer indicated. This helps to reduce bloodstream infections, in particular Central Line-Associated Bloodstream Infections (CLABSIs).

References:

AREAS OF RESPONSIBILITY
UNMH Inpatient Care Areas excluding NBICU and ICNs.

PROCEDURE
1. During the Vascular Assessment performed every shift, determine if the patient has a temporary central line. Temporary central lines include:
   a. Central Venous Catheters (CVC) [referred to as “Central IV-2 or 3 Lumen”]
   b. Peripherally Inserted Central Catheter (PICC) [referred to as “PICC-1, -2 or -3 Lumen”]
   c. Cordis
   d. Cordis with Line
   e. PA catheter
   f. Sheath
   g. Dialysis catheter / Vas cath
   h. Pheresis catheter
   i. Umbilical artery and umbilical venous catheter
2. Document indication(s) in the Interactive View (IView) Assessment under Vascular Access and then choose from the list of indications. Current indications (underlined words are what is displayed in IView):
   a. Temperature Management: central line that helps to cool patient (e.g., Cool-Gard™, typically used in the intensive care unit setting)
   b. Hemodialysis/CRRT: for dialysis or continuous renal replacement therapy.
   c. Difficult Access: 2 unsuccessful attempts by 2 RNs to place IV access OR Unsuccessful attempt for IV access by Rapid Response OR recommendation for temporary central line by Rapid Response
   d. Frequent Lab Draws: for patients requiring blood draws more frequent than every 12 hours and these are anticipated for a duration greater than 24 hours
e. **Hemodynamic Monitoring**: presence of a pulmonary arterial (PA) catheter or monitoring of central venous pressure (CVP) monitoring

f. **Medications**: medications which require central administration which includes irritants, vesicants, complete parenteral nutrition, and certain types of chemotherapy. For a complete list, please see Pharmacy website.

g. **Plasmapheresis**: continuation of catheter per guidance of the pathology department

h. **Resuscitation**: patient with central line placed during a code situation or when patient in extremis

i. **RN/Provider Discussion**: if reason for line is unclear, discussion need to occur between nurse and provider (licensed independent practitioner [LIP])

j. **Transvenous Pacing**: for cardiac pacing.

k. **Other**: if the temporary line is in place for another indication not listed above.

3. If temporary central line in place without a clear indication:
   a. Select “RN/Provider Discussion”
   b. Contact provider to discuss reason for temporary central line.
   c. Document name of provider with whom the discussion occurred.
   d. Document the reason from the list of current indications or choose other.

4. Temporary central lines should only be removed if order written by LIP.

5. If temporary central line removed, chart “discontinued” and then inactivate the central line in IView.
Attachment 11

Peripheral Vascular Access Site Assessment Procedure

1. Full vascular access site assessment should be completed and documented each shift.
2. Subsequent vascular access site assessments should be performed at least every 2 hours in intensive care or inpatient pediatric units or every 4 hours on adult progressive care units or more frequent based on intravenous infusions.
   a. For documentation:
      i. If no changes, then select “Vascular Access Checked” under “Patient Rounding” in IView.
      ii. If vascular access site has changes, then a full assessment should be documented again.
3. When performing a vascular access site assessment, assess the site for the following complications:
   a. Suspected infiltration/extravasation: suggested by edema, hardness, and/or cool to touch
   b. Suspected phlebitis: suggested by redness, streaking, and/or warmth
   c. Crepitus
   d. Ecchymotic/bruising
   e. Leaking
   f. Dislodgement
4. Document this information in IView:
   a. Check all characteristics that apply in “Site Condition.”
   b. If suspected infiltration selected, complete the infiltration score.
   c. If suspected phlebitis selected, complete the phlebitis score.
5. If any of the above are checked, consider all the following actions:
   a. Remove dressing to better assess site and catheter.
   b. If leaking:
      i. Check connection site between catheter and extension set/ “T-connector.”
      ii. Check that all clamps are unclamped.
6. If peripheral intravenous (PIV) catheter is still not functioning or concern about PIV infiltration or site infection, then remove catheter.