Policy Name: IV Therapy Adult

Effective Date: 02/04/16

Policy Primary:

Status: Published

Final Approval:
Approved by: DUHS Council for Intravenous Access Date:
Approved by: DUH Clinical Practice Council Date:

Glossary:
Term:
Definition:

Definitions:
It is estimated that approximately 90% of patients in the acute care setting and 75% of home care patients receive continuous or intermittent IV therapy. It is imperative that front-line nurses and physicians have current guidelines as established by the INS (Infusion Nurses Society), AVA Association for Vascular Access, the CDC (Centers for Disease Control), OSHA (Occupational Safety and Health Administration), and the North Carolina Nurse Practice Act. This document provides clear direction based upon these standards and evidence-based nursing practice.

Level: Interdependent - asterisked [*] items require an order from a health care practitioner licensed to prescribe medical therapy.

Personnel:
See Competencies below.

Competencies/Skills:
RNs and LPNs may, after demonstrating competency infuse through, care for and maintain vascular access devices including peripheral IVs, midlines, PICCs, non-tunneled and tunneled central venous access devices and implanted ports. PICC and midline dressings are performed by the VAST at DRH.

Radiology Technicians in CT and MRI may, after demonstrating competency insert, infuse contrast and care for peripheral IVs.

In approved areas - RNs may, after demonstrating competency insert external jugular peripheral IVs, PICCs, midlines and non-tunneled temporary central venous access devices.

Approved areas include:

**PICC / Midline**

DUH Vascular Access Team (VAT), NICU PICC Team

DRH Vascular Access Services Team (VAST)
External Jugular IVs

DUH       Life Flight, ED, VAT

DRH       VAST, ED

Internal Jugular Non-tunneled Devices

DUH       VAT

Required Resources:

Policy Statement:

Purpose: To outline the delivery of care measures related to daily care, administration of medications and fluids, maintenance, monitoring, discontinuation of intravenous (IV) therapies, and drawing blood samples from lines in adult patients.

Due to the breadth of this subject, content has been divided into sections and subsections

Section 2: Access Types (including a note about Terminology)

A. Peripheral Short Catheters (peripheral IVs)
   1. Definition
   2. Personnel
   3. Equipment
   4. Insertion
   5. Care and dressing
      a. Monitoring and assessment
      b. Site duration
      c. Dressing change
      d. Extension tubing change
      e. Needleless cap change
   6. Flushing
   7. Documentation
   8. Reportable conditions
   9. Removal

B. Midline Catheters
   1. Definition
2. Personnel
3. Equipment
4. Insertion
5. Care and dressing
   a. Monitoring and assessment
   b. Site duration
   c. Dressing change
d. Extension tubing change
e. Needleless cap change
6. Flushing
7. Documentation
8. Reportable conditions
9. Removal

C. Peripherally Inserted Central Catheter (PICC)
   1. Definition
   2. Personnel
   3. Equipment
   4. Insertion
   5. Care and dressing
      a. Monitoring and assessment
      b. Site duration
c. Dressing change
d. Extension tubing change
e. Needleless cap change
6. Flushing
7. Documentation
8. Reportable conditions
9. Removal

D. Non-Tunneled Central Lines (e.g., single and multilumen catheters)
   1. Definition
   2. Personnel
   3. Equipment
   4. Insertion
   5. Care and dressing
      a. Monitoring and assessment
      b. Site duration
c. Dressing change
d. Extension tubing change
e. Needleless cap change
6. Flushing
7. Documentation
8. Reportable conditions

9. Removal

E. Tunneled Central Lines
   1. Definition
   2. Personnel
   3. Equipment
   4. Insertion
   5. Care and dressing
      a. Monitoring and assessment
      b. Site duration
      c. Dressing change
      d. Extension tubing change
      e. Needleless cap change
   6. Flushing
   7. Documentation
   8. Reportable conditions
   9. Removal

F. Implanted Access Devices (Ports)
   1. Definition
   2. Personnel
   3. Equipment
   4. Insertion
   5. Care and dressing
      a. Accessing
      b. De-accessing
      c. Monitoring and assessment
      d. Site duration
      e. Dressing change
      f. Re-accessing
   6. Flushing
   7. Documentation
   8. Reportable conditions
   9. Removal

Section 3: Drawing Blood from Lines

A. General Information

B. From an existing Peripheral Short catheter (PIV)
Section 2: Access Types

A Note about Terminology: Due to confusion about catheter names such as PIC, midline, midclavicular, etc, the following terminology has been recommended by the INS. To ensure correct information and care of these lines is maintained by DUHS nurses, the DUHS Nurse Practice Council has also adopted the following terminology:

<table>
<thead>
<tr>
<th>Previous Term</th>
<th>Recommended Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral IV catheter, PIV, external jugular</td>
<td>Peripheral Short IV Catheter or “Peripheral”</td>
</tr>
<tr>
<td>Catheter</td>
<td></td>
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<tr>
<td>----------</td>
<td></td>
</tr>
<tr>
<td><strong>Midline and Midclavicular catheters, PICs</strong></td>
<td>Short” or “PIV”</td>
</tr>
<tr>
<td><strong>Peripherally Inserted Central Catheter, PICC</strong></td>
<td>No change</td>
</tr>
<tr>
<td><strong>Non-Tunneled Central Lines (double, triple, quad-lumen)</strong></td>
<td>No change</td>
</tr>
<tr>
<td><strong>Tunneled Central Lines</strong></td>
<td>No change</td>
</tr>
<tr>
<td><strong>Implanted Ports</strong></td>
<td>No change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Catheter Type</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporary</strong></td>
<td>Peripheral IVs are temporary catheters that may remain until removal is clinically indicated. At DRAH, peripheral IV’s are rotated every 96 hours routinely. External jugular catheters may dwell 24-48 hours in the absence of complications.</td>
</tr>
<tr>
<td>Peripheral catheters</td>
<td>Temporary catheter may remain up to 4 weeks in the absence of complications</td>
</tr>
<tr>
<td>Peripheral IV catheter, External jugular catheter</td>
<td>Long term catheter may remain up to one year in the absence of complications</td>
</tr>
<tr>
<td><strong>Temporary Central Venous Access Devices (CVAD):</strong></td>
<td>Temporary catheters may remain several days to several weeks. Inserted into the internal jugular, subclavian, axillary or femoral veins</td>
</tr>
<tr>
<td>double, triple, quad-lumen, (MAC)- multi access catheters, Vas-cath and Trialysis (non cuffed) for dialysis</td>
<td>May be tunneled or non tunneled</td>
</tr>
<tr>
<td>Hohn catheters and Power lines are short term, non cuffed, tunneled</td>
<td></td>
</tr>
<tr>
<td><strong>Permanent CVADs</strong></td>
<td>Long term central access device that may dwell indefinitely in the absence of complications.</td>
</tr>
<tr>
<td>- Permcat - permanent tunneled, cuffed dialysis catheter</td>
<td></td>
</tr>
<tr>
<td>- Hickman and Groshong catheters are tunneled and cuffed</td>
<td></td>
</tr>
<tr>
<td>- Implanted ports</td>
<td></td>
</tr>
<tr>
<td>- Large Bore Catheters for pheresis tunneled and cuffed</td>
<td></td>
</tr>
</tbody>
</table>

**A Note about Asepsis:**
• Clean gloves should be worn for any manipulation of vascular access devices including flushing, medication administration, tubing and bag changes.
• Needleless connectors require the use of aseptic technique. Scrub needleless connectors with alcohol (DRH may use CHG) for 15 seconds prior to every access.
• Needleless neutral connectors are neutral displacement devices that have minimal internal dead space. Neutral displacement devices do not need to be changed after blood draws. Any other type of needleless connector needs to be changed after blood draws to prevent accumulation of fibrin in the device dead space.
• Exposed ends of all IV tubing needs to remain aseptic by covering with a single use sterile end cap. The "spin cap" at the end of the tubing will not maintain sterility of the exposed end of the IV tubing.
• Plugging exposed ends of IV tubing into its nearest needleless access port (referred to as "looping") has been associated with contaminated IV tubing ends. "Looping" is not is not acceptable practice.
• Catheters that will not return blood or return blood sluggishly as a result of a fibrin sheath formation should be treated to restore patency. Fibrin sheath formation is a growth medium for bacterial growth and can lead to catheter related blood stream infection. See the DUHS Declotting Central Line/Occlusion Management Protocol for detailed information.
• Blood return should be checked on all catheters prior to intermittent medication and/or flush administration to ensure patency. Checking for blood return can be omitted for catheters with continuous infusions where interruption could affect hemodynamic stability or blood levels of the drug.
• Consider using sterile gloves when changing needleless connectors in patients with ANC < 500. Each care nurse is accountable for the care and maintenance of peripheral IVs including assessment, troubleshooting, continued need for IV or CVAD.
• Needleless connectors are changed with primary tubing change every 96 hours.
• Any new peripheral or central line placed requires new tubing.
• Masks required for needleless connector changes.

A note about Chlorhexidine (CHG) use:

• CHG is the preferred agent for skin disinfection prior to insertion and during dressing changes for vascular access devices in adults.
• If the patient has or develops CHG sensitivity, alcohol and povidone-iodine may be used instead. The povidone-iodine must be applied in a circular pattern working from the intended insertion site outward and allowed to dry for 2 minutes to be effective. If the patient has povidone-iodine sensitivity, alcohol can be applied in a circular pattern using three separate swabs and allowed to dry.
• Scrubbing lightly using a back and forth motion is recommended by the CHG manufacturer.
  a. Peripheral Short or "PIV"
     Scrub 15 seconds then allow to dry 30 seconds
  b. Midline, PICC or other central catheter

     Scrub 30 seconds then allow to dry 1 minute
• CHG tegaderm is routinely applied to midline, PICC and other central catheter insertion sites. If the insertion site continues to ooze after the initial 24 hour period, a gauze dressing may be reapplied and changed at 48 hour intervals.
• If drainage extends beyond the CHG gel pad or if the gel pad becomes soft, the dressing needs to be changed.
• If the patient has or develops CHG sensitivity, plain transparent dressing can be used in place of the CHG transparent dressing.
• If the patient has sensitivity to transparent dressings, gauze and tape dressings can be used. Hypoallergenic dressings can also be used as an alternative. They need to be treated as gauze dressings with respect to dressing change frequency.
• Removal of CHG transparent dressing can be facilitated with a couple of drops of sterile saline directly under the gel pad edges.

A note about Documentation

*Insertion of any vascular access device requires a physician order.

Vascular access device documentation should include:

• Type, length and size of device
• Date and time of insertion, number of attempts used
• Type of stabilization device
• Patient toleration of insertion
• Identification of insertion site
• Radiographic confirmation of tip location if applicable
• Size, condition and appearance of any vascular access device complication (i.e., phlebitis, infiltration, extravasation, difficulty when flushing, lack of blood return)
• Specific site preparation, infection control and safety precautions taken as appropriate for the procedure.
• Device discontinuation, including catheter length and condition, site appearance, dressing applied, reason for removal, and patient response.

A note about Tubing Change:

Infusion tubing is changed every 96 hours for continuous primary intravenous infusions of medications other than TPN, Propofol and blood.

• TPN - every 24 hours
• Blood - every 4 hours or every 4 units (if 4 units of blood have infused before the 4 hour limit - change tubing)
• Propofol - every 12 hours

Primary intermittent tubing is changed every 24 hours.

Secondary intermittent tubing is changed every 24 hours.
(Intermittent means that the tubing is intermittently disconnected and then reconnected from and to the vascular access device for infusions.)

Back priming of the secondary set as a mechanism to flush the tubing for additional medications can be done to reduce the need for tubing change as long as the medications are compatible.

If there is no KVO fluid ordered, intermittent infusions need to be disconnected when the infusion is complete and the catheter flushed to prevent occlusion of the device.

Content:

A. **Peripheral Short Catheters**

   NOTE: Once the nurse has an original PIV insertion order form from the provider, the nurse may care for and maintain the IV device according to this policy. The nurse may restart the device as needed for complications after determining that the device is still necessary for clinical care and in keeping with our daily line necessity criteria.

1. **Definition:** Peripheral Short Catheters include any 14-24 gauge catheters of 3 inches or less in length placed in the hands or arms of adult patients. *Specific order is required to start a Peripheral Short Catheter in lower extremities of adult patients. Peripheral Short Catheters in lower extremities of diabetic and/or sickle cell adult patients are contraindicated. Do not use arm on side of mastectomy where lymph node dissection has occurred or in the presence of an active AV fistula/ graft for dialysis. Place catheters proximal to non-functional AV fistulas/ grafts.

2. **External Jugular Catheters** (EJ PIVs) are considered peripheral IV catheters. The catheters are less than 3 inches in length and infusions must meet the criteria for peripheral infusates. Because the catheters are placed above the level of the heart, care, maintenance and discontinuation should follow the non-tunneled central line protocols to prevent air embolus. These catheters are not acceptable for power injection of contrast media. NonTunneledCentralLineRemoval.

3. **Personnel:** RNs and LPNs with documented competency may start, access, dress, and remove Peripheral Short Catheters. NAIIs may, with documented competency, remove Peripheral Short Catheters and change Peripheral Short Catheter dressings. For delegation to UAP (CMAs, patient technicians) refer to the "Decision Tree for Delegating to UAP" on the North Carolina Board of Nursing website or provider delegation.

   [http://www.ncbon.org/content.aspx?id=682](http://www.ncbon.org/content.aspx?id=682)

4. **Equipment**
<table>
<thead>
<tr>
<th>Insertion</th>
<th>Dressing</th>
<th>Access</th>
<th>Flushing</th>
<th>Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourniquet</td>
<td>Alcohol squares to remove</td>
<td>Alcohol squares</td>
<td>Alcohol square</td>
<td>Gloves</td>
</tr>
<tr>
<td>Tape Transparent</td>
<td>Tape</td>
<td>Needleless vacutainer or syringe</td>
<td>Gloves</td>
<td>PPE as needed</td>
</tr>
<tr>
<td>dressing</td>
<td>Transparent dressing</td>
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<td></td>
<td></td>
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<tr>
<td>Transparent dressing</td>
<td>Transparent dressing</td>
<td>Blood tubes</td>
<td>PPE as needed</td>
<td>2x2 gauze</td>
</tr>
<tr>
<td>Gloves</td>
<td>Gloves</td>
<td>Vacutainer syringe transfer</td>
<td>Saline flush syringe</td>
<td>tape</td>
</tr>
<tr>
<td>PPE as needed</td>
<td>PPE as needed</td>
<td>Gloves</td>
<td></td>
<td>Or may use</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>adhesive bandage</td>
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<tr>
<td>Chlorhexidine swabs</td>
<td>Chlorhexidine swabs</td>
<td>PPE as needed</td>
<td></td>
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<tr>
<td>Povidone-iodine</td>
<td>Saline flush syringe</td>
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<tr>
<td>swab if chlorhexidine</td>
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<tr>
<td>unavailable or patient</td>
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<tr>
<td>allergy</td>
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<tr>
<td>IV catheter</td>
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</tr>
<tr>
<td>Saline flush syringe</td>
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<td></td>
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<tr>
<td>Short extension set</td>
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<td></td>
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<tr>
<td>with needleless connector attached</td>
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</tbody>
</table>

5. **Insertion**

   a. *Obtain or verify physician orders for Peripheral IV Insertion or the infusion order.*

Assess patient infusion needs to determine appropriate catheter size, location, allergies or contraindications. **Remember to use the smallest gauge catheter that will accommodate the needed therapy to allow hemodilution and promote long term vessel health.** *Consider use of topical or subcutaneous lidocaine for analgesia.*

6. Once a peripheral IV or PICC is removed, 24 hours should elapse before placing another IV distal to that insertion site in the same extremity. Even if a different vein is used, collateral circulation can exist that could put the patient at risk for infiltration or extravasation of the proximal site.

   a. Gather supplies:
1) Gloves  
2) Tourniquet  
3) IV catheter  
4) Chlorhexidine (CHG) swab stick (see Section 2 note for CHG sensitivity)  
5) Sterile tape  
6) 2x2 sterile gauze  
7) Sterile transparent dressing  
8) Saline flush syringe  
9) Short extension tubing set with needleless connector attached  
10) PPE as needed  
11) *1% lidocaine without epinephrine (optional)  
12) 1ml syringe with 25 g needle for lidocaine administration (optional)  
13) Topical lidocaine cream (optional).

b. Perform hand hygiene.  
c. Don clean gloves and PPE as needed.  
d. Flush extension set with saline.  
f. Apply tourniquet for vein selection.  
g. Release the tourniquet for skin prep procedure.  
h. Scrub insertion site with CHG swab stick using a back and forth motion for 15 seconds and allow to air dry for 30 seconds.** for CHG allergies- use alcohol or alcohol followed by povidone iodine and allow to air dry completely.  
i. *Inject intradermal lidocaine as ordered adjacent to the selected vein. Refer to DUH Lidocaine Administration Procedure for Peripheral Intravenous (IV) Insertion.

7. Reapply the tourniquet.  
a. Insert catheter.  
   **ONC method** (over the needle cannula)  
   1) Insert the catheter assembly into the vein using a low insertion angle.  
   2) After entry into the vein, blood should be observed in the clear needle hub.  
   3) Advance the catheter over the needle and into the vein.  
   4) Release the tourniquet.  
   5) Apply digital pressure proximal to the insertion site to obstruct the flow of blood.  
   6) Attach the short extension set.  
   7) Aspirate for blood return.  
   8) Flush the catheter with 5ml of saline and monitor for signs of infiltration.  
   9) Apply transparent dressing and secure extension tubing to the skin with tape.  
  10) Stabilize the site with an arm board or soft stabilization device if the catheter is placed within three fingerbreadths of an area of flexion to prevent damage to the vessel endothelium and infiltration.

**Butterfly needle method (appropriate for infusions up to 4 hours in duration)**  
1) Insert the needle into the vein.  
2) After entry into the vein, blood should be observed in the butterfly extension tubing.  
3) Flush the catheter with 5ml of saline and monitor for signs of infiltration.
4) Apply transparent dressing and secure extension tubing to the skin with tape.

5) Stabilize the site with an arm board if appropriate.

7. Care and Dressing

a. Nurse monitoring and assessment responsibilities:

1) Assessment frequency:
   a) Inpatient: at least every 8 hours and prn
   b) Home Health: every visit and whenever accessed for medication or fluid administration.
   c) Outpatient/DUAPs: intermittently during infusions when accessed for medication delivery

2) Assessment:
   a) Perform hand hygiene.
   b) Don gloves and other PPE as needed.
   c) Use aseptic technique and observe Standard Precautions throughout.
   d) If possible, ask patient about any discomfort to area.
   e) Inspect site/dressing for infusion related complications (including but not limited to: discoloration, disruption of sensation, edema, localized swelling or induration, exudate, warmth, red streak with palpable cord, skin sensitivities, or increased bleeding/oozing.
   f) Site duration: Site rotation based on clinical indication. Clinical indications for rotation include: redness, leaking, warmth, inability to flush, infiltration, pain, drainage from the insertion site, suspected contamination.

   g) Change PIV’s from outside hospitals or emergently placed lines within 24 hours.

   h) Remove unnecessary PIV’s from adult patients with functional PICC’s, Midlines, or Central Lines.

   i) No adult patient should have extra/unused PIV’s unless ordered by the patient’s physician.

j) Dressing change:

   - Inpatient:
     o Transparent – every 7 days and whenever loose, damp or soiled.
     o Gauze – every 48 hours unless visibly soiled.
   - Home Health: with site rotation. Patients may reinforce dressing if it becomes loose damp or soiled.

   k) Extension tubing change: with site rotation, or when contaminated (both inpatient and outpatient (PDC)/Home Health; use optional in DUAPs).

   l) Needleless connector change: every 96 hours to coincide with IV tubing change or when becomes contaminated (both inpatient and outpatient/Home Health; use optional in DUAPs).
m) IV tubing and needleless connector needs to be changed any time a new intravenous catheter is inserted - peripheral or central. If the tubing is less than 24 hours old at the time of a new peripheral IV insertion you may replace the tubing within 24 hours.

8. **Flushing**

For patients on an inpatient area, **flushing with saline is preferred. Flushing with heparin is optional based upon clinical condition and does not require a provider order.** Patients with abnormally high platelet counts or who have had a clotted catheter lumen may be candidates for heparin use. For patients with allergies or that cannot receive heparin, obtain physician orders for flushing.

**Maximum Heparin dose per 24 hours: 2000 units per catheter lumen.**

**Note:** Catheters with continuous infusions should have blood return checked every 12 hours using care not to bolus medications. This may be omitted in patients who are hemodynamically unstable or who have critical drips.

<table>
<thead>
<tr>
<th></th>
<th>Flush (no continuous IV meds or fluids infusing)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td>Saline, 5 ml minimum</td>
<td>• Every 8 hours and prn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prior to and after IV each med administration</td>
</tr>
<tr>
<td><strong>Home Health</strong></td>
<td>Saline, 5 ml minimum</td>
<td>• Every 12 hours and prn</td>
</tr>
<tr>
<td></td>
<td>Saline, 5 ml - IV med - saline</td>
<td>• With IV med administration</td>
</tr>
<tr>
<td><strong>Outpatient (PDC, Hospital-based clinics)</strong></td>
<td>Saline, 5 ml - IV med - saline, Heparin 100 units/ml, 3 ml (SASH)</td>
<td>• With IV med administration</td>
</tr>
<tr>
<td><strong>Outpatient (DUAPs)</strong></td>
<td>Flush with ordered fluid upon insertion (no extension tubing used)</td>
<td>• Insertion and prn</td>
</tr>
</tbody>
</table>

9. **Documentation**

a. Insertion: Type of line (i.e., peripheral short), size, site, and patient tolerance.
b. Assessment and monitoring: Type of line, size, site condition, condition of dressing, and patency.
c. Removal: Type of line, reason for removal, condition of site, patient tolerance, or any concern related to line integrity.

10. Reportable Conditions

a. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, red streak with palpable cord, skin sensitivities.

d. *Potential or real need for lower extremity access.

e. Inability to obtain ordered peripheral IV access. Lower extremity should not be routinely placed in patients with diabetes or peripheral vascular disease.

f. Non-intact catheter upon removal.

g. Exudate on catheter or at site upon removal of catheter.

11. Removal

a. Explain procedure to patient.
b. Perform hand hygiene.
c. Don gloves and PPE as needed.
d. Remove dressing.
e. Apply pressure with gauze proximal to the catheter tip.
f. Withdraw catheter and apply pressure at insertion site until bleeding stops. Inspect the catheter for integrity.

g. Apply clean gauze with tape or transparent dressing, or use an adhesive bandage.

B. Midline Catheters

1. Definition: Midline catheters are either soft silicone (DUH) or polyurethane catheters (DRH) that are 8-20 cm in length and have their terminal tip in the axillary vein distal to the level of the axilla. Midline catheters are used in patients who require temporary IV therapy for longer than 5 days or who have limited venous access options. These catheters are placed using sterile technique by the vascular access team. Patients can be discharged to home or other facilities with these catheters. Midline catheters are considered peripheral IV catheters placed for extended use and may dwell up to 4 weeks if functioning properly and no complications are noted. The terminal tip of midline dwells in a smaller vessel than CVADs and there is less blood flow around the catheter and less hemodilution. Thus, there is a higher risk of phlebitis and thrombophlebitis. Caution should be used to assess for complications and remove the catheters for any noted swelling or leaking form the insertion site.

2. Personnel: RNs may insert and remove midline catheters. Insertion and removal of midline catheters are listed as Advisory Statements by the North Carolina Board of Nursing and RNs must complete training and demonstrate competency. RNs and LPNs may flush, change dressings, and remove midline catheters after demonstrating competency. For delegation to UAP (CMAs, patient technicians) refer to the "Decision Tree for Delegating to UAP" on the North Carolina Board of Nursing website
NOTE: At DRH, the VAST insert, remove and change midline dressings.

3. Equipment:

Insertion:
- Insertion tray with maximum sterile barrier drapes
- Catheter and introducer
- Sterile gloves (powder-free) and PPE as needed
- Face masks for everyone including patient in room as appropriate (i.e., not intubated patients
- Sterile Gown, head covering
- Heparin flush (optional)
- Sterile needleless neutral connector for each lumen
- Sterile extension tubing(s), one for each lumen as needed
- Ultrasound machine
- Sterile ultrasound probe cover with sterile gel
- Single use surgical marker
- 1% Lidocaine without epinephrine, or EMLA®/LMX 4 cream (unless patient allergic

Dressing change:
- Clean gloves
- PICC dressing change kit SAP# 326262
- Hand sanitizer

Flushing or med administration:
- Alcohol wipes
- Clean gloves

Prefilled saline flush syringe(s), 10 ml or larger (one for each lumen)

Removal:
- Sterile gloves
- Alcohol wipe or CHG swab
- Tape measure
- Sterile 2x2 gauze
- Small transparent dressing
- Vaseline gauze or triple antibiotic ointment

Sterile saline for CHG gel removal (optional)

1. Insertion:
a. Verify provider order for placement of midline and assess appropriateness of ordered medications for midline use. Midlines are appropriate for infusion of medications with pH between 5 and 9.
b. Inform patient of procedure and provide patient and family teaching.
c. Obtain written assent.
d. Evaluate patient for relative contraindications to placement (to include but not limited to): upper extremity edema mobility, non intact upper extremity skin, vascular implants (e.g., pacemakers, AV fistulas) prolonged bleeding time, history of unresolved deep vein thrombosis (DVT) or creatinine > 2.0 (Refer to DUH Vascular Access Team – [Link to PICC Insertion in Patients with Chronic Kidney Disease]).
e. Collaborate with primary physician team for any relative contraindication to placement before placing the catheter.
f. Perform hand hygiene. Assemble equipment.
g. Position patient supine in a reclining position, with arm extended at a 90º angle away from body.
h. Assess vasculature using ultrasound from proposed insertion site to axilla and internal jugular vein.
   1) Assessing vasculature using ultrasound.
      a) Explain procedure and provide rationale for the use of the ultrasound machine to the patient and/or family.
      b) Sanitize the probe with a germicidal wipe.
      c) Perform hand hygiene. Don clean gloves.
      d) Apply liberal amount of ultrasound gel to patient’s arm.
      e) Apply probe to the skin: visualize and note the location of the veins, arteries and nerves. Assess veins for normal vessel size, path, round shape and compressibility. Catheter should optimally occupy no more than 30% of the vessel and minimally no more than 50% of the vessel. Smaller vessels should be avoided to prevent thrombosis.
      f) Measure the selected vein diameter and mark proposed insertion site with a single use surgical marker.
      g) Remove ultrasound gel from patient’s arm.
   i. Measure baseline arm circumference at the proposed insertion site.
   j. Measure from proposed insertion site to desired tip location distal to the axilla.
   k. If using topical EMLA or LMX 4 cream for analgesia, apply cream to proposed insertion site, cover with TSM dressing and allow 30-60 minutes before continuing with procedure.
   l. Catheter Insertion Using the Modified Seldinger Technique.
      1) Don head covering and mask.
      2) Perform 3 minute scrub with approved antimicrobial agent. Avagard™ solution may be used as an alternative to the 3 minute scrub after the first 3 minute scrub of the shift for subsequent insertions.
      3) Establish sterile field: open insertion tray, drop additional sterile items from their packaging on to the sterile field.
      4) Perform hand hygiene.
      5) Don sterile gown and gloves.
      6) Prime the extension set and catheter with saline.
7) Per manufacturer recommendations: If the catheter has a stylet, withdraw the stylet just past the desired length, bending the stylet over the catheter hub, and trim the catheter to the premeasured length. **DO NOT CUT THE STYLET.**

8) Apply sterile full body drape.

9) Cleanse skin with CHG x 30 seconds and allow to dry 1 minute. (see Section 2 for CHG sensitivities)

10) Apply tourniquet and change sterile gloves.

11) Apply fenestrated drape over marked insertion site.

12) Apply sterile gel to ultrasound probe and cover with sterile probe cover and secure to sterile field with tape.

13) Apply sterile ultrasound gel to skin over insertion site.

14) Visualize the marked vessel with the ultrasound and note surrounding structures (artery and nerve bundles).

15) *Inject 1% Lidocaine subcutaneously at the insertion site as ordered. May use 3 ml and repeat x 1 if needed to manage insertion pain.

16) While visualizing the vessel, insert the micro-introducer needle through the skin using a 45 degree angle. Observe for blood return in micro-introducer needle hub and visualize the needle tip in the center of the vein before proceeding.

17) Put probe down on sterile field and reduce the angle of the micro-introducer.

18) Stabilize the micro-introducer. Insert the floppy tipped guide wire into the micro-introducer threading at least 10 cm, but not more than 20 cm, into the vein. **The guide wire should NEVER be inserted into a position beyond the level of the axilla.**

19) Carefully remove the micro-introducer by removing it from the vein and skin skin and pulling it back over the guide wire. Do not allow the guide wire to move outward through the access needle due to risk of severing the guide wire. Secure the guide wire with non-dominant hand to prevent migration in or out of the vein.

20) Using the supplied scalpel, hold the blade with the blunt side against the wire. Make a small nick at the insertion site on either side of the guide wire to facilitate insertion of the peel-away dilator/introducer.

21) Advance the peel-away dilator/introducer over the guide wire through the skin completely into the vein using a twisted motion.

22) Release the tourniquet.

23) Turn the dilator counter clockwise in the peel-away dilator/introducer and slowly remove the dilator, leaving the peel-away introducer sheath in the vein.

24) Slowly advance the catheter through the introducer sheath.

25) Continue to advance the catheter slowly to measured length.

26) Aspirate for blood from catheter and flush.

27) Peel away and remove introducer sheath after the catheter has reached its’ terminal tip location.

28) Connect the primed extension set(s) with neutral pressure needleless neutral connector to each lumen as needed.

29) Clean excess blood from site using CHG or dry gauze.

30) Apply skin prep to the area the stabilization device will cover and apply the stabilization device to stabilize the catheter.
31) Apply initial gauze and transparent dressing to dry insertion site (change in 24 hours). DRH may apply CHG impregnated sponge and change in 7 days.

32) Document in electronic health record (EHR). (Refer to Section 2 for documentation details.)

If using a Powerglide midline catheter at DRH --> follow steps 1 - 15 above then:

16) Remove needle sheath from plastic housing.

17) To break catheter tip adhesion, hold back grips while advancing catheter approximately 1/8" (3mm) off the needle using the catheter handle and return to original position.

18) While visualizing the vessel, insert the needle into the vein and visualize the needle tip in the center of the vein and blood return along the catheter tubing.

19) While holding the needle in place using the front grips, advance the guide wire using the guide wire push-off until guide wire is fully extended and locks into place. Guide wire should advance smoothly and without resistance. (Confirm guide wire is fully extended before moving on to the next step.)

20) Grip the plastic housing by holding the back grips and fully advance the catheter using the catheter handle. This inserts the catheter into the vein. Always keep the housing stationary while advancing catheter handle. Do NOT hold the catheter handle stationary and retract the housing. Failure to keep housing stationary will prevent catheter from entering vein.

21) Hold catheter in place using catheter handle and fully remove housing. The needle safety mechanism activates upon removal from handle. Blood flow will be restricted by a plug located in the handle. Catheter handle remains temporarily connected to catheter hub after housing removal. Discard housing and needle in shrps container.

22) Hold catheter hub and twist and remove catheter handle. Immediately attach primed extension set to the catheter.

23) Clean site as needed with CHG/sterile gauze.

24) Apply skin prep to the area the Statlock will cover and apply the Statlock to stabilize the catheter.

4. Care and dressing:

a. Monitoring and assessment:

b. If a gauze dressing is used, the dressing is changed 24 hours after insertion. If the site is no longer oozing, a CHG transparent dressing is used and changed q 7 days and or
more frequently if soiled or not intact. If the site continues to ooze, use a gauze dressing and change every 48 hours or more frequently if soiled or not intact.

c. Assessment frequency:
   1) Inpatient: at least every 8 hours and prn
   2) Outpatient/Home Health: whenever accessed for medication or fluid administration and with patient complaint.

d. Assessment:
   1) Perform hand hygiene.
   2) Don gloves and other PPE as needed.
   3) Ask patient about any discomfort to area.
   4) Inspect site for infusion-related complications (including, but not limited to): redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, and/or red streak with a palpable cord.
   5) Assess patient medication list to verify the midline remains an appropriate access device.

e. Site duration: Dwell time up to 4 weeks if no complications.

f. Dressing change: (DRH: dressing change done by VAST)
   1) Gather supplies and secure a clean work space.
   2) Perform hand hygiene.
   3) Open the dressing change kit.
   4) Don head covering and mask. Don other PPE as indicated.
   5) Everyone in room should wear a mask including the patient. Have the patient turn their head away if they are unable to tolerate a mask.
   6) Everyone assisting the procedure or within three feet of the sterile field should wear a head covering.
   7) Perform hand hygiene and don clean gloves.
   8) Measure the arm circumference at the insertion site. More than 2 cm increase in arm circumference will need to be reported to the provider. *Upper extremity ultrasound to evaluate for DVT may be warranted.
   9) Remove the old dressing from the bottom working toward the insertion site.
   10) Assess the site for symptoms of complications and for length of exposed catheter.
   11) Notify the VAT/VAST for changes in the amount of exposed catheter. *More than 2 cm in change will require a chest radiograph to determine tip placement for PICCs.
   12) Remove clean gloves and perform hand hygiene.
   13) Don sterile gloves.
   14) Lightly scrub the insertion site using a back and forth motion with CHG for 30 seconds removing the securement device as part of the cleaning procedure. (See note for CHG sensitivities.)
   15) Allow the site to dry at least one minute.
   16) Replace securement device per manufacturer’s instructions that are printed on the device packaging.
   17) Apply the CHG impregnated transparent dressing. (See note for CHG sensitivities.)
   18) Remove gloves and perform hand hygiene.
   19) Document the procedure, site assessment and the arm circumference in the EHR.
g. **Extension tubing change:** Midline extension tubing should be changed if it becomes contaminated or clotted (change generally not necessary as the extension is placed at the time of insertion and is considered a permanent part of the line).

1) Perform hand hygiene.
2) Don gloves and other PPE as needed.*Mask required for any connector change.
3) Flush new needleless neutral connector with saline. Keep saline syringe attached to connector.
4) If needed, remove dressing.
5) Cleanse the junction of the needleless neutral connector and extension set or catheter hub with alcohol before removing connector.
6) Remove old connector.
7) Apply new needleless neutral connector. Flush extension set and IV catheter to confirm patency.
8) If needed, apply new dressing, following steps under "f" above.

5. **Flushing:**

For patients on an inpatient area, flushing with saline is preferred. *Flushing with heparin is optional based upon clinical condition and does not require a provider order. Patients with abnormally high platelet counts or who have had a clotted catheter lumen may be candidates for heparin use. For patients with allergies or that cannot receive heparin, obtain physician orders for flushing. **DRAH does not use Heparin for flushing any vascular access device except implanted ports.**

*Maximum Heparin dose per 24 hours: 2000 units per lumen catheter.*

*Catheters with continuous infusions should have blood return checked every 12 hours using care not to bolus medications. This may be omitted in patients who are hemodynamically unstable or who have critical drips.*

<table>
<thead>
<tr>
<th></th>
<th>Flush (all lumen without continuous meds or fluids infusing)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td>Saline 5 ml minimum</td>
<td>Every 8 hrs</td>
</tr>
<tr>
<td></td>
<td>Optional- heparin flush prefilled 3 ml (100 units/ml)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saline 5 ml - IV med - saline 5 ml</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optional-heparin flush prefilled 3 ml (100 units/ml)</td>
<td>With IV med administration</td>
</tr>
<tr>
<td><strong>Home Health</strong></td>
<td>Saline 5 ml minimum then Heparin prefilled flush 3 ml(100 units/ml)</td>
<td>Every 12 hrs and prn</td>
</tr>
<tr>
<td></td>
<td>Saline, 5 ml; IV med - saline, 5 ml</td>
<td>With IV med administration</td>
</tr>
<tr>
<td></td>
<td>Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td></td>
</tr>
<tr>
<td>Outpatient</td>
<td>Saline, 5 ml; IV med - saline, 5 ml Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td>With IV med administration</td>
</tr>
</tbody>
</table>

6 Removal:

a. Verify length of catheter as noted in medical record.

b. Perform hand hygiene. Don clean gloves and PPE as needed.

c. Remove transparent dressing. **Do not use scissors.**

d. Don sterile gloves.

e. Clean insertion site with alcohol, iodine, or CHG and allow to dry.

f. Pull catheter back slowly. Do not put pressure over site until catheter is completely removed.

g. Apply pressure until hemostasis is obtained.

h. Apply Vaseline gauze or triple antibiotic ointment over site and cover with sterile 2x2 gauze and transparent dressing.

i. Measure catheter length by counting each cm mark. Check catheter end to verify it is straight and not jagged. Confirm entire length of inserted catheter has been removed.

j. Perform patient and family teaching for care of site post removal and reportable symptoms of complications

k. Document in electronic health record. (Refer to Section 2 for documentation details)

7. Documentation:

a. Insertion: Date, reason for insertion, type of line, size, patency, insertion length, and patient tolerance.

b. Assessment and monitoring: Type of line, size, site, site condition, condition of dressing, and patient tolerance.

c. Removal: Type of line, reason for removal, condition of site, length of catheter removed, dressing placement and patient tolerance.

8. **Reportable conditions (to physician/provider):**
d. Any insertion related complications; including but not limited to: inability to place catheter, excessive bleeding, inability to remove stylet or access wire, inadvertent arterial puncture, catheter malposition, catheter or guide wire shear or nerve stimulation. **Immediately remove any catheter inadvertently placed in an artery and apply pressure for 10 minutes or until hemostasis is achieved. If an artery is punctured during the procedure, immediately abort the procedure and apply pressure until hemostasis is achieved.**

e. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, red streak with palpable cord, skin sensitivities.

f. Fever and/or chills.

g. Non intact catheter on removal.

h. Exudate on catheter or at site upon removal of catheter.

9. **Report any of the following to the VAT/VAST for assessment:**

a. Discrepancy in catheter length noted under dressing representing possible catheter migration

b. Persistent or unresolved occlusion alarms and/or difficulty flushing catheter

c. Leaking from catheter

d. Severed catheter

e. Inability to remove catheter.

C. **Peripherally Inserted Central Catheters (PICC):**

1. **Definition:** PICCs are peripherally inserted central catheters. PICCs are used in patients who require IV therapy for longer periods of time (at least 5 days), have limited venous access options, or require administration of irritating and/or hyperosmolar solutions. These catheters are placed using sterile procedure and **require X-ray verification of tip location unless using an FDA approved vascular positioning system during catheter insertion.** Patients may be discharged to home or other facilities with these catheters per provider order.

2. **Personnel:** RNs may insert and remove PICCs after completing training and demonstrating competency. Insertion and removal of PICCs are listed as Advisory Statements by the North Carolina Board of Nursing. RNs and LPNs may flush, change dressings, and administer medications through PICCs after demonstrating competency. [For delegation to UAP (CMAs, patient technicians) refer to the "Decision Tree for Delegating to UAP" on the North Carolina Board of Nursing website.](#)

3. **Equipment:**

   **Insertion:**
Insertion tray with maximum sterile barrier drapes

Catheter and introducer

Sterile gloves (powder-free) and PPE as needed

Face masks for everyone including patient in room as appropriate (i.e. not intubated patients)

Sterile Gown, head covering

Heparin flush (optional)

Sterile needleless neutral connector for each lumen

Sterile extension tubing(s), one for each lumen as needed

Ultrasound machine

Sterile ultrasound probe cover with sterile gel

Single use surgical marker

1% Lidocaine without epinephrine, or EMLA®/LMX 4 cream (unless patient allergic)

Vascular positioning system and stylet (optional)

Second site adjustable hub (optional)

**Dressing change:**

Clean gloves

PICC dressing change kit   SAP# 326262

Hand sanitizer

**Flush or med administration:**

Alcohol wipes

Clean gloves

Prefilled saline flush syringe(s), 10 ml or larger (one for each lumen)

Prefilled Heparin flush syringe(s), 3-5 ml with 100 units/ml (one for each lumen if indicated)
Removal:

- Clean gloves
- Sterile gloves
- Alcohol wipe or CHG swab
- Tape measure
- Triple antibiotic ointment or petroleum based gauze (required)
- Sterile 2x2 gauze and small transparent dressing
- Sterile saline for CHG gel pad removal (optional)

4. Insertion:
   a. *Verify provider order for PICC.
   b. Provide patient and family teaching and obtain written patient assent.
   c. Evaluate patient for relative contraindications to VAT (VAST) placement of a PICC (including but not limited to): upper extremity edema, extremity immobility, non intact upper extremity skin, vascular implants (e.g., pacemakers, AV fistulas) prolonged bleeding time, history of unresolved deep vein thrombosis (DVT) in the affected extremity, the ipsilateral internal jugular vein, ipsilateral or contralateral subclavian or brachiocephalic veins or creatinine > 2.0 (Refer to DUH Vascular Access Team – PICC Insertion in Patients with Chronic Kidney Disease).
   d. Collaborate with primary physician team for any relative contraindication to placement before placing the catheter.
   e. Perform hand hygiene. Assemble equipment.
   f. Position patient supine in a reclining position, with arm extended at a 90° angle away from body.
   g. Assess vasculature using ultrasound from proposed insertion site to axilla and internal jugular vein.

   1) Assessing vasculature using ultrasound:
      a) Explain procedure and provide rationale for the use of the ultrasound machine to the patient and/or family.
      b) Sanitize the probe with a germicidal wipe.
      c) Perform hand hygiene. Don clean gloves.
      d) Apply liberal amount of ultrasound gel to patient’s arm.
e) Apply probe to the skin, visualize and note the location of the veins, arteries and nerves. Assess veins for normal vessel size, path, round shape and compressibility. Catheter should optimally occupy no more than 30% of the vessel and minimally no more than 50% of the vessel. Smaller vessels should be avoided to prevent thrombosis.

f) Measure the selected vein diameter and mark proposed insertion site with a single use surgical marker.

g) Remove ultrasound gel from patient’s arm.

h. Measure baseline arm circumference at the proposed insertion site.

i. External measurement can never exactly duplicate the internal venous anatomy. Measure path from the planned insertion site using the following external landmarks:

1) Insertion site to axillary crease.

2) Axillary crease to right clavicular head.

3) Right clavicular head to the right sternal border of the third intercostal space.

j. If using topical EMLA or LMX 4 cream for analgesia, apply cream to proposed insertion site, cover with TSM dressing and allow 30-60 minutes before continuing with procedure.

k. Catheter Insertion Using the Modified Seldinger Technique.

1) Don head covering and mask.

2) Perform 3 minute scrub with approved antimicrobial agent. Avagard™ solution may be used as an alternative to the 3 minute scrub after the first 3 minute scrub of the shift for subsequent insertions.

3) Establish sterile field: open insertion tray, drop additional sterile items from their packaging on to the sterile field.

4) Perform hand hygiene

5) Don sterile gown and gloves.

6) Prime the extension set and catheter with saline.

7) Per manufacturer recommendations: If the catheter has a stylet, withdraw the stylet just past the desired length, bending the stylet over the catheter hub, and trim the catheter to the premeasured length. **DO NOT CUT THE STYLET.**

8) Apply sterile full body drape.

9) Cleanse skin with CHG x 30 seconds and allow to dry 1 minute. (Refer to Section 2 for CHG sensitivities.)
10) Apply tourniquet and change sterile gloves.

11) Apply fenestrated drape over marked insertion site.

12) Apply sterile gel to ultrasound probe and cover with sterile probe cover and secure to sterile field with tape.

13) Apply sterile ultrasound gel to skin over insertion site.

14) Visualize the marked vessel with the ultrasound and note surrounding structures (artery and nerve bundles).

15) *Inject 1% Lidocaine subcutaneously at the insertion site as ordered. May use 3 ml and repeat x 1 if needed to manage insertion pain.

16) While visualizing the vessel, insert the micro-introducer needle through the skin using a 45 degree angle. Observe for blood return in micro-introducer needle hub and visualize the needle tip in the center of the vein before proceeding.

17) Put probe down on sterile field and reduce the angle of the micro-introducer.

18) Stabilize the micro-introducer. Insert the floppy tipped guide wire into the micro-introducer threading at least 10 cm, but not more than 20 cm, into the vein. **The guide wire should NEVER be inserted into a position beyond the level of the axilla.**

19) Carefully remove the micro-introducer by removing it from the vein and skin and pulling it back over the guide wire. Do not allow the guide wire to move outward through the access needle due to risk of severing the guide wire. Secure the guide wire with non-dominant hand to prevent migration in or out of the vein.

20) Using the supplied scalpel, hold the blade with the blunt side against the wire. Make a small nick at the insertion site on either side of the guide wire to facilitate insertion of the peel-away dilator/introducer.

21) Advance the peel-away dilator/introducer over the guide wire through the skin completely into the vein using a twisted motion.

22) Release the tourniquet.

23) Turn the dilator counter clockwise in the peel-away dilator/introducer and and slowly remove the dilator, leaving the peel-away introducer sheath in the vein.

24) Slowly advance the catheter through the introducer sheath.

25) Continue to advance the catheter slowly to measured length.

26) Aspirate for blood from catheter and flush.
27) Peel away and remove introducer sheath after the catheter has reached its’ terminal tip location.

28) Connect the primed extension set(s) with needleless neutral connector to each lumen as needed.

29) Clean excess blood from site using CHG or dry gauze.

30) Apply skin prep to the area the IV stabilization device will cover and apply the stabilization device to stabilize the catheter. A second site adjustable hub may be applied to catheter if the length of catheter external to the insertion site is greater than 2 cm. This adjustable hub is then considered a permanent part of the catheter and does not need to be changed with dressing changes.

31) Apply initial gauze and transparent dressing to dry insertion site (change in 24 hours).

32) *Obtain chest x-ray as ordered, if not using a vascular positioning system or the tip location can not be confirmed with the system.

33) *Do not infuse any medication or fluid until an order is written to activate the line.

34) *Provider or competent RN will verify proper tip placement and write orders to activate the line for use.

35) Document in electronic health record (EHR). (Refer to Section 2 for documentation details.)

5. Use of tip locating device and stylet as an adjunct for placement.
   a. Perform hand hygiene.
   b. Calibrate the device prior to sterile field set up.
   c. Apply electrodes to patient right shoulder and left abdomen.
   d. Look for EKG tracing on the device screen.
   e. Perform sterile field set up and include the additional stylet.
   f. Connect the device cable to the device using sterile technique.
   g. Flush the catheter and load the stylet until the tip protrudes 0.5 cm from the catheter.
   h. Flush the catheter and look for the doppler waveform and EKG tracing on the device.
   i. Secure the stylet with the luer lock.
   j. Mark the stylet location with the permanent marking pen.
k. Insert the catheter watching for the green arrow as the tip courses into the central circulation from the periphery.

l. Watch for the confirmatory symbol - "blue bull’s eye" as the catheter reaches the junction of the superior vena cava and the right atrium.

m. Make sure the bull’s eye symbol remains on the screen continuously for 10 seconds.

n. Retract the catheter 1 cm.

o. Stabilize and dress the catheter using steps 28-35 above.

p. *Activate the catheter for use in the EHR and communicate with the patient’s care nurse.

q. *If unable to obtain the confirmatory symbol, a chest radiograph must be performed and the provider consulted before the catheter is activated for use.

r. Document the use of the device.

NOTE: *PICC’s inserted in outside facilities need to have placement confirmed by chest radiograph, confirmation of blood return from the lumen(s) and a needleless connector change prior to use. A dressing change should be performed within 24 hours of admission.

6. Care and dressing:

a. Monitoring and assessment: If a gauze dressing is used the dressing is changed 24 hours after insertion. If the site is no longer oozing a CHG transparent dressing is used and changed q 7 days and more frequently if soiled or non occlusive. If the site continues to ooze after 24 hours, use a gauze dressing and change every 48 hours or more frequently if soiled or non occlusive.

1) Assessment frequency:

   a) Inpatient: at least every 8 hours and prn

   b) Outpatient/Home Health: whenever accessed for medication or fluid administration and with patient complaint.

2) Assessment:

   a) Perform hand hygiene

   b) Don gloves and other PPE as needed

   c) Ask patient about any discomfort to area.

   d) Inspect site for infusion-related complications (including, but not limited to): redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage,
coolness, itching/rash/hives, numbness, and/or red streak with a palpable cord, increased bleeding or oozing.

b. **Site duration**: Dwell time indefinite if no complications.

c. **Dressing change**: *(DRH: dressing change done by VAST.)*

1) Gather supplies and secure a clean work space.

2) Perform hand hygiene.

3) Open the dressing kit.

4) Everyone in the room should wear a mask including the patient. Have the patient turn their head away if they are unable to tolerate a mask.

5) Everyone assisting the procedure or within three feet of the sterile field should wear a head covering.

6) Perform hand hygiene and don clean gloves.

7) Measure the arm circumference at the insertion site. More than 2 cm increase in arm circumference will need to be reported to the provider. *Upper extremity ultrasound to evaluate for DVT may be warranted.

8) Remove the old dressing from the bottom working toward the insertion site.

9) Assess the site for symptoms of complications and for length of exposed catheter.

10) Notify the VAT/VAST for changes in the amount of exposed catheter. More than 2 cm in change will require a chest radiograph to determine tip placement for PICCs.

11) Remove gloves and perform hand hygiene.

12) Don sterile gloves.

13) Lightly scrub insertion site and surrounding skin with CHG for 30 seconds removing the securement device as a part of the cleaning procedure. Allow to dry x 1 minute. *(See Section 2 for CHG sensitivities.)*

14) Allow the site to dry at least one minute.

15) Replace securement device per manufacturer's instructions that are printed on the device packaging.

16) Apply the CHG impregnated transparent dressing. *(See Section 2 for CHG sensitivities.)*

17) Remove gloves and perform hand hygiene.
18) Document the procedure, site assessment and the arm circumference in the EHR.

d. **Extension tubing change:** Extension tubing should be changed if contaminated or clotted. (change generally not necessary as the extension is placed at the time of insertion and is considered a permanent part of the line).

   1) Don mask and other PPE as needed.
   2) Perform hand hygiene.
   3) Don clean gloves.
   4) Flush new extension tubing and needleless neutral connector with saline. Keep saline syringe attached to extension tubing.
   5) Remove dressing.
   6) While stabilizing hub, carefully remove old extension tubing and connector.
   7) Insert new extension tubing with connector. Flush extension tubing and PICC lumen to confirm patency.
   8) Apply new dressing, following steps under "d-n" above.

e. **Needleless neutral connector change:** Change every 4 days (96 hours) with tubing change and PRN.

   f. Perform hand hygiene.

   g. Don gloves and other PPE as needed. * Mask is required for connector changes.

   h. Flush new needleless neutral connector with saline. Keep saline syringe attached to connector.

   i. If needed, remove dressing.

   j. Cleanse connection between the needleless neutral connector and the extension set or catheter hub with alcohol prior to removing connector.

   k. Remove old connector.

   l. Insert new needleless neutral connector. Flush extension tubing and PICC lumen to confirm patency.

6. **Flushing:**

   For patients on an inpatient area, flushing with saline is preferred. Flushing with heparin is optional based upon clinical condition. For patients with allergies or that cannot receive heparin, obtain
physician orders for flushing. **DRAH does not use Heparin for flushing any vascular access device except implanted ports.**

**Maximum Heparin dose per 24 hours: 2000 units per lumen.**

**Note:** **PICC lumen** receiving continuous IV medication drips should have blood returned checked and be routinely flushed using caution not to caused unintended bolusing of medications and hemodynamic instability. Checking for blood return can be omitted for catheters with continuous infusions where interruption could affect hemodynamic stability or blood levels of the drug.

<table>
<thead>
<tr>
<th>Inpatient</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Saline 5 ml minimum</td>
<td>Every 8 hrs (DRH: q 12 hrs) and prn</td>
</tr>
<tr>
<td>Optional- heparin flush prefilled 3 ml (100 units/ml)</td>
<td></td>
</tr>
<tr>
<td>Saline 5 ml - IV med - saline 5 ml</td>
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<td><strong>Home Health</strong></td>
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</tr>
<tr>
<td>Saline, 5 ml minimum then Heparin pre-filled flush 3 ml (100 units/ml)</td>
<td>Every 12 hrs and prn</td>
</tr>
<tr>
<td><strong>Outpatient</strong></td>
<td></td>
</tr>
<tr>
<td>Saline, 10 ml - IV med - saline, 10 ml</td>
<td>With IV med administration</td>
</tr>
<tr>
<td>Heparin flush prefilled 3 ml (100 units/ml)</td>
<td></td>
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<tr>
<td>[SASH]</td>
<td></td>
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</tbody>
</table>

7. **Documentation:**

a. Insertion: Date and time of insertion, type of line, reason for insertion, size, patency, insertion length, patient tolerance, use of tip locating device and terminal tip location as confirmed by the device.

b. Assessment and monitoring: Type of line, size, site, site condition, and condition of dressing.

c. Removal: Type of line, reason for removal, condition of site, length of catheter removed, dressing application, and patient tolerance.

8. **Reportable conditions (to physician/provider):**
i. Any insertion related complications; including but not limited to inability to place catheter, excessive bleeding, inability to remove stylet or access wire, inadvertent arterial puncture, catheter malposition, catheter or guide wire shear or nerve stimulation. Immediately remove any catheter inadvertently placed in an artery and apply pressure for 10 minutes or until hemostasis is achieved. If an artery is punctured during the procedure, immediately abort the procedure and apply pressure until hemostasis is achieved.

a. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, red streak with palpable cord, skin sensitivities, concerns regarding integrity of catheter.

b. Fever, chills.

c. Non-intact catheter upon removal (potential catheter embolus).

d. Exudate on catheter or at site upon removal of catheter.

Report any of the following to the VAT /VAST:

a. Discrepancy in catheter length noted under dressing.

b. Persistent or unresolved occlusion alarms and/or difficulty flushing catheter.

c. Leaking from catheter.

d. Severed catheter.

e. Inability to remove catheter.

9. Removal: (Credentialed RN)

a. Verify length of inserted catheter as noted in medical record.

b. Don PPE as needed.

c. Perform hand hygiene.

d. Don gloves.

e. Assess insertion site and length of catheter external to insertion site.

f. Remove stabilization device, tape, and transparent dressing. Do not use scissors.

g. Clean insertion site with alcohol, iodine, or CHG and allow drying.

h. Perform hand hygiene.

i. Don sterile gloves.

j. Pull catheter back slowly while patient exhales. Do not put pressure over the site until the catheter is completely removed.

k. Apply pressure using sterile 2x2 gauze until hemostasis is achieved.

l. Apply sterile occlusive dressing over site. To avoid air embolus when removing central venous catheters, it is required that a small amount of *(triple antibiotic ointment) or sterile petroleum based gauze be applied before applying a sterile gauze and transparent dressing. This occlusive dressing needs to be removed in 24 hours. If the exit site has not epithelialized, a dry dressing should be reapplied every 24 hours. Petroleum based ointment or triple antibiotic ointment is not necessary with subsequent dressing changes.

m. Measure catheter length by counting each cm mark. Check catheter end to confirm it is straight and not jagged. Verify the entire documented inserted length of catheter is removed.

n. Document in medical record. (Refer to Section 2 for documentation details)
D. Non-Tunneled Central Venous Access Devices (single and multi-lumen catheters, sheath introducer catheters)

**NOTE:** For further information on dialysis catheters, click on [Hemodialysis and Pheresis Catheter (vas-cath, perm-cath) Care Policy](#).

**NOTE:** MAC and Cordis catheters are not appropriate for use in stepdown and intermediate areas because the large bore nature of these catheters increases risks of life threatening complications related to bleeding and air embolus if dislodged. Patients in the stepdown and intermediate areas may not have the close supervision necessary for appropriate monitoring of these catheters.

1. **Definition:** Non-tunneled central venous access devices, often called percutaneous catheters. Dwell time is indefinite in the absence of complications, but is usually less than one month. The catheter may have from one to four lumens. This catheter may be inserted in a femoral, internal jugular, or subclavian or axillary vein. Temporary central venous access devices will be assessed daily by the primary team in collaboration with the nurse to determine if the device continues to be necessary for infusion therapy. Patients with mature tunneled catheters may not require a dressing at home, but dressings will be applied for inpatient stays.

Trialyxis catheters used at DRAH have two lumens for dialysis and one for medication administration.

2. **Personnel:** Insertion of these lines is done by physicians or designees. RNs may, after competency validation, insert and remove these lines. RNs and LPNs may access, flush, change dressing of, and administer IV fluids and medications into a non-tunneled central venous access device. For delegation to UAP (CMAs, patient technicians) refer to the "Decision Tree for Delegating to UAP" on the North Carolina Board of Nursing website.

3. **Equipment:**

   **Insertion:**
   - Central Venous catheterization kit
   - CHG swabs (for CHG sensitivity, use alcohol and povidone-iodine swabs, 3 each)
   - Sterile 4 x 4 gauze
   - Sterile saline for flush
   - Needleless neutral connector for each port
   - Sterile gowns
   - Sterile gloves
   - Masks
   - Cap
   - Transparent dressing with CHG

   (see Section 2 for CHG sensitivites)

   **Dressing change:**
   - Clean gloves
Alcohol foam/gel  
Sterile gloves  
Masks  
CHG swabs (see Section 2 for CHG sensitivities)  
CHG transparent (see Section 2 for CHG sensitivities)  
Sterile saline for CHG gel pad removal (optional)  
Tape

**Flushing or med administration:**

Alcohol wipes  
Clean gloves and PPE as needed  
Prefilled saline flush syringe(s), 10 ml or larger, one for each lumen

**Removal:** *(Credentialed RN)*

Sterile gloves and PPE as needed  
Sterile saline for CHG gel pad removal (optional)  
Alcohol wipe or CHG swabs  
*Antiseptic ointment or sterile petroleum based gauze (required)*  
Sterile Gauze  
Transparent dressing

4. **Insertion:**

   a. In a non-emergent situation, assure that informed consent has been obtained by the physician or designee.  
b. Provide reassurance to the patient throughout the procedure.  
c. Place patient supine for insertion. Have patient wear mask, if unable to tolerate mask assist pt in turning head opposite the insertion side and provide 20 – 30º of trendelenburg for internal jugular (IJ) insertion. A towel roll placed behind the patient, under the selected shoulder, may be helpful for subclavian (SC) insertion. Keep patient’s leg straight for femoral insertion.  
d. *Consider sedation and/or analgesia.*  
e. Provide assistance to inserter as needed.  
f. *Obtain stat portable x-ray to confirm placement for SC, IJ and femoral routes. DO NOT administer medications or fluid until placement is confirmed (except in emergency situations).*  
   *Verify before using line that there is a confirmation order to use line.*  
g. Apply dressing:
1) Apply head covering and mask, wash hands, and then apply sterile gloves. *Everyone in room must don a mask for the procedure and anyone within 3 feet of the sterile field needs to don a head covering.
2) Cleanse site with CHG and allow to air dry (Refer to Section 2 for CHG sensitivities).
3) Apply gauze dressing using transparent dressing over insertion site. This dressing is changed within 24 hours of insertion or more frequently if soiled or no intact.
4) Gauze may be used under transparent dressing if there is bleeding/oozing at site. If gauze dressing used, dressing must be changed within 24 hours. If bleeding/oozing continues after the first 24 hours, continue to use a gauze dressing under a transparent dressing and change every 48 hours and more frequently if soiled or not intact. If there is not oozing/bleeding, place CHG transparent dressing and change every 7 days or more frequently if soiled or not intact.
5) Secure extension tubing to skin with tape.
6) Document in medical record.

5. Care and dressing:
   a. Monitoring and assessment:
      1) Assessment frequency:
         a) Inpatient: at least every 8 hours and prn
         b) Outpatient/Home Health: whenever accessed for medication or fluid administration and with patient complaint.
      2) Perform hand hygiene.
      3) Don gloves and other PPE as needed.
      4) Ask patient about any discomfort to area.
      5) Inspect site/dressing for infusion-related complications (including, but not limited to): redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, increased bleeding/oozing and/or numbness.
   b. Site duration: Dwell time is indefinite in the absence of complications.
   c. Dressing change:
      1) Don head covering and mask
      2) Perform hand hygiene
      3) Don clean gloves
      4) Remove old dressing
      5) Assess site
      6) Remove clean gloves
      7) Perform hand hygiene
      8) Don sterile gloves
      9) Lightly scrub site with CHG. Allow to air dry x 1 minute. (Refer to Section 2 for CHG sensitivity).
10) Apply CHG transparent dressing. (Refer to Section 2 for CHG sensitivity)
11) Gauze must be used under transparent dressing if there is bleeding/oozing at site. If gauze dressing used, dressing must be changed within 24 hours. If bleeding/oozing continues after the first 24 hours, continue to use a gauze dressing under a transparent dressing and change every 48 hours and more frequently if soiled or not intact. If there is not oozing/bleeding, place CHG transparent dressing and change every 7 days or more frequently if soiled or not intact.
12) Secure extension tubing to skin with tape.
13) Document in EHR. (Refer to Section 2 for documentation details)

d. Needleless neutral connector change: Change every 4 days (96 hours) with tubing change and PRN. Don mask and other PPE as needed. * Mask is required for connector changes.

1) Perform hand hygiene.
2) Don clean gloves
3) Flush new needleless neutral connector with saline. Keep saline syringe attached to connector.
4) If needed, remove dressing.
5) Cleanse connection between the needleless connector and the extension set or catheter hub with alcohol prior to removing needleless neutral connector.
6) Remove old connector.
7) Insert new needleless neutral connector. Flush extension tubing and lumen to confirm patency.
8) If needed, apply new dressing, following steps under "c" above.

6. Flushing:

For patients on an inpatient area, flushing with saline is preferred. Flushing with heparin is optional based upon clinical condition. *For patients with allergies or that cannot receive heparin, obtain physician orders for flushing.

**Note:** Non tunneled temporary central line lumens receiving continuous IV medication drips should have blood returned checked and be routinely flushed using caution not to caused unintended bolusing of medications and hemodynamic instability. Checking for blood return can be omitted for catheters with continuous infusions where interruption could affect hemodynamic stability or blood levels of the drug.

<table>
<thead>
<tr>
<th></th>
<th>Flush (all lumen without continuous meds or fluids infusing)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td>Saline, 5 ml minimum</td>
<td>• Every 8 hours (</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Before and after IV med administration</td>
</tr>
<tr>
<td><strong>Home Health</strong></td>
<td>Saline, 5 ml minimum</td>
<td>• Every week and prn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Before and after IV</td>
</tr>
</tbody>
</table>
7. **Removal:**

   a. Place the patient flat or in trendelenburg position.
   b. Perform hand hygiene.
   c. Don sterile gloves.
   d. Remove sutures.
   e. Encourage patient to take a deep breath and hold, or time catheter withdrawal to exhalation. (This is not required for femoral lines).
   f. Withdraw the catheter smoothly, applying pressure. Inspect catheter to assure complete removal before discarding. Continue applying pressure for 5 minutes or until no active bleeding occurs.
   g. Apply sterile occlusive dressing over site. To avoid air embolus when removing central venous catheters, it is required that a small amount of antiseptic ointment *triple antibiotic ointment or sterile petroleum based gauze be applied before applying a sterile gauze and transparent dressing. This occlusive dressing needs to be removed in 24 hours. If the exit site has not epithelialized, a dry dressing should be reapplied every 24 hours. Petroleum based ointment or triple antibiotic ointment is not necessary with subsequent dressing changes.
   h. Document in the EHR. (Refer to Section 2 for documentation details)

8. **Documentation:**

   b. Insertion: Date and time of insertion, reason for insertion, type of line, site, patency, insertion length, and patient tolerance.
   c. Assessment and monitoring: Type of line, site, site condition, condition of dressing, and patency of all lumens.
   d. Removal: Type of line, reason for removal, condition of site, dressing application and patient tolerance.

9. **Reportable Conditions:**

   a. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, skin sensitivities, concerns regarding integrity of catheter.
   b. Fever, chills.
   c. Non-intact catheter upon removal. (Potential for catheter embolus)
   d. Exudate on catheter or at site upon removal of catheter.
   e. Inability to flush any of the lumens.
   f. For IJ or SC sites: tachypnea, dyspnea, diminished lung sounds on side of catheter insertion, signs of hypoxia.
g. Excessive bleeding at site.

E. Tunneled Central Venous Access Devices

1. Definition: A tunneled catheter is inserted into a central vein and is subcutaneously tunneled to an exit site usually on the chest wall. Sutures remain in place for 7 – 10 days following insertion. Once the catheter is mature, a Dacron cuff holds the permanent catheter in place and provides a barrier against microorganisms. There are also temporary tunneled catheters that do not have a Dacron cuff. These catheters may have single, double, or triple lumens and may or may not be power injectable.

2. Personnel: RNs may, after demonstrating competency, access, de-access, and dress tunneled central lines, and administer medications and fluids via these catheters. LPNs may, after demonstrating competency, access, de-access, and dress tunneled central lines. After demonstrating specific competency, MLPNs may administer medications and fluids via these catheters. For delegation to UAP (CMAs, patient technicians) refer to the "Decision Tree for Delegating to UAP" on the North Carolina Board of Nursing website.

3. Equipment (dressing and flushing only):

   **Dressing:**
   
   - Clean gloves
   - Alcohol foam/gel
   - Head covering
   - Mask
   - Sterile gloves
   - Tape
   - CHG transparent dressing (Refer to Section 2 for CHG sensitivities)
   - CHG swab (Refer to Section 2 for CHG sensitivities)
   - Sterile saline for CHG gel pad removal (optional)

   **Flushing and med administration:**
   
   - Clean gloves
   - Saline flush(es) (one for each lumen)
   - Prefilled Heparin flush(es) as indicated (one for each lumen)
   - Alcohol wipes

4. Insertion: Surgically inserted by credentialed MD, PA, or NP.

5. Care and dressing:
a. Monitoring and assessment
   1) Assessment frequency:
      a) Inpatient: at least every 8 hours and prn
      b) Outpatient/Home Health: whenever accessed for medication or fluid administration and with patient complaint.
   2) Don head covering and mask
   3) Perform hand hygiene.
   4) Don gloves and other PPE as needed.
   5) Ask patient about any discomfort to area.
   6) Inspect site for infusion-related complications (including, but not limited to): redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, and/or numbness.

b. Site duration: Indefinitely in the absence of complications.

c. Dressing change:
   1) Initial dressing should be a gauze dressing with tape due to drainage/bleeding. Perform first dressing change 24 hours after insertion. If there is drainage or bleeding noted prior to the 24 hours, reinforce dressing and continue to use gauze until drainage or bleeding stops. Change if soiled, loose, or damp. When insertion site is no longer oozing, apply CHG transparent dressing and change q 7 days and more frequently is soiled or not intact. May use sterile saline for CHG gel pad removal (optional).
   2) Don head covering and mask.
   3) Perform hand hygiene and apply clean gloves.
   4) Remove old dressing.
   5) Assess catheter- skin junction.
   6) Remove clean gloves.
   7) Perform hand hygiene.
   8) Don sterile gloves.
   9) Lightly scrub insertion site and surrounding skin with CHG for 30 seconds. Allow to air dry x 1 minute. (Refer to Section 2 for CHG sensitivities)
   10) Apply CHG transparent dressing (Refer to Section 2 for CHG sensitivities)
   11) Apply appropriate dressing: Transparent or gauze.
      a) Transparent dressing: Routine dressing for all patients.
      b) Gauze dressing: For patients with skin sensitivities or patients requiring frequent dressing changes. Change sterile gauze dressing q 48 hours and prn when dressing becomes loose, damp, or soiled. Fold one 2 x 2 gauze in half and place under catheter at the exit site. Place the second 2 x 2 gauze over the catheter and the first 2 x 2 gauze. Apply tape over entire dressing.

d. Needleless neutral connector change: Change every 4 days (96 hours) with tubing change and PRN.
   1) Perform hand hygiene.
   2) Don gloves, mask and other PPE as needed. *Mask is required for connector changes.
   3) Flush new needleless neutral connector with saline. Keep saline syringe attached to connector.
   4) If needed, remove dressing.
   5) Cleanse connection between the needleless connector and the extension set or catheter hub with alcohol prior to removing the needleless neutral connector.
   6) Remove old connector.
7) Insert new needleless neutral connector. Flush extension tubing and lumen to ensure patency.

8) If needed, apply new dressing, following steps under "c" above.

6. **Flushing:**

For patients on an inpatient area, flushing with saline is preferred. Flushing with heparin is optional based upon clinical condition. For patients with allergies or that cannot receive heparin, obtain physician orders for flushing. **DRAH does not use Heparin for flushing any vascular access device except implanted ports.**

**Maximum Heparin dose per 24 hours: 2000 units per lumen.**

*Note: Tunneled catheter lumen receiving continuous IV medication drips should have blood returned checked and be routinely flushed using caution not to cause unintended bolusing of medications and hemodynamic instability.* Checking for blood return can be omitted for catheters with continuous infusions where interruption could affect hemodynamic stability or blood levels of the drug.

<table>
<thead>
<tr>
<th>Accesses per Day</th>
<th>Flush (each lumen)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Saline 5 ml minimum</td>
<td>Every day</td>
</tr>
<tr>
<td></td>
<td>Optional - Heparin pre-filled flush 3 ml (100 units/ml)</td>
<td></td>
</tr>
<tr>
<td>1 – 4</td>
<td>Saline 5 ml - IV med - saline 5 ml</td>
<td>With IV med administration</td>
</tr>
<tr>
<td></td>
<td>Optional - Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td></td>
</tr>
<tr>
<td>&gt; 4</td>
<td>NS 2 – 10 ml/hr continuous or other maintenance IV fluid</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

**Home Health**

<table>
<thead>
<tr>
<th>Accesses per Day</th>
<th>Flush (each lumen)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Saline, 5 ml minimum then Heparin pre-filled flush 3 ml (100 units/ml)</td>
<td>1 – 3 times per week</td>
</tr>
<tr>
<td></td>
<td>Saline, 10 ml - IV med - saline, 10 ml</td>
<td>With IV med administration</td>
</tr>
<tr>
<td></td>
<td>Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td></td>
</tr>
</tbody>
</table>

**Outpatient**

<table>
<thead>
<tr>
<th>Accesses per Day</th>
<th>Flush (each lumen)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Saline, 5 ml - IV med - saline, 5 ml - Heparin flush prefilled 3</td>
<td>With IV med administration</td>
</tr>
</tbody>
</table>
7. Documentation:

   a. Assessment and monitoring: Type of line, site, site condition, condition of dressing, and patency of all lumens.

8. Reportable Conditions:
a. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, skin sensitivities.
b. Fever, chills.
c. Inability to flush any of the lumen.
d. Tachypnea, dyspnea, diminished lung sounds on side of catheter insertion, signs of hypoxia.
e. Excessive bleeding at site.

f. Cuff showing at exit site.

9. **Removal**: Credentialed MD, PA, or NP.

**F. Implanted Access Devices (ports):**

1. **Definition**: An implanted port is a reservoir that is surgically placed into a subcutaneous pocket in the anterior chest, abdomen, or peripherally in the veins of the upper arm. A catheter is attached to a reservoir, tunneled subcutaneously and inserted into a central vein (usually subclavian, then into the superior vena cava). The device itself cannot be visualized, but may be palpated to identify device placement. The port may have single or double chambers and may or may not be power injectable.

   *Use only right angle, non-coring power "Huber" needles and tubing to access. Terminal tip locations of all implanted ports are confirmed in radiology prior to use.*

2. **Personnel**: RNs may, after demonstrating competency, access, de-access, and dress implanted ports, and administer medications and fluids via these catheters. MLPNs may, after demonstrating competency, access, de-access, and dress implanted ports. After demonstrating specific competency, MLPNs may administer medications and fluids via these catheters.

3. **Equipment (not insertion):**

   **Dressing:**
   - Mask
   - Head covering
   - Transparent dressing or sterile gauze
   - CHG swabs (Refer to Section 2 for CHG sensitivities)
   - Clean gloves
   - Sterile gloves
   - Sterile 2 x 2 gauze (optional)

   Sterile tape strip

   **Accessing:**
   - Mask
   - Head covering
   - Clean gloves
   - Sterile gloves
Non-coring needle (i.e., "Huber"; it must be a right angle needle for continuous infusions)  
CHG swabs (Refer to Section 2 for CHG sensitivities)  
Sterile Saline flush in sterile packaging, 10 ml in prefilled 10 ml syringe (one for each chamber used)  
*To perform this procedure using a single inserter, the saline syringes must be in sterile packaging in order to add them to a sterile field. If using saline syringes that are in non sterile packages, the inserter will need an assistant to attach the saline syringes and flush the needle and port since the syringes cannot be added to the sterile field.*  
Empty 10 ml syringe  
Heparin flush, 3 ml in prefilled 10 ml syringe as indicated (one for each chamber used)  
Transparent dressing  
Sterile tape strip  
Needleless neutral connector  

**De-accessing:**  
Clean gloves  
Alcohol wipes  
Saline flush, 10 ml in prefilled 10 ml syringe (one for each chamber used)  
Heparin flush, 3 ml in prefilled 10 ml syringe as indicated (one for each chamber used)  

2x2 gauze and transparent dressing  

**Flushing and med administration:**  
Clean gloves  
Saline flush(es) (one for each lumen)  
Heparin flush(es) as indicated (one for each lumen)  
Alcohol wipes  

4. **Insertion:** Surgically implanted by credentialed MD, PA, or NP.  
5. **Care and dressing:**  
   
a. **Accessing:**  
   
   1) Each port (or chamber if dual chambered) can be accessed with a physician order (per protocol) following placement or on admission using a non-coring right angle needle. The needle is then changed every 7 days and prn.  
   2) Perform hand hygiene.  
   3) Don clean gloves and PPE as needed.  
   4) Locate the chamber(s) and septum by palpation.  
   **Power ports (all brands): If patient has a power port ID card and/or power port bracelet and/or verbally states they have a power port, palpate for landmarks unique to that manufacturer’s device. If unable to verify power port is present, assume that a regular, non-power port is in place.**  
   5) *Consider topical pain management to anesthetize site.*
6) Don head covering, mask
7) Perform hand hygiene
8) Don sterile gloves
9) Scrub site using a back and forth motion with CHG swabstick the area to be covered by the dressing. Allow to thoroughly air dry. (Refer to Section 2 for CHG sensitivities)
10) Prime the non-coring right angle needle and tubing using 10 ml sterile saline in prefilled 10 ml syringe and then attach an empty 10 ml syringe to the tubing.
11) Relocate chamber; push right angle, non-coring Huber needle through skin and portal septum, holding skin taut, stopping when contact is made with back of chamber.
12) Draw back on the empty syringe to assess for blood return. Discard 5ml blood. If no blood return or resistance is met, check for open clamp and reposition patient. Verify needle placement. Consider re-accessing the port if blood return is absent or resistance persists. If still unsuccessful, refer to Declotting Procedure (adults) and/or consult IV team for assistance.
13) Flush with sterile saline and assess for resistance, swelling and pain.
14) Secure non coring needle with sterile tape strip.
15) If port has two chambers, repeat steps for second chamber.
16) Apply transparent or gauze dressing.

b. De-accessing:

1) Perform hand hygiene
2) Don clean gloves.
3) Cleanse needleless connector with alcohol using friction x 15 seconds. Allow to thoroughly air dry.
4) Assess for blood return
5) Flush with 10 ml NS in prefilled 10 ml syringe and follow with 3 ml Heparin flush (100 units/ml) in prefilled 10 ml syringe as indicated.

6) Stabilize port with 2 fingers and withdraw the needle. Apply pressure to site with gauze until any bleeding stops.

c. Apply small 2x2 gauze and transparent dressing as needed or apply a adhesive bandage.

Monitoring and assessment:

1) Assessment frequency:
   a) Inpatient: at least every 8 hours and prn when accessed
   b) Outpatient/Home Health: whenever accessed for medication or fluid administration and with patient complaint.
2) Perform hand hygiene.
3) Don gloves and other PPE as needed.
4) Ask patient about any discomfort to area.

5) Inspect site for infusion-related complications (including, but not limited to): redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, and/or numbness.

d. Site duration:
1) Implanted Port: Indefinitely in the absence of complications.

2) Right angle, non-coring Huber needle and dressing: Every 7 days, as long as access is ordered.

e. Dressing change:

1) Perform first dressing change 24 hours after insertion of port or as ordered by insertion team. (Access needle will still need to be changed after total dwell time of 7 days).
2) Don mask and head covering
3) Perform hand hygiene
4) Don clean gloves.
5) Remove old dressing.
6) Assess exit site.
7) Remove clean gloves
8) Perform hand hygiene
9) Don sterile gloves.
10) Scrub site using a back and forth motion with CHG swab stick the area to be covered by the dressing. (Refer to Section 2 for CHG sensitivities)
11) Apply appropriate dressing:
   a) Transparent dressing: Routine dressing for all patients. Change dressing q 7 days and prn when dressing becomes loose, damp, or soiled. Apply dressing in the direction of the catheter and minimize air trapped beneath the dressing.
   b) Gauze dressing: For patients with skin sensitivities or requiring frequent dressing changes. Change sterile gauze q 48 hrs and prn when dressing becomes loose, damp, or soiled. Fold one 2 x 2 in half and place under catheter at the needle site. Place second 2 x 2 gauze over the catheter and the first 2 x 2 gauze. Apply tape over entire dressing.

f. Re-accessing:

1) Don clean gloves and PPE as needed.
2) Locate the chamber(s) and septum by palpation.
   Power ports (all brands): If patient has a power port ID card and/or power port bracelet and/or verbally states they have a power port, palpate for landmarks unique to that manufacturer’s device. If unable to verify power port is present, assume that a regular, non-power port is in place.
3) *Consider topical pain management to anesthetize site (LMX-4 cream).
4) Don mask and sterile gloves. Scrub site using a back and forth motion with CHG swab stick x 30 seconds the area to be covered by the dressing. Allow to dry. (Refer to Section 2 for CHG sensitivities)
5) Prime the right angle, non-coring Huber needle and tubing using 10 ml sterile saline in prefilled 10 ml syringe and then attach an empty 10 ml syringe to the tubing.
6) Relocate chamber; push right angle, non coring Huber needle through skin and portal septum, holding skin taut, stopping when contact is made with back of chamber.
7) Draw back on syringe to assess for blood return. Discard 5 ml blood. If no blood return or resistance is met, check for open clamp and reposition patient. Re-verify needle placement. Consider re-accessing the port if blood return is absent or resistance persists. If still unsuccessful, refer to Declotting Procedure (adults) and/or consult VAT/VAST for assistance.

8) Flush with sterile saline and assess for resistance, swelling and pain.

9) Secure right angle, non coring needle with sterile tape strip.

10) If port has two chambers, repeat steps for second chamber.

6. **Flushing:**

*For patients with allergies to or cannot receive Heparin, obtain physician order for flushing.

**Maximum Heparin dose per 24 hours:** 2000 units per chamber. **Heparin is not necessary in valved port**

_Note: Implanted port chambers receiving continuous IV medication drips should have blood returned checked and be routinely flushed using caution not to cause unintended bolusing of medications and hemodynamic instability._ Checking for blood return can be omitted for catheters with continuous infusions where interruption could affect hemodynamic stability or blood levels of the drug.

<table>
<thead>
<tr>
<th></th>
<th>Accesses per Day</th>
<th>Flush (each chamber used)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient</strong></td>
<td>0</td>
<td>Saline 5 ml minimum then Heparin pre-filled flush 3 ml (100 units/ml)</td>
<td>Every month</td>
</tr>
<tr>
<td></td>
<td>1 – 4</td>
<td>Saline, 5 ml, IV med, saline, Heparin flush 3 ml (100 units/ml) prefilled (SASH)</td>
<td>With IV med administration</td>
</tr>
<tr>
<td></td>
<td>&gt; 4</td>
<td>NS 2 – 10 ml/hr continuous or other maintenance IV fluid</td>
<td>Continuous</td>
</tr>
<tr>
<td><strong>Home Health</strong></td>
<td>N/A</td>
<td>Saline, 5 ml minimum then Heparin pre-filled flush 3 ml (100 units/ml)</td>
<td>Every month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saline, 10ml - IV med - saline, 10 ml - Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td>With IV med administration</td>
</tr>
<tr>
<td><strong>Outpatient</strong></td>
<td></td>
<td>Saline, 5 ml minimum</td>
<td>For continuous IV meds or fluids infusing, flush only with each IV bag change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saline, 5 ml - IV med - saline, 5 ml - Heparin flush prefilled 3 ml, 100 units/ml (SASH)</td>
<td>With IV med administration</td>
</tr>
</tbody>
</table>
7. Needleless connector change: Change every 4 days (96 hours) with tubing change and PRN.

   1. Don mask and other PPE as needed. * Mask is required for connector changes.
   2. Perform hand hygiene.
   3. Don clean gloves.
   5. If needed, remove dressing.
   6. Cleanse connection between the needleless neutral connector and the extension set or catheter hub with alcohol prior to removing needleless neutral connector.
   7. Remove old connector.
   8. Attach new needleless connector. Flush extension tubing and lumen to confirm patency.

9. If needed, apply new dressing, following steps under "c" above.

8. Documentation:

   a. Assessment and monitoring: Type of port, number of chambers, site, if accessed, needle size (if applicable) site condition, condition of dressing, patency.

9. Reportable Conditions:

   a. Complications at insertion area: redness, ecchymosis, pain, swelling, warmth, blisters, drainage, blanching, leakage, coolness, itching/rash/hives, numbness, skin sensitivities, lack of blood return
   b. Fever, chills.
   c. Inability to flush any line.
   d. Tachypnea, dyspnea, diminished lung sounds on side of catheter insertion, signs of hypoxia.
   e. Excessive bleeding at site.

   f. Implanted port visible or eroding through skin.

10. Removal: Port must be removed by a credentialed MD, PA, or NP.

Section 3: Drawing Blood from Lines

Note: For blood cultures refer to Blood Culture Procedure

A. General Information:

   1. The following are common pitfalls that produce analysis errors and can harm a patient:
b. **Extensive tourniquet time.** A total tourniquet time should be less than 1 minute to avoid hemoconcentration. If unable to locate and obtain blood in this timeframe, release tourniquet for at least 2 minutes before reapplication.

c. **Using too small of a needle or IV catheter with a vacutainer or syringe.** The minimum size used should be a 22 G as smaller sizes are associated with increased hemolysis. If a small IV must be utilized, a syringe (instead of a vacutainer) should be used.

d. **Failure to waste blood when appropriate.** Blood is wasted to rid catheters of medications and electrolytes that are indwelling in the catheter.

e. **Aspirating blood too quickly with syringe.** The plunger should be pulled back at a rate no greater than 1 ml/sec as faster speeds increase hemolysis.

f. Filling tubes in incorrect order or improperly filled tubes. Tubes with fill lines have additives that are important for blood/additive ratios. Order of draw is established to minimize carry-over from tube additives. Both improper order of draw and/or improper filling of tubes will result in lab analysis errors. See chart for appropriate order of draw. [Blood culture Procedure](#)

g. **Improper mixing of specimens.** Not inverting and reverting correctly prevents blood from coming in contact with additive on sides of tube. Mixing too fast may cause foaming or hemolysis.

h. **Not flushing the catheter after procedure.** This will result in blood coagulating in catheter lumen and will result in an occluded catheter.

i. **Failure to label blood tubes at the patient’s bedside.** Not doing so may result in improper labeling of tubes. This will result in providers ordering medications based on erroneous laboratory values, and in its most severe consequence, may lead to blood transfusion errors.

j. *DRAH may use Angel Wing™ (in place of syringe for lab draws) and use one extra lab tube to fill with at least 5ml of blood and discard before collecting samples.*

**B. Existing Peripheral Short (PIV) Catheter:**

1. **Equipment:**

   Physician orders and/or requisitions for lab tests  
   Clean gloves and PPE as needed  
   Tourniquet  
   Alcohol wipes  
   10 ml syringe or smaller depending on volume of blood needed. Using syringes larger than 10 ml to **draw blood** can result in damage to the vein or hemolysis of lab samples.  
   Vacutainer transfer device (optional)  
   Blood tubes needed for ordered lab tests  
   Saline flush(es)

2. **Content:**

   a. Consider risk of phlebitis and infiltration before drawing blood from existing IV catheters after the initial insertion.  
   b. Verify laboratory orders.  
   c. Inform patient and/or family of procedure.
d. Identify patient using two (2) patient identifiers (wristband for name and medical record number and having patient state their name).
e. Assemble equipment.
f. Perform hand hygiene.
g. Don clean gloves.
h. Apply tourniquet 3-4 inches above the IV site. Tourniquet should not remain on patient for more than one (1) minute.
i. Scrub needleless connector with alcohol x 15 seconds (or povidone-iodine if gathering blood cultures). Allow alcohol to air dry.
j. Attach syringe and aspirate 5ml of blood and discard.
k. Change syringes and draw blood at a rate no greater than 1 ml/sec. Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
l. Remove tourniquet and flush IV with 5 ml of normal saline.
m. Use transfer device when drawing with a syringe to safely transfer blood into blood tubes in correct order and confirm tubes are properly filled.
n. Gently and slowly invert and revert tube 8 – 10 times immediately after transfer of blood into tube.
o. All items are single use items and should be disposed of according to institutional policy.
p. Verify each label is complete and legible for patient’s full name and medical record number.
q. Record time, date, and collector’s initials on each label.
r. Apply labels to appropriate tube in the presence of the patient.
s. Remove gloves and perform hand hygiene.

C. Existing PICCs

Note the following:

- 4fr single lumen silicone (BD) catheters and any CT PICC or "Power PICC" have large enough lumens to be used for blood sampling.
- 5fr double lumen silicone (BD) PICCs, 2.8fr and 3fr silicone (BD) PICCs have small internal lumens and should not be used for blood sampling without collaborating with the provider.
- Blood stream infection risks should be discussed with the primary team before routinely drawing blood from PICCs. Each time blood is drawn through a catheter lumen fibrin deposits occur within the catheter and can increase the risk of blood stream infection.
- Midlines are peripheral catheters and are not appropriate for blood sampling due to the risk for phlebitis and thrombophlebitis.

1. Equipment:

   Physician orders and/or requisitions for lab tests
   Clean gloves and PPE as needed
   Saline flush(es)
   Alcohol wipes
   10 ml or smaller syringes depending on the volume of blood needed. Using syringes larger
than 10 ml to **draw blood** can result in damage to the vein or hemolysis of lab samples.

**Vacutainer transfer device**

Blood tubes needed for ordered lab tests

2. **Content:**

   a. **With IV fluid running:**

      1) **Do not routinely draw blood from a central line placed for TPN infusion.**
         a) DRH: Call VAST for all blood draws from TPN line.
         b) DUH: Call TPN nurse before obtaining blood from this line if necessary.
      2) Verify laboratory orders.
      3) Inform patient and/or family of procedure.
      4) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
      5) Assemble equipment.
      6) Perform hand hygiene.
      7) Don clean gloves.
      8) The infusions must be stopped to all lumens for 2 minutes. Then flush the lumen with 5 ml NS and wait 1 minute before continuing with blood draw. If blood products are being administered through the catheter use new venipuncture site or different IV.
      9) Confirm infusion line is clamped above injection site where drawing blood to avoid aspirating infusion contents.
      10) Scrub needleless connector with alcohol x 15 seconds and allow to air dry.
      11) Use 10 ml syringes only.
      12) *Draw 5 ml blood and discard.
      13) Use a syringe to draw blood at a rate no greater than 1 ml/sec (adjust syringe size to volume of blood needed, may need several syringes). Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
      14) Flush lumen with 10 ml NS after blood draw and restart infusion. Flushing line with 10 ml NS is to prevent catheter occlusion.
      15) Use transfer device to safely transfer blood into blood tubes in correct order.
      16) Gently and slowly invert and revert tube **8 – 10 times** immediately after transfer of blood into tube.
      17) All items are single use items and should be disposed of according to institutional policy.
      18) Verify each label is complete and legible for patient’s full name and medical record number.
      19) Record time, date, and collector’s initials on each label.
      20) Apply labels to appropriate tube in the presence of the patient.

      21) Remove gloves and perform hand hygiene.

   b. **Without IV fluid running:**
1) Verify laboratory orders.
2) Inform patient and/or family of procedure.
3) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
4) Assemble equipment.
5) Perform hand hygiene.
6) Don clean gloves.
7) Scrub needleless neutral connector with alcohol x 15 seconds. Allow prep to air dry.
8) Connect syringe and aspirate until see blood to ensure catheter is in correct location, then flush with 5 ml of NS.
9) Wait 1 minute after flushing before continuing with blood draw.
10) Draw a minimum of 5 ml blood and discard.
11) Use a syringe to draw blood at a rate no greater than 1 ml/sec (adjust syringe size to volume of blood needed, may need several syringes). Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
12) Flush lumen with 10 ml NS after blood draw. Flushing line with 10 ml NS is to prevent clotting the line.
13) Use transfer device attached to syringe to safely transfer blood into blood tubes in correct order.
14) Gently and slowly invert and revert tube 8 – 10 times immediately after transfer of blood into tube.
15) All items are single use items and should be disposed of according to institutional policy.
16) Verify each label is complete and legible for patient’s full name and medical record number.
17) Record time, date, and collector’s initials on each label.
18) Apply labels to appropriate tube in the presence of the patient.
19) Remove gloves and perform hand hygiene.

D. Existing Non-tunneled Central Lines (e.g., single and multilumen catheters):

1. Equipment:
   - Physician orders and/or requisitions for lab tests
   - Clean gloves and PPE as needed
   - Saline flush(es)
   - Alcohol wipes
   - 10 ml syringe or smaller, depending on the volume of blood needed. Using syringes larger than 10 ml to draw blood can result in damage to the vein or hemolysis of lab samples.
   - Vacutainer transfer device

   Blood tubes needed for ordered lab tests

2. Content:
a. **With fluid running:**

1. **Do not routinely draw blood from a central line placed for TPN infusion.**
   a) DRH: Call VAST for all blood draws from TPN line.
   b) DUH: Call TPN Nurse before obtaining blood from this line if necessary.
2. Verify laboratory orders.
3. Inform patient and/or family of procedure.
4. Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
5. Assemble equipment.
7. The infusion must be stopped to all lumens for 2 minutes. Flush all lumens used for blood draws with 5ml NS and wait for 1 minute prior to continuing with blood draw. If blood products are being administered through IV use new venipuncture site or different IV.
8. Confirm infusion line is clamped above injection site where drawing blood to avoid aspirating infusion contents.
9. Scrub needleless connector with alcohol x 15 seconds. Allow prep to air dry.
10. Draw 5 ml blood and discard.
11. Use a syringe to draw blood at a rate no greater than 1 ml/sec. Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
12. Flush lumen with 10 ml NS after blood draw and restart infusion. Flushing line with 10 ml NS is to prevent catheter occlusion.
13. Use transfer device to safely transfer blood from syringe into blood tubes in correct order.
14. Gently and slowly invert and revert tube **8 – 10 times** immediately after transfer of blood into tube.
15. All items are single use items and should be disposed of according to institutional policy.
16. Verify each label is complete and legible for patient’s full name and medical record number.
17. Record time, date, and collector’s initials on each label.
18. Apply labels to appropriate tube in the presence of the patient.
19. Remove gloves and perform hand hygiene.

b. **Without fluid running:**

1. Verify laboratory orders.
2. Inform patient and/or family of procedure.
3. Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
4. Assemble equipment.
5. Perform hand hygiene
6. Don clean gloves.
7. Scrub needleless connector with alcohol x 15 seconds. Allow to air dry.
8) Connect syringe and aspirate until see blood to confirm catheter is in correct location, then flush with 5 ml of NS.
9) Wait 1 minute after flushing before continuing with blood draw.
10) Draw 5 ml blood and discard.
11) Use a syringe to draw blood at a rate no greater than 1ml/sec. Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
12) Flush lumen with 10 ml NS after blood draw. Flushing line with 10 ml NS is to prevent clotting the central line.
13) Use transfer device to safely transfer blood from syringe into blood tubes in correct order.
14) Gently and slowly invert and revert tube 8 – 10 times immediately after transfer of blood into tube.
15) All items are single use items and should be disposed of according to institutional policy.
16) Verify each label is complete and legible for patient’s full name and medical record number.
17) Record time, date, and collector’s initials on each label.
18) Apply labels to appropriate tube in the presence of the patient.
19) Remove gloves and perform hand hygiene.

E. Existing Tunneled Central Lines:

1. Equipment:
   - Physician orders and/or requisitions for lab tests
   - Clean gloves and PPE as needed
   - Saline flush(es)
   - Alcohol wipes
   - 10 ml syringe or smaller depending on volume of blood needed. Using syringes larger than 10 ml to draw blood can result in damage to the vein or hemolysis of lab samples.
   - Vacutainer transfer device
   - Blood tubes needed for ordered lab tests

2. Content:
   a. With fluid running:
      1) Verify laboratory orders.
      2) Inform patient and/or family of procedure.
      3) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
      4) Assemble equipment.
      5) Perform hand hygiene
      6) Don clean pair of gloves.
      7) The IV must be turned off to all lumens for two minutes and then the lumen for blood draw flushed with 5 ml of NS.
      8) Wait one minute.
9) If blood products are being administered through IV use new venipuncture site or
different IV.
10) Scrub needleless connector with alcohol x 15 seconds. Allow to air dry.
11) Confirm infusion line is clamped above injection site where drawing blood to avoid
aspirating infusion contents.
12) Draw a 5 ml blood and discard.
13) Use a syringe to draw blood at a rate no greater than 1ml/sec. Vacutainers can
increase hemolysis from the vacuum collapsing the vein against the IV catheter.
14) Flush lumen with 10 ml NS after blood draw and restart infusion. Flushing line with 10
ml NS is to prevent clotting in the central line.
15) Use transfer device to safely transfer blood from syringe into blood tubes in correct
order.
16) Gently and slowly invert and revert tube **8 – 10 times** immediately after transfer of
blood into tube.
17) All items are single use items and should be disposed of according to institutional
policy.
18) Verify each label is complete and legible for patient’s full name and medical record
number.
19) Record time, date, and collector’s initials on each label.
20) Apply labels to appropriate tube in the presence of the patient.
21) Remove gloves and perform hand hygiene.

b. **Without fluid running:**

1) Verify laboratory orders.
2) Inform patient and/or family of procedure.
3) Identify patient using two [2] patient identifiers (wristband for name and medical
record number and having patient state their name).
4) Assemble equipment.
5) Perform hand hygiene.
6) Don clean gloves.
7) Scrub needleless connector with alcohol x 15 seconds. Allow prep to air dry.
8) Connect syringe and aspirate until see blood to ensure catheter is in correct location,
then flush with 5 ml of NS.
9) Wait 1 minute after flushing before continuing with blood draw.
10) Draw 5 ml blood and discard.
11) Use a syringe to draw blood at a rate no greater than 1ml/sec. Vacutainers can
increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against
the IV catheter.
12) Flush lumen with 10 ml NS after blood draw to prevent clotting the central line.
13) Use transfer device attached to syringe to safely transfer blood into blood tubes in
correct order.
14) Frequently and slowly invert and revert tube **8 – 10 times** immediately after transfer of
blood into tube.
15) All items are single use items and should be disposed of according to institutional
policy.
16) Verify each label is complete and legible for patient’s full name and medical record number. 
17) Record time, date, and collector’s initials on each label. 
18) Apply labels to appropriate tube in the presence of the patient. 

19) Remove gloves and perform hand hygiene. 

F. Existing Implanted Access Devices (ports): 

1. Equipment: 

   Physician orders and/or requisitions for lab tests 
   Clean gloves and PPE as needed 
   Saline flush(es) 
   Alcohol wipes 
   10 ml syringe or smaller depending on the volume of blood needed. Using syringes larger than 10 ml to **draw blood** can result in damage to the vein or hemolysis of lab samples. 
   Vacutainer® transfer device 

   Blood tubes needed for ordered lab tests 

2. Content: 

   a. Accessed ports **with fluid running**: 
      1) Verify laboratory orders. 
      2) Inform patient and/or family of procedure. 
      3) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name). 
      4) Assemble equipment. 
      5) Perform hand hygiene. 
      6) Don clean gloves. 
      7) All infusions must be turned off for 2 minutes prior to blood draw. 
      8) Then, flush the lumen with 10 ml NS and wait for one minute prior to blood draw. 
      9) Confirm infusion line is clamped above injection site where drawing blood to avoid aspirating infusion contents. 
      10) Scrub needleless connector with alcohol x 15 seconds. Allow to air dry. 
      11) Draw 5 ml blood and discard. This initial blood may contain traces of medications that were infusing that can alter lab results. 
      12) Use a syringe to draw blood at a rate no greater than 1 ml/sec. Vacutainers can increase the risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter. 
      13) Flush implanted port with 10 ml NS after blood draw and restart infusion. Flushing with 10 ml NS is to prevent clotting in the port. 
      14) Use transfer device to safely transfer blood from syringe into blood tubes in correct order. 
      15) All items are single use items and should be disposed of according to institutional policy.
16) Verify each label is complete and legible for patient’s full name and medical record number.
17) Record time, date, and collector’s initials on each label.
18) Apply labels to appropriate tube in the presence of the patient.
19) Remove gloves and perform hand hygiene.

b. Accessed ports **without fluid running**:
   1) Verify laboratory orders.
   2) Inform patient and/or family of procedure.
   3) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
   4) Assemble equipment.
   5) Perform hand hygiene
   6) Don clean gloves.
   7) Scrub needleless connector with alcohol. Allow to air dry. Ensure infusion line is clamped above injection site where drawing blood to avoid aspirating infusion contents.
   8) Flush the catheter with 10 ml NS and wait one minute prior to blood draw.
   9) Draw 5 ml blood and discard. This initial blood may contain traces of medications that were infusing that can alter lab results.
  10) Use a syringe to draw blood at a rate no greater than 1 ml/sec. Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
  11) Flush implanted port with 10 ml NS after blood draw and restart infusion. Flushing with 10 ml NS is to prevent clotting in the port.
  12) Use transfer device to safely transfer blood from syringe into blood tubes in correct order.
  13) Gently and slowly invert and revert tube **8 – 10 times** immediately after transfer of blood into tube.
  14) All items are single use items and should be disposed of according to institutional policy.
  15) Ensure each label is complete and legible for patient’s full name and medical record number.
  16) Record time, date, and collector’s initials on each label.
  17) Apply labels to appropriate tube in the presence of the patient.
  18) Remove gloves and perform hand hygiene.

c. Non-accessed ports:
   1) Verify laboratory orders.
   2) Inform patient and/or family of procedure.
   3) Identify patient using two [2] patient identifiers (wristband for name and medical record number and having patient state their name).
   4) Assemble equipment.
   5) Don mask, head covering and other PPE as needed.
   6) Perform hand hygiene.
   7) Don clean gloves
8) Locate the chamber(s) and septum by palpation.

*Power ports (all brands): If patient has a power port ID card and/or power port bracelet and/or verbally states they have a power port, palpate for landmarks unique to that manufacturer’s device. If unable to verify power port is present, assume that a regular, non-power port is in place.*

9) *Consider topical pain management to anesthetize site.
10) Don sterile gloves.
11) Scrub site using a back and forth motion with CHG swabstick x 30 seconds over the area to be covered. Allow to thoroughly air dry. (Refer to section 2 note for sensitivities about CHG).
12) Perform hand hygiene.
13) Don sterile gloves.
14) Prime the right angle, non-coring Huber needle and tubing using 10 ml sterile saline in prefilled 10 ml sterile syringe.
15) Relocate chamber; push right angle, non-coring Huber needle through skin and portal septum, holding skin taut, stopping when contact is made with back of chamber.
16) Draw back on syringe to assess for blood return. If no blood return or resistance is met, check for open clamp and reposition patient. Verify needle placement. Consider re-accessing the port if blood return is absent or resistance persists. If still unsuccessful, refer to Declotting Procedure (Adults) and/or consult IV team for assistance.
17) Flush the catheter with 10 ml NS and wait one minute prior to blood draw.
18) Draw a 5 ml blood and discard. This initial blood may contain traces of medications that were infusing that can alter lab results. The additional blood waste is needed because tunneled central implanted ports have a larger internal volume than tunneled catheters.
19) Use a syringe to draw blood at a rate no greater than 1 ml/sec. Vacutainers can increase risk of phlebitis and/or hemolysis from the vacuum collapsing the vein against the IV catheter.
20) Flush implanted port with 10 ml NS after blood draw. Flushing with 10 ml NS is to prevent device occlusion.
21) Flush with 5 ml 100 units/ml heparin.
22) Use transfer device to safely transfer blood from syringe into blood tubes in correct order.
23) Gently and slowly invert and revert tube 8 – 10 times immediately after transfer of blood into tube.
24) All items are single use items and should be disposed of according to institutional policy.
25) Verify each label is complete and legible for patient’s full name and medical record number.
26) Record time, date, and collector’s initials on each label.
27) Apply labels to appropriate tube in the presence of the patient.
28) Stabilize port with 2 fingers and withdraw right angle, non-coring Huber needle. Apply pressure to site with gauze.
29) Apply small 2x2 gauze and transparent dressing or adhesive dressing.

**REFERENCES**
Citations:


Policies:

Authoritative Source:

Additional References:

Attachment Names:

Company:

Entities:
DRAH
DRH
DUH