Intravenous Line Maintenance

POLICY: The care of intravenous devices is standardized

PURPOSE: Describes general line care maintenance practices for all venous lines (including PIV, central lines, Hemodialysis, umbilical, PICC, and Port-A-Cath).

PROCEDURE: The ADDENDUM below describes current standards and procedures.

PLEASE NOTE: In March 2010, the previous policy known as “Intravenous Lines, Peripheral, Central, PICC and Dialysis” was divided into 10 discrete policies. Click on links below to find the following information:

- PIV (Peripheral IV) Insertion and Removal
- PICC (Peripherally Inserted Central Catheter) Insertion, Usage, Removal, Troubleshooting, Repair
- Central Venous Line Occlusion Treatment
- Intravenous Line Infiltration and Extravasation Assessment and Treatment
- Venipuncture (Lab Policy)
- Infusion Pump Management (IV pumps)
- Central Venous Tunneled and Implanted Lines (Broviac, Hickman, Port O Cath, etc) Pre-op, Post-op, Port Access, Troubleshooting, Repair
- J-Tip Use with Buffered Lidocaine
- Central Venous Lines Temporary Non-Tunneled Lines (i.e. temporary lines, such as Cook catheters) Insertion and Removal

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ADDENDUM:

I. General Considerations:
   A. For abbreviated one page table of maintenance practices, see APPENDIX I
   B. Inclusion Criteria: This policy applies to all intravenous lines, as well as some arterial lines
      1. PIVs
      2. Central Venous Lines include:
         a. Temporary CVL
         b. PICC
         c. Tunneled (permanent)
         d. Implanted Port
         e. Transthoracic
      3. PA Catheters (though an arterial line, this is cared for as a central venous line)
      4. Umbilical- UAC and UVC (though a UAC is an arterial line, this is cared for as a central venous line) (see umbilical line policy for dressing change)
      5. Dialysis catheters
      6. Catheters for CRRT
      7. CRRT circuit
      8. ECMO circuit (see ECLS policy for dressing change)
   C. Medications requiring central line:
      1. Consult the formulary or pharmacy for drug specific requirements.
      2. General considerations for medications requiring central access include:
         a. TPN > 900 mOSm.
         b. IV fluids with > 12.5% dextrose without amino acids
         c. Vaso-constrictive infusions such as dopamine, epinephrine, norepinephrine and vasopressin for blood pressure support
         d. Irritating and corrosive medications such as potassium chloride drip, calcium chloride, and undiluted sodium bicarbonate
   D. Use of Arm boards:
      1. Arm boards may be utilized to facilitate IV therapy and prevent removal of IV. They are not considered “restraints”, unless long arm board used (IV in antecubital space) or board attached to the bed in some manner which causes the entire extremity to be immobilized from movement. (If restraints are required, See Clinical P&P, Restraint or Seclusion)
      2. Coban should not be utilized to secure arm boards
         a. The IV site is visually assessed, despite the immobilization device, every one hour, if peripheral, or every two hours if central for assessment of the IV site.
   E. Disconnection of IV tubing:
      a. IV lines should not be disconnected to dress patients. For patients who are wearing clothes, select clothing that allows the IV to remain connected, during changes.

II. Daily assessment for need for intravenous line
   A. Daily, on rounds, the multidisciplinary team should discuss the ongoing need for the line. Reducing the use of intravascular lines reduces the risk of infiltration, and catheter associated blood stream infections.
1. The line can be removed
2. Any medications that are being administered via a central line can be administered via PIV
3. Any medications that are being administered via a central line, can be discontinue or administered via enteral route
4. Any labs being obtained via the central line can be decreased in frequency or discontinued

III. Assessment of insertion site and dressing
   A. Site Check.
      1. Patients receiving IV therapy will have the infusion site assessed:
         a. Central line: at least every two hours
         b. PIV: every one hour
         c. The patient’s nurse must consider the need to assess the site more frequently than required depending on the type of vascular device, type and rate of infusion, and patient acuity, mobility, and ability to communicate.
         d. Site assessment to include dressing, to ensure it is secure, dry, intact and dated
         e. Signs of infection or other complications, including:
            i. Swelling
            ii. Tenderness
            iii. Redness or blanching
            iv. Increased or decreased temperature.
            v. Drainage
            vi. Leaking IV fluid.
         f. For IVs in extremities, distal perfusion assessment to include:
            i. Color
            ii. Warmth
            iii. Edema
            iv. Alterations in movement of function
               ● If limb is cool, further assessment needs to be taken; the line may be placed in an artery.
               ● Consider obtaining a blood gas from the line.
         g. Ease of aspiration or flushing during blood draws

IV. Line Entry
   A. Line entry includes:
      1. Entry into cap or connector or line
      2. Disconnection of tubing from a cap, connector, etc
      3. Tubing Change
      4. IV syringe change or removal
   B. Procedure
      1. Perform hand hygiene
      2. Don clean gloves
         a. If already wearing gloves, such as in isolation or related to other procedure, remove them, perform hand hygiene and don clean gloves
      3. Vigorously Scrub the external surface of the cap, connection, or line with alcohol for 15 seconds…Allow to completely dry (15 seconds)
V. **Tubing Change and Prime Procedure:**

A. **Frequency**

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalloid</td>
<td>Every 72 hours</td>
</tr>
<tr>
<td>Medication Line</td>
<td>Every 72 hours</td>
</tr>
<tr>
<td>PN</td>
<td>Every 24 hours</td>
</tr>
<tr>
<td>Lipids</td>
<td>Every 24 hours</td>
</tr>
<tr>
<td>Albumin</td>
<td>Every 24 hours</td>
</tr>
<tr>
<td>Propofol</td>
<td>Every 12 hours</td>
</tr>
<tr>
<td>Blood Products</td>
<td>Every 4 hours</td>
</tr>
</tbody>
</table>

B. **Tubing change includes**

1. Tubing’s, extension sets, bi/tri/quadrifuse, connectors, T-connectors, caps and all other extensions and connectors right up to the hub of the catheter.
   a. Tubing change should include all components to the IV catheter.
2. Avoid the use of stopcocks whenever possible.
3. Tubing is changed when a new line is placed and at indicated frequency above.

C. **Preparation Procedure**

1. Ideally, lines are attached to the patient, as soon as they are primed and labeled.
2. Collect all tubing, caps, valves, extensions, filters, etc. Leave in packages
   a. Utilize clean surface, such as bedside table, bedside cart, work area (not trash can, linen hamper, area next to sink)
   b. Cover area with sterile drape or sterile towel, creating a designated area for preparing and priming IV lines.
   c. If only one tubing is being changed, with a direct spike to a single bag, the tubing package may act as the sterile field. Add on connectors, etc can be opened onto this field
3. Perform hand hygiene
4. Don clean gloves to be worn throughout the procedure
5. Open all tubings, caps, valves, extensions, filters, etc, onto the sterile field (leaving end caps on connectors, to keep internal surface sterile
6. Save one tubing package for priming
7. Attach all parts together, with microclave cap as final connection before attachment to line
8. Label as indicated below
9. Prime tubing into empty IV package, with end cap in place. (Some caps may need to be removed or loosened momentarily, such as with lipids. (Do not prime into sink, trash can, recycle bin, gauze, floor, etc.)
   a. For inotropic and vaso-active infusions, see ICU and other pertinent policies for pre-priming procedure through infusion pumps

D. **Tubing Change (after all lines labeled and infusions and pumps verified by 2nd RN)**

1. Clean hands, don clean gloves
2. Scrub the connection site with alcohol for 15 seconds and allow to dry for 15 seconds
3. Clamp line
4. Remove old tubing/connectors/cap and replace with new, unclamp and infuse

VI. Line and Tubing Labeling
A. General: Label the pumps, catheter, and tubing of line with the standard pre-printed label tape.
   1. Label all vascular lines.
      a. Vascular lines include:
         i. Arterial.
         ii. Central Venous Pressure lines (include temporary, Hickman, Broviac, Port, etc).
         iii. Left Atrial.
         iv. Peripherally Inserted Central Catheter (PICC).
         v. Peripheral IV.
         vi. Right Atrial.
         vii. Pulmonary Artery.
         viii. Umbilical.
         ix. Hemodialysis Catheter
         x. Pheresis Catheter

B. Vascular lines are labeled as they exit the patient, indicating the type of line; CVL, Arterial, PIV, etc.

C. IV Tubing:
   1. Label all IV tubing (syringe and large volume pump) with the type of solution or medication infusing.
      a. Close to the bag or syringe below the drip chamber.
      b. At all connections and injection ports.
      c. Next to or on clamp.
      d. Distal; at connection to the patient line.
   2. Syringe Pump: Magnum Set (ICUs) as above plus:
      a. Between the spike and the clamp.
      b. All 3 sides of stopcock tubing.
   3. Date should be placed on all tubing closest to the bag or syringe with the date to be changed.

D. Pump:
   1. For syringe pumps label with the medication/solution infusing at the bottom of the pump
   2. For large volume pumps, labels are not required, because of the prominent drug name on the screen.
   3. If used for multiple medications label as Med Line.

E. For patient requiring a radiologic exam with contrast, the RN or anesthesiologist will label the most appropriate line for injection of contrast with the RAD inject OK.

Figure 1

1. PICC lines less than 3Fr should not be used for injection of contrast. If you are not sure whether contrast can be injected please page the VAS team.
a. if the patient will not be accompanied by a nurse or anesthesiologist, the labeling should occur before they leave the unit.
b. If the patient will be accompanied by a nurse or anesthesiologist, the labeling may occur in radiology.
c. The **RAD inject OK** label should be removed after the procedure has been completed.

### VII. Cap Change

A. Caps should be changed as part of routine tubing changes at the same interval

<table>
<thead>
<tr>
<th>Type of Fluid</th>
<th>Frequency</th>
<th>Notes/Labeling: Caps are not labeled with change date to prevent adhesives from sticking to the device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalloid</td>
<td>72 hours</td>
<td>Change with tubing change</td>
</tr>
<tr>
<td>Medication Line</td>
<td>72 hours</td>
<td>If line is locked for intermittent medications, cap should be changed at same time medication line tubing is changed</td>
</tr>
<tr>
<td>PN</td>
<td>24 hours</td>
<td>Change with tubing change. If PN is being administered through a quad/trifuse with other crystalloids, include cap between tubing and quad/trifuse. Cap attached to central line will be changed with routine tubing change for crystalloid</td>
</tr>
<tr>
<td>Lipids</td>
<td>24 hours</td>
<td>Change with tubing change. If lipids are being administered through a quad/trifuse with other crystalloids, include cap between tubing and quad/trifuse. Cap attached to central line will be changed with routine tubing change for crystalloid</td>
</tr>
<tr>
<td>Albumin</td>
<td>24 hours</td>
<td>Change with tubing change</td>
</tr>
<tr>
<td>Propofol</td>
<td>12 hours</td>
<td>Change with tubing change</td>
</tr>
<tr>
<td>Blood</td>
<td>24 hours</td>
<td>Change with every blood transfusion, but not more frequently than daily. If multiple transfusions, change at the end of the cycle. If patient receiving continuous blood transfusion, change with routine AM draw.</td>
</tr>
<tr>
<td>Cap used for blood draw</td>
<td>24 hours</td>
<td>Change with every blood draw, but not more than daily. If multiple blood draws, change with routine AM draw.</td>
</tr>
<tr>
<td>Cap on “locked” line (no meds and no blood draws)</td>
<td>72-96 hours Sun &amp; Wed</td>
<td>If other lines/lumens are in place, change cap at same interval as others. If no other lines/lumens are in place, change cap at same change every Sunday and Wednesday.</td>
</tr>
<tr>
<td>Tego™ Caps placed on lines used for dialysis</td>
<td>Weekly</td>
<td>Caps are changed by Dialysis RN. Dialysis RNs keep track of due dates and change accordingly. If the line is no longer being used for dialysis and there is no plan to use it in the future, it should be treated like any other central line, with regular caps, changed as described above.</td>
</tr>
</tbody>
</table>
| Tego™ Caps placed on lines used for plasmapheresis (managed by nephrology) | Weekly | Pheresis lines managed by nephrology: Caps are changed by Dialysis RN. Dialysis RNs keep track of due dates and change accordingly. Dialysis RN will place a note in patient’s Caredex, so RN is aware that dialysis RN wills mange cap change. If the line is no longer being used for pheresis and there is no plan to use it in the future, it should be treated like any other central line, with regular caps, changed as described above. Pheresis lines managed by blood center are cared for like any
B. Procedure to be followed whenever changing the cap at the central line connection (usually, the cap change will be done at the same time as the tubing change)
   1. Obtain new cap
   2. Obtain normal saline or heparin flush, as indicated
   3. Perform hand hygiene. Don gloves
   4. Attach the normal saline or heparin flush to the cap and flush the cap.
      a. If the line will be left “locked,” leave the syringe attached, so the cap/line can be flushed, once attached
      b. If IV fluids will be connected to the cap and line, cap may be flushed with normal saline or flushed with IV fluids that will be connected (such as in the ICU, where most fluids are pre-primed and allowed to infuse prior to connecting to the patient)
   5. Sterile drape is placed under line at cap site
   6. Scrob cap connection site with alcohol for 15 seconds, and allow to dry for 15 seconds
   7. Clamp line
   8. Change cap
   9. Unclamp line and flush with turbulence

VIII. Bag and Syringe Change
   A. Every 72 hours if IV solution stocked on unit (nothing added by pharmacy)
   B. Every 24 hours if prepared by pharmacy, including drips, PN, or intralipids, or albumin.
   C. Every 12 hours for propofol

IX. Dressing Change:
   A. Obtain supplies:
      1. Clean gloves
      2. Dressing change kit
      3. BioPatch:
         a. Utilized for the life of all central lines
         b. Exception: Infants < 34 weeks gestation.
         c. Do not use BioPatch on moist or insertion sites leaking fluid or blood
   4. Second person to hold or support child if necessary
   5. Additional/alternative dressing change supplies: Gauze/tape if patient unable to tolerate transparent dressing, different size transparent dressing if necessary

B. Hand Hygiene, thoroughly wash hands
C. Set up line care kit, using wrapper as sterile field
D. Empty contents of the kit onto sterile field
E. Remove dressing with clean gloves
F. Inspect site for signs of infection or skin irritation
   1. If skin irritation is noted, consider wound care consult
G. Remove gloves and clean hands
H. Don sterile gloves.
   1. Perform procedure using aseptic technique
I. Open swabs and drop onto sterile field
   1. Using back and forth motion, clean area around entry site
   2. Perform a 10 second scrub with each swab for a total of 30 seconds
   3. For femoral lines, scrub for 2 minutes

J. Allow area to dry for 30 seconds, no need to pat dry or rinse for non-neonate patients.
   1. For premature infants < 34 weeks gestation, utilize chlorhexidine gluconate (provided by pharmacy).
      a. Allow to air-dry for 30 seconds, remove excess CHG with sterile NS or H2O with excess wiped dry
   2. For the patient who has a documented allergy to chlorhexidine, utilize povidone iodine, instead of chlorhexidine and leave off BioPatch.
   3. Clean skin as above allowing for a 3 minute contact time with Betadine
      a. Allow to dry for 60 seconds then clean povidone iodine from the skin with sterile water or sterile 0.9% sodium chloride

K. For patients with permanent lines, after cleansing the skin, cleanse the catheter with alcohol by securing catheter near insertion site with 1 alcohol pad and cleansing with a 2nd alcohol pad

L. After the chlorhexidine gluconate has completely dried, apply Biopatch

M. Place BioPatch over the insertion site (see APPENDIX III)
   1. To avoid skin irritation make sure that skin is dry before placing the BioPatch!
   2. Do not use in premature infants < 34 weeks gestation.
   3. Place BioPatch circumferentially around the line with the blue waffle side up.
   4. Do not use BioPatch over insertion sites that are moist or leaking fluid or blood

N. Apply No Sting Barrier film and allow to completely dry. AVOID area under BioPatch

O. Cover with dressing (transparent preferred, or gauze and tape).
   1. Gauze and tape (Oasis dressing preferred) should be used for lines that are leaking fluid or blood and changed prn moist and at least every 48 hours

P. Make a loop in the catheter below or to the side of the dressing, assuring that there are no kinks, and secure it with a transparent dressing or knit tape.
   1. Make certain that there is no tension on the catheter at the exit site.

Q. Date the dressing, with the date it was changed

R. A transparent dressing is changed every 7 days and prn when no longer intact.
   1. In premature infants < 34 weeks gestation, less than 1 month old or children with skin disruption, dressing changes may be done prn only.

S. Gauze and tape dressing, if used, is changed every 48 hrs and prn when no longer intact.
   1. This includes Oasis, gauze and tape, Ray Marshall, and any other dressing other than the standard transparent dressing.

T. Document the dressing change in the progress notes by utilizing the Procedure Note Sticker that is included in the dressing change kit. Document any skin breakdown, drainage, or variance from the standard dressing change in the progress notes.

X. Blood Draw: Drawing Blood from a Catheter:
   A. For Hemodialysis lines see Clinical P&P, Accessing Hemodialysis Line (HD).
B. General:
1. Obtain supplies;
   a. Note; syringes smaller than 10 mL should not be used when flushing the catheter to avoid excessive pressure and possible rupture of the catheter.
2. 5 mL syringe for drawing waste
3. Clean gloves
4. Syringe(s) for sample
5. 10 mL preservative-free 0.9% sodium chloride (NS) (See Appendix II)
6. 4 alcohol swabs
7. Blood sample supplies
8. Clean drape(s)
9. Sterile blue cap (to protect IV tubing if in use)

C. Obtain additional supplies if heparin locked after a blood draw:
1. Heparin if required
   a. Volume and concentration varies per service and line type; (see table).
   b. Cap
      i. If drawing blood through a microclave cap, the cap should be changed. If the patients are receiving frequent blood draws, the cap does not need to be changed greater than every 24 hours. Typically, the 24 hour cap change will be done with routine morning labs.
2. Explain procedure to patient.
   a. Follow standards for patient ID verification.
3. Wash hands thoroughly and don gloves.
4. Lay clean drape under line.
   a. Open supplies onto drape
      i. A second drape may be used if needed
5. When drawing blood from multilumen catheters
   a. The largest lumen is the preferred lumen from which to obtain the specimen.
6. Turn off infusions on all lumens of the catheter before drawing blood sample.
7. Clamp all lumens not being used for blood drawing before drawing the blood sample.
8. If not attached to IV tubing;
   a. Clean cap with 15 second alcohol scrub.
   b. Allow 15 second dry time.
9. If attached to tubing:
   a. Scrub around the connection where the IV tubing meets the line with alcohol for 15 seconds and allow 15 second dry time
   b. Disconnect IV tubing from cap
   c. Attach sterile cap or cover to end of IV tubing to maintain sterile technique.
   d. Scrub the cap with a 15 second alcohol scrub
      i. Allow a 15 second dry time.
10. Attach 5 mL empty syringe to line
    a. Withdraw waste sample
       i. Waste amount varies per line type; (see table)
b. Remove and discard waste sample.
c. Alternate waste options:
i. For Hickman lines only, a push-pull method is used ONLY when blood draws > 3 mL/kg/day
   • Instead of discarding waste sample, gently withdraw and return volume without removing syringe.
   • Do this 3 times in succession, then withdraw specimen amount on the 4th pull.
d. In the ICU, if patient does not have a closed blood draw set (line is not transduced), waste sample can be returned to patient using a stopcock method to collect blood
   i. Prepare stopcock with sample syringe and waste syringe
   ii. Place clean drape under line
   iii. Clean central line cap with 15 second alcohol scrub and allow for 15 second dry
   iv. Attach prepared stopcock to cap
   v. Aspirate waste for clearing volume into waste syringe attached to stopcock
   vi. Withdraw collection sample into sample syringe attached to stopcock
   vii. Return waste to patient
   viii. Remove waste syringe from stopcock, attach saline syringe
   ix. Flush central line with NS via stopcock
   x. Remove stopcock with attached collection sample
   xi. Clean central line cap with alcohol for 15 seconds and allow 15 seconds to dry before reconnecting to tubing

11. Attach empty syringe to catheter hub, size to be determined by amount of blood needed. Several syringes may be needed to obtain required amount of blood.
a. Withdraw amount of blood needed for lab studies.
i. Note it is important to pull back slowly and gently. If you are pulling air into the syringe you are pulling too hard and can cause hemolysis of the sample.
b. Remove blood sample syringe(s)
c. Immediately attach the 10 mL normal saline and flush the line, with the volume indicated on the table.
d. The line does not need to be re-prepped with alcohol, unless the tip was contaminated during the blood draw collection.
e. Place blood in tubes
f. Change cap if required
g. Reconnect catheter to IV tubing and continue IV infusion, or heparinized saline lock
h. Clamp catheter if not connecting to continuous infusion
i. Perform specimen identification check per ID policy.

XI. Bathing:
A. For showering or bathing (excludes bed baths done by staff), where tubing and sites are exposed to water:
   1. Cover the dressing using the Aqua Guard water-resistant 5555 dressing.
   2. Wrap all connections and injection ports with Parafilm.
3. Prevent insertion site, connections, and injection ports from becoming submerged in bath water. If this is not possible, do not allow full tub bathing.

4. If dressing or caps are wet when protection is removed, replace immediately.

XII. Off-Unit Management:

A. Patients Receiving IV Therapy Away from the Patient Unit:

1. Procedure:
   a. The nurse responsible for the patient will be notified whenever the patient leaves the patient care area
   b. Every effort will be made to assure that the volume to be infused (VTBI) will last the duration of the patient's absence from the unit. VTBI should not exceed 2 hours.
   c. IV pumps are plugged into electrical outlets whenever possible when away from the unit.
   d. IV pumps are not to be turned off for any reason except for patient procedure requiring this be done.
   e. The patient may leave with IV medications, chemotherapy and blood products infusing as long as;
      i. The patient’s RN has given permission
         • NOTE; An RN must visualize the patient every 30 minutes during any blood product infusion
      ii. If a patient is receiving a medication via a syringe pump, primary IV fluids should be infusing to maintain line patency once the syringe medication infusion is completed.

2. Alarms:
   a. Non-nursing hospital staff may plug in the IV pump in the event of a “low battery alarm”.
   b. Trained staff in other departments may reset VTBI of IV fluids as needed.
   c. For all other alarms the patient should be returned to the patient unit for evaluation.
   d. Only nursing staff may make changes to medication and blood product infusions.
   e. Make every effort to maintain the integrity of the IV site and IV patency.
      i. Prevent kinks/occlusions/pulling of any IV tubing
      ii. Ensure any IV boards are kept in place
      iii. Ensure dressing is not disturbed

3. If IV tubing becomes accidentally disconnected:
   a. Non-trained staff or volunteers:
      i. Clamp line (if present)
      ii. Call patient’s nurse or return to unit immediately
      iii. If the end of the line is not covered with a cap; make every effort to avoid anything touching the end of the line
      iv. Do not attempt to re-attach tubing
   b. Trained staff:
      i. Clamp line (if present)
      ii. Clean hands and don gloves
iii. If the end of the line is not covered with a blue cap;
   • Make every effort to avoid anything touching the end of the line
   • Cover line with a gauze or alcohol swab if available
   • Do not attempt to re-attach tubing or cap
   • If new sterile caps are available; replace

c. Contact patient’s nurse and immediately:
   i. If the end of the line is covered with a blue cap:
      • Scrub the cap with an alcohol swab for 15 seconds and allow to dry for 15 seconds
   ii. Flush line with normal saline, per volume indicated in APPENDIX II
      • Do not re-attach old IV tubing
      • Contact patient’s nurse for next steps
      • Attach new IV tubing or return to patient unit immediately

REFERENCES:

Goodwin ML.


National Association Children’s Hospitals and Related Institutions. PICU Collaborative to Eliminate CABSI. 2010. [http://www.childrenshospitals.net/AM/Template.cfm?Section=%20Collaboratives1&Template=/]


Plumer’s Principles and Practice of IV Therapy. 1993.


# APPENDIX I: General Line Care for All Venous Lines

Central Line Maintenance Abbreviated Grid (3/2010). See ON-LINE Policy for most up to date complete details

| Assessment of insertion site and dressing | PIV: Hourly  
|                                           | Central: Every 2 hours |
| Line Entry: Cap or Connector or Line | Hand Hygiene  
| - Entry                                 | Don clean gloves  
| - Disconnection of tubing               | 15 second alcohol scrub  
| - Tubing Change                         | 15 second dry time  
| - IV syringe change or removal          | |
| Tubing Change Frequency                 | Crystalloid Every 72 hours  
|                                         | Medication Line Every 72 hours  
|                                         | PN Every 24 hours  
|                                         | Lipids Every 24 hours  
|                                         | Albumin Every 24 hours  
|                                         | Blood Every 4 hours  
|                                         | Propofol Every 12 hours  
| Tubing Change and Prime                 | Sterile drape or towel on clean surface for prep  
|                                         | Tubing change should include caps, connectors, extensions, down to the hub of the catheter.  
| Line and Tubing Labeling                | Tubing next to syringe or bag  
|                                         | Injection ports  
|                                         | Clamps  
|                                         | Distal at site attached to patient  
| Cap Change                              | Same frequency as tubing change, except  
|                                         | Every 24 hours if blood administered or drawn through cap  
|                                         | If locked with no meds & no blood draws, change Wed & Sunday  
|                                         | Use Tego caps, changed weekly by dialysis RN on patients undergoing dialysis or pheresis (pheresis managed by nephrology only. See policy content for details  
| Bag and Syringe Change                  | Every 72 hours if no additives (e.g. IV solution stocked on unit).  
|                                         | Every 24 hours if additives, intralipids, albumin  
|                                         | Every 12 hours propofol  
| Dressing Change                         | Requires use of Dressing change kit  
|                                         | Change PRN not pristine  
|                                         | Transparent dressing every 7 days  
|                                         | Gauze and Tape every 48 hours (gauze and tape should be used for moist or leaking dressings)  
|                                         | Date dressing  
| Flush (NS and Heparin)                  | See APPENDIX II  
| Bathing                                 | Do not submerge dressing or tubing  
|                                         | Cover dressing with Aqua Guard water-resistant 5555  
|                                         | Wrap connections and ports with Parafilm.  
|                                         | Change both if wet after bath  

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**APPENDIX II: Flush (normal saline and heparin)**

**Heparin Lock and Normal Saline Flush**
For lines without continuous infusions, flush all lines with NS prior to administering heparin flush.
Do not exceed 50 units/kg/day. (for SCCA patients that approach 50 units/kg/day, change to 10 unit/mL flush)

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Venous Temporary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cook, etc All Sizes</td>
<td>2 mL</td>
<td>Normal Saline 1.5 mL</td>
<td>Heparin 10 unit/mL</td>
<td>1.5 mL or volume printed on catheter hub for apheresis lines</td>
<td>Every 8 hours</td>
</tr>
</tbody>
</table>

**Central Venous Permanent (tunneled)**

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hickman, Broviac, etc. All sizes</td>
<td>5 mL</td>
<td>Normal Saline 5 mL</td>
<td>Heparin 10 unit/mL</td>
<td>1.5 mL or volume printed on catheter hub for apheresis lines</td>
<td>Every 24 hours</td>
</tr>
</tbody>
</table>

**Hemodialysis**

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mL</td>
<td>Normal Saline 5 mL</td>
<td>Heparin 1,000 unit/mL, volume printed on catheter hub</td>
<td>After every hemodialysis run or weekly, if not in use</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PICC**

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 – 2 French*</td>
<td>DO NOT DRAW LABS</td>
<td>Normal Saline 5 mL</td>
<td>Heparin 10 unit/mL</td>
<td>0.5 mL</td>
<td>Every 6 hours</td>
</tr>
<tr>
<td>Greater than 2 French</td>
<td>2 mL</td>
<td>Normal Saline 5 mL</td>
<td>Heparin 10 unit/mL</td>
<td>0.5 mL</td>
<td>Every 12 hours</td>
</tr>
</tbody>
</table>

**PIV**

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>All brands All Sizes</td>
<td>2 mL</td>
<td>Normal Saline 1-3 mL</td>
<td>NO HEPARIN</td>
<td>N/A</td>
<td>Every 6 hours</td>
</tr>
</tbody>
</table>

**Port (Port a Cath)**

<table>
<thead>
<tr>
<th>Line Type</th>
<th>Lab Draw Waste Volume</th>
<th>Normal Saline Flush Volume</th>
<th>Heparin Concentration</th>
<th>Heparin Volume</th>
<th>Heparin Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>All brands All sizes</td>
<td>5 mL</td>
<td>Normal Saline 10 mL</td>
<td>Heparin 10 unit/mL</td>
<td>3 mL</td>
<td>Every 24 hours</td>
</tr>
</tbody>
</table>

*If solutions are running at <20 mL/hr, providers must order heparin 0.5 units/mL with the maintenance fluid

**APPENDIX III:**
**Clinical Policy/Procedure: Intravenous Line Maintenance**

**How to apply BioPatch® Disk:**

1. Prepare the insertion site. Secure catheter at least 1" (2.5 cm) from insertion site.
2. Ensure skin prep is completely dry. Place BioPatch around catheter printed side up.
3. Align catheter with radial slit. Ensure edges of slit touch.
4. Secure catheter and BioPatch with transparent film dressing. Ensure complete contact between BioPatch and skin.

**How to remove BioPatch:**

1. Peel film away from catheter.

**Do’s and Don’ts:**

- **Do** secure catheter at least 1" (2.5 cm) from insertion site. This allows proper placement of BioPatch®.
- **Do** align radial slit with catheter. This helps easy removal.
- **Do** ensure edges of slit touch. This assures efficacy.
- **Don’t** place BioPatch with white side up. Antimicrobial white side must face skin. If wrong, change immediately.
- **Don’t** allow slit edges to straddle catheter. Edges of slit must touch to assure efficacy.
- **Don’t** secure catheter too close to entry point. This will prevent proper placement of BioPatch®.
- **Don’t** place BioPatch on catheter. BioPatch® must have complete contact with skin to assure efficacy.

**Ordering BioPatch®**

<table>
<thead>
<tr>
<th>ORDER CODE</th>
<th>4150</th>
<th>4151</th>
<th>4152</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>1&quot; disk (2.5 cm) w/4mm center hole</td>
<td>3/4&quot; disk (1.9 cm) w/1 mm center hole</td>
<td>1/2&quot; disk (1.3 cm) w/7 mm center hole</td>
</tr>
</tbody>
</table>

*Note: For use on premature infants or patients with known sensitivity to CMS. Safety and effectiveness in children under 5 years of age have not been established.*