SUBJECT: INTRAVENOUS THERAPY: GENERAL GUIDELINES

RATIONALE: To assure safe and effective practices in all activities related to intravenous therapy.

SCOPE: Registered Nurses

POLICY: Consistent care is established to assist with prevention of line sepsis and clotting

EQUIPMENT: See individual sections

POLICY:
I. Patient identification is required prior to initiating intravenous (IV) therapy or any changes with the current IV therapy plan per policy RI 11 Patient Identification. Patient identification will include two verifiers.

II. RNs working with IV preparations will be familiar with aseptic technique.

III. IVs utilizing additives will be prepared in the pharmacy.

IV. Good hand washing and standard precautions (gloves) should be used when accessing any IV site.

V. IV sites should be assessed and findings documented at least BID in appropriate nursing documentation. Documentation should include; blood return, patency, appearance of site and for central lines length of catheters

VI. The drug specific library will be used in situations where the smart programmable pumps are utilized. Hard upper limits will not be exceeded.

PROCEDURE:
I. STARTING A PERIPHERAL IV

A. RN will identify MD order for peripheral IV line
1. Restrictions on site of insertion:
   a. Not attempted in feet or legs of an adult without physician’s order.
   b. Not attempted on the limb of a patient who has had axillary lymph nodes removed or who has A-V shunt without physician’s order.
   c. Not attempted on an extremity with a known blood clot.
2. When attempting IV insertion:
   a. No more than two unsuccessful attempts may be performed per nurse.
   b. If unable to accomplish insertion, notify clinical nurse coordinators, if available.

B. RN will document IV insertion in appropriate nursing documentation (including IV site, type, gauge of catheter and number of attempts).

C. A local anesthetic agent may be used when performing IV insertion unless patient refuses or use is contraindicated.

D. Bacteriostatic sodium chloride (with Benzyl Alcohol) is the drug of choice. Up to 0.5 cc. of 0.5% Lidocaine without epinephrine may also be used (obtain order from physician).

E. An extension is placed on the angiocath on all IV starts and restarts. Exception: Do not place extension on IV lines used for contrast injection by radiology.

F. Pre-op IV insertion will be started with #18 angiocath unless otherwise ordered, and macrodrip tubing. If unable to insert a #18 angiocath, document on pre-op check-list.

II. ADMINISTRATION OF IV SOLUTIONS

A. Peripheral IV sites will be changed by the RN every 96 hrs. and prn. EXCEPTION to changing site every 96 hours:
   1. The site is asymptomatic
   2. The patient has poor veins
   3. The IV will be discontinued within 24 hrs
   4. All of the above exceptions should be documented daily when the site is not changed.
B. RNs may administer IVs (maintenance and IV piggyback) via central lines. **RNs only will dc central lines.**

C. RNs may initiate and discontinue peripheral IV catheters.

D. The nurse hanging an IV solution will verify that the solution and additives are correct, that the solution is clear, without particulate, and the container is without leaks or cracks.

E. Bags of IV solution may be left hanging for no more than 72 hours. **EXCEPTION to leaving solutions hanging for 72 hours:**
   1. Change TPN bag and tubing every 24 hours
   2. Change Lipids bag and tubing every 24 hours
   3. Change Albumin bag and tubing every 24 hours
   4. A shorter period of time is specified by pharmacy.
   
   The RN hanging a new IV bag is responsible to date, time and initial the bag/label.

F. Rate of infusion may be decreased following appropriate assessment of the patient's condition (i.e. fluid overload, combined rate of continuous and IVPB is greater than recommended rate of infusion through peripheral or PICC line-See Attachment A).
   1. Document and notify the physician of the change.
   2. Keep-open rate is 20-25 cc./hr. (use a 250 cc. or 500 cc. bag when hanging a KVO I.V.).

G. Arm boards
   1. Should be used for IVs located in the antecubital space and prn
   2. Should be used to facilitate delivery when a catheter is placed in an area of extremity flexion
   3. The arm board should be removed every 8 hours to assess the extremity status for circulation and pressure.

H. Smart Programmable Pumps
   1. When using the pumps the drug library must be selected.
   2. Upper hard limits are concentration and policy restricted and can not be overridden.

III. CHECKING IV INFUSIONS

A. IV rounds will be made by the responsible nurse on each patient with an IV at the beginning of the shift to verify the following:
   1. Correct patient
2. Correct solution.
3. Correct additives.
4. Correct rate of infusion.
5. Quantity of solution
6. Monitoring equipment appropriate.
7. Insertion site is free from infiltration redness, and positioning problems.
8. Tubing is current.
9. Length of time IV site in place.

B. IV infusions are to be checked at least hourly as follows:
1. Check rate, redness, swelling, pain, wet dressing, purulent discharge, thrombosis, or infiltration. Document findings of hourly assessments at least once a shift.
2. If symptoms present, discontinue IV and have appropriate person restart.
3. If purulent drainage is present notify the attending MD, remove the catheter and culture the site if physician’s order received.
4. Fluid overload
   a. If more than 2 times the ordered fluid volume per hour is received by high risk patient complete an incident report form.
   b. If more than 3 times the ordered fluid volume per hour is received by non high risk patient, complete incident report form.
   c. High risk patients are defined as those patients requiring a pump, see section VIII.
5. Record discontinuation and a description of catheter site in appropriate nursing documentation and IV fluid on MAR.

C. Dressing changes will be performed by an RN
1. Document dressing changes in appropriate nursing documentation.
2. Dressings will be labeled with the date of insertion, initials of the person inserting, size of the catheter, date of the dressing change, and initials of person changing the dressing.
3. Peripheral line: gauze dressing, change every 48 hours. Transparent dressing: change only when dressing compromised or with line change.
4. Central Line: refer to attachment A
5. The IV site will be cleansed with 2% chlorhexidine.

D. Parenteral solutions will be labeled to indicate the rate of infusion, the date, and time of starting the infusion. Do not write on IV bag/container or tubing.

On IVs not given via an infusion pump:
1. Place masking tape along numbers on the bag.
2. Mark the hourly checkpoint, starting at the zero line. Piggyback
medications are included in the hourly total.

3. At the end of the shift, the amount marked as left in bottle should include amount remaining in soluset.

4. If the infusion is ahead or behind at the end of a shift, relabel the I.V. with new tape.

IV. TUBINGS

A. All IV tubing, claves, and 3-way adapters will be changed every 72 hours as a new bag of fluids is hung. Claves should also be changed after blood draws. **EXCEPTION to changing tubing every 72 hours:**
   1. Change TPN and lipids every 24 hours
   2. Change Albumin every 24 hours
   3. Change Septra/Bactrim every dose
   4. Blood and blood products see blood administration policy (IV 04)
   5. Other drugs as specified by Pharmacy

B. Label new tubing with a label near the top of the tubing showing the date and time of tubing change and initials of nurse who changed the tubing.

C. Each secondary infusion (piggyback) will have its own tubing.
   1. When patient is receiving only one kind of secondary infusion with a primary IV, leave the secondary line connected to the primary IV tubing.
   2. When patient has more than one secondary infusion, use a multi injection site and leave all secondary sets connected to primary IV tubing, this is the preferred method. Or disconnect the secondary set and cap after each infusion.
   3. Change all secondary tubing at the same date and time as primary tubing even if secondary tubing is not due for change.

V. FILTERS

A. A 0.22 micron filter will be used to administer antibiotics peripherally and on all fluids given via a central line. **EXCEPTIONS TO USING FILTERS:**
   1. Patients going to surgery
   3. Albumin
   4. Protonix (Use filter provided by pharmacy)

B. A 0.22 micron filter is not needed for antibiotic administration of less than 24 hours duration.

C. When a filter is used, place the filter at the end of the primary line on running IVs. Do not place filter on secondary set.

D. Change filters at the same time as the primary tubing change.

E. A 0.22 micron filter will be used to administer TPN solutions when IV fat
emulsions are 'piggy backed' below the filter.

F. A 1.2 micron filter will be used to administer TPN solutions when the IV fat emulsion is contained within the TPN bag.

VI. CLAVE VALVES (BUFF CAP)

A. A buff capped peripheral IV may be inserted only with a physician's order

EXCEPTION: An additional line is needed to run a solution which is incompatible with the primary IV or a buff cap is needed for radiology procedures.

VII. FLUSHES

A. All lumens of peripheral and central lines that utilize an IV clave must be flushed
after each medication or every 8 hours utilizing a 10cc syringe with 10 cc of normal saline for injection. Exception: See attachment B for PICC and implanted port that additionally need a heparin flush.

1. When flushing a central line use a turbulent flow of “push-stop-push-stop” technique to reduce buildup of residue on inner surface of catheter.

2. Keep positive pressure on the syringe after the flush and clamp line prior to removing syringe to maintain positive pressure and prevent backflow of blood.

B. Aspirate the central venous catheters and PICC to confirm patency prior to administration of medications and/or solutions. After blood return verified, flush with at least 10cc of normal saline in a 10cc syringe, and then administer medication. Flush after the medication with 10cc of normal saline in a 10cc syringe. Refer to Attachment B for lines needing an additional Heparin flush.

C. If unable to aspirate from a central line, suspect malpositioning of the catheter or an occlusion by a non thrombotic or thrombotic occlusion, and report to physician. If after problem solving for non-blood return and no malpositioning or occlusions apparent, may continue to use line.

D. No more than 800 [units] [g1] of Heparin flush will be administered in any 24-hour period without notifying the physician.

E. All normal saline and Heparin flushes will be recorded on the MAR.

VIII. PATIENTS REQUIRED TO USE PUMP

A. As assessed by the RN for patient safety

B. Age 60 or over or under age 15 or less than 90 pounds weight
C. Acute respiratory problems
D. COPD
E. Hypertension
F. Cardiac diseases
G. Renal failure
H. A-V fistula
I. Receiving medication which requires monitoring or where changes in flow could adversely affect the patient's condition, i.e., Heparin, KCL greater than 40 mEq/L., Aminophylline, Tagamet, TPN, Insulin, Dopamine.

I. With central lines.

IX. WITHDRAWING A BLOOD SPECIMEN FROM A PERIPHERAL IV
A. Peripheral lines should not be used for routine blood sampling.

X. WITHDRAWING OF BLOOD FROM CENTRAL LINE
A. Exception: PICC lines are not routinely used for blood draws at Craig Hospital. They may be used if no other access is available.

B. Dialysis catheters may not be used unless there is a specific doctor's order.

C. Assemble appropriate tubes and labels (if not available on unit, consult laboratory). Make sure that the patient’s name and unit record number on the label and tubes match exactly with the patient’s name and unit record number on the patient’s armband!

D. Gather following equipment
   1. 20 cc of normal saline flush in two 10 cc syringes
   2. 5 cc of normal saline flush in a 10 cc syringe
   3. Two 10 cc syringes
   4. Needleless transfer device
   5. Appropriate lab tubes
   6. Labels
   7. Biohazard bag for transport
E. Procedure
1. Proximal port is preferred for blood draws
2. Turn off all fluids running through all ports for 1 minute. Exception: If lipids running, turn off for 15 minutes
3. Flush lumen with 5 cc of Normal Saline
4. Withdraw and discard the first 5 cc of blood in biohazard container. (Waste amount = flush amount). Exception: Discard 10 cc for coagulation tests)
5. Withdraw amount of blood needed for lab test in empty 10 cc syringes
6. Flush line with 20 cc of normal saline in two 10 cc syringes.
7. Using a blood transfer device, transfer blood into proper vacationer tubes; allow the vacuum of tube to proper level. Do Not overfill by forcing blood
   a. Blue top: Must be filled to blue portion of label; 1cc
   b. Lavender (Purple) top: 1 cc minimum and 3 cc maximum.
   c. Green PST (goop): 1-3cc
   d. Gold PST (goop): 4cc
   e. Plain Red, Red/black (goop): 6-8cc
8. Invert (do not shake) the tubes 6-8 times
9. Prime and insert new IV clave and reattach IV tubing as necessary
10. Restart IV fluids at previous rate
11. Label the tubes using the appropriate label per tube as provided. The label must include: Initials of RN, time of draw, and words" Line Draw".
12. Transport tubes in a Ziploc portion of a biohazard bag and seal. Place the remainder of the labels in the side pocket of the biohazard bag. Place the bag on the main desk of your floor and page for a laboratory run.

XI. PREPARING IVs USING THE ADD-VANTAGE SYSTEM
A. Reconstitution of Sterile Powder Additives: (Add-Vantage)
   1. Push Advantage stopper to distribute the medication into the IV solution.
   2. Agitate solution to thoroughly dissolve the medication.
   3. The solution may appear cloudy at first, but should clear within minutes. Notify Pharmacy if the solution remains cloudy or has sediment that does not dissolve.
   4. Similar commercially available delivery systems may be employed due to Add Vantage® product shortages or changes in the pharmacy purchasing contracts.

XII. TREATMENT OF EXTRAVASATION OF VESICANT OTHER THAN CHEMOTHERAPY
A. Stop infusion immediately. Leave infusion device in place.

B. Aspirate any residual drug from the tissues as able through the existing IV device.

C. Notify the physician immediately.

D. Administer antidote and treatments per physician order.

E. Elevate extremity.

F. As indicated apply appropriate warm or cold compress for 60 minutes: then every 6 hours for 20-30 minutes for 72 hours.

G. Complete Incident Report.

H. Assess site of injury every 8 hours for 24 hours then daily.

I. Document in appropriate nursing documentation.

XIII. INSERTION AND REPLACEMENT OF CENTRAL VENOUS CATHETERS

A. All central catheters should be removed when no longer medically necessary. Central catheters including peripherally inserted central venous catheters (PICC) or midline catheters may remain in place as long as necessary, in the absence of signs of infection, assuming good site care is given.

B. Insertion by percutaneous puncture rather than surgical cut down is always the preferred method of insertion.

C. The practice of changing central catheters in the same site using a guide wire is generally discouraged, and should not be done routinely—UNLESS there are limited sites for central access or the patient’s condition (e.g. morbid obesity, coagulopathy) would make insertion in a new site hazardous.

D. Good hand washing and standard precautions (gloves) should be used when handling central venous catheters.

E. Procedure
   1. Prior to insertion by the physician or SMC IV team, the patient’s skin will be cleaned with a chlorhexidine scrub.
   2. Upon insertion of catheter, maximal sterile barrier precautions and meticulous sterile technique during insertion. These barriers should
include:
  a. mask
  b. sterile gloves
  c. sterile gown
  d. large sterile drapes

3. Stabilization of catheter should be accomplished with sutures to prevent movement of the catheter, which may result in local irritation of the insertion site or transport of organisms along insertion path.

4. If there is a need to replace a central catheter in the same site over a guide wire because of malfunction or suspected catheter-related sepsis, the procedure must be done with stringent aseptic technique. The physician MUST change gloves after removal of the old catheter and before insertion of new. (Two sets of sterile gloves may be initially donned and then remove top layer after removal of old catheter). The old catheter and blood must be cultured. If these cultures indicate that the old catheter was infected, the new catheter should be removed from the infected site and access reestablished at a new, clean site.

5. The date of insertion will be charted in the appropriate nursing documentation by nursing along with daily assessments including insertion length if known, external length of PICC line and dressing changes.

6. Catheters should be monitored carefully and should be removed and cultured if there is unexplained fever, signs of sepsis, signs of bacteremia, or local inflammation at the catheter site, per physician order.

7. Radiographic confirmation should be obtained prior to initiation of therapy to confirm catheter location in the vena cava.

8. See pre-printed orders for standing PICC protocol

XIV. REMOVAL OF CENTRAL LINES

NOTE: only RNs may remove central lines

A. Central Catheter Removal

1. Explain procedure to patient.
2. Wash hands with soap and water.
3. Assist patient to dorsal recumbent position. Note: the head of the bed must be in a supine position.
5. Apply gloves.
6. Remove tape and dressing.
7. Assess the insertion site.
8. Clip and remove sutures, if present.
9. Cleanse area with a chlor-prep swab.
10. Instruct the patient to perform the Val Salva maneuver.
11. Remove the catheter with gentle pulling motion.
12. Instruct patient to breathe normally.
13. Apply gentle pressure at the insertion site with sterile zeroform, dry gauze, until bleeding stops. Do not apply pressure to site until catheter is completely out of body, then immediately apply manual pressure. 5 min for catheters 4 FR (16ga) or smaller, 15 minutes for larger catheters.
14. Document the date, time, site assessment, patient response, nursing interventions, and condition of catheter (intact) in appropriate nursing documentation along with measurement of catheter length. If a retained line is suspected, obtain an x-ray to check for retained line and notify physician. Then apply occlusive dressing over the zeroform and gauze. Do not lift to check site, this can allow air in, causing an air emboli.
15. The dressing should be changed and the access site assessed every 24 hours until the site is epithelialized.
16. If resistance is encountered when the catheter is being removed, the catheter should not be removed and the physician should be notified.

B. Peripherally inserted central catheter (PICC)
   1. Follow above directions for removal; take precautions to prevent air embolism. In addition:
   2. The patient’s arm should be abducted.
   3. Resistance to catheter removal can occur due to venous spasm, vasoconstrictive phlebitis, valve inflammation, and thrombophlebitis, or presence of fibrin sheath. Application of warm, moist compresses may alleviate venous spasm and vasoconstriction, resulting in easier removal of the catheter.
   4. If the catheter is unable to be removed with gentle pressure, leave it in place, cover with sterile dressing, and notify Swedish Medical Center IV team.
      A. A catheter embolism may occur if too much withdrawal pressure is applied to a resistant catheter.
   5. Digital pressure should be applied to site after removal until hemostasis is achieved
   6. Cleanse area with an antiseptic solution.
   7. After removal, measure length of catheter, compare this with documented length found in progress notes of physician order sheet on date of insertion. If a retained line is suspected, obtain an x-ray to check for retained line and notify physician.
   8. Document the date, time, site assessment, patient response, nursing interventions and condition of catheter (intact) in appropriate nursing documentation.
9. The dressing should be changed and the access site assessed every 24 hours until the site is epithelialized.

C. Procedure for Culturing: (A physician’s order is needed to send a culture).
   1. Culturing Insertion Sites
      a. Assemble equipment: one culture tube with transport medium, alcohol wipes, sterile tipped applicators.
      b. Wash hands with soap and water. Apply clean gloves.
      c. Clean insertion site with Chlor prep and allow to air dry.
      d. Attempt to express pus from site (if peripheral site, milk vein towards insertion site.)
      e. Roll 2 sterile tipped applicators over insertion site/pus.
      f. Break off applicators into culture tube and replace cap on tube.
      g. Label appropriately and transport to lab with requisition.

   2. Culturing Catheter (done only with physician’s order)
      a. Assemble supplies: one or two empty culture tubes or sterile containers (do not use transport medium), antiseptics, and sterile scissors.
      b. Wash hands with soap and water. Apply clean gloves.
      c. Culture site (as indicated above) if appropriate. Remove sutures if applicable.
      d. Clean insertion site with Chlor-prep and allow to air dry. (Clean second time after site culture taken, if appropriate.)
      e. Remove catheter aseptically by pulling in an upward direction to avoid contact with skin surface. For central line, patient should perform Val Salva maneuver as catheter is removed. It is helpful to have a second person available to hold pressure over the insertion site after the catheter is removed while you culture catheter.
      f. For short catheters – 2 inches or less in length:
         1. Remove catheter.
         2. Using sterile scissors cut off tapered portion of catheter if applicable.
         3. Using sterile scissors cut off catheter just inside the previous skin/catheter junction and place in an empty culture tube.
      g. For longer catheters – over 2 inches in length:
         1. Remove catheter as in XIV A and B above.
         2. Using sterile scissors cut off tapered portion of catheter.
         3. Using sterile scissors cut off one 2” segment from the tip and one 2” segment from just inside the previous skin/catheter junction. Each segment should go into a separate culture tube and be appropriately labeled.
4. Use only tip culture for PICC line.
   h. Immediately transport directly to Microbiology Department with requisition

Source
Note: For references on specific IV procedures:
Lippincott Williams and Wilkins (2004). Procedures Verson 2.2

References


MMNR Recommendations and Reports. Guidelines for the prevention of intravascular catheter related infections, 51, (RR-10).


## Care and use of IV Catheters
Craig Nursing Department
Peripheral Lines

<table>
<thead>
<tr>
<th>Catheter</th>
<th>Insertion Type</th>
<th>Inserted by</th>
<th>Dressings</th>
<th>Flush Solutions and Strength – Heparin or Saline</th>
<th>Comments</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angiocath/Angioset</td>
<td>Peripheral IV line</td>
<td>Craig RN, IV resource through lab services at Craig Hospital</td>
<td>Transparent dressing. Changed every 96 hours with site change or PRN. Gauze dressing changed every 48 hours and prn.</td>
<td>NS 10 cc in 10 cc syringe every 8 hours or after each medication administration</td>
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</table>

### Central Lines

<p>| Subclavian Catheter       | Subclavian or jugular insertion site. Femoral vein may also be used | Physician. Can be inserted at the bedside or in the OR. | Transparent dressing changed weekly and PRN due to loose dressing or moisture build up, using sterile technique. | NS 10 cc in a 10 cc syringe every 8 hours or after each use. Must flush each lumen separately. Flush with 20 cc saline after blood draw. | Use push-stop method to create a turbid flow. May run incompatible drugs through different lumens. Turn off running IV before blood draws. SMC IV Team may declot or repair pigtails. <strong>CANNOT</strong> repair catheter | Must use IV pump |</p>
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<tr>
<td>PICC - Peripherally Inserted Central Catheter</td>
<td>Use antecubital vein to float catheter into subclavian or SVC</td>
<td>SMC IV Team or SMC Radiology Dept.</td>
<td>Transparent dressing changed weekly using sterile technique. The Stat-Lock anchor device must also be changed at least once a week and PRN. Observe upper arm along catheter track for redness or tenderness. BE SURE THAT THE CATHETER ENTRY SITE IS VISIBLE!! If using a gauze dressing, change every 48 hours.</td>
<td>1.5 cc of Heparin (100 units/cc) every 24 hours. If not in use. Or flush with 10 cc of normal saline in a 10 cc syringe and 1.5 cc of heparin (100u/cc) after each use. Flush with 20cc of normal saline after blood draws and follow with 150 units heparin flush. Maximum flow rate of per-q-cath 2.8F is 7.5cc/min or 450cc/hr</td>
<td>Use push-stop method as described in policy. Do not flush vigorously as catheter may rupture. Length of catheter determines if a PICC line or a midline catheter. Only 3.8 F may be declotted by SMC IV TEAM</td>
<td>Notify MD if giving &gt; 800 units heparin in 24 hours</td>
</tr>
<tr>
<td>Hickman Catheter</td>
<td>Usually a subclavian vein. May use femoral or greater inferior vena cava. Tunneled approach with exit site usually on top of breast or over sternal midline.</td>
<td>Surgeon in the OR. Usually requires general anesthetic. Can be done as an inpatient or as an outpatient.</td>
<td>Gauze dressing daily for one month, then transparent dressing weekly or as instructed by MD. Use clean technique. DO NOT USE ACETONE NEAR CATHETER – USE HYDROGEN PEROXIDE.</td>
<td>Heparin, 100 units per cc, 1.5 cc every 12 hours or after each use. Must flush each lumen separately.</td>
<td>Flush with enough turbulence to clear blood from closed tip</td>
<td>Notify MD if giving &gt;800 units heparin in 24 hours</td>
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### Central Lines continued…

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<tr>
<td>Groshong Catheter</td>
<td>Same as Hickman</td>
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<td>NO HEPARIN NECESSARY, Use 5cc of normal saline once per week or after each use.</td>
<td>Ensure needle does not pull out of port. Check blood return before using.</td>
<td></td>
</tr>
<tr>
<td>Implanted Ports</td>
<td>Usually use subclavian vein. The port is usually placed in upper chest.</td>
<td>Same as Hickman. Accessed only by SMC IV Team using a Huber needle.</td>
<td>Only dressed when accessed, then transparent dressing changed weekly. No dressing necessary when port not accessed.</td>
<td>While accessed: flush with 5cc NS, followed by 5cc heparin, 100u/cc every 12 hours or after each use. Peritoneal port may require larger flush volume. When not accessed, flush monthly.</td>
<td>Observe for redness, swelling at insertion site and on the chest.</td>
<td>Notify MD if giving &gt;1500 units heparin in 24 hours</td>
</tr>
<tr>
<td>Hemodialysis Catheters</td>
<td>Usually subclavian vein. May use femoral vein. Inserted over a guide wire</td>
<td>Same as triple lumen</td>
<td>Generally dressed by dialysis personnel.</td>
<td>NO REGULAR FLUSH DONE. Obtain MD order. Aspirate 3cc before using a flush. Heparin does, 100u/cc- 1.5cc per limb after each dialysis or after each use.</td>
<td>Always aspirate heparin before use of flush. Flush with 15-30cc NS after blood draw. Only with MD order</td>
<td>Always aspirate heparin before use.</td>
</tr>
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