UNIVERSITY OF MICHIGAN HOSPITALS AND HEALTH CENTERS

Home Care Services
HomeMed • MedEQUIP • Michigan Visiting Care
Michigan Visiting Nurses • Wheelchair Seating Service

PROCEDURE

TITLE: Standard Infusion, Vascular Access Device, and Dressing Protocols

DEFINITIONS:
1. Transparent Membrane: i.e. Tegaderm, Opsite 3000, Tegaderm IV dressings
2. Gauze and Tape: i.e. Tegaderm + Pad, Medipore dressings

PROCESSES

A. Aseptic Technique and body substance precautions will be adhered to in all infusion procedures.

B. Flush Protocols

1. Only those solutions properly labeled and dispensed with a physician’s order will be administered. The selection of the flush solution, amount, frequency and sequence is dependent on the drug to be infused, compatibilities when multiple drugs are infused, the frequency/mode of infusion and the access device used. The following protocols are to be used unless otherwise directed by physician. The four standard flush protocols are:

   a. **Saline Flush**: used for peripheral and split valved vascular access devices (VAD) at the end of an intermittent infusion and/or used to maintain catheter patency between multiple (back-to-back) infusions of incompatible drugs.

   b. **Heparin Flush**: (10 units/ml): used for midline, PICC, tunneled, non-tunneled, and implanted ports at the end of an intermittent infusion and/or when the catheter will not be infused for a period of time to maintain VAD patency.

   c. **SASH Flush** (S - Saline flush; A - Administer drug; S - Saline flush; H - Heparin flush): method is used when heparin is indicated to maintain VAD patency, and before and after infusions).

   d. **Dextrose and Water 5% Flush**: used prior and following administration of saline incompatible drugs; to be followed with heparin flush.

C. Patients who request not to receive pork products due to religious preferences or have a history of adverse drug reactions to heparin shall flush with normal saline with the frequencies listed on the VAD grids. See Exhibit 1.

D. Adjustments to flush volume to 2 mL may be necessary based upon fluid restrictions, i.e. pediatric cardiac and neonatal patients.

E. Connections/Adapters Protocols

1. The following type of connectors/adapters will be used, unless otherwise directed:

   a. Needleless system with either locking blunt cannula or direct connection.

   b. Leur lock connectors will be used whenever possible.

   c. Connection/injection ports will be vigorously swabbed with alcohol prior to entry for 15 seconds.

   d. Locking blunt cannulas are changed following the administration of each
medication dose and/or tubing change.

F. VAD Care Protocols

1. The dressing type, frequency of change and site care is dependent on the type of VAD and the patient’s individual need. The VAD care standards listed on the VAD grids are to be followed, unless otherwise directed by physician.

2. Securement devices shall be placed on PICCs, midlines and peripheral VADs.

G. Infusion System Protocols

1. The infusion system includes the tubing, container, and where applicable, the extension set. The following procedures will be used for standard infusion systems, unless otherwise indicated:
   a. The container (if applicable) and tubing will be primed prior to connection with VAD.
   b. Tubing change: standard infusion tubing is changed every 72 hours unless otherwise stipulated due to drug stability; HPN / lipid tubing is changed every 24 hours; and continuous infusion tubing is changed at least every 7 days.
   c. Tubing will be clamped when system is disconnected.

H. Flow Control Device Protocols

1. Refer to manufacturers operating manuals for complete instructions when using flow control devices. Flow control devices (electric or manual) will be used when it is necessary to control the volume/rate of the infusion.
   a. Considerations should be given to the patient’s condition, age, limitations, complexity/ intervals of the infusion, and the potential risks/complications inherent to the drug infused.
   b. Flow control devices will be used for infants and small children, and with medications/solutions such as narcotics and home parenteral nutrition. Refer to the appropriate drug protocol when considering the use of flow control devices.

EXHIBITS:

1. Home Care Services Catheter Access Grids.
2. Home Care Services VAD Grids (Adult and Peds) at M:\Patient_Education\HomeMed\VAD grids Grid revision 09-2010.

UMHHC/HCS REFERENCES:

1. UMHS-HC IV Preparation Standards
2. Standard Catheter Care Supplies

APPROVAL AND REVISIONS:

1. November 2000, revised.
2. September 2004, reviewed, updated to reflect changes in pheresis VAD flush procedure.
5. November 2010, reviewed and changes to grid for flush volumes.
6. January 2013, reviewed and changes to dressing frequency if gauze under TM dressing.
**GENERAL INFO**

**Tubing changes:**  Pain management tubing changed with bag change or at least every 7 days  
Continuous chemotherapy tubing changed at least every 7 days  
Parenteral Nutrition tubing with/or lipid containing drugs change daily  
Intermittent infusions for both IV or SQ, change tubing every 72 hours

**Pre-pierced cap change:** every 7 days or sooner if blood/infusate cannot be cleared

**Locking blunt cannulas:** change after each medication administration and tubing change

**Flushes:** Concentration of heparin = 10 units/mL, unless noted  
Always use a 10 mL syringe & positive pressure for final flush  
All flushes are per lumen for multilumen catheters  
Ethanol lock patients should flush with 10 mL normal saline after removal & prior to instillation of ethanol

**Pt’s requesting no Pork products:** flush with NS per frequency in grid

**Dressing changes:** High permeable TM = transparent membrane, i.e. Tegaderm HP®, Tegaderm IV®  
Gauze & tape = Airstrip, Tegaderm with pad, Medipore TM with gauze underneath  
Change dressing every 7 days unless evidence of bleeding, gauze is under TM dressing, if it becomes loose or wet or if patient complains of pain at the insertion site.  
For all catheters, use ChloraPrep® unless sensitivity/allergy noted using a back-and-forth motion for 30 seconds.  
ALLOW to completely dry before applying dressing.  
May use povidone-iodine or alcohol if sensitive to ChloraPrep®; Cleanse with alcohol using 3 swabsicks in a circular manner cleansing from inside to outside then apply povidone-iodine using 3 swabsticks in the same manner, allow to completely dry.

**IV Securement devices:** Use with PICC, ML, nontunneled catheters & change with dressing weekly

**Blood Draws:** if line is multilumen, clamp off other lumens before drawing blood  
If drawing coagulation labs, flush with 5 mL of NS before collection of any waste tubes.

**PERIPHERAL BLOOD DRAW PREFERRED for patients with PICCs, peripheral or if serum drug levels ordered.**

**1.9 French PICCS:** continuous infusion of fluid required to maintain patency: 3 mL per hour if 0.9% normal saline; 5 mL per hour if IV solution contains dextrose.
<table>
<thead>
<tr>
<th>Access Device</th>
<th>Dressing change</th>
<th>Blood draws &amp; flush</th>
<th>Flushing after intermittent use</th>
<th>Routine flushing of non-infusing or capped line</th>
</tr>
</thead>
<tbody>
<tr>
<td>SubQ Maximum subcutaneous infusion rate = 2mL per hour.</td>
<td>TM, semi-permeable Q 72 hours with needle change (Clean technique)</td>
<td>Not applicable</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Periph</td>
<td>TM, semi-permeable with site change Q 72 hours (Clean technique)</td>
<td>No blood draws</td>
<td>5 mL NS</td>
<td>5 mL NS q 8 hours</td>
</tr>
<tr>
<td>Midline</td>
<td>TM, semi-permeable Q 7 days (Sterile or clean technique)</td>
<td>No blood draws</td>
<td>5 mL hep lock</td>
<td>5 mL hep lock BID</td>
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<tr>
<td>PICC</td>
<td>TM, semi-permeable Q 7 days (Sterile or clean technique)</td>
<td>(PERIPHERAL DRAW PREFERRED) Draw only from a 4 French (18 gauge) or greater</td>
<td>5 mL hep lock</td>
<td>5 mL hep lock daily</td>
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<td>Nontunneled CVC</td>
<td>TM, semi-permeable Q 7 days (Sterile or clean technique)</td>
<td>1. Draw 5 mL 2. Draw specimen 3. Flush with 10 mL NS 4. Flush with 5 mL hep lock</td>
<td>5 mL hep lock</td>
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<tr>
<td>Tunneled CVC (Broviac, Hickman, proline)</td>
<td>TM semi-permeable Q 7 days or gauze &amp; tape 3X per week (Clean technique)</td>
<td>1. Draw 5 mL 2. Draw specimen 3. Flush with 10 mL NS 4. Flush with 5 mL hep lock</td>
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<td>Valved CVC (Groshong)</td>
<td>TM, semi-permeable Q 7 days or gauze &amp; tape 3X per week (Clean technique)</td>
<td>1. Flush with 10 mL NS 2. Draw 5 mL 3. Draw specimen 4. Flush with 10 mL NS</td>
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<td>Dialysis (Sorenson, Permacath)</td>
<td>TM, semi-permeable Q 7 days (Sterile or clean technique)</td>
<td>Distal lumen preferred 1. Draw 5 mL 2. Draw specimen 3. Flush with 5 mL NS 4. Flush with fill volume listed on VAD using heparin (1000u/mL)</td>
<td>Distal lumen preferred 1. Discard 0.1 mL&gt;capacity of VAD 2. Give med 3. Flush with 5 mL NS 4. Instill with volume of heparin (1000u/mL)= volume listed on VAD</td>
<td>Q M-W-F 1. Discard 0.1 mL&gt;capacity of VAD 2. Flush with 10 mL NS 3. Instill with volume of heparin (1000units/mL)=to volume listed on VAD</td>
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<td>Apheresis Stem Cell Txp or photopheresis</td>
<td>TM, semi-permeable Q 7 days (sterile or clean technique) Following transplant, treat catheter as tunneled for all care except if receiving photopheresis</td>
<td>1. Washout 5 mL of waste 2. Draw specimen 3. Flush with 10 mL NS 4. Pre transplant, flush with 2.5 mL 1000 u/mL heparin Post transplant, flush with 5 mL of 10 units/mL hep lock</td>
<td>Active apheresis: 2.5 mL 1000 units/mL heparin Post apheresis: 5 mL of 10 units/mL hep lock Post txp with active photopheresis: 5 mL of 100 units/mL heparin</td>
<td>Active apheresis: Flush with 2.5 mL of 1000 units/mL heparin Q M-W-F Post apheresis: flush with 5 mL of heparin daily Post txp with active photopheresis: 5 mL of 100 units/mL heparin</td>
</tr>
<tr>
<td>Implanted Ports (Infusaport, R-port, S-port)</td>
<td>TM, semi-permeable Q 7 days or with needle change Sterile technique (mask not needed) Unaccessed: no dsg</td>
<td>Unaccessed: 5 mL of heparin daily Accessed: 5 mL of heparin daily</td>
<td>5 mL hip lock</td>
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<td>(PERIPHERAL DRAW PREFERRED) Draw only from a 4 French (18 gauge) or greater 1. Drawback/discard 2 mL blood 2. Draw specimen 3. Flush with 2 mL NS 4. Flush with 2 mL hip lock</td>
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<td>Tunneled CVC (Broviac, Hickman, proline)</td>
<td>TM semi-permeable Q 7 days or gauze &amp; tape 3X per week (Clean technique) 1. Drawback/discard 1-3 mL blood 2. Draw specimen 3. Flush with 2 mL NS 4. Flush with 2 mL hip lock</td>
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<td>Distal lumen preferred 5. Discard 0.1 mL&gt;capacity of VAD 6. Give med 7. Flush with 5 mL NS 8. Instill with volume of heparin (1000u/mL)= volume listed on VAD</td>
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<td>TM, semi-permeable Q 7 days (sterile or clean technique) 1. Withdraw 5 mL of waste 2. Draw specimen 3. Flush with 10 mL NS 4. Pre transplant, flush with fill volume listed on catheter using 1000 u/mL heparin 5. Post transplant, flush with 2 mL of 10 units/mL hip lock</td>
<td>Active apheresis: 2 mL 1000 units/mL heparin 3. Draw specimen 3. Flush with 10 mL NS 4. Pre transplant, flush with fill volume listed on catheter using 1000 u/mL heparin 5. Post transplant, flush with 2 mL of 10 units/mL hip lock</td>
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