IV Therapy
Tip of The Month

Brought to you by
The OHSU IV Therapy Team
IV Therapy
October
Tip of the Month

Venous Phlebitis: Inflammation of the Vein

Signs and Symptoms
- Pain with flushing or palpation of site
- Edema
- Erythema or red streak over vein
- Palpable firmness of vein (strongly suggests thrombophlebitis)

“If it’s RED it’s DEAD”
“If it’s SORE….NO MORE”

What To Do
For any or all of the above signs/symptoms, D/C the IV
Call the IV Team for questions
Scrub the HUB before you Flush!

1. Scrub the HUB for any IV/CVC access with pressure and friction for 15 seconds with alcohol and allow to dry.

2. Scrub entire hub tip, including luer lock and grooves EVERYTIME you start a piggyback, give an IV push or anytime you need to access any CVC or PIV.

Firm rotating friction for 15 seconds and allow to dry

Culture Results: Evidence of Valve Contamination

1 = No Alcohol Scrub
2 = Alcohol Scrub
Intravenous Promethazine (Phenergan)
• Classified as a vesicant with pH 4 - 5.5
• HIGHLY caustic

Institute for Safe Medication Practices Recommendations:
• Use **Lowest effective dose** starting with 6.25mg
• **Dilute medication in at least 10 mL** Normal Saline
• Administer through furthest port via running **IV over 10-15 minutes**
• **STOP** infusion if patient complains of pain or burning
• Use **LARGEST VEIN** possible
• Consider Alternative Treatment or different route (IM or po).

“The Dilution Solution”
NEVER give undiluted
Intravenous Promethazine (Phenergan)

• **Significant Complications**
  • Burning ? **STOP** !
  • Erythema
  • Nerve damage
  • Tissue necrosis
  • Phlebitis
  • Thrombophlebitis
**IV Therapy**

**January Tip of The Month**

“**DEFINE** the use of the **LINE**”

<table>
<thead>
<tr>
<th>Peripheral IV</th>
<th>PICC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short Term Access</strong></td>
<td>• Greater than 5 day access</td>
</tr>
<tr>
<td><strong>Non vesicant medications</strong></td>
<td><strong>Commonly used Vesicants:</strong></td>
</tr>
<tr>
<td><strong>Primarily IV Fluid</strong></td>
<td>• Vancomycin, Flagyl, KCL &gt; 40 Meq.....</td>
</tr>
<tr>
<td></td>
<td><strong>Highly Irritating:</strong></td>
</tr>
<tr>
<td></td>
<td>• Nafcillin, Cipro, Gentamycin ......</td>
</tr>
<tr>
<td><strong>Great veins, minimal blood draws.</strong></td>
<td>• Difficult IV Access with overly used phlebotic veins.</td>
</tr>
</tbody>
</table>
|                  | • Admission diagnosis i.e. pancreatitis, ulcerative colitis, liver failure, joint infections, cellulitis.
**Prevent Mechanical Phlebitis**

**IV Therapy**

**February Tip of the Month**

**NO NEED to SUPER SIZE**

Use the smallest IV catheter size needed for infusion

<table>
<thead>
<tr>
<th>Gauge</th>
<th>IV Fluid Only</th>
<th>Blood</th>
<th>IV Meds</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Gauge</td>
<td>OK</td>
<td>OK</td>
<td>If only vein available</td>
</tr>
<tr>
<td>(1200 mL/hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 Gauge</td>
<td>OK</td>
<td>OK</td>
<td>BEST</td>
</tr>
<tr>
<td>(2100 mL/hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 Gauge</td>
<td>OK</td>
<td>Ideal</td>
<td>OK</td>
</tr>
<tr>
<td>(3900 mL/hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Gauge</td>
<td>For Large Volumes</td>
<td>OK</td>
<td>Avoid Routine Use</td>
</tr>
<tr>
<td>(6600 mL/hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Gauge</td>
<td>Used when large volumes required but replace with smaller size ASAP.</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>(13,200 mL/hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Return from OR with 16 or 18 g?

Remove within 24 hours.
OHSU Blood Culture Contamination Rate = 4-5%

Changing the Culture

IV Therapy March Tip of the Month

The method used to draw a blood culture affects the results

**Green/Aerobic**
With Oxygen
Fill first 10mL

**Orange/Anaerobic**
Without Oxygen
Fill Second 10mL

Top of culture bottles are not sterile
Use Alcohol to disinfect after flipping off caps

Use Chloraprep to decontaminate the skin or hub and allow to dry.

Use Angel Wings to transfer blood to bottles

Limited Amount of blood?
Fill the aerobic first

Proper Label Placement:
Stay away from barcode

Contamination Rate Goal = 1.5%

Developed by: OHSU IV Therapy and Lab Departments
### IV Therapy April Tip of the Month

**PICC, PORT & Midline FLUSHING**: Flush every 8 hours and after each use.

Doing a Blood Draw? Pulsatile Flush with 20 mL Normal Saline

| **Open Ended** | **Power PICC** (Purple) Or 4 French Dual Lumen (White) | **Pulsatile Flush**: 10 mL Normal Saline and 3-5 mL 10u/mL Heparin  
**Remove Syringe and Clamp Catheter**  
**Open Ended = No valve so keep it clamped!** |
|---|---|---|
| **Open Ended** | **Port-a-Cath** Common Use: Chemotherapy | **Pulsatile Flush**: 10 mL Normal Saline followed with 3-5 mL 10u/mL Heparin  
**Remove Syringe and Clamp Catheter**  
Always use 100u/mL Heparin for deaccessing |
| **Valved** | **Groshong PICC** (Blue) Common Use: Access for ≥ 6 days of therapy | **Pulsatile Flush**: 10 mL Normal Saline  
**No Clamps**  
**Valved = Prevents Blood from backing up** |
| **Valved** | **Midlines- Usually Groshongs** | **Pulsatile Flush**: 10 mL Normal Saline May use 10u/mL Heparin to lock for frequent blood draws to prevent clotting  
**Line Not Central/ Do not use vesicants**  
Use: Short-term IV Therapy and blood draws |

*Refer to back of Vascular Access Device Flow Sheet: “Guidelines for Flushing” and for Pediatric flush amounts*
**IV Therapy May Tip of the Month**

*ALL Central Venous Line Flushes: Every 8 hours and after each use*

**Doing a Blood Draw? Pulsatile Flush with 20 mL Normal Saline**

<table>
<thead>
<tr>
<th>Central Venous Line Type</th>
<th>Device Characteristics</th>
<th>Dressing for Tunneled Catheters:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chest Wall Groshong</strong></td>
<td>Tunneled and cuffed Closed 10 mL Normal Saline Flush</td>
<td>• Semi-permeable transparent Dressing with or without Biopatch</td>
</tr>
<tr>
<td>Usually Double Lumen Blue</td>
<td></td>
<td>• Change every 7 days and as needed.</td>
</tr>
<tr>
<td><strong>Chest Wall Hickman Catheter</strong></td>
<td>Tunneled Comes out of the chest Open-ended (requires Heparin) 10mL Normal Saline Flush followed by 3-5 mL 10 units/mL Heparin Lock</td>
<td>• If using gauze, change every 48 hours and as needed.</td>
</tr>
<tr>
<td>Usually Double Lumen White</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal Jugular Line</strong></td>
<td>10 mL pulsatile flush followed with 3-5 mL 10 units/mL Heparin Lock</td>
<td>• Semi-permeable OCCLUSIVE Transparent dressing</td>
</tr>
<tr>
<td>Double, Triple, Quad Lumen</td>
<td></td>
<td>• Change every 3 days and as needed.</td>
</tr>
<tr>
<td><strong>Subclavian Line</strong></td>
<td>10 mL pulsatile flush followed with 3-5 mL 10 units/mL Heparin Lock</td>
<td>• Semi-permeable OCCLUSIVE Transparent dressing</td>
</tr>
<tr>
<td>Double, Triple, Quad Lumen</td>
<td></td>
<td>• Change every 3 days and as needed.</td>
</tr>
</tbody>
</table>

*Refer to back of Vascular Access Device Flow Sheet: “Guidelines for Flushing” and for Pediatric flush amounts*
IV Therapy TIP of THE TIMES

- **SCRUBBING THE HUB** for 15 seconds (not 3-5 seconds prevents transfer of microorganisms)

- A very recent Study (2007) completed at Sharp Memorial in San Diego, Ca. found that **friction for 15 seconds with either 70% alcohol alone or Chloraprep provided effective disinfection.**

- Disinfection of the HUBS with 70% alcohol for 3-5 seconds is not effective in preventing transfer of microorganisms.

- Proper disinfection of the HUB is an important strategy to prevent Catheter-Related Blood Stream Infections.
**Case Review:** 56 Year Old White Male transferred from outlying hospital with Diabetes, Crohn’s Disease and partial removal of small intestine for multiple fistulas. PICC line in left antecubital placed by another facility. No physician order or CXR confirmed placement. PICC Line used to infuse TPN/Lipids. On Day #2 patient complained of pain in the left arm and assessment revealed edema with redness in the left shoulder area. CXR indicated line was not central but in fact midline with subsequent thrombus, and severe phlebitis (see pictures below)

1.) What should you do if your patient is a transfer from an outside facility?
   - Obtain PICC Tip placement CXR (Recommended for new patients to OHSU)
   - Assure you have a physician order prior to line use
   - Promptly notify IV Therapy of admission and change the hubs

2.) What about when your PICC patient transfers between units?
   - Promptly notify IV Therapy

3.) Is your patient going home with a PICC?
   - Notify IV Therapy

4.) PICC line discontinued?
   - Do not call the PICC pager, call your IV Team pager
Change IV Tubing and Valves How Often?

- Change Primary and Secondary IV Tubing every 96 hours and TPN Tubing every 24 hours

- Change Valves every 96 hours

- **Document** “T” and “V” on the Parenteral Access Record when changed.

- **Change out stopcocks** as soon as possible and try to avoid using them (Why? CDC indicates they become contaminated at least 50% of the time they are used)
Biofilm: microorganisms that attach to the surface of a catheter (both inside and out) and resist antibiotics.

**Biofilm**

The start of a Central Venous Catheter Infection.

**IV Therapy August Tip of the Month**

**PREVENT Biofilm Formation**

*Instead of just flushing with a steady flow... Use Pulsatile Flushing for ALL Central Lines*

**Pulsatile Motion Creates Turbulent Flow**

Turbulent flow reduces catheter residue on the inner surface of the catheter and prevents clot and fibrin formation.
## The difference between phlebitis and Infiltration

### Phlebitis

Inflammatory response to damage to the intimal layer of the vein caused by mechanical or physiochemical forces.

**A palpable venous cord** indicates advanced stage of phlebitis. When identified, remove the PIV. Advanced stage phlebitis may require 10 to 21 days to resolve. Continue to actively monitor an IV site for at least 48 hours after device removal for the presence of post-infusion phlebitis. **No Studies** support slowing IV rate down to decrease phlebitis.

### Infiltration

Inadvertant administration of nonvescant medication or solution into tissue surrounding the vein. It’s called *Extravasion* if vesicant medication is administered into the surrounding tissue.

**Infiltration:** Most commonly identified complication of PIV therapy with a reported incidence of 23% to 78%.

**Antibiotic-induced tissue injury** may be caused by intrinsic properties of the medications and the hypertonicity of the solution. The duration of exposure rather than the concentration of the infiltrated medication contributes to the tissue damage.

**Assessment:** Difficult since the visible cutaneous damage does not reflect damage to the underlying subcutaneous fat and fascia that evolves over days.

### IV Therapy September Tip of the Month

**Phlebitis Scale**

- 0 = No Symptoms
- 1 = Erythema
- 2 = Pain
- 3 = Streak Formation, venous cord
- 4 = Purulent Drainage, palpable venous cord

New Scale coming with EPIC to record and track phlebitis and infiltration

### Infiltration Scale

- 0 = No Symptoms
- 1 = Some Edema, Cool
- 2 = 1-6 inch Edema, Cool, Pain
- 3 = > 6 inch edema, pain, numb
- 4 = Pitting Edema, Circulatory impairment
Hemodialysis Catheters Require EXTREME ASEPSIS
If the end of the catheter becomes unhooked or ends contaminated:
Call Nephrologist Immediately. They will need to replace the line!

NEVER USE Hemodialysis Catheters for infusion or access
unless ordered by Nephrology Fellow or Staff Physician.

For Nephrology Ordered Access: Call IV Therapy

HUBs MUST BE INTACT to avoid bacterial invasion
- If you are assisting with insertion, assure Dead End Hubs are placed at the end of the catheter (No Valved Hubs/Red OK).

Don’t Touch Non-Capped Hubs

Dressing Changes
- Same procedure as Central Venous Catheter Dressing.
- Avoid dislodging the scab formation
- Avoid using large amt of tape to secure the ends.

For Questions: Call IV Therapy or Nephrology