Peripherally Inserted Central Catheter (PICC)

Care and maintenance
Objectives

The goal of this presentation is to provide nurses with the knowledge of:

- Basic anatomy for peripherally inserted central catheter (PICC)
- Indications & contraindications for a PICC line insertion
- Possible complications associated with PICC lines
- Nursing responsibilities for
  - a) care and maintenance
  - b) dressing changes
  - c) flushing guidelines
  - d) changing needless connector
  - e) blood sampling
  - f) discontinuation and removal
  - g) occlusion management
Peripherally Inserted Central Catheter (PICC)

- May be a single, double, or triple lumen
- The catheter may be valved (without clamps) or non-valved (with external clamps)
- Catheters that are valved prevent passive entry of blood into the catheter
- The tip of the catheter lies in the distal third of the superior vena cava above the right atrium

![Diagram of PICC Catheter]
Peripherally Inserted Central Catheter (PICC)

- PICCs may be inserted in the basilic, brachial, or cephalic vein in interventional radiology
Indications for a PICC

1. Compromised/Inadequate peripheral access
2. Infusion of hyperosmolar solutions or solutions with high acidity or alkalinity (eg. Total Parenteral Nutrition)
3. Continuous infusion of vesicant or irritant agents (Inotropes, Chemotherapy)
4. Short or long term intravenous therapy (eg. Antibiotics)
Contraindications for a PICC

1. Inadequate veins
2. Pre-existing skin surface or subsurface infection at or near the proposed catheter insertion site.
3. Lymphoedema
4. Anatomical distortion from surgery, injury or trauma
5. Anatomical irregularities that may compromise catheter insertion or catheter care procedures.
6. Mastectomy surgery with axillary dissection +/- lymphoedema on affected side
7. Crutch walking as this causes pressure on veins of the arm.
A physician order is required for the following:

- PICC insertion
- X-ray or fluoroscopy to confirm placement or tip position
- Flushing, including solution, volume and frequency
- PICC discontinuation and removal
- Occlusion management (i.e TPA)
Guidelines for physician notification

- Excessive bleeding
- New and/or different cardiac arrhythmias
- Sudden and unexplained onset of respiratory distress
- Chest pain
- Onset of pain and/or edema in the cannulated arm
- Numbness or tingling in the cannulated limb
- Swelling or decrease circulation to affected arm
Post-insertion Documentation

The following information should be included in the documentation by inserter (usually Interventional Radiology):

- Date of insertion
- Insertion vein
- Tip location (as shown on fluoroscopy report)
- Location (right or left arm)
- Internal length
- Catheter type, gauge, length and number of lumens
- External catheter length based on catheter marking and measurement

**This information should be available in the electronic Patient Care Summary so it is easily accessible to all healthcare providers caring for the patient.**
Nursing Responsibilities

This shall be assessed and documented every shift and PRN:

- **Insertion site and surrounding tissue**: Site leaking? Tubing kinked? Any redness or swelling? Gently palpate for pain and temperature.
- **Vein track**: inspect the site along the track of the vein. Any edema, pain, tenderness, numbness?
- **Catheter malposition**: Inspect that the ‘wings’ on the PICC catheter are secured. A chest x-ray must be ordered if migration is suspected.
- **Dressing**: Dry and intact? When was it last changed?
Different Types of PICCs
Valved PICC

- aka “Close ended”
- No clamps
- No need for heparin

Non-Valved PICC

- Aka “ Open ended
- Needs clamps
- Needs heparin
Flush guidelines (Access & Deaccess)

NYGH patients will most likely have valved PICCs. Each lumen must be flushed once every 7 days.

1. Scrub needless connector with 2% chlorhexidine & 70% Isopropyl Alcohol wipe. Air dry for 10 seconds.
2. Attach 10 mL syringe filled with 10 mL 0.9% normal saline.
3. Flush lumen with 10 mL of 0.9% normal saline using the stop/start technique. With the last 1-2 mL, deposit positive pressure.

**IF ANY RESISTANCE, STOP:**
Have patient change position, raise arms, cough

**IF RESISTANCE STILL MET, DO NOT CONTINUE:**
Notify Vascular Access Nurse and/or physician for further instructions
It’s so easy....
PICC Blood Sampling

- Only to be done once peripheral access is not possible, or if central line infection is suspected
- Nurse needs to be certified by Clinical Nurse Educator to perform
- Must have specific MD order to draw blood from PICC
PICC Blood Sampling

1. Verify physician order
2. Gather equipment
3. Stop all infusion 1 minute before and during
4. Explain procedure and don mask, gloves
5. Select largest lumen
6. Scrub the hub. Let dry
7. Attach 10mL saline syringe and flush
8. Attach needleless vacutainer adapter
PICC Blood Sampling

9. Draw up and discard 5mL blood
10. Collect blood samples in order of draw. Rotate each vial as indicated. Do not shake vials.
11. When last sample collected, remove vacutainer adapter.
13. Flush with 2 x 10mL syringes of NaCL and with last 1-2 mL apply positive pressure
14. Label samples. Document
**Order of Draw**

<table>
<thead>
<tr>
<th>BD Vacutainer® Blood Collection Tubes <em>(glass or plastic)</em></th>
<th></th>
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<tbody>
<tr>
<td>![Yellow] • Blood Cultures - SPS</td>
<td>8 to 10 times</td>
</tr>
<tr>
<td>![Light Blue] • Citrate Tube*</td>
<td>3 to 4 times</td>
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<tr>
<td>![Orange] or ![Red] • BD Vacutainer® SST™ Gel Separator Tube</td>
<td>5 times</td>
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<tr>
<td>![Orange] or ![Red] • Serum Tube <em>(glass or plastic)</em></td>
<td>5 times (plastic) none (glass)</td>
</tr>
<tr>
<td>![Green] • Heparin Tube</td>
<td>8 to 10 times</td>
</tr>
<tr>
<td>![Light Gray] or ![Pink] • BD Vacutainer® PST™ Gel Separator Tube With Heparin</td>
<td>8 to 10 times</td>
</tr>
<tr>
<td>![Purple] or ![Pink] • EDTA Tube</td>
<td>8 to 10 times</td>
</tr>
<tr>
<td>![Gray] • Fluoride (glucose) Tube</td>
<td>8 to 10 times</td>
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Helpful Hints

Avoid PICC lines with TPN

Pick the largest lumen available
PICC Dressings: Statlock Device

Used to anchor PICC to skin

But the statlock and PICC external length should be monitored
Post procedure documentation:

Document as per documentation standards the following elements:

- How patient tolerated procedure
- Ease of flush and blood return verified
- Condition of insertion site
- Update treatment plan
- In Powerchart: Ad Hoc → Venous/Subcutaneous Access → Central Line Assessment/Care/Removal
Questions?

Should you encounter a patient with a PICC and are unsure of anything, please ask or call for assistance.