CVC/PICC/PIV Workshop for Medical Interpreters

by

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October, 23rd, 2013
What does the fox say?

http://www.youtube.com/watch?v=BBWcWh1Giqo
The healthcare system is STRESSED OUT!

The nurse patient ratio applied to the bed patient ratio.
• At most adult hospitals, nurses typically care for 6 to 8 patients per shift. At adult hospital the nurse patient ratio is usually 6 to 8 per nurse!

• CCHMC’s growing reputation as a world-class hospital means more patients need beds than are available.

• Many conditions (including ruptured appendix) are now treated at the patient’s home with IV antibiotics instead of in house.

• Patients and/or families are trained to maintain intravenous devices during treatment.
Medical Interpreters are NEVER to touch patients, but should understand how intravenous devices work in order to help patients learn to care for intravenous devices while away from the hospital.
IV catheter associated bloodstream infections acquired while being treated are NOT reimbursable by Medicare. Hospitals must EAT the cost of additional treatment.

*Average cost of treating CABI = $10,000*
Catheter Associated Bloodstream Infections - CABIs.

- **FACT:** Most CABI’s are the #1 reason for prolonged hospitalization/re-hospitalization.

- **FACT:** Patients with CABI’s are at increased risk for organ failure and hearing loss r/t powerful antibiotics needed to treat their infections. Newborns, elderly, and chronically ill patients are at greater risk for death from both the infections and treatment of CABIs.

- **FACT:** Most CABI’s can be avoided by good caregiver hygiene and timely maintenance of IV devices.
Peripheral Intravenous Device (PIV)
Purpose of PIV

To gain minimally-invasive bloodstream access in order to:
- Administer blood products, medications and nutritional components.
- Administer fluids that are not destructive to the surrounding skin and tissue if they should leak.
- Intended for short-term use (usually less than 1 week.)
- Used with patients with visible veins that are easy to visualize and puncture.

To minimize the risk of complications when inserting a PIV:
- Proper choice of equipment i.e. needle and cannula gauge appropriate for size of the patient’s veins.
- Careful choice of IV site (avoid veins near tendons and joints to reduce malfunction and pain.
- Good insertion technique (Non-sterile.)
- Aseptic preparation of fluids to be infused.

*Cue PIV insertion video now*
PIV Pros and Cons

Pros
• Relatively painless
• Inexpensive
• Can be inserted by a nurse, EMT, phlebotomist, or other trained personnel.
• Can be inserted at bedside.
• Easily replaced if failure occurs.
• Low risk of infection.

Cons
• Can easily infiltrate or occlude if not monitored carefully.
• Cannot be used for multiple infusions at the same time.
• Difficult to draw blood from a PIV.
• Can become dislodged by ADLs.
Clean the hub of the PIV before each use with an antiseptic solution - 70% isopropyl alcohol, 0.5 - 1% Chlorhexidine (CCHMC policy.)

- Use an aqueous based alternative such as betadine if there is a known allergy to alcohol.
- Scrub hub for 15 seconds, wait 15 seconds for it to air dry. Scrub caps take place of scrubbing hub.
Peripherally Inserted Central Catheter (PICC)
Purpose of PICC

• Long, slender, flexible tube inserted into a peripheral vein (usually upper arm) and ends in a large vein in the chest near the heart.

• Used for patients with poor venous access or those needing IV therapy for prolonged periods of time (typically 2 weeks to over a year.)

• Can be used to infuse fluids and medications and to draw blood.
PICC Pros and Cons

Pros

• Patients can leave hospital with PICC inserted.
• Sturdy enough for infusing fluids potentially destructive to skin and tissues i.e. chemotherapy.
• Can be placed by a physician or a specially trained nurse.
• Placed under fluroscopy to ensure proper placement.

Cons

• Requires frequent cleaning of hub, cap, and dressing.
• Dressing changes require sterile technique.
• Can migrate (pull out of body.) This requires an X-ray to determine proper location.
• Infected or dirty PICC’s can easily spread pathogens throughout body.
*cue PICC insertion video*
• PICC dressing should be changed weekly on the same day.

• Scrub cap and hub for 30 seconds with alcohol or chlorhexidine (CCHMC policy.) Allow to air dry 30 more seconds.

• Flush with 3 – 5 mL normal saline to check patency.

• After infusion stops, flush again with normal saline, then push 3 to 5 mL heparin to prevent clotting

*cue dressing change video, start demonstration.*
Central Lines & Mediports
What is a CVC?

A central venous catheter (CVC) is a small, soft, flexible tube which is inserted into a large vein and advanced into a major vessel near the heart. Typical insertion sites can be in an upper or lower extremity or large vessels in the chest.

CVC is placed in a sterile operating room with the help of x-ray and placement MUST be confirmed by a Radiologist (MD or DO) BEFORE use!
Three types of CVC’s

- **TUNNELED**: A special cuff at the base of the base of the tube allows scar tissue to form and hold it in place so it cannot migrate into the body.

- **NON-TUNNELED**: Softer and must be stitched into the skin to prevent migration (shorter-term use.)

- **APHERESIS**: Large, semi-permanent 2 lumens used for removing very large quantities of blood (hemodialysis, Sickle cell treatments, apheresis, or removal of certain types of blood cells.)
Tunneled CVC
Non-tunneled CVC
Apheresis catheter aka “shunt.”
# Vasculature Identification

## Upper Extremity Vein Anthropometric Measurements

<table>
<thead>
<tr>
<th>Vein</th>
<th>Length</th>
<th>Actual Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior Vena Cava</td>
<td>7 cm</td>
<td>20 mm</td>
</tr>
<tr>
<td>R Innominate</td>
<td>2.5 cm</td>
<td>19 mm</td>
</tr>
<tr>
<td>Subclavian</td>
<td>6 cm</td>
<td>19 mm</td>
</tr>
<tr>
<td>Axillary</td>
<td>13 cm</td>
<td>16 mm</td>
</tr>
<tr>
<td>Basilic</td>
<td>24 cm</td>
<td>8 mm</td>
</tr>
<tr>
<td>Cephalic</td>
<td>38 cm</td>
<td>6 mm</td>
</tr>
</tbody>
</table>

Copyrighted from the AVA.
Catheter tip placement in large Vein near heart

Atrium

Ventricle
Why a CVC of PICC or IV?

• Extended (more than 2 weeks) of infusions.

• Unable to access smaller veins with an IV or PICC.

• Medications are harmful to skin if infiltration into skin should occur
What is a Mediport?

• Flexible, heavy-duty catheter placed directly into major vessels of the chest for immediate and unobstructed access to the bloodstream.

• Mediports are placed surgically under the skin. Central lines protrude from the body.

• Used for long-term care patients such as those needing hemodialysis, chemotherapy, and blood-related conditions requiring transfusions.
• Mediports must be accessed (punctured and flushed through the skin) regularly per institutional policy.

• Scrub 30 seconds, air dry 30 seconds with alcohol or chlorhexidine (CCHMC)

*Substitute aqueous cleansers if allergy is noted.  
Flush lumen(s) with saline and heparin after use similar to PICC.

*cue C line video
Mediport

- Sewn beneath skin and accessed by Huber needle.
- Not visible and will not affect daily activities.
- Can remain in place for years to lifetime.
- Expensive, requires major surgery. Not easily removed.
- Reserved for longterm care.
Central Line/Mediport Pros and Cons

Pros

• Reliability. Central lines rarely occlude, migrate, or infiltrate.
• Can remain in place for months or years.
• Can handle the high infusion pressure. Multiple fluids can be infused at the same time.
• Can have multiple lumens (channels.)

Cons

• Expensive to place (requires surgery.)
• Risk of infection higher due to easy access to the bloodstream.
• Requires regular dressing changes and flushing under sterile conditions.
• Body image issues esp. in adolescent females.
PIV/PICC/CVC Complications

- PIV are flimsy and shallow. They go bad within 2 weeks on average.

- PICC can become clogged due to narrow lumen. Medications can back up and leak into skin. Easily migrate if not measured frequently.

- CVC remains in place for month to years and can become infected.
Amputate leg caused by TPN infiltration from a PIV
INTRAVENOUS ACCESS “Food Chain.”

- **PIV** for basic infusions of hydration fluids, basic blood draws, and administration of medications that are not likely to cause skin irritation.
- **PICC** if an IV cannot be placed, or if patient is to be treated at home for a short time.
- **CVC** if PICC cannot be placed or patient needing potentially skin irritating medications.
- **Mediport** for long term IV therapy.
- **Apheresis cathether** for dialysis or sickle cell disease.
Are you as sharp as a tiger?

I told you not to use bleach

Shut up!
QUIZ