Why Do We Care About CLABSI?

• Central lines are common
  – 48% of ICU patients

• CLABSI are associated with bad outcomes
  – 500-4,000 U.S. patients die annually due to CLABSI
  – Average increased length of stay is 7 days
  – Estimated cost per CLABSI is $3,700-29,000

• CLABSI rates in Maryland ICUs are being reported to the state and are available to the public
How Do We Calculate Your Unit’s CLABSI Rate?

• Numerator: number of CLASBSIs during a certain period of time
  – CLABSI determined by Centers for Disease Control and Prevention (CDC) definition applied by infection preventionists
    • Intended to identify BSIs that cannot be attributed to another source in patients with central venous catheters
    • Certain organisms are considered always pathogens, even if the clinical picture does not suggest infection
  • Denominator: # of catheter days during the same period of time (expressed as 1000 catheter days)
    – Obtained electronically from clinical information systems
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Hand Hygiene

HAND HYGIENE IS THE NUMBER ONE WAY TO PREVENT THE SPREAD OF INFECTIONS
Chlorhexidine for Skin Prep

- Chlorhexidine reduced the risk of CLABSI by half compared to alcohol or povidone iodine in a meta-analysis
- Chlorhexidine is the preferred skin prep unless there is true allergy or age < 2 months

Ann Intern Med. 2002;136:792-801
Choice of Prep

1st choice: CHG
30 second scrub (2 minutes if groin)
1 minute to dry

CHG allergy:
Tincture of iodine
1 minute to dry

Last resort:
Povidone iodine
2 minutes to dry
Maximal Barrier Precautions

• For Operator & Others Contacting or Crossing the Sterile Field:
  – Non-sterile cap and mask
    • All hair should be under cap
    • Mask should cover nose & mouth tightly
  – Sterile gown and gloves

• For the Patient:
  – Cover patient’s head and body with a large sterile drape
  – Drape should be wide enough to cover bed rail to rail

• For Others in the Room
  – Non-sterile cap and mask

Three prospective studies have shown that use of maximal barrier precautions reduces the odds of CLABSI 2 to 3 fold

Infect Control Hosp Epidemiol 1994;15:231-8,
Infect Control Hosp Epidemiol 2008; 29:947-950
Maximal Barrier Precautions
Choice of Site

- The femoral site should be avoided in adults
  - A randomized controlled trial comparing the femoral site to the subclavian site showed a higher rate of infectious and thrombotic complications with the femoral site.

- Lines placed in the femoral site should be replaced as soon as possible.

JAMA 2001;286:700-7
Removal of Unnecessary Lines

- Assess need for continued central line access daily
• Be an **ADVOCATE** for your Patient!
• **ENSURE** that the checklist is being followed and **STOP** the procedure if not
• Place completed checklist in the medical record
Pediatric Checklist

- Be an **ADVOCATE** for your Patient!
- **ENSURE** that the checklist is being followed and **STOP** the procedure if not
- Place completed checklist in the medical record
# Procedure Area Checklist

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<tr>
<th>Critical Steps</th>
<th>Operator</th>
<th>Supervisor</th>
<th>Assistant</th>
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<tr>
<td>1. Perform a time out using the informed consent form</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Clean hands</td>
<td></td>
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</tr>
<tr>
<td>3. Wear cap, mask, sterile gown/gloves, and eye protection if in contact with or crossing the sterile field at any time during the procedure. All others entering the room during the procedure must wear cap and mask.</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>4. Prep site with chlorhexidine and let air dry (see instructions on back)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Drape patient from head to toe using sterile technique</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Prepare catheter by pre-flushing and clamping all lumens not in use during procedure</td>
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<td>7. Place patient in Trendelenburg position unless contraindicated (e.g., increased ICP) or if femoral/PICC (place supine and flat)</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8. Maintain sterile field</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Ensure grasp on guide wire is maintained throughout procedure and removed post procedure</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>10. Aspirate blood from all lumens, flush, and apply sterile caps</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>11. Ensure appropriate vessel placement (see instructions on back)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12. Clean site with chlorhexidine, apply sterile dressing, and apply sterile caps on all hubs.</td>
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*Checklist instructions located on back*
Inserter Training and Competency Requirements

- Complete J HH VAD training modules
- **Before inserting central lines independently**
  - A minimum of five fully supervised procedures
    - Above the diaphragm (IJ or subclavian)
    - Below the diaphragm (femoral)
    - 3 re-wires
- **Speak up! Contact inserter’s supervisor for verification!**

VAD Training Modules
Bundle Kit or Central Line Cart
Hub Care

**SCRUB THE HUB**

- Clean needleless connector/hub before every access with 70% alcohol
- Perform at least 10 “scrubs” in a motion similar to juicing an orange
Hub Care

When to Replace Needleless Connectors

• With tubing change
• As needed if occluded or if visible blood or debris is seen in or on connector
• Every 96 hrs if not being accessed (72 hrs for pediatrics)
• Prior to drawing blood cultures
Site Care

• Must demonstrate competency

• Timing of dressing change
  – Any dressing that is damp, loose, or soiled
    • Immediately
  – Transparent dressing
    • Every 7 days
  – Gauze dressing
    • Every 48 hours
Tubing Care

- Lipids and blood products (enhance bacterial growth)
- Intermittent IV

Propofol

6 hrs

24 hrs

72 hrs

96 hrs

Continuous IV (Ped)

Continuous IV (Adults)

*Non-lipid CPN: Mon, Wed, Fri

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<td>2. Use chlorhexidine for skin preparation</td>
<td>3. Site care: Change dressing if not intact and replace at appropriate intervals</td>
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What Are Your Next Steps?

- Post and update “Weeks Since Last CLABSI” wheel
- Post unit rates in staff areas
- Schedule meeting with HEIC and Patient Safety Officer
  - Ensure appropriate products are available
  - Formulate staff education plan
  - Collaborate to introduce mini Root Cause Analyses for each CLABSI occurrence
- Encourage front-line staff to view this presentation and VAD training available on the HEIC website
HEIC Website
http://intranet.insidehopkinsmedicine.org/heic

Adult VAD Policy

Pediatric VAD Policies
www.insidehopkinsmedicine.org/hpo/policies/50/2282/policy_2282.pdf
www.insidehopkinsmedicine.org/hpo/policies/50/2283/policy_2283.pdf

CDC Guidelines
www.cdc.gov/mmwr/preview/mmwrhtml/mm5110a1.htm

SHEA Guidelines
www.shea-online.org/about/compendium.cfm