

Why Do We Care About CLABSI?

- Central lines are common
 - 48% of ICU patients
- CLABSIs are associated with bad outcomes
 - 500-4,000 U.S. patients die annually due to CLABSIs
 - 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

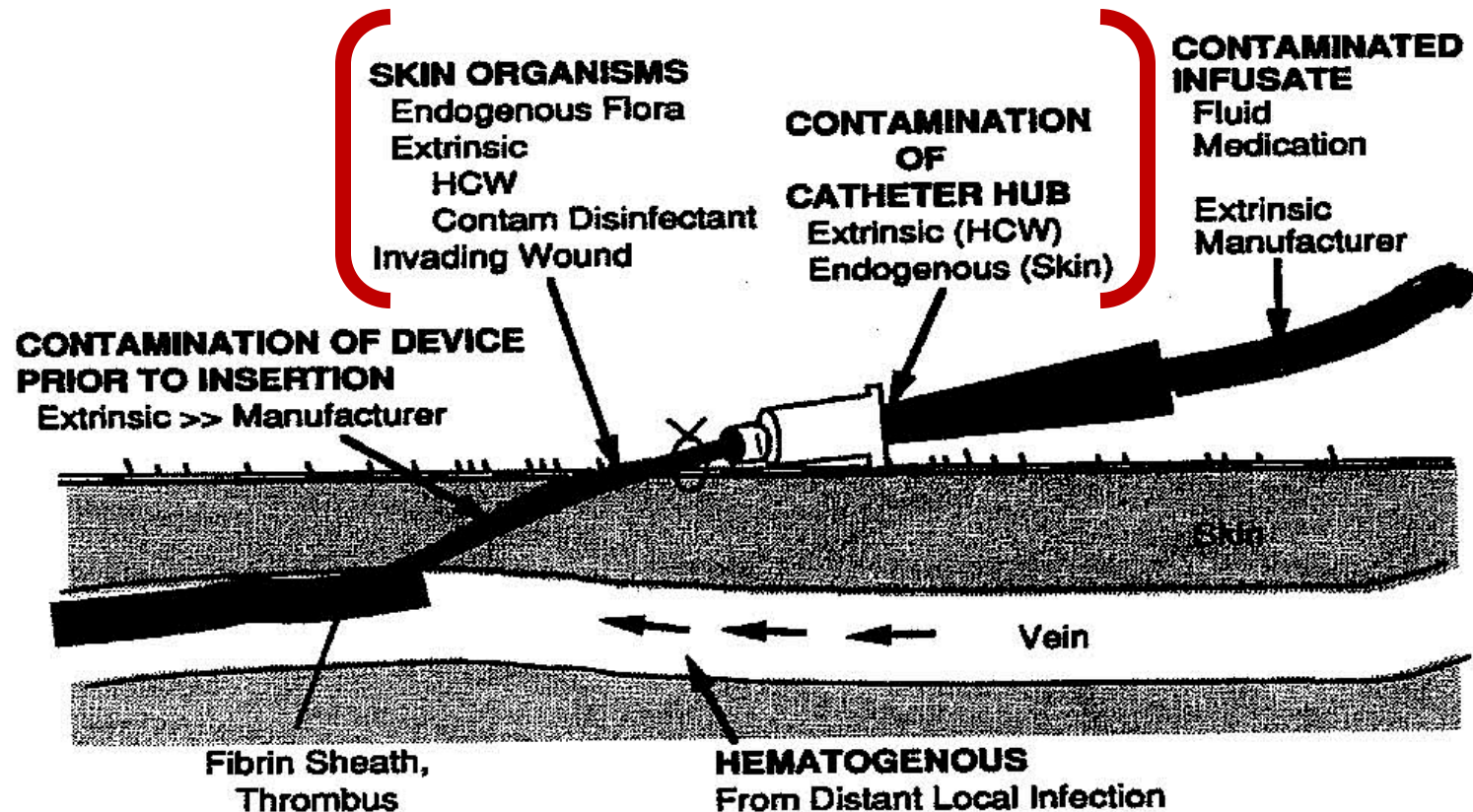


How Do We Calculate Your Unit's CLABSI Rate?

- 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



Mechanisms of CLABSI



Line Insertion

Line Maintenance

1. Perform hand hygiene before and after catheter insertions or manipulation

2. Use chlorhexidine for skin preparation

2. Hub care

3. Use full barrier precautions during insertion

3. Site care

4. Avoid using the femoral site in adult patients

4. Tubing care

5. Assess the need for the catheter each day and remove ASAP

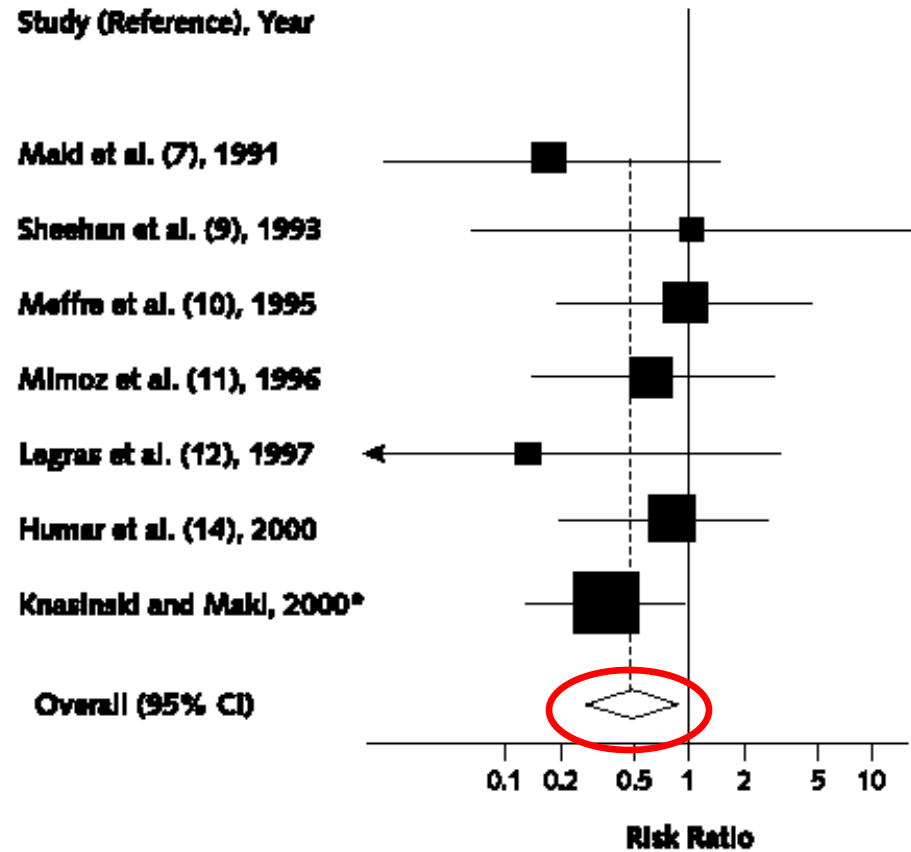
Hand Hygiene

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

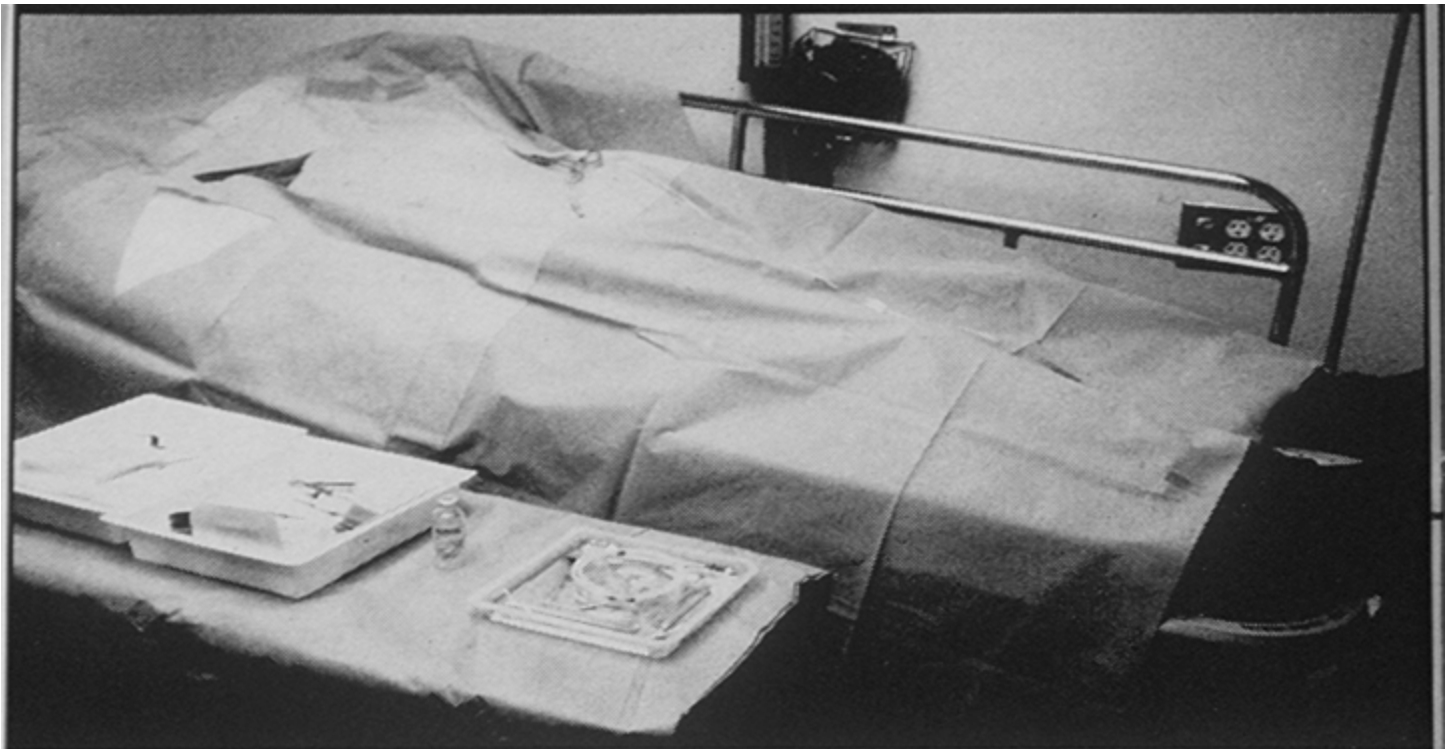
- For Operator & Others Contacting or Crossing the Sterile Field:
 - Non-sterile cap and mask
 - All hair should be under cap
 - Mask should cover nose & mouth tightly
 - Sterile gown and gloves
- For the Patient:
 - Cover patient's head and body with a large sterile drape
 - Drape should be wide enough 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

Am J Med 1991;91(3B):197S-205S
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**



Adult 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



JOHNS HOPKINS MEDICINE
THE JOHNS HOPKINS HOSPITAL
600 NORTH WOLFE STREET
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Central Line Insertion Care Team Checklist

Date _____ Time _____ Addressograph _____

TYPE OF LINE PLACED _____ REWIRE LOCATION OF LINE _____ # OF LUMENS _____

CRITICAL STEPS	Yes ✓	Yes with Reminder ✓ <i>(If No-add a comment)</i>
Directions: The Assistant completes this checklist by indicating with a checkmark in the appropriate column when the task is performed. If the task is not performed, a comment must be added. The Supervisor may also function as the Assistant who completes this form.		
1. Perform a time out using the informed consent form.		
2. Clean hands		
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. a. All others entering the room during the procedure must wear cap and mask.		
4. Prep site with chlorhexidine and let air dry. (*See instructions)		
5. Drape patient from head to toe using sterile technique.		
6. Prepare catheter by pre-flushing and clamping all lumens not in use during procedure.		
7. Place patient in trendelenburg position unless contraindicated (e.g., increased ICP) or if femoral/ PICC (place supine and flat).		
8. Maintain sterile field.		
9. Ensure grasp on guide wire is maintained throughout procedure and removed post procedure.		
10. Aspirate blood from all lumens, flush, and apply sterile caps.		
11. Ensure venous placement. (*See instructions)		
12. Clean site with chlorhexidine, apply sterile dressing, and apply sterile caps on all hubs.		

*Checklist instructions located on back of form

Operator _____ Supervisor _____ Assistant _____

Comments:

15-480131000017 (10/10)



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

JHH Pediatric Central Venous Catheter Insertion: Care Team Checklist

1. Today's date: _____ Time _____

2. Patient name/MRN: _____

3. Person inserting line (Service): _____

4. Observer: _____

5. Procedure is: Elective Emergent

6. Line is: New Rewire

7. Site: U Subclavian Femoral UAC UVC PICC Other _____

Complete this form for all central venous insertions & rewiring procedures

- Use a separate form for each site attempted
- Line placement should be interrupted and corrected immediately if a deviation in infection control practice occurs
- Contact ICU attending directly with concerns

1. 'Time Out' performed immediately prior to procedure:		Procedure Sign posted on door? <input type="checkbox"/> Yes <input type="checkbox"/> No
The following 'Time Out' elements were verified by the inserter: <input type="checkbox"/> patient ID <input type="checkbox"/> site and side <input type="checkbox"/> necessary equipment available <input type="checkbox"/> procedure <input type="checkbox"/> patient position <input type="checkbox"/> names & title of participants		
2. All individuals involved washed hands at the start of the procedure: (with Purell or soap & water)		
<input type="checkbox"/> Yes, independently <input type="checkbox"/> Yes, prompted Was this directly observed? <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> No *please explain:
3. All participating individuals at the bedside are wearing proper attire including: *Mask *Sterile gown *Hair cap with all hair covered *Sterile gloves		
<input type="checkbox"/> Yes, independently <input type="checkbox"/> Yes, prompted		<input type="checkbox"/> No *please explain:
4. Patient is covered head-to-toe with a sterile drape:		
<input type="checkbox"/> Yes, independently <input type="checkbox"/> Yes, prompted		<input type="checkbox"/> No *please explain: <input type="checkbox"/> No, NICU patients may require a portion of the body distal to the insertion site kept uncovered for thermoregulation purposes.
5. Insertion site is prepared with Chloraprep®:		
<input type="checkbox"/> Yes, independently <input type="checkbox"/> Yes, prompted Did scrub comply with recommendations? * 30 second scrub for non-groin sites OR * 2 minute scrub for groin sites * 30-60 second air dry <input type="checkbox"/> Yes <input type="checkbox"/> No *please explain:	<input type="checkbox"/> No Does the child have a CHG allergy or CEA grafts? <input type="checkbox"/> Yes *please explain: <input type="checkbox"/> No *please explain: Was 1% tincture of iodine used as a skin prep alternative? <input type="checkbox"/> Yes <input type="checkbox"/> No *please explain: Did scrub comply with recommendations? * Tincture of iodine allowed 2 minute air dry <input type="checkbox"/> Yes <input type="checkbox"/> No *please explain:	<input type="checkbox"/> No, NICU pt < 2 mos of age Was povidone iodine used as a skin prep alternative? <input type="checkbox"/> Yes <input type="checkbox"/> No *please explain: Did scrub comply with recommendations? * Area first cleansed with soap & water and dried. * Povidone iodine allowed 2 minute air dry <input type="checkbox"/> Yes <input type="checkbox"/> No *please explain:
6. A sterile, transparent dressing was applied to the site immediately after the procedure:		
<input type="checkbox"/> Yes, independently <input type="checkbox"/> Yes, prompted		<input type="checkbox"/> No *please explain:
7. A sterile field was maintained throughout procedure.		
<input type="checkbox"/> Yes		<input type="checkbox"/> No *please explain:
8. This checklist was completed by an observer during the actual procedure:		
<input type="checkbox"/> Yes		<input type="checkbox"/> No *please explain:
9. Was the Catheter Associated Blood Stream Infections Patient Education sheet given to the parent?		
<input type="checkbox"/> Yes		<input type="checkbox"/> No *please explain:

4/2010



Procedure Area Checklist

Date: _____ Time: _____

Johns Hopkins Health System

Patient Identification Label

Procedure Area Central Line Insertion Care Team Checklist

Critical Steps	Type: _____ Location: _____ # of lumens: _____ Arterial / Venous Rewire: <input type="checkbox"/>		Type: _____ Location: _____ # of lumens: _____ Arterial / Venous Rewire: <input type="checkbox"/>		Type: _____ Location: _____ # of lumens: _____ Arterial / Venous Rewire: <input type="checkbox"/>		Type: _____ Location: _____ # of lumens: _____ Arterial / Venous Rewire: <input type="checkbox"/>		Type: _____ Location: _____ # of lumens: _____ Arterial / Venous Rewire: <input type="checkbox"/>	
	Yes	Yes with Reminder	Yes	Yes with Reminder	Yes	Yes with Reminder	Yes	Yes with Reminder	Yes	Yes with Reminder
	✓	✓ If No- comment	✓	✓ If No- comment	✓	✓ If No- comment	✓	✓ If No- comment	✓	✓ If No- comment
1. Perform a time out using the informed consent form										
2. Clean hands										
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.										
4. Prep site with chlorhexidine and let air dry (see instructions on back)										
5. Drape patient from head to toe using sterile technique										
6. Prepare catheter by pre-flushing and clamping all lumens not in use during procedure										
7. Place patient in trendelenburg position unless contraindicated (e.g., increased ICP) or if femoral/ PICC (place supine and flat)										
8. Maintain sterile field										
9. Ensure grasp on guide wire is maintained throughout procedure and removed post procedure										
10. Aspirate blood from all lumens, flush, and apply sterile caps										
11. Ensure appropriate vessel placement (see instructions on back)										
12. Clean site with chlorhexidine, apply sterile dressing, and apply sterile caps on all hubs.										

(Checklist instructions located on back)

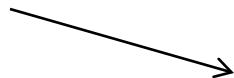
Operator _____ Supervisor _____ Assistant _____



Insertion Training and Competency Requirements

- Complete JHH 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 rewires
- Speak up! Contact inserter's supervisor for verification!

VAD
Training
Modules



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Outbreak Management

Patient Information

VAD Training Module 1

VAD Training Module 2

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Hospital Epidemiology and Infection Control

The mission of the Department of Hospital Epidemiology and Infection Control is to support the Johns Hopkins Health System's mission of research, teaching, and patient care; to promote patient safety by reducing the risk of acquiring and transmitting infections; and to become a leader in health care epidemiology and infection control.

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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

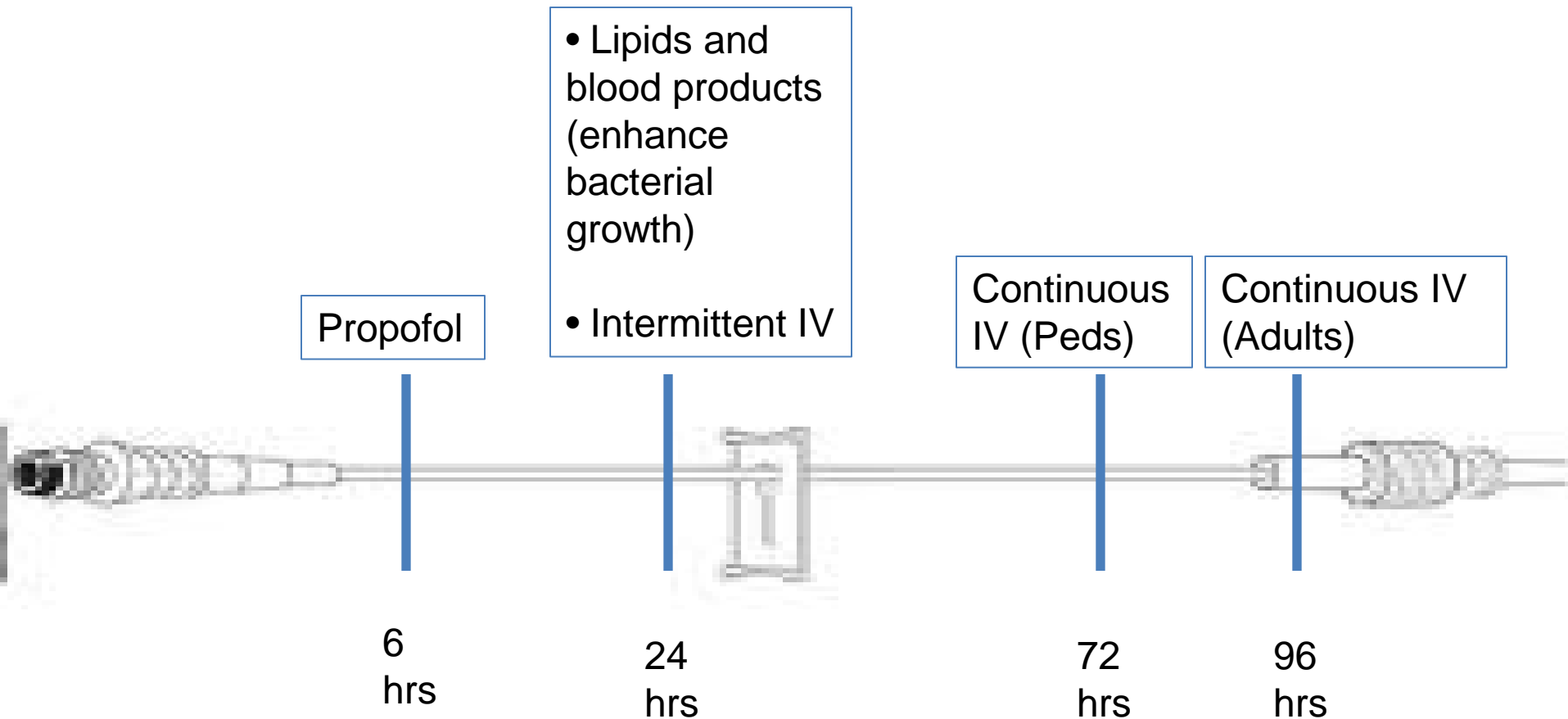


Site Care

- 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



*Non-lipid CPN: Mon, Wed, Fri

Infect Control Hosp Epidemiol. 2004;25:240-50



Line Insertion

Line Maintenance

1. Perform hand hygiene before and after catheter insertions or manipulation

2. Use chlorhexidine for skin preparation

2. Hub care: Scrub hub and replace at appropriate interval

3. Use full barrier precautions during insertion

3. Site care: Change dressing if not intact and replace at appropriate intervals

4. Avoid using the femoral site in adult patients

4. Tubing care: Change at appropriate intervals

5. Assess the need for the catheter each day and remove ASAP

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



Resources

HEIC Website

<http://intranet.insidehopkinsmedicine.org/heic>

Adult VAD Policy

www.insidehopkinsmedicine.org/hpo/policies/39/139/policy_139.pdf

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/rr5110a1.htm

SHEA Guidelines

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

