

Implementation of Central Line Bundle in Critical Care March 2003

Goal:

Improve patient outcomes by reducing central line-associated bloodstream infections.

Objective:

Educate/re-educate practitioners who insert and maintain central venous catheters on CDC's Guidelines for the Prevention of Intravascular Catheter-Related Infections as it pertains to central venous catheters.

Materials:

- Copy of Letter sent to Physicians from IC Chairman and Critical Care Medical Director
- "Central Line Bundle" components
- Copy of CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections
- Bullet Point sheet on CDC guidelines
- Central Line Insertion Nursing Checklist
- ChloroPrep product information/sample

Baptist Memorial Hospital
Infection Control

3/03: LL



BAPTIST MEMORIAL HOSPITAL - MEMPHIS

INFECTION CONTROL

6019 Walnut Grove Road, Memphis, TN. 38120

(901) 226-5820

Memorandum

To: All Physicians

From: Michael Threlkeld, M.D., Chairman Infection Control Committee and
Emmel B. Golden, Jr., M.D., Critical Care Director

Date: July 8, 2003

Subject: Infection Prevention with Central Venous Catheters

In order to improve our patient outcomes and reduce CVC-associated bloodstream infections there is a need to follow recommended strategies demonstrated clinically to reduce the incidence of these infections. The Centers for Disease Control and Prevention and the Healthcare Infection Control Practices Advisory Committee have published updated guidelines for the prevention of intravascular catheter-related infections. Of the many strategies recommended in guidelines, the following are especially important because they deal with pressing issues or reflect recent changes in practice:

***Proper hand hygiene:** practitioners should wash hands with antiseptic soap and water or an alcohol-based gel or foam. This should be done before and after palpating a catheter insertion site, as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Wearing gloves does not obviate the need for proper hand hygiene.

***Skin antisepsis:** A 2% chlorhexidine preparation (*ChloroPrep*) is the preferred disinfectant for catheter insertion sites.

***Maximum Barrier Precautions:** Maximum Barrier Precautions include: sterile cap, mask, gown, and gloves and a large sterile sheet to cover the patient. Maximum Barrier Precautions is more important in catheter-related bloodstream infections than where the insertion is performed.

***No routine replacement of catheter:** CVCs do not need routine changing once they are in place. Part of practice lore is to change the catheter at a scheduled frequency but this is not beneficial and may even be associated with a higher risk of pneumothorax and other mechanical complications.

***Remove as soon as possible:** Remove the CVC as soon as it is no longer clinically indicated; practitioners should resist the temptation to leave it in place in the event it may be needed later.

***Education:** Practitioners that insert and maintain intravascular catheters should receive education and training related to the indications for the catheters, their proper placement and maintenance and appropriate infection control measures that help to prevent catheter related bloodstream infections.

The cost of CVC-associated infections is substantial, both in terms of morbidity and in terms of financial resources expended. Your adherence to these practices is vital in preventing CVC-associated infections. For further information or a copy of the CDC Guidelines please contact the Infection Control Department at 226-5820.

Central Line Bundle

1. Hand Hygiene
(checklist)
2. Maximum Barrier Precautions
(checklist)
3. ChloroPrep Skin Prep
(checklist)
4. Appropriate Site Care
(nsg. monitor)
5. No Routine Replacement
(checklist)
6. Remove as soon as no longer indicated

Plan:

Education for the following disciplines -

Nursing

Intensivists

Venous Access Team

Interventional Radiology

Signage for Central Line Carts

Bundle packs for insertion procedure

Central Line Insertion Checklist

Date _____				
Room # _____				
Pt. ID # _____	Please Circle the one that applies			
1. Procedure	New Line	Over Wire		
2. Type of Line	PA	Intro	Triple Lumen	
	Quad	Vas Cath	Other	
3. Central Line placed in the	Subclavian	Jugular	Femoral	
4. Is the procedure	Elective	Emergent		

BELOW ARE CDC IA Recommendations:

5. Before the procedure, did the provider:				
Decontaminate their hands	Y	N		
Prep site with ChloroPrep	Y	N		
Drape pt using large sterile sheet	Y	N		
During the procedure did the provider:				
Use sterile gloves	Y	N		
Use hat, mask, and sterile gown	Y	N		
Maintain sterile field	Y	N		
Did personnel assisting wear mask	Y	N		
After the procedure:	Y	N		
Biopatch placed to site	Y	N		
Sterile dressing applied to site	Y	N		

Please return completed form to the Float Charge Nurse

FIRST DO NO HARM

HAND HYGIENE:

Decontaminate hands with antiseptic soap and water handwash or waterless alcohol-based gel.

MAXIMUM BARRIER PRECAUTIONS:

Use aseptic technique including use of Cap, Mask, Sterile Gown, Sterile Gloves, Large Sterile Sheet for insertion of CVC's (including PICCs) or guidewire exchange.

CUTANEOUS ANTISEPSIS:

Disinfect clean skin with ChloroPrep before catheter insertions and during dressing changes.

Bullet Points on CDC Guidelines for Prevention of Intravascular Catheter-Related Infections

HAND HYGIENE

- Antiseptic soap and water handwash or waterless alcohol-based hand antiseptic before and after inserting, replacing, accessing, repairing, or dressing.

INSERTION TECHNIQUE

- **Maximum Sterile Barrier Precautions/Aseptic technique**
Use aseptic technique including the use of a cap, mask, sterile gown, sterile gloves and a larger sterile sheet, for the insertion of CVC's (including PICC's) or guidewire exchange.

Use sterile sleeve to protect PA cath. during insertion.
- **Cutaneous skin antisepsis**
Disinfect clean skin with an appropriate antiseptic before catheter insertion and during dressing changes.
2% Chlorhexidine-based preparation preferred. Allow antiseptic to remain on the insertion site and to air dry before catheter insertion.
Allow povidone iodine to remain on the skin for at least two minutes or longer if it is not yet dry before insertion.

SITE SELECTION AND PLACEMENT

CVCs:

- Weigh the risk and benefits of placing a device at a recommended site to reduce infectious complications against the risk for mechanical complications (eg, pneumothorax, subclavian artery puncture, subclavian vein laceration, subclavian vein stenosis, hemothorax, thrombosis, air embolism, and catheter misplacement).
- Promptly remove any intravascular catheter that is no longer essential.
- Use a subclavian site (rather than jugular or femoral) in adult patients to minimize infection risk for nontunneled CVC placement.
- Use a CVC with the minimum number of ports or lumens essential for the management of patient.
- Use totally implantable access devices for patients who require long-term intermittent vascular access. For patients requiring frequent or continuous access, a PICC or tunneled CVC is preferable.

Use midline catheter or PICC when the duration of IV Therapy will likely exceed 6 days.

DIALYSIS CATHs:

- Place catheters used for hemodialysis and pheresis in a jugular or femoral vein rather than a subclavian vein to avoid venous stenosis if catheter access is needed.
- Use a cuffed CVC for dialysis if the period of temporary access is anticipated to be prolonged (eg, > 3wks).
- Use a fistula or graft instead of a CVC for permanent access for dialysis.
- Do not use hemodialysis catheters for blood drawing or applications other than hemodialysis except during dialysis or under emergency circumstances.
- Use povidone-iodine antiseptic ointment at the hemodialysis catheter site after catheter insertion and at the end of each dialysis session only if this ointment does not interact with the material of the hemodialysis catheter per manufacturer's recommendations.

REPLACEMENT

- Do not routinely replace CVCs, PICCs, Hemodialysis catheters, or Pulmonary artery catheters to prevent catheter-related infections.
- Guidewire exchange:
 - Don't use routinely for nontunneled cath's to prevent infection
 - Use a guidewire exchange to replace a malfunctioning nontunneled catheter if no evidence of infection is present.
 - Use a new set of sterile gloves before handling the new catheter when guidewire exchange performed.

Resources:

Below are the pdf files for the actual guidelines in the event you want to print and place with the packets. They are handy to have should you have to refer a physician to the actual recommendation related to an item in the bundle i.e.; Maximum Barrier Precautions or Chlorhexidine based solution for skin antisepsis.



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The above is an erratum that was published after the Guidelines were printed in the below issue of the MMWR.



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