Prevention of Central Line Associated Bloodstream Infections at MGH

Educational Packet
Background

• Recent evidence that a goal of zero central line related blood stream infections is achievable.

• The costs associated with a catheter related blood stream infection are high:
  – Human- up to 28,000 deaths in ICUs with an attributable mortality as high as 35%
  – Financial- average incremental cost $45,000 per infection
  – Reputation: hospital specific infection rates will be public soon.
Where do central line infections come from?

• Subcutaneous skin tract colonization
• Contamination of the catheter hub or stopcock
• Contamination of infusate
• Seeding via the blood from a remote site
• Placement under less than ideal conditions
MGH central line insertion program

• Line placement teams include a monitor who watches for breaches in aseptic technique and stops the procedure if one occurs
• All team members are empowered to stop the procedure if aseptic technique is broken
• Use of a standardized kit with all components required to comply with known infection prevention practices will be available
• Use of a check list for use during placement of all central lines that highlights aseptic technique requirements
• Documentation of compliance with aseptic technique by placement of checklist in medical record
• Use of a color coded sticker as part of a handoff procedure to highlight that the line was placed using the practices above from those placed under less than ideal conditions
Procedure for using checklist

• Coordinate time for line placement with patient’s nurse or other designated monitor
• Confirm consent present
• Complete “Time Out/Universal Protocol” per MGH policy
• Monitor: Observe sterile technique during set up and placement of central line
• Monitor: Complete the central line insertion checklist
• MD and RN sign completed checklist
• Courtesy and team work is expected and required from all members of the team
Who is the monitor

• Any RN can be a monitor.
• The monitor watches for breaches in the aseptic technique and stops the procedure if one occurs.
• The monitor educates the patient on the process and what to expect.
Talking with the patient

• “It has been decided that you will need to have a central IV line placed. My job is to monitor this procedure so that this IV line is inserted using sterile technique. Our goal is to minimize the risk of infection while this line is being inserted. If there appears to be a break in the sterile technique or even a possibility of a break in sterile technique you will hear me say stop the procedure. We will then change what ever is needed so that we can continue with sterile technique. I will be there to provide the necessary equipment so that we are able to perform this procedure as safely as possible.
Talking with the MD

- I am working with you to make sure that we maintain sterile technique throughout the procedure. The things I will be looking for are that:
  - you've used hand sanitizer (Cal Stat) or antimicrobial soap just before the procedure
  - you've disinfected the site with chlorhexidine,
  - the patient is draped from head to toe and that everyone involved in the procedure are wearing the required protective gear
  - I'll also watch to see if the line is flushed and capped before the drapes are removed and
  - any blood is removed with chlorhexidine before the sterile dressing is placed.
  - If a break in sterile technique is observed, I will ask you to repeat a portion of the procedure.
Standard Aseptic Technique

• Hand hygiene with alcohol-based hand rub
  ✓ Before gloving
  ✓ After removal of gloves
• Site preparation with chlorhexidine
  ✓ 30 second friction rub
  ✓ Must allow to air dry
• Maximum sterile barrier technique
  ✓ Hat and mask for everyone in room
  ✓ Sterile gloves & sterile gown for all operators
  ✓ Full body drape (head to toe)
• All equipment maintained on a sterile field & replaced if contaminated
• Sterile occlusive dressing applied following placement of the line.
Communication regarding line status

• all elements of the checklist are completed without a breach in aseptic technique (all boxes are marked ‘yes’):
  – Apply a GREEN sticker to the pigtail portion of the line

• If there has been a breach in aseptic technique during any portion of the line placement (a box is marked ‘no’ on the checklist):
  – Apply a RED sticker to the pigtail portion of the line
  – The sticker cues the receiving clinician to assess the risks and benefits of line replacement

• Place the checklist in the patient’s medical record. It is helpful reference for making decisions regarding the circumstances of line placement

• Any line with a RED sticker should be assessed for potential replacement within 24 hours
**EXAMPLE OF MGH CHECKLIST**

**Sources:** The checklist can be found in the central line kit, can be ordered from Standard Register or found on the MetaVision system (for OR Anesthesia)

**Destination:** The completed checklist should be placed in the progress note section of the patient’s medical record.
Breaks in sterile technique

- The monitor or any other team member will state that there is a break in technique
- The procedure will stop
- The team will agree upon corrective actions
- The procedure will resume
# HANDLING BREAKS IN STERILE TECHNIQUE

<table>
<thead>
<tr>
<th>Break</th>
<th>Appropriate Action</th>
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<tbody>
<tr>
<td>1. Guide wire tip touches non sterile object</td>
<td>• Remove contaminated wire from field and replace it with a new wire</td>
</tr>
<tr>
<td>2. Gloved hand touches non sterile object but no other part of field is contaminated</td>
<td>• Remove glove &amp; replace with new sterile glove</td>
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</tbody>
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| 3. Patient becomes agitated & sterile drapes are dislodged           | • Take down all drapes & equipment  
• Attend to the patients needs, then start over                          |
| 4. Non sterile object falls or is dropped onto sterile field         | • Sterile field & all associated equipment must be replaced                                                                                         |
| 5. Operator uses hand hygiene prior to entering the room, repositions the bed & side table, then dons sterile gloves | • Remove gloves  
• Repeat hand hygiene immediately before donning sterile gloves                                                                        |