



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

Central Line Infection Prevention Checklist  MASSACHUSETTS GENERAL HOSPITAL

Goal: To decrease patient harm from catheter-related blood stream infections
Who: An operator & a monitor
What: Assure compliance with and documentation of checklist elements
Where: At the site of the procedure
When: During all central venous line insertions or rewires
How: The monitor verifies that the steps have occurred, immediately informs the operator/supervisor of deviations, & completes the checklist Patient label

Roles:
Operator: the clinician placing the central line
Supervisor: an experienced operator that is involved in training the operator in central line placement
Monitor: an individual that is qualified to observe the procedure and watch for breaks in sterile technique. If a break in sterile technique is observed, the monitor asks the operator to repeat a portion of the procedure after correcting the observed break. Please identify a monitor for this line placement prior to the time out.

Procedure Planning			
Line Insertion Site:	<input type="checkbox"/> Subclavian	<input type="checkbox"/> Internal Jugular	<input type="checkbox"/> Femoral <input type="checkbox"/> PICC <input type="checkbox"/> Other (specify)
	Yes	No	Comments/Reason
Emergent placement	<input type="checkbox"/>	<input type="checkbox"/>	
Timeout documented separately	<input type="checkbox"/>	<input type="checkbox"/>	
Consent documented separately	<input type="checkbox"/>	<input type="checkbox"/>	

If there is a deviation in any of the critical steps, immediately notify the operator and stop the procedure until corrected. If the step is completed properly, check the "Yes" box. If the step is not completed properly, check the "No" box and note the issue in the "Comments/Reason" section. Contact the Attending if any item on the checklist is not adhered to or with any concerns.

Critical Step for Line Insertion	Yes	No	Comments/Reason
Before the procedure, the operator will:			
Confirm hand sanitizing (Cal Steril) or antimicrobial soap immediately prior	<input type="checkbox"/>	<input type="checkbox"/>	
Disinfect procedure site (chlorhexidine) using a back & forth friction scrub for 30 seconds. In patients < 2 months of age, use povidone iodine instead of chlorhexidine.	<input type="checkbox"/>	<input type="checkbox"/>	
Allow site to dry for 30 seconds	<input type="checkbox"/>	<input type="checkbox"/>	
Operator(s): hat, mask, sterile gown/gloves, eye protection	<input type="checkbox"/>	<input type="checkbox"/>	
Assistant/Monitor: hat, mask & standard precautions (if at risk for entering sterile field use sterile gown/gloves)	<input type="checkbox"/>	<input type="checkbox"/>	
Use sterile technique to drape from head to toe; Pediatrics use judgment to determine extent of draping.	<input type="checkbox"/>	<input type="checkbox"/>	
During the procedure, the operator will:			
Maintain a sterile field	<input type="checkbox"/>	<input type="checkbox"/>	
Flush and cap line before removal of drapes	<input type="checkbox"/>	<input type="checkbox"/>	
After the procedure, the operator will:			
Remove blood with antiseptic agent (chlorhexidine), if present, before placement of sterile dressing	<input type="checkbox"/>	<input type="checkbox"/>	
Apply appropriate (green = all "yes", red = 1 or more "no") dated sticker on patient's line	<input type="checkbox"/>	<input type="checkbox"/>	
Date & Time:	Unit:		
Operator:	MGRN	Monitor:	Credentials

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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

Break	Appropriate Action
1 Guide wire tip touches non sterile object	<ul style="list-style-type: none">Remove contaminated wire from field and replace it with a new wire
2 Gloved hand touches non sterile object but no other part of field is contaminated	<ul style="list-style-type: none">Remove glove & replace with new sterile glove
3 Patient becomes agitated & sterile drapes are dislodged	<ul style="list-style-type: none">Take down all drapes & equipmentAttend to the patients needs, then start over
4 Non sterile object falls or is dropped onto sterile field	<ul style="list-style-type: none">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	<ul style="list-style-type: none">Remove glovesRepeat hand hygiene immediately before donning sterile gloves