



“Preventing Central Line Infections”

The Central Line Bundle

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Central Line Bundle Elements

1. Hand hygiene
2. Maximal barrier precautions
3. Chlorhexidine skin antisepsis
4. Optimal catheter site selection, with subclavian vein as the preferred site for non-tunneled catheters
5. Daily review of line necessity with prompt removal of unnecessary lines



Hand Hygiene 101

- Wash hands if they are obviously soiled
- Wash hands or use an alcohol based waterless hand cleaner
 - Before and after invasive procedures
 - Between patients
 - After removing gloves
 - Before eating
 - After using the bathroom
 - If contamination is suspected



What are Maximal Barrier Precautions?

- For Provider:
 - Hand hygiene
 - Non-sterile cap and mask
 - All hair should be under cap
 - Mask should cover nose and mouth tightly
 - Sterile gown and gloves
- For the Patient:
 - Cover patient's head and body with a large sterile drape (use more than one if needed for large patients)



Key Change: Central Line Checklist

- Have the nurse document compliance with the insertion criteria at the time of insertion.
- Create a culture of safety and prevention:
 - ☺ empower nurses to stop line placement if improper techniques are used
- Instruct nurses in use of critical communication strategies to facilitate important exchanges.
 - ☹ e.g. “*the sterile field has been contaminated,*” rather than “*You contaminated the catheter!*”



Checklist Elements

- Before the procedure, did they:
 - Wash hands?
 - Sterilize procedure site?
 - Drape entire patient in a sterile fashion?
- During the procedure, did they:
 - Use sterile gloves, mask and sterile gown?
 - Maintain a sterile field?
- Verify: did all personnel assisting with procedure follow the above precautions?



Chlorhexidine Skin Antisepsis

- Prepare skin with antiseptic/detergent Chlorhexidine 2% in 70% isopropyl alcohol.
- Pinch wings on the “Chloraprep” applicator to pop the ampule. Hold the applicator down to allow the solution to saturate the pad.
- Press sponge against skin, apply chlorhexidine solution using a back and forth friction scrub for at least 30 seconds. Do not wipe or blot.
- Allow antiseptic solution time to dry completely before puncturing the site (~ 2 minutes).



Starting the Project

- Is there a method in place now?
- Know your baseline performance:
 - Randomly select 20 patients' records who had central lines placed. Apply the measures to them.
 - Be sure to check compliance with the total bundle as well, the “all or none” goal.
- Educate ICU staff (using your own data).



Small Tests of Change

- Small tests... 1 RN, 1 MD, 1 patient.
- Move on to pilot test in one ICU:
 - Refine the process
 - Test on all shifts
 - Test on all patients with central lines
- Measure your results to know if a change was an improvement.



Supportive Interventions

- **Multidisciplinary Daily Rounds:**

Physicians Nurses Nutrition Respiratory
Palliative Care Chaplaincy Pharmacy Case Management

- An opportunity to assess bundle related issues.
- Invite and encourage the family to join in.

- **Daily Goal Sheets:**

- Maintenance of bundle items.



Measure: CR-BSI per 1000 Line Days

Central line-associated BSI rate per 1000 central line-days:

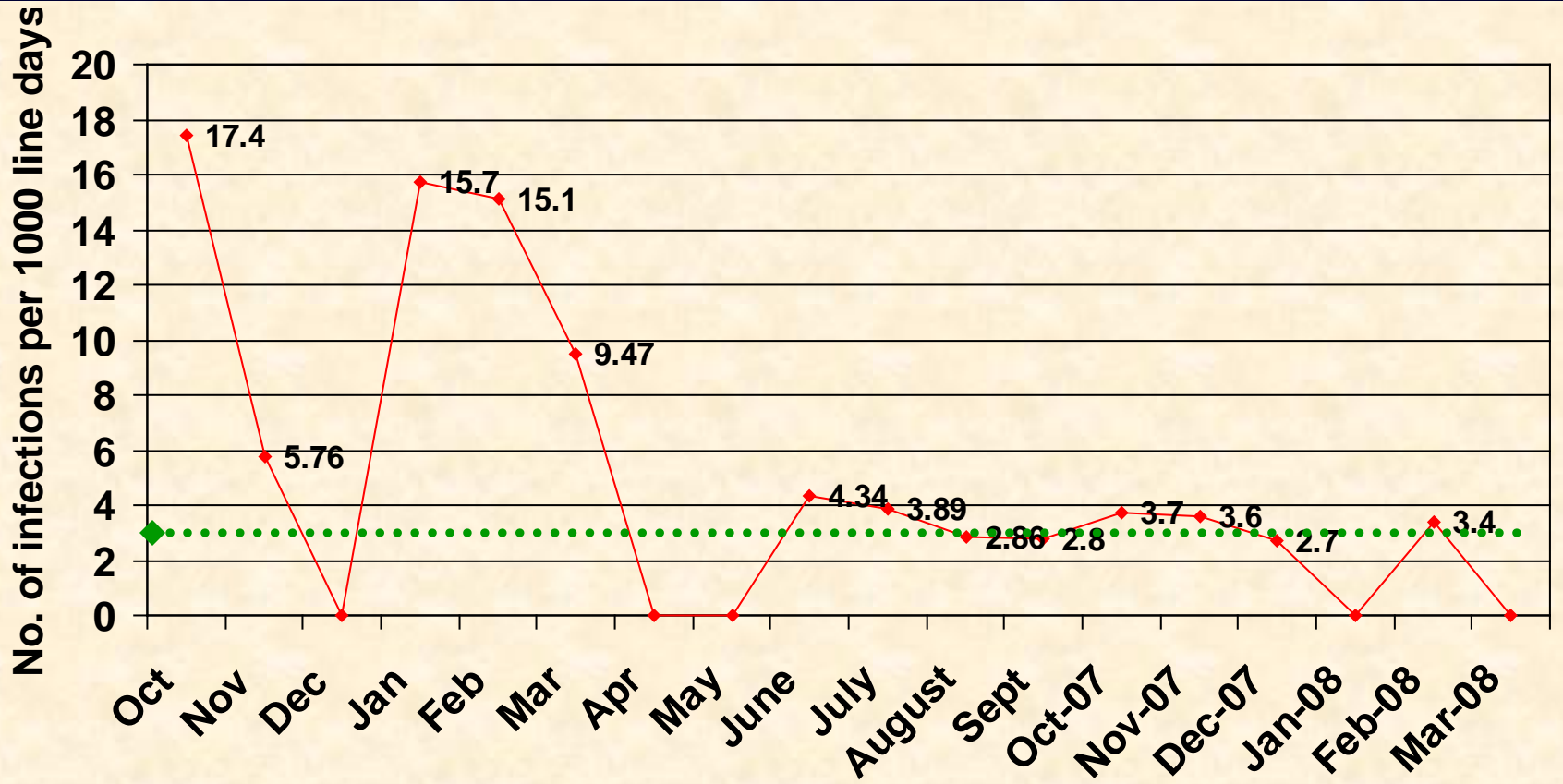
Numerator: Number of central line-associated BSI x 1000.

Denominator: Number of central line-days (total number of days of exposure to central venous catheters by all patients in the selected population during the selected time period).



	Pre-intervention (Oct. 06 – March 07)	Post-intervention (April 07 – March 08)
1. Hand hygiene	Yes	Antiseptic hand wash for 1 min
2. Maximum Barrier precautions	Variable : Small & large drapes Gown & mask for all CVC insertion in the theatre ICU: Gown & mask variable	Large drapes for CVC lines Gown & mask for all CVC insertion in the theatre ICU: Gown for all insertion but mask variable
3. Skin asepsis <ul style="list-style-type: none"> • Type of antiseptic • Contact time • Single/multi-use 	<ul style="list-style-type: none"> • Various: alcohol, povidone, chlorhexidine • Variable • All Multi-use 	<ul style="list-style-type: none"> • ChloraPrep (2% Chlorhexidine + alcohol) • 1 minute/until dry • Single use
4. Daily monitoring	No record keeping in non-ICU patients	Single form introduced both for insertion & monitoring as a part of patient's medical record
5. Subclavian site	Subclavian & internal jugular were used	Encouraged unless contraindicated

Southern Trust :CR-BSI



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5 Million

lives

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Thank you