Field Guide: 
Central Line-Associated Blood Stream Infections

Definition and Harm Impact

A central venous catheter, also known as a central line, is a tube that physicians place in a large vein in the neck, chest, groin, or arm to give fluids, blood, or medications or to do medical tests quickly. Central line-associated bloodstream infections (CLABSIs) are serious, preventable infections that occur when microorganisms enter the bloodstream through the central line, resulting in thousands of deaths annually along with billions of dollars in added healthcare costs. To prevent CLABSIs, healthcare providers must follow strict evidence-based guidelines when inserting and maintaining the central line.

Engaging Patients and Families

Patient and family education and in partnership in CLABSI prevention—best practice central line care is a critical element to successful reduction of CLABSI.

Education points:

- Include the purpose of a central line, expected duration of use, and why it is important to remove the central line as soon as it is no longer needed.
- Invite patients and family members to ask staff members about handwashing as part of a safety culture partnership.
- Use the Teach-Back method to educate patients and visitors on handwashing frequency, options (alcohol rub, soap, and water), and proper hand-hygiene techniques.
- Proactively explain central line care best practices such as “scrub the hub,” dressing change frequency, and positioning, as part of “nothing to me, without me” engagement and patient safety culture practices.
- For post-hospitalization use of central lines: Use Teach-Back methods for pre-discharge line-care teaching and begin early in hospitalization to allow time for follow-up.

Patient engagement strategies include:

- Obtain patient feedback on education materials and processes via patient family advisory council (PFAC) or other mechanisms.
- Include patients and their family members in shift-to-shift report, and daily care goals including line days, huddles, care decision, and debriefs.
- Make hand hygiene easy for patients and families with availability of hand hygiene products.
Hospital Improvement Strategies

Healthcare providers can take the following steps to help prevent CLABSI: 4

- Consider use of central-line insertion teams using certified registered nurses (RNs)
- Ensure handwashing practices are standardized across roles and environments
  - Review products for use with patients who are not ambulatory and/or cannot easily perform hand hygiene 5
- Standardize central-line insertion process
  - Implement insertion checklist
  - Implement “Stop the Line” process and culture, using standard communication phrases that instill all staff members involved with line insertion with the responsibility to halt the insertion process if the sterile field interrupted or a step is missed
  - Select optimal site based on individual anatomy, estimated length of treatment, and line type
  - Hand hygiene and aseptic technique
  - Site prep with two percent chlorhexidine (CHG)
  - Guide line placement with ultrasound
- Review line necessity
  - Daily review of central-line need based on clinical criteria with standardized guidance for prompt removal or notification to physician that criteria are met, indicating removal
- Standardize central-line maintenance process
  - Bundle elements of line care/maintenance together
  - Incorporate into daily assessment
  - Use standardized “scrub the hub” process for line access when obtaining lab samples
- Specialize tactics: “Beyond the Bundles”
  - Use CHG dressings
  - Bathe with CHG
  - Use a non-suture securement
  - Use antiseptic or antimicrobial impregnated central venous catheters (CVCs) judiciously.
  - Do not routinely replace CVCs
  - Adopt antibiotic stewardship program best practices (see related Field Guide) 6,7

Measurement

The Hospital Improvement Innovation Network (HIIN) goal for reduction in CLABSI standardized infection ratio (SIR) is 20 percent compared to the National Healthcare and Safety Network (NHSN) calendar year 2015 baseline SIRs. The SIR is calculated by dividing the number of observed events by the number of predicted events. Beginning with 2015 data, SIRs are calculated for CLABSI (excluding mucosal barrier injury laboratory-confirmed bloodstream infection, [MBI-LCBI] events) and, for acute care hospitals, MBI.
Resources and Guides for Hospitals


2 Ibid.