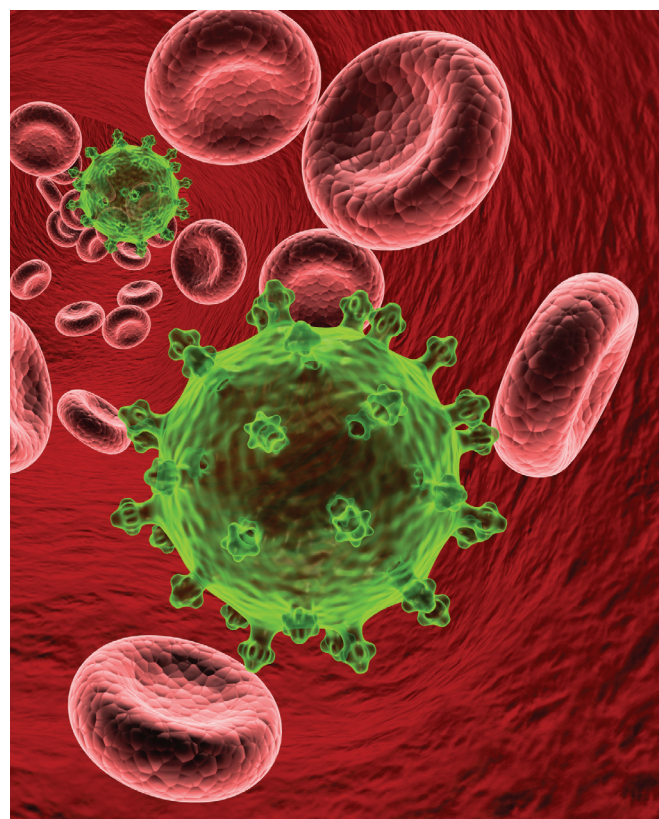


Revisiting CLABSI prevention strategies: Part 1

Follow the basics to keep your patients safe.

By Michelle DeVries, MPH, CIC, VA-BC

Editor's note: This is the first in a two-part series on central line–associated bloodstream infections (CLABSIs). Part 1 focuses on indications and insertions. Part 2 will discuss maintenance and what to do if a CLABSI occurs.



THE COST of CLABSIs is high both for patients and for organizations. Although progress in reducing these infections has been made, they remain a common problem in hospitals. CLABSIs increase mortality risk and can cost an organization about \$45,000 per case. (See *CLABSI defined*.)

CLABSI prevention strategies fall into three categories: clinical indications, insertion, and care and maintenance. In this first of a two-part series, we'll focus on indications and insertion.

Clinical indications

An often overlooked first step in CLABSI prevention is asking whether a central line is clinically indicated. Central line access poses risks beyond CLABSI, including deep vein thrombosis, bleeding, pneumothorax, and arrhythmias. An interprofessional team can work together to establish organizational criteria for central line use and help all units adopt them. The team should represent infectious diseases, hospitalists, nephrology, critical care, emergency, administration, pharmacy, vascular access, infection prevention, information technology, and frontline nursing staff. Use evidence-based practice to develop central line criteria, and include protocols for establishing individual patient need, choosing a device, and preventing device complications.

Evidence-based practice

The Centers for Disease Control and Prevention (CDC) guidelines and Infusion Nurses Society (INS) standards discuss basic concepts for appropriate device selection. Other documents, such as The Joint Commission CLABSI Toolkit and the “Compendium of strategies to prevent healthcare-associated infections in acute care hospitals” from the Society for Healthcare Epidemiology of America (SHEA), emphasize daily review of central lines to determine if their continued use is necessary.

Recent publications (for example the Michigan Appropriateness Guide for Intravenous Catheters [MAGIC]) offer direction for clarifying the indications most broadly accepted for central line use. Based on expert consensus, recommendations for preferred vascular access devices should be based on patient characteristics (for example, difficult venous access), appropriateness of infusate for peripheral administration, and anticipated therapy duration. These broad considerations are easily adopted into order sets and are available as a free, downloadable smartphone application (www.improvepicc.com).

Individual patient need

Early in a patient's admission, the healthcare team should discuss appropriate vascular access, indications, and ves-

CLABSI defined

Central line–associated bloodstream infection (CLABSI) is a surveillance (not clinical) protocol standardized by the Centers for Disease Control and Prevention (CDC) and used for internal quality-improvement efforts and required state and federal public reporting. The definition is part of a detailed protocol that must be precisely followed to allow for accurate comparison of infection incidence. Ongoing revisions (published at least annually) are incorporated into the protocols.

- At its simplest, CLABSI is diagnosed when pathogens are found in the patient's blood without another source of infection and the patient has a central line in place for more than 2 calendar days before infection.
- When common skin contaminants (such as coagulase-negative staphylococci) are present, CLABSI is diagnosed only when two cultures test positive and the patient has a symptom (such as fever).
- Severely immunocompromised patients who develop infections with organisms known to be associated with gut translocation (some gram-negative organisms and yeasts) are classified as having mucosal barrier injury infections. These infections must be reported, but they don't count "against" the facility.
- Catheter tip cultures, paired cultures, and time to positivity offer clinical guidance, but their results aren't taken into consideration when making a CLABSI determination.
- Infection prevention and control teams generally are responsible for conducting surveillance and attending annual protocol trainings, but the information is available for free at cdc.gov/nhsn/acute-care-hospital/clabsi/index.html.

sel health and preservation. If a line is placed, review its continued use daily. When it's no longer needed, develop a plan for appropriate, reliable access for the patient's ongoing needs.

Device options and complications

Vascular access isn't synonymous with central access. Hospitals that have added midline catheters to their vascular access options have consistently reported substantial decreases in central line days. This suggests an over-reliance on central lines without a true need for them. Midlines (longer/extended dwell peripheral catheters) may offer an option for patients with difficult venous access who may otherwise have been escalated to a central line, when no valid central line indication existed. Because midlines are considered peripheral catheters, care must be taken to ensure that only peripherally compatible infusates are given. A vascular access consult can provide the necessary recommendations for evidence-based device selection.

Excess lumens substantially increase CLABSI and deep vein thrombosis risk. Including extra lumens "just in case" isn't acceptable. Studies show that defaulting to single-lumen central lines, establishing specific criteria for multi-lumen devices, combined with provider,

nursing, and pharmacist education supported by real-time monitoring and feedback contribute to positive outcomes. The University of Michigan published these criteria for the use of multi-lumen devices:

- simultaneous administration of multiple incompatible medications
- total parenteral nutrition infusion with concurrent need for additional I.V. medications
- simultaneous use of continuous vesicant or irritant chemotherapy with other medications
- need for vasopressors.

Calculators and simulation studies ([improvepicc.com](https://www.improvepicc.com)) can help you evaluate the potential decreases in CLABSI and deep vein thrombosis risk if you change the relative percentages of triple-, double-, and single-lumen central lines in your organization.

Current reimbursement penalties focus only on CLABSI and don't include reporting of short peripheral catheter and midline infections. Frontline staff can be patient advocates and ensure that line selection is a clinical decision guided solely by the patient's access needs. Choosing devices without fully understanding their infection rates and other complications could expose patients to significant risk.

Shared governance, patient safety committees, and infection prevention committees can encourage organizations to expand their surveillance scope to include all device-associated infections, not just those from central lines, and request complication rate information for all devices used by the vascular access team. Fully understanding benefits and complications of vascular access devices helps frontline staff advocate for safe access.

Insertion

After the care team determines that central access is required and the type of access (acute central venous catheter, tunneled catheter, peripherally inserted central catheter, totally implanted device) is chosen, plan the insertion, including use of antimicrobial lines (if indicated) and insertion checklists and bundles.

Antimicrobial lines

Based on organizational goals and current infection incidence, consider an antimicrobial line. Studies, including those from the author's institution, have shown substantial reductions in CLABSI when this technology is used.

Checklists and bundles

Central line insertion checklists or bundles—hand hygiene, maximum sterile barrier precautions (head-to-toe sterile drape, mask, cap, sterile gown, sterile gloves), chlorhexidine skin prep (unless contraindicated), and, when possible, avoidance of the femoral vein—are the cornerstone to CLABSI prevention. Incorporating the

*Fully understanding
benefits and
complications of
vascular access devices
helps frontline staff
advocate for safe
access.*

checklist into the electronic health record (EHR) will reinforce and verify its use across all central venous access devices in all settings within the organization.

Using the checklist in conjunction with a trained observer helps ensure that all elements of the insertion process are followed. The observer should record each step of the checklist in the EHR and provide real-time feedback if any element is missed. Some checklists have the option of “yes” or “yes, with coaching” to emphasize the importance of an active review process. Some organizations have adopted a “stop the line” approach, which further empowers the observer to stop a procedure that’s not complying with safety expectations. Another strategy organizations use is to have a formal process for following up (peer review or individualized coaching from division leaders, hospital epidemiologists, and administration) with clinicians who don’t adhere to the checklist even when coached to determine barriers to compliance and to reinforce that using the checklist is compulsory.

Central line insertion that doesn’t comply with the

checklist (for example, a line inserted in an emergency situation) should be documented as emergent, and the line should be flagged for removal within 24 to 48 hours based on the organization’s policies. To avoid this situation, organizations may want to consider using intraosseous devices as bridges for emergent vascular access. They allow time for the patient to stabilize and provide an opportunity for safe insertion of the most appropriate device for continued therapy.

Limitations aid prevention

CLABSI prevention begins with limiting central access line use to established indications. When central lines are indicated, checklists and bundles can help ensure proper insertion. The next article in this series will focus on access line maintenance and what to do if a CLABSI occurs. ★

Michelle DeVries is senior infection control officer for Methodist Hospitals in Gary, Indiana, and is an adjunct research fellow at Griffith University in Australia. She serves on the speakers bureau for Access Scientific, Becton Dickinson, Ethicon, and Eloquest.

Visit americannursetoday.com/?p=56421 for a list of selected references.

Frontier Nursing Univ AD