

## Guidelines for the Prevention of Intravascular Catheter-Related Infections: Centers for Disease Control and Prevention

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Since 1983, the Centers for Disease Control and Prevention have been providing healthcare practitioners with guidelines based on evidence for the prevention of catheter-related infection. This latest report was developed by a working group representing various organizations and disciplines in the fields of infection control, critical care medicine, infectious disease, surgery, anesthesiology, interventional radiology, pulmonary medicine, pediatric medicine, and nursing. As per the previous guidelines published in 1983 and 1996, each recommendation is categorized based on existing scientific data, theoretical rationale, applicability, and economic impact. The categories are listed as follows: Category IA—strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies; Category IB—strongly recommended for implementation and supported by some experimental, clinical, or epidemiologic studies, and a strong theoretical rationale; Category IC—required by state or federal regulations, rules, or standards; Category II—suggested for implementation and supported by suggestive clinical or epidemiologic studies or a theoretical rationale; and Unresolved Issue—an unresolved issue for which evidence is insufficient or no consensus regarding efficacy exists.

In the past, the guidelines were intended for use in hospitals and acute care with the recommendation of adapting them for use in home care and

outpatient areas. They are now recommended to be used across the health continuum. Overall, the guidelines are much easier to read. The working group placed catheter types into their respective categories instead of listing them separately. For instance, peripheral venous catheter recommendations incorporate midline catheter information, and central venous catheter recommendations include peripherally inserted central catheters (PICC), hemodialysis, and pulmonary artery catheters. The paper also has two appendices for reference purposes. One contains examples of clinical and surveillance definitions for primary bloodstream infection (BSI), and the second is a summary of the recommended frequency for the replacement of catheters, dressings, administration sets, and fluids. There are major areas that have been included into the paper. These include the following: (1) suggestions for performance indicators that organizations can monitor to reduce the incidence of catheter-related bloodstream infection (Category IA); (2) the use of maximal sterile barrier precautions inclusive of mask, cap, sterile gown, sterile gloves, and large sterile sheet for the insertion and guidewire changes of central venous catheters (CVCs), including PICCs (Category IA); (3) preference of a 2% chlorhexidine-based preparation for insertion and catheter site care, although tincture of iodine and iodophor or 70% alcohol may be used (Category IA); (4) the use of antimicrobial- or antiseptic-impregnated catheters should be used in adults whose catheters are to remain in place for >5 days if the institution's BSI rate is greater than benchmark rates and if other infection control measures have failed (Category IB); (5) central catheters and midline catheters should not be routinely replaced to decrease the risk of infection (Category IB); and (6) the importance of educational programs and competency testing for clinicians responsible for the insertion and care of venous catheters (Category IA).

Evidence-based documentation in refereed journals and clinical competencies has demonstrated that specially trained personnel decrease the potential for catheter-related bloodstream infections (CRBSI). In the guidelines there is a lengthy discussion concerning the morbidity and mortality of patients requiring central venous access and the substantial financial burden CRBSI places on the healthcare system. Numerous studies have demon-

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strated that the incidence of BSI is higher in intensive care units than in other patient care settings. These new guidelines have made two exciting recommendations regarding these historical issues. The first is the inclusion of the importance of appropriate nursing staff levels in intensive care units to minimize the risk of CRBSI (Category IB). The second is the recommendation for IV personnel designated for the insertion and maintenance of intravascular catheters (Category IA).

Nutrition support clinicians will find that the recommendations remain largely unchanged concerning parenteral nutrition. One port (if using a multilumen catheter) should be used for the administration of parenteral nutrition. Lipid-containing parenteral nutrition fluids (ie, 3-in-1 solutions) should be completed within 24 hours of hanging the fluid, and the infusion of lipid emulsions alone should be completed with 12 hours of hanging the

fluid. There continues to be no recommendation for the hang time of non-lipid-containing fluids. IV tubing sets used to administer lipid emulsions should be changed within 24 hours of initiating the infusion. One recommendation that went from an Unresolved Issue to a Category II is the administration tubing for parenteral nutrition solutions containing only dextrose and amino acids does not need to be changed more frequently than every 72 hours.

When determining how to integrate these guidelines into your organization, clinicians should be reminded that these are just what they are stated to be—guidelines. Each organization must take into account other benchmarking data provided by other professional organizations, your organization's experience, cost/benefit analysis, and results from continued research that is evolving in this area. Only then can you determine what is best for your practice.