Central Line Associated Blood Stream Infections (CLABSI) FACT SHEET

Bottom Line

1. CLABSIs result annually in*:
   - 84,551-203,916 preventable infections
   - 10,426-25,145 preventable deaths
   - $1.7-21.4 billion avoidable costs
2. The following interventions decrease the risk for CLABSIs:
   - Appropriate hand hygiene,
   - Use of chlorhexidine for skin preparation,
   - Use of full-barrier precautions during central venous catheter insertion,
   - Avoid using the femoral vein for central venous catheters in adult patients, and
   - Removing unnecessary central venous catheters.

*Umscheid, CA, et al. Estimating the proportion of reasonably preventable hospital-acquired infections and associated mortality and costs.

Our Current Performance

Base on our current performance, our opportunity to improve the care that we provide to patients if we eliminated CLABSIs in our ICU*:

Current CLABSI rate:

Deaths/year:

Excess ICU days/year:

Excess Dollars/year:

*This data may be calculated using the CLABSI opportunity estimator at www.safercare.net. The opportunity estimator uses current evidence from multiple studies. The list of references can be found on the website.

 Revised 10/28/09

Appendix B

The following information is from the 2008 Society for Healthcare Epidemiology of America (SHEA) and Infectious Disease Society of America (IDSA) Practice Recommendation: Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals. Infect Control Hosp Epidemiol 2008;29:S22-S30.

Each recommendation is categorized on the basis of existing scientific data, theoretical rationale, applicability, and economic impact. **Category A-I recommendations** are strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.

APPROPRIATE HAND HYGIENE

Bottom Line: Proper hand hygiene is required before and after palpating catheter insertion sites, as well as before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. In addition, the use of gloves does not obviate the need for hand hygiene. **Category B-II**

Since 1977, at least 7 prospective studies have shown that improvement in hand hygiene *significantly* decreases a variety of infectious complications. Proper hand-hygiene procedures can be achieved through the use of either a waterless, alcohol-based product or an antibacterial soap and water with adequate rinsing. Compared with peripheral venous catheters, CVCs carry a substantially greater risk for infection; therefore, the level of barrier precautions needed to prevent infection during insertion of CVCs should be more stringent than proper hand hygiene alone.

Ref:
1. Pittet D et al. Lancet 2000;356:1307-1309
2. Larson EL et al. Am J Infect Control 1995;23:251-269
3. Rosenthal VD et al. Am J Infect Control 2005;33:392-397
4. Boyce JM et al. MMWR 2002;51(RR-16):1-45
5. Yilmaz G et al. JPEN 2007;31:284-287

USE OF CHLORHEXIDINE FOR SKIN PREPARATION

Bottom Line: Disinfect clean skin with an appropriate antiseptic before catheter insertion and during dressing changes. An alcoholic chlorhexidine solution containing a concentration greater than 0.5% is preferred. **Category A-I**

In a study from 1991, preparation of central venous and arterial sites with a 2% aqueous chlorhexidine gluconate lowered BSI rates compared with site preparation with 10% povidone-iodine or 70% alcohol. Since that time, there has been growing evidence that chlorhexidine-containing skin preparation is superior to other options. A meta-analysis from 2002 that pooled results of these studies demonstrated use of a chlorhexidine-containing preparation decreased central catheter related infections by 49% relative to povidone-iodine preparations. Because a smaller effect of chlorhexidine was seen in studies using a 0.5% concentration of chlorhexidine, preparations with greater concentrations are recommended.

Ref:
6. *Maki DG et al. Lancet 1991;338:339-343
7. Chaiyakunapruk N et al. Ann Intern Med 2002;136:792-801
8. Humar A et al. Clin Infect Dis 2000;31:1001-1007

* Included in annotated bibliography

Appendix B

USE OF FULL-BARRIER PRECAUTIONS DURING CVC INSERTION

Bottom Line: Maintain aseptic technique for the insertion of intravascular catheters. **Category A-I**

Maximal sterile barrier precautions (e.g., cap, mask, sterile gown, sterile gloves, and large sterile drape) during the insertion of CVCs substantially reduces the incidence of CLABSI compared with standard precautions (e.g., sterile gloves and small drapes).

Ref:

9. Mermel LA et al. Am J Med 1991;91(suppl):S197–S205
10. *Raad II et al. Infect Control Hosp Epidemiol 1994;15:231–8
11. Hu KK et al. Am J Infect Control 2004;32:142-146
12. Young EM et al. Am J Infect Control 2006;34:503-506

AVOID USING THE FEMORAL VEIN FOR CENTRAL VENOUS CATHETERS IN ADULT PATIENTS

Bottom Line: Use of the femoral site is associated with greater risk of infection and deep venous thrombosis in adults. **Category A-I**

The site at which a catheter is placed influences the subsequent risk for catheter-related infection and noninfectious complications. For adults, lower extremity insertion sites are associated with a higher risk for infection than are upper extremity sites. As a result, authorities recommend that the femoral vein be avoided. Place CVCs in an alternative site to reduce the risk for infection. The risk of noninfectious complications should be assessed on an individual basis when determining which site to place the CVC.

Ref:

13. Lorente L et al. Crit Care 2005;9:R631-R635
14. Merrer J et al. JAMA 2001;286:700–7.
15. *Goetz AM et al. Infect Control Hosp Epidemiol 1998;19:842–5.

REMOVING UNNECESSARY CENTRAL VENOUS CATHETERS

Bottom Line: Promptly remove any intravascular catheter that is no longer essential. **Category A-II**

One of the most effective strategies for preventing CLABSIs is to eliminate, or at least reduce, exposure to central venous catheters. The decision regarding the need for a catheter however is complex and therefore difficult to standardize into a practice guideline. Nonetheless, to reduce exposure to central venous catheters, the multidisciplinary team should adopt a strategy to systematically evaluate daily whether any catheters or tubes can be removed.

Ref:

16. Lederle FA et al. Ann Intern Med 1992;116:737-738
17. Parenti CM et al. Arch Intern Med 1994;154:1829-1832.

* Included in annotated bibliography

