

# Reducing Central Line–Associated Bloodstream Infections in the Blood and Marrow Transplantation Population: A Review of the Literature

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Healthcare-associated infections are a significant cause of patient morbidity and mortality. Most healthcare-associated bloodstream infections are related to the presence of central venous catheters and are called central line–associated bloodstream infections (CLABSI). A review of the literature showed a decrease in CLABSI in intensive care units (ICUs) since the implementation of guidelines from the Centers for Disease Control and Prevention. This review demonstrated the effectiveness of daily chlorhexidine gluconate (CHG) bathing toward reducing CLABSI as well as infections from methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococci* in this setting. A need exists for implementation of a similar intervention for patients undergoing blood and marrow transplantation, and CHG bathing would be a logical choice because of its proven efficacy in the ICU, its safety, and its cost affordability.

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Healthcare-associated infections are a huge burden on the healthcare system; however, most are preventable. About 70% of central line–associated bloodstream infections (CLABSI) may be prevented with the use of current Centers for Disease Control and Prevention (CDC) guidelines (Umscheid et al., 2011). The four major causes of healthcare-associated infections are urinary tract infections (34%), surgical site infections (17%), CLABSI (14%), and pneumonia (13%) (Klevens et al., 2007). An estimated 1.7 million healthcare-associated infections were reported in 2002, a quarter of which occurred in intensive care units (ICUs) (Klevens et al., 2007). The same study noted that healthcare-associated infections may have been a factor in as many as 99,000 deaths, which would rank among the top 10 leading causes of death in the United States. CLABSI are the second leading cause of death among patients with healthcare-associated infections, resulting in 30,665 deaths in 2002 (Klevens et al., 2007).

The incidence of bloodstream infections is reported to be between 1% in patients in the ICU and 36% in blood and marrow transplantation (BMT) recipients (Wisplinghoff et al., 2004).

Most healthcare-associated bloodstream infections are related to the presence of central venous catheters (Kallen, Patel, & O'Grady, 2010). According to O'Grady et al. (2011), a 58% decrease in CLABSI was noted in ICUs from 2001–2009 because of the efforts of healthcare professionals and state and federal agencies in developing, implementing, and adhering to CDC (2011a) guidelines. The guidelines are summarized as follows.

- Educate and train healthcare personnel who insert and maintain catheters.
- Use maximal sterile barrier precautions during central venous catheter insertion.
- Use a more than 0.5% chlorhexidine gluconate (CHG) skin preparation with alcohol for antiseptics.
- Avoid routine replacement of central venous catheters.
- Use antiseptic or antibiotic-impregnated short-term central venous catheters and CHG-impregnated sponge dressings if the rate of infection is not decreasing despite adherence to these strategies.

More effort is needed in non-ICU areas, such as with patients undergoing BMT, as well as for those in hematology/oncology, to reduce the incidence of CLABSI. Healthcare providers are