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

Abdelbaki Boubekri

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 (CLABSIs). A review of the literature showed a decrease in CLABSIs 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 CLABSIs 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.

Abdelbaki Boubekri is an advanced registered nurse practitioner student in the School of Nursing at the University of South Florida in Tampa. The author takes full responsibility for the content of the article. The author did not receive honoraria for this work. The content of this article has been reviewed by independent peer reviewers to ensure that it is balanced, objective, and free from commercial bias. No financial relationships relevant to the content of this article have been disclosed by the author, planners, independent peer reviewers, or editorial staff. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Clinical Journal of Oncology Nursing or the Oncology Nursing Society. Boubekri can be reached at baki_b@msn.com, with copy to editor at CJONEditor@ons.org. (Submitted May 2012. Revision submitted September 2012. Accepted for publication October 1, 2012.)

Digital Object Identifier:10.1188/13.CJON.297-302

Healthcare-associated infections are a huge burden on the healthcare system; however, most are preventable. About 70% of central line–associated bloodstream infections (CLABSIs) 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%), CLABSIs (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. CLABSIs 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 CLABSIs 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 antisepsis.
- 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 CLABSIs. Healthcare providers are