Central Line–Associated Bloodstream Infection Prevention: Standardizing Practice Focused on Evidence-Based Guidelines

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Central venous access devices (CVADs) are integral to the treatment and provision of supportive care for many patients with cancer. Central venous catheters are the most frequent cause of healthcare-associated bloodstream infections. Healthcare-associated bloodstream infections can be prevented when evidence-based practices are followed consistently over time. Establishing nursing best practice with CVADs in the ambulatory setting presents additional challenges because of multiple providers, caregivers, and policies. This article identifies evidence-based practice strategies implemented at a comprehensive ambulatory cancer center to standardize best nursing practice for central lines.

At a Glance

• Central line care must reflect knowledge of risk factors associated with central line–associated bloodstream infection.
• Central line care must be guided by credible evidence-based standards that focus on central line–associated bloodstream infection prevention.
• Standardizing port access and dressing practice by implementing evidence-based policies are associated with measurable improvement in patient outcomes.

Central line–associated bloodstream infection (CLABSI) can cause significant avoidable morbidity and mortality (O’Grady et al., 2011). The Institute for Healthcare Improvement (IHI) introduced central line care bundles in 2001, which have demonstrated a 58% reduction in CLABSIs as a result (Centers for Disease Control and Prevention [CDC], 2011a; Um- schied et al., 2011). These improvements have occurred in the intensive care unit and acute care setting; research suggests that millions of patients outside the intensive care and acute care settings are at risk of developing CLABSIs (Chopra, Krein, Olmstead, Saifdar, & Saint, 2013). This shift is relevant to the ambulatory setting because multiple patient care teams and caregivers and the absence of comprehensive surveillance methods are substantial obstacles to CLABSI prevention. Minimal research exists on measures to prevent CLABSIs in the ambulatory setting (Mollee et al., 2011; Tomlinson et al., 2011). Patients with cancer are at higher risk because of neutropenia, which has been identified by the IHI as a key risk factor for CLABSIs. Neutropenia is a common side effect of cancer treatment, with most treatments being provided in the outpatient setting (Chopra et al., 2013; Loveday et al., 2011; Schiffer et al., 2013). Central line care must reflect knowledge of risk factors and be guided by credible evidence-based standards that focus on the goal of preventing CLABSIs (Camp-Sorrell, 2011).

In 2011, the Dana-Farber Cancer Institute (DFCI), a National Cancer Institute–designated comprehensive cancer center, opened a cancer center with a centralized laboratory service unit for patient blood draws and venous access. The new unit was staffed by IV nurses and phlebotomists. An average of 300 patients per day were seen for blood draw and access by the IV team, and about 50% of those patients required port access. The opening of the laboratory service center integrated nursing staff with IV expertise from a variety of disease center units and institutions. Questions began to arise from staff about best practice as they observed and discussed individual practice. The practice variance was most evident in port access. Patients noticed this variance and were concerned that nurses did not follow the same routine. Patient interviews revealed dissatisfaction with the variance and expected consistency in the central line practices of the staff (Weingart, Hsieh, Lane, & Cleary, 2014).

Practices Associated With Prevention

The key advances from the science of CLABSI prevention focus on the following high-risk factors: heavy microbial colonization at the insertion site, heavy microbial colonization at the catheter hub, presence of neutropenia, and inadequate care of the central venous catheter after insertion (Chopra et al., 2013). The CDC (2011b) guideline bundle for postinsertion care of central lines emphasizes (a) compliance with hand hygiene requirements, (b) scrub of the access port or hub immediately prior to each use with