Most Effective Nursing Interventions to Prevent Central Line-Associated Bloodstream Infections: A Critical Review of the Literature

Jacqueline Flint
SUNY Brockport

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**Introduction**

Central Line-Associated Bloodstream Infections (CLABSIs) are defined by The Joint Commission as: A primary bloodstream infection (that is, there is no apparent infection at another site) that develops in a patient with a central line in place within the 48-hour period before onset of the bloodstream infection that is not related to infection at another site (The Joint Commission, 2012).

CLABSIs is a significant risk factor for increased morbidity, mortality, cost of care, and length of stay for hospitalized patients. Of the various kinds of hospital-acquired infections, CLABSIs are one of the most deadly with an estimated mortality rate of 12-25% for each infection (CDC, 2002).

Costs associated with CLABSI have varied from $3,700 to $56,000 per infection, and the annual cost of care ranges from $296 million to $2.3 billion (CDC, 2002).

Though there has been a 46% decrease in CLABSI occurrence in hospitals across the United States from 2009-2013, it is estimated that 30,100 CLABSI still occur in intensive care units and acute care facilities each year (CDC, 2020).

**Methods**

A literature review was performed to identify the most effective evidence-based nursing interventions to prevent the development of CLABSI, as well as evaluation of interventions. A literature review was performed using Medline, CINAHL, PubMed, and Cochrane Database for the terms “central line dressing” and “central line infection.”

**Results**

One study investigated the effects of a simulation study that analyzed the effectiveness of standardized central line dressing changes. This study examined nursing student knowledge and potential to be cost effective.

18 primary studies were reviewed. All articles investigating the effect of implementing an antimicrobial cap into central line care. In 1 study investigated bedside nursing knowledge and how easily these interventions can be implemented into practice.

What makes an intervention effective? How should future maintenance protocols look like for CLABSI prevention?

**Discussion**

Overall, all interventions analyzed in this literature review were proven to be effective in reducing CLABSI incidence. Many interventions were determined to be cost effective.

Nursing knowledge in regards to CLABSI prevention and line site care varies. Lecture-based, simulation-based, and e-learning have proven to be effective measures in enhancing knowledge of these topics. All hospitals should provide routine CLABSI education on a yearly basis.

Incorporating a unit-based quality nurse to all hospitals could lead to sustained CLABSI reduction, particularly in areas with high-risk patients.

Including an insertion site assessment score in routine nursing documentation enhances attention to line-site care, improves interprofessional communication, and can prevent CLABSI.

Implementation of standardized CLABSI bundles which incorporate all of the evaluated interventions in addition to routine education for healthcare staff would be most effective in reducing CLABSI.