

Title:

Effectiveness of Central Venous Catheter Needleless Connectors & Protective Caps in Reducing Central Line Associated Blood Stream Infections

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Session Title:

Rising Stars of Nursing Invited Posters - Group 1

Slot (superslotted):

RSG STR 1: Thursday, September 25, 2014: 9:45 AM-10:30 AM

Slot (superslotted):

RSG STR 1: Thursday, September 25, 2014: 2:30 PM-3:15 PM

Keywords:

central line-associated blood stream infections, disinfection of needleless connectors and needleless connectors

References:

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Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE	TIME ALLOTTED	FACULTY/SPEAKER	TEACHING/LEARNING METHOD	EVALUATION/FEEDBACK
Example Critique selected definition of the term, "curriculum"	Example Definitions of "curriculum" Course of study Arrangements of instructional materials The subject matter that is taught Cultural "training"	Example 20 minutes	Example Name, Credentials	Example Lecture PowerPoint presentation Participant feedback	Example Group discussion: What does cultural training mean to you?

		Planned engagem ent of learners				
The learner will be able to identify three types of needleless connectors used on central venous catheters.	n/a	n/a	Susan Nelson, MSN (c), RN, CRNI	Poster Presentation	Individual discussion on poster findings during poster review	
The learner will be able to identify practice, research, and policy implications as a result of this literature review.	n/a	n/a	Susan Nelson, MSN (c), RN, CRNI	Poster Presentation	Individual discussion on poster findings during poster review	

Abstract Text:

The Effectiveness of Central Venous Catheter Needleless Connectors and Protective Caps in Reducing Central Line Associated Blood Stream Infections

Abstract

Background and Significance: There are approximately 250,000 central line-associated blood stream infections (CLABSI) in the U.S. each year. The CLABSI mortality rate in the U.S. is as high as 35%, resulting in 28,000 deaths per year. The development of a CLABSI can increase the hospital length of stay by up to three weeks and has an estimated cost of \$16,550.00 (CDC, 2011). The implementation of central venous catheter (CVC) insertion bundles and CVC care and maintenance bundles has been effective in decreasing the incidence of CLABSIs; however, the use of needleless connectors on CVCs has been linked to an increase of CLABSIs. **Problem and Purpose:** This paper seeks to review the current state of nursing science regarding how these needleless connectors are being cared for, what protocols are being followed for scrubbing the hub, and whether the use of needleless protector caps has

an impact on decreasing CLABSIs. **Method:** A database search was performed to obtain articles written in the English language for review using the following key words: *needleless connectors, catheter related blood stream infections, central line-associated blood stream infections, CLABSI, central venous catheter, needleless connector protector cap, needleless cap, infection, disinfection of needleless connectors*. Nine of the ten articles chosen for this review focused on care of adult patients with CVCs in an ICU setting using needleless connectors and the incidence of CLABSIs, one article focused on care of children with CVCs. **Findings:** Four of the ten studies showed that there was no significant difference in CLABSI rates with the use of various types of needleless connectors and/or needleless protector caps even though there was a reduction in CLABSIs during the intervention. Two of the studies revealed that the use of a needleless protector cap may prevent microorganisms entering into the intraluminal pathway and lower the risk of CLABSIs. Three studies involved nurses' knowledge of needleless connectors and how to properly disinfect them and indicated that there is a lack of nursing knowledge when it comes to needleless connectors and how they work. One experimental study showed that of the three types of needleless connectors tested, the zero fluid displacement connector performed the best in reducing CLABSIs. All studies agreed that how the needleless connector is maintained plays a major role in the prevention of CLABSIs and that educating clinicians is a key step in preventing CLABSIs. **Discussion/Implications:** While there was no significant difference in CLABSI rates in these studies, there was a decrease in CLABSI rates with the use of various needleless connectors and needleless connector protective caps. There is a lack of nursing knowledge on how to properly cleanse the needleless connector hub, insufficient evidence on length of time to scrub the hub with a disinfectant, and length of drying time before accessing the needleless connector. Additional research is needed including larger sample sizes, use of various types of needleless connectors, i.e. negative, positive, or zero fluid displacement, and their relationship to CLABSIs. Further clinical effectiveness could strengthen these results by review of needleless connector protective cap use to prevent CLABSIs. Additional studies need to be conducted on disinfectant times required to properly scrub the hub to reduce bacterial transfer.