



The Effects of Chlorhexidine Bathing on Reducing Central Line Associated Blood Stream Infections

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Background

The CDC estimates that 80,000 central line associated blood stream infections (CLABSIs) develop each year in ICU environments. This estimate climbs to 250,000 CLABSIs per year when entire hospitals are included (CDC, 2011). CLABSIs have been found to be the second most deadly type of hospital acquired infection .

The yearly cost of CLABSIs is greater than on billion and costs per individual patient with a CLABSI can exceed \$16,000. CLABSI can result in an extended length of hospital stay and increase the financial cost of treatment considerably. These consistently high rates of CLABSIs, despite the adoption of standard prevention techniques by most hospitals, indicate the need for more effective interventions.

PICO Question

In adult patients with a central vascular access device, does the use of daily chlorhexidine bathing versus use of standard soap and water bathing decrease the incidence of central line associated blood stream infections?

Literature Search

- A systemic search of published literature was performed in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed databases.
- The following keywords/phrases were searched: chlorhexidine bathing, central line infection, effects of daily chlorhexidine bathing on central line infection, chlorhexidine bathing AND central line infections, chlorhexidine bathing central, and CLABSI prevention.
- Thirteen articles were reviewed and eight were included for systematic review.
- No restrictions were placed on the date of publication and only articles in English were reviewed.
- The John Hopkins Nursing Evidence Based Practice Appraisal was utilized to determine strength of evidence of each study.

Literature Review

Literature	Study Type	Sample/Setting	Level of Evidence	Results
Karki, S., & Cheng, A. (2012)	Systemic Review	20 studies reviewed.	Level One	<ul style="list-style-type: none"> Five studies showed improvement in CLABSI rate; three studies presented no benefit. Analysis of studies revealed greater than 50% reduction in CLABSI rate.
Popovich, K., Hota, B., et al. (2010)	Quasi experimental study	Surgical intensive care unit (SICU) at the Rush University Medical Center.	Level Two	<ul style="list-style-type: none"> No significant difference in rate of CLABSIs when chlorhexidine was utilized (p=0.57). Half the amount of contamination was observed during blood culture collection process when chlorhexidine was used (p=0.003). Significant decrease in average monthly admissions between the soap and water and chlorhexidine periods.
Climo, M., Yokoe, D., et al. (2013)	Randomized controlled study.	Nine intensive care and bone marrow transplantation units in six hospitals that included 7727 patients between Aug. 2007 – Feb. 2009.	Level One	<ul style="list-style-type: none"> Rate of hospital acquired bloodstream infections was 28% lower with chlorhexidine-impregnated washcloths (p=0.007) \. When chlorhexidine wipes were utilized, a 90% reduction in the rate of fungal bloodstream infections was observed.
Dixon, J., & Carver, R. (2012)	Observational cohort study	144 patients in a nine bed SICU, that involved all patients who were admitted or transferred to the unit within the initial three months.	Level Three	<ul style="list-style-type: none"> Decrease in CLABSI rates from 12.07 CLABSIs per 1000 central line days to 3.17 CLABSIs per 1000 line days during the initial three months, resulting in 73.7% rate reduction (p=.0358). Pre intervention to post intervention showed 76% reduction in CLABSI rates.
Lopez, A. (2011)	Quasi-experimental study	Medical-surgical intensive care unit (ICU) at a regional medical center.	Level Two	<ul style="list-style-type: none"> Rates of CLABSI infection were reduced by 96% from pre intervention rate of 5.7/1000 device days to post intervention rate of 0.2/1000 device days (p<.001).
Munoz-Price, L., Hota, B., et al. (2010)	Quasi-experimental study	70 bed LTACH in Chicago, IL from Feb. 2006 – Feb. 2008.	Level Two	<ul style="list-style-type: none"> Results showed a 99% reduction of CLABSI during the period when chlorhexidine bathing was utilized (p=.02)

Conclusions

- CLABSIs are a prevalent and costly issue in healthcare and are a preventable infection. Evidence based interventions can be implemented in order to reduce them.
- Existing evidence supports using daily chlorhexidine bathing as an effective intervention in comparison to traditional soap and water bathing to prevent CLABSI in adult patients with a central venous access device.
- Further study on the effectiveness of chlorhexidine bathing is warranted, specifically randomized controlled studies.

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Acknowledgements

Thanks to those who helped make this project successful, including Carol Tringali, MS, RN, AOCNS, Clinical Nurse Specialist, Penn State Hershey Medical Center; and Kelly A. Kuhns, PhD, RN, Assistant Professor, Millersville University.