Chlorhexidine Gluconate (CHG) Baths and the Incidences of Central Line Infection Rates

Adena Blair, Christina Philip, Olivia Michie, Richard Butterfield, Song Vo

UC Davis Medical Center

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Learning Objectives

- Investigation of recent literature describing evidence-based studies showing decreases in central line associated blood stream infection (CLABSI) rates with the use of CHG vs soap and water in bathing central line patients.
- Understanding the mechanism of CHG bathing and its effectiveness in reducing infection rates in patients with a central line catheter.
- How to decrease the rate of CLABSI by increasing awareness and CHG bathing compliance in patients with central lines.

Abstract

250,000 cases of bloodstream infection have been estimated to occur annually with a 12-25% mortality rate with each infection and a cost of $25,000 per episode. Central line-related bloodstream infections increase hospital length of stay and cost. The majority of these infections are associated with central venous catheters (O’Grady, et al., 2011).

Currently UC Davis protocol for preventing central line associated bloodstream infections (CLABSI) includes: daily review of necessity, evaluation of insertion site daily, aseptic technique for changing IV tubing, and other recommendations by the CDC. (O’Grady, et.al., 2011). Daily Chlorhexidine gluconate (CHG) baths are recommended, but not incorporated into the CLABSI bundle at UCDMC. CHG is a topical antiseptic that binds to bacterial cell walls causing leaking of cytoplasm and ultimate cell death. CHG remains active for hours after application and therefore has been used in the hospital setting for preoperative bathing and catheter dressing changes. (Montecalvo, et al., 2012). Does daily CHG bathing reduce the rates of CLABSI in the hospital setting?

A literature review was conducted concerning the use of CHG bathing to reduce CLABSI. A three month trial of 144 patients in a nine bed SICU at a level one trauma center was conducted where patients received daily non-rinse CHG impregnated cloth baths along with the institution’s established central line bundle (Dixon, Carver, 2010). This resulted in a 73.7% decrease in their CLABSI rate. Another study was done comparing CHG basin baths versus soap and water in the effectiveness of decreasing infection. The rate of CLABSI using soap and water was 6.4 out of 1000 central venous catheter days versus 2.6 when using CHG baths. This is a relative decrease of 59% in the rate of CLABSI when using CHG over soap and water (Montecalvo, et al., 2012). Bleasdale (2007) conducted a 52-week study in two similar 11-bed intensive care units of the John H. Stroger Jr Hospital in Chicago, Illinois. The units were randomlyselected in which patients were bathed daily with 2% non-rinse CHG impregnated washcloths, or soap and water in the control group. Central line infection rates were reduced from 16.8 to 6.4 out of 1000 central venous catheter days using CHG impregnated cloths.

Survey

In order to assess the current CHG bathing behaviors used at UCDMC we conducted a simple questionnaire survey of nurses on four acute care units (n = 47) asking if they completed...
daily CHG baths and if not, reasons for the noncompliance and suggestions for improvement. We found that the biggest barrier to daily CHG baths were time constraints and patient refusal. All nurses who participated in the survey were interested in any means to decrease CHG bath times. Non-rinse CHG impregnated cloth baths were favored by all nurses who took the survey.

**Conclusion**

CHG bathing is proven to decrease healthcare-associated bloodstream infections in patients with central venous catheters (Montecalvo, et al., 2012). We believe that incorporating this practice into our existing CLABSI bundle will increase compliance; thus, contributing to reduction of central line infection rates. To promote daily CHG baths of central line patients, we recommend in-service training to educate nurses on the importance of this practice. Weekly chart audits of patients with central lines by management would be encouraged to review compliance of CHG bathing as part of the CLABSI bundle. Per the survey that was conducted, exchanging CHG basin baths for non-rinse CHG impregnated cloths would greatly increase compliance of daily CHG baths and potentially further decrease CLABSI rates. Further investigation of bathing practices of central line patients and CLABSI rates at UCDMC, and the potential use of non-rinse CHG cloths is recommended.
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