

Effect of Chlorhexidine Gluconate (CHG) Gel Dressing on Adult Central Venous Line-Related Primary Bloodstream infections

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BACKGROUND

Central lines are used in multiple settings such as ICU and general floors throughout the hospital to provide vascular access. The cost of a central line-associated bloodstream infection (CLABSI) can range from \$3,700 to \$29,000 per episode.¹ The reduction of CLABSIs is important to decrease the patient's risk of morbidity and mortality as well as decrease the patient's hospital stay.

In 2007, the CLABSI goal for our facility was to remain below the median National Healthcare Safety Network (NHSN) rate of 2.1/1000 device days. We implemented the CDC Guidelines for the Prevention of Intravascular Catheter-Related Infection practices and utilized a CHG impregnated sponge*. In 2008, CLABSI education was completed and a review of the current CHG sponge* application was performed. The six-month and nine-month rate for CLABSI was 2.2. Audits of the central line dressings revealed that CHG sponges* were incorrectly placed 40 percent of the time. The units were re-educated and practice pointers were sent out, initially improving compliance but over time incorrect sponge* placement still remained a factor.

OBJECTIVE

To determine whether a chlorhexidine gluconate (CHG) gel dressing† could decrease the rate of primary central line-related bloodstream infections (CLABSI).

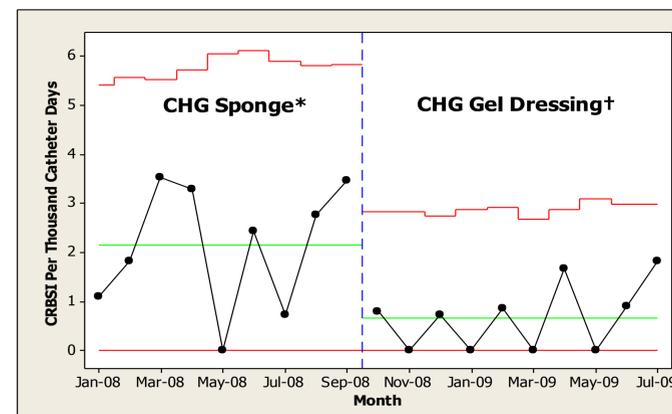
MATERIALS and METHODS

The study was conducted in a 544 bed, critical care regional teaching center on the adult ICU and non-ICU patient units. Infection rates were calculated each month by number of primary central line-associated blood stream infections (CLABSI) per total device days x 1000. The CLABSI rates were plotted by month for the period of time prior to the change in practice and for the period of time after the change using a U-chart (control chart).

The multidisciplinary Infection Control Committee approved a trial of CHG gel dressings† with a complete product switch-out on the adult units in October 2008. Education regarding the use of the CHG gel dressing† was completed through walking in-services and practice pointers. The same CVL policies were maintained except that dressing changes were now once a week. In October 2008, the central line CHG sponge* change kits were removed and the new CHG gel dressing† change kits were implemented with unit education.

RESULTS

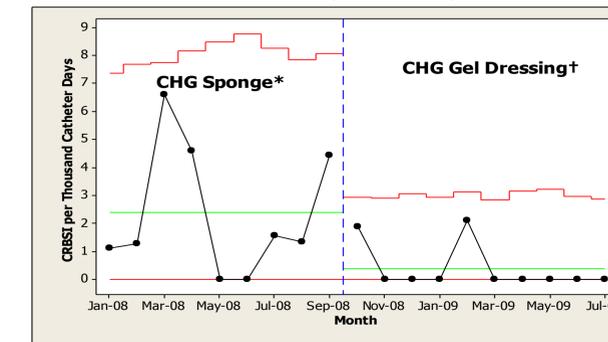
CRBSI Rates Combined



Red lines represent upper and lower statistical control limits. Green lines represent the mean rate; showing a change from 2.2 / 1000 catheter days to 0.7 per 1000 catheter days

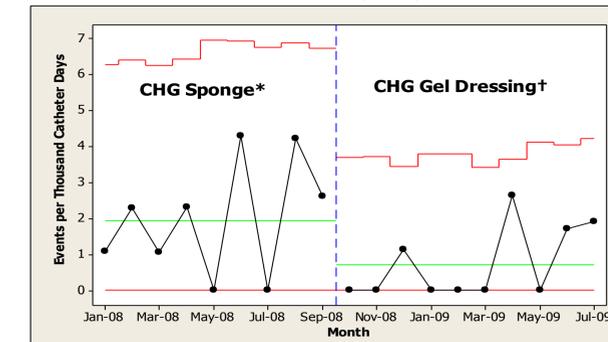
RESULTS (cont.)

CRBSI Rate (Non-ICU)



Red lines represent upper and lower statistical control limits. Green lines represent the mean rate; showing a change from 2.4 / 1000 catheter days to 0.4 per 1000 catheter days

CRBSI Rate (ICU)



Red lines represent upper and lower statistical control limits. Green lines represent the mean rate; showing a change from 1.9 / 1000 catheter days to 0.7 per 1000 catheter days

RESULTS SUMMARY

Prior to implementation of the CHG gel dressing† the infection rate (standard error, SE) was 2.15 (0.40) infections per 1000 catheter days. After implementation of the CHG gel dressing† the infection rate decreased significantly ($p < 0.002$) to an estimated rate (SE) of 0.66 (0.23) infections per 1000 catheter days. The relative risk (RR) of a CRBSI after implementation of the CHG gel dressing† was estimated to be 0.3066. That is, the risk of a CR-BSI was 0.3066 times (or roughly one-third) the risk of infection with the CHG sponge*. The 95% CI of the RR was (0.140, 0.671).

CONCLUSIONS

- The focused intervention of introducing a one step CHG gel occlusive dressing† to central line sites resulted in a dramatic decrease in CLABSI.
- Staff recommended this dressing† over the previous CHG sponge* and dressing as there was less room for error in applying the dressing and that the dressing stayed in place for the whole seven days even on jugular sites.

Reference:

¹ Marschall J, Mermel L, Classen D, et al. A Compendium of Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute Care Hospitals. *Infect Control and Hosp Epidemiol.* 2008; 29: S22-S30.

* Ethicon, Inc. Biopatch® Antimicrobial Disc

† 3M™ Tegaderm™ CHG Chlorhexidine Gluconate IV Securement Dressing

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