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The Reduction of Central Line Associated Bloodstream Infections with the Use of Silver-Plated Disk Dressings in Burn Injured Patients

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Introduction

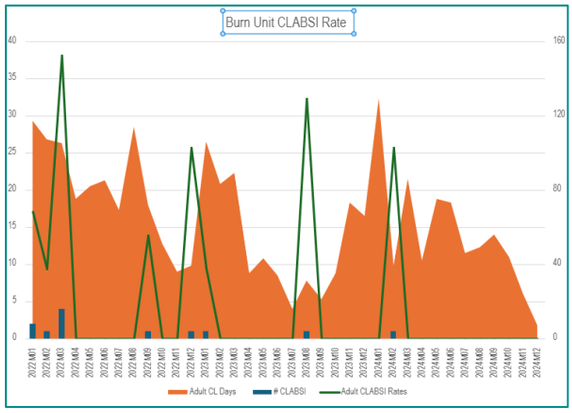
Burn patients are particularly more susceptible to infections due to compromised skin integrity, frequent exposure to moisture during wound care, and elevated ambient temperatures in care settings, which are maintained to mitigate the risk of hypothermia. Additionally, there is an elevated prevalence of central lineassociated bloodstream infections (CLABSIs) among burn patients. This increased CLABSI risk/prevalence underscores the critical interplay between these vulnerabilities and the heightened risk of infection. This correlation highlights the need for targeted interventions to reduce the incidence of CLABSIs in this particularly at-risk population. This study investigates the efficacy of silver-plated disk dressings in reducing CLABSIs within a single burn center.

Methods

To address the high risk, and relatively increased prevalence of CLABSIs, a simpleintervention prospective QI/PI process was implemented within the Burn Intensive Care Unit (ICU) of a single ABA-verified Burn Center, beginning in July 2022. The initiative included the adoption of a silver-plated disk as the primary dressing for all arterial and central venous access devices. Dressing changes were scheduled biweekly. CLABSI rates were calculated as the number of infections per 1,000 central line days. The effectiveness of this intervention was evaluated by assessing the rates of CLABSIs before and after its implementation.

Results

From January 2022 to June 2022, a total of 7 CLABSIs were recorded over 571 line-days, with a mean CLABSI rate of 10.76 per 1,000 central line (CL) days (SD 15.08) preimplementation. F]ollowing the implementation of the silver-plated disk dressing, in July 2022, through December 2024, there were 5 CLABSIs recorded over 1,683 line-days. The post-implementation mean CLABSI rate was 3.56 per 1,000 CL lines (SD 8.82). Two CLABSI's were observed but excluded from these analyses due to noncompliance with dressing protocols, thereby classifying them as outliers. Poisson regression analysis showed that implementation of the silver-plated disk dressing was significant in a reduction of CLABSI rates. The implementation variable had a coefficient of -1.50 (p= 0.031), indicating a statistically significant decrease in monthly CLABSI's post-intervention. CL days were not statistically associated with CLABSI rates (p=0.333).



Conclusions

The adoption of silver-plated disk dressings has effectively decreased CLABSIs in adult burn patients within the ICU setting, as compared to the standard of care CHG dressings previously used. The kits, initially crafted by hand and assembled in-house, have evolved significantly. They are now professionally packaged and distributed by a regional distributor, thus allowing for standardization of their central line dressing kit to include the silver-plated disk and marking a significant advancement in patient care practices within the Burn ICU. Ongoing institutional policy revisions reflect this practice change, emphasizing the dressing's role in setting new standards of care. To further support these results, additional studies at other burn centers could be warranted.

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