The Addition of Nasal Antiseptic to Universal Decolonization Programs Reduces Central Line Associated Blood Stream Infections in Intensive Care Units

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Background

Central line-associated bloodstream infections (CLABSI) are a major healthcare burden, causing morbidity, mortality, and substantial costs due to increased lengths of stay and treatment. In 2020 our facility, began to see an increase in CLABSI numbers in critical care patients comparable to national trends. This quality improvement initiative evaluates the effectiveness of incorporating nasal decolonization into an existing skin decolonization protocol to reduce CLABSI and costs within the intensive care unit (ICU) population of an academic medical facility.

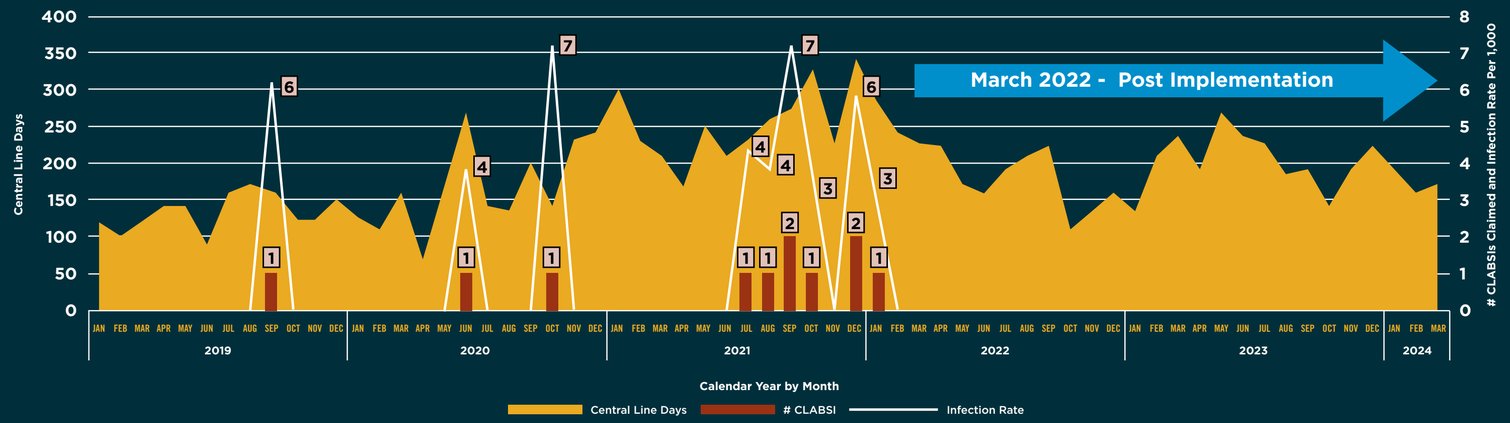
Methods

In March 2022, a multidisciplinary team initiated a new intervention for all ICU patients to receive twice daily nasal decolonization with an alcohol-based antiseptic (ABA) upon admission. Body decolonization continued per protocol with antimicrobial wipes. CLABSI numbers and infection rates were calculated pre-and-post implementation to evaluate intervention effectiveness. Baseline data was collected from 2019 until implementation in March 2022. Cost savings were estimated pre-and-post intervention.

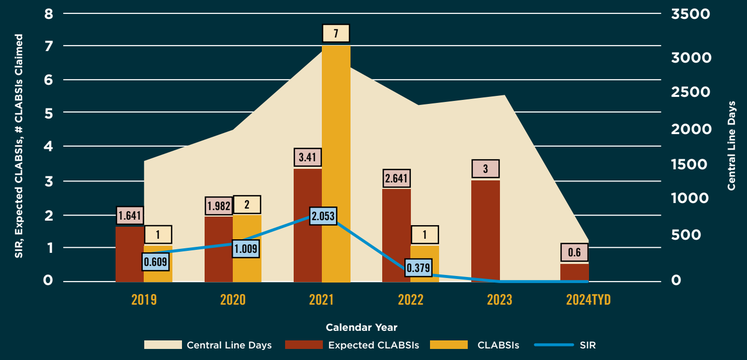
Results

Prior to the intervention of nasal decolonization (2019-Februrary 2022), there were 11 total CLABSIs with a total of 7124 central line (CL) days for a calculated rate of 1.54. Post implementation (March 2022-October 2023), there were zero CLABSIs and 3671 CL days for a rate of 0. This decrease in CLABSI was statistically significant (p=0.01, Mid-p exact test at 95% confidence). The associated cost of CLABSI prior to intervention was calculated to be $529,188 ($48,108 per event). The annual estimated savings since the intervention was approximately $176,396, for a total savings of $352,792.

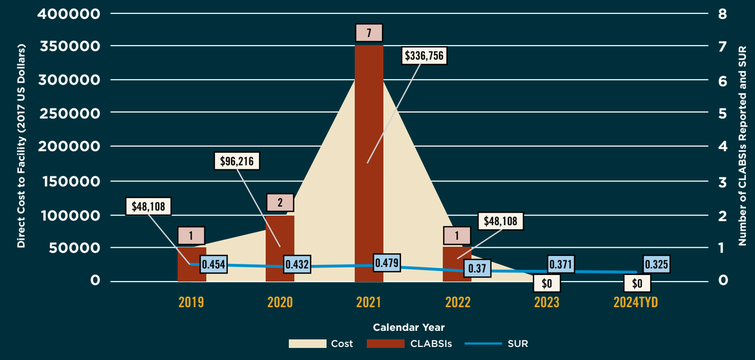
ICU CLABSI Infection Rate 2019-March 2024



RCH ICU CLABSI SIR
National Benchmark Yearly Comparison Calendar Year 2019-2024YTD



RCH ICU CLABSI SUR (Standardized Utilization Ratio) with Direct Cost
National Benchmark Yearly Comparison Calendar Year 2019-2024YTD



Conclusions

Our study found that universal nasal decolonization is an effective strategy to reduce CLABSIs and associated costs in the ICU population. We found significant reductions in CLABSIs and costs after implementation of an ABA for nasal decolonization. Including an ABA for nasal decolonization as a part of a universal decolonization program is a meaningful infection prevention intervention for ICU patients.

Learning Objectives

- Upon completion, participants will be able to understand the role of universal decolonization in preventing CLABSIs. The benefit of alcohol-based antiseptic for nasal decolonization over an antibiotic will be understood.
- Upon completion, participants will be able to describe the cost benefit of a nasal decolonization product to their administration and key stakeholders.
- Upon completion, participants will be able to describe implementation of a new product into critical care practice, that fits into caregiver workflow without disruption to their administration and key stakeholders.

The interventions were developed from the following organizational guidelines and best practices:

AHRQ	Agency for Healthcare Research and Quality
APIC	Association for Professionals in Infection Control and Epidemiology
CDC	Centers for Disease Control
IDSA	Infectious Disease Society of America
SHEA	Society for Healthcare Epidemiology

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