Strategies for Reducing Central Line Bloodstream Infections: A Comprehensive Review of Best Practices and Outcomes

RWJBarnabas HEALTH

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BACKGROUND

Newark Beth Israel Medical Center is a 667-quaternary care complex facility with a wide variety of services and many high acuity patients. Central Line Associated Bloodstream Infection (CLABSIs) pose significant challenges in healthcare, leading to increase morbidity and mortality, extended hospital stays, and heightened healthcare costs. Our institution experienced high rates of CLABSIs, prompting an urgent need for effective interventions. By fostering a culture of safety, accountability, and utilizing best practices, we aimed to significantly reduce our CLABSI rates and improve patient outcomes.

OBJECTIVE

To reduce the number of CLABSI cases to below 10 cases by Dec. 31, 2024, and below 7 cases by Dec. 31, 2025.

METHODOLOGY

We utilized an A3 report to analyze our existing CLABSI rates and identify trends and contributing factors. In the previous 12 months (11/2022- 10/2023) our facility had 30 CLABSI's and a Standard Infection Ratio (SIR) of 1.069. We identified high Central Line (CL) utilization rate, suboptimal dressing compliance, and a lack of physician engagement for the issue.

The intervention period (11/2023-10/2024) consisted of:
✓ An interdisciplinary team was formed comprising of senior leadership, nurses, physicians, infection preventionists (IP) and introduced an IP education specialist, who concentrated on central line maintenance.
✓ We conducted training on best practice for central line insertion and maintenance, implemented daily audits of CL dressings by unit leaders in addition to daily rounding by IP educational specialist.
✓ The IP educational specialist provided real time feedback, education, addressed areas of improvement, and recorded compliance data.
✓ A daily report of central lines were distributed to all relevant stake holders.
✓ The central line utilization was reported out daily at senior leadership safety huddle.
✓ Established weekly IP Hospital Acquired Infection (HAI) Learning Meetings for unit leaders to review CL status, indication, and dressing integrity, with physician leadership present to support escalation of removal when needed.
✓ Unit leaders would also present Apparent Cause Analysis (ACA) of any HAI's at the HAI Learning meeting.

RESULTS

CLABSI - Housewide SIR, Jan'23 - Jul'25
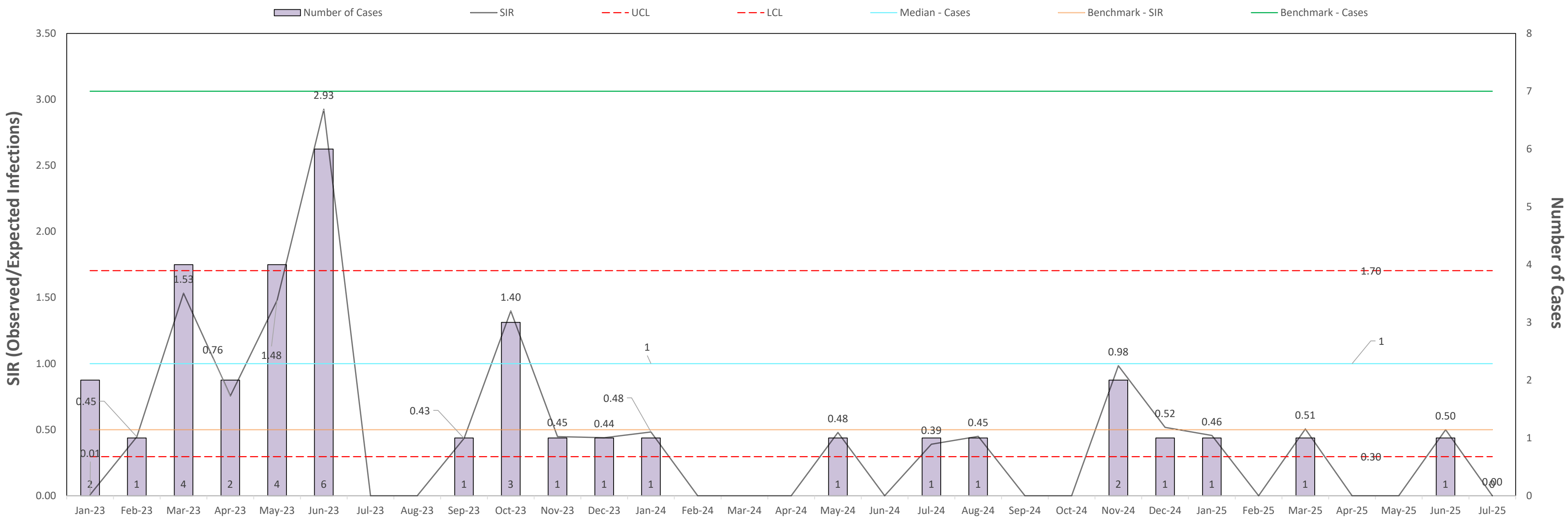
✓ During the 12-month intervention period, we recorded 6 CLABSI cases. This represents an 80% decrease in the CLABSI incidence.

✓ SIR was reduced from 1.069 to 0.225 (79% decrease)

✓ CL utilization decreased 10%

✓ CL dressing compliance improved from 61% to 96%

✓ In addition to improving patient outcomes, the interventions led to substantial cost avoidance supporting both patient safety and financial stewardship. According to Agency for Healthcare Research and Quality (AHRQ), estimates the additional cost to the hospital for each CLABSI to be $48, 108.

CONCLUSION

The 80% reduction in CLABSI shows the effectiveness of implementing standardized protocols, enhanced staff education, and fostering a culture of safety. One strategy that is most effective is the IP education specialist who drives dressing compliance with staff. Our weekly HAI Learning meeting with physician leadership is also essential to help with the challenges faced on removing unnecessary central lines. Sustained engagement from nursing, physicians, as well senior leaders is crucial to sustain long-term success.

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