

Comprehensive Multidisciplinary Performance Improvement Teams Effectively Reduce Colon Surgical Site Infections

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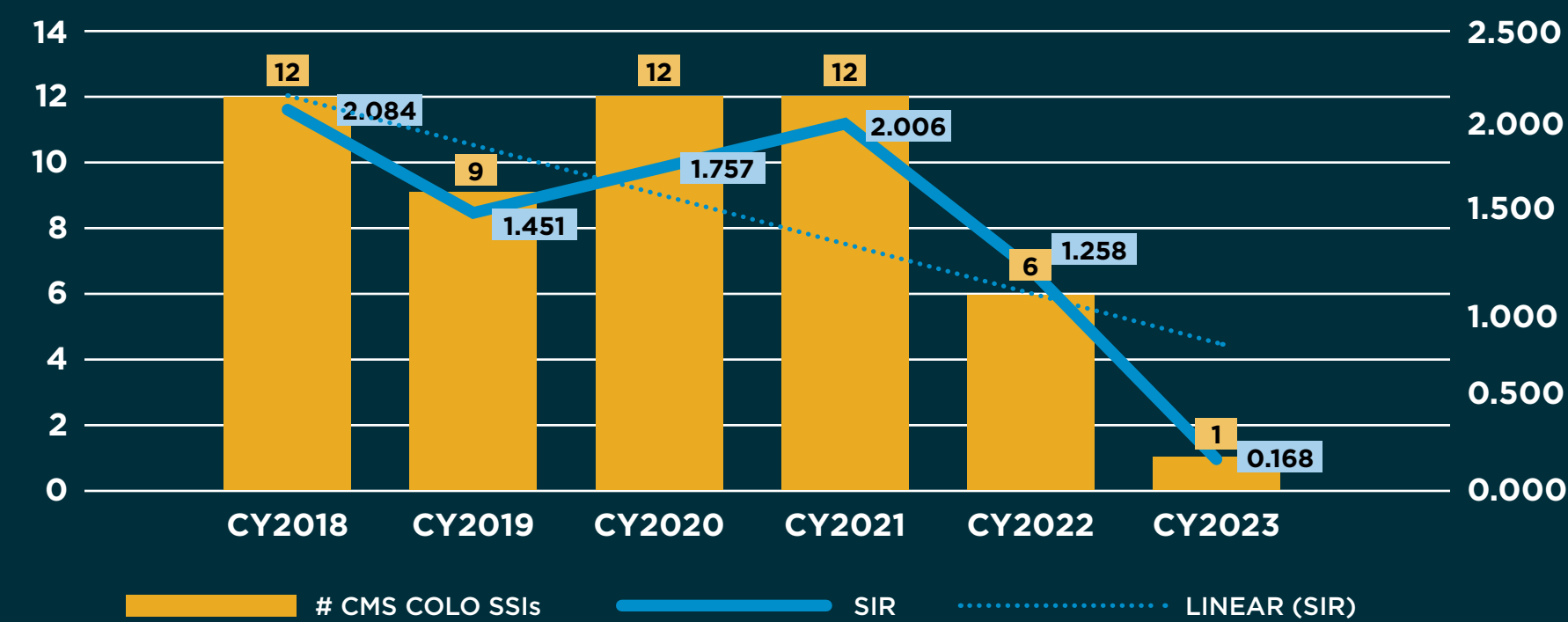
Background

Surgical site infections (SSIs) make up 16% of healthcare-associated infections and are a leading cause of postoperative morbidity and mortality. Upwards of 15-30% of colorectal (COLO) surgeries develop SSIs (Vadhvana et al., 2020). Between 2018 and 2022, Monument Health Rapid City Hospital experienced nearly two times the expected COLO SSIs based on the standardized infection ratio (SIR). This study examines the hypothesis that multidisciplinary teams and multiphase interventions reduce the burden of COLO SSIs.

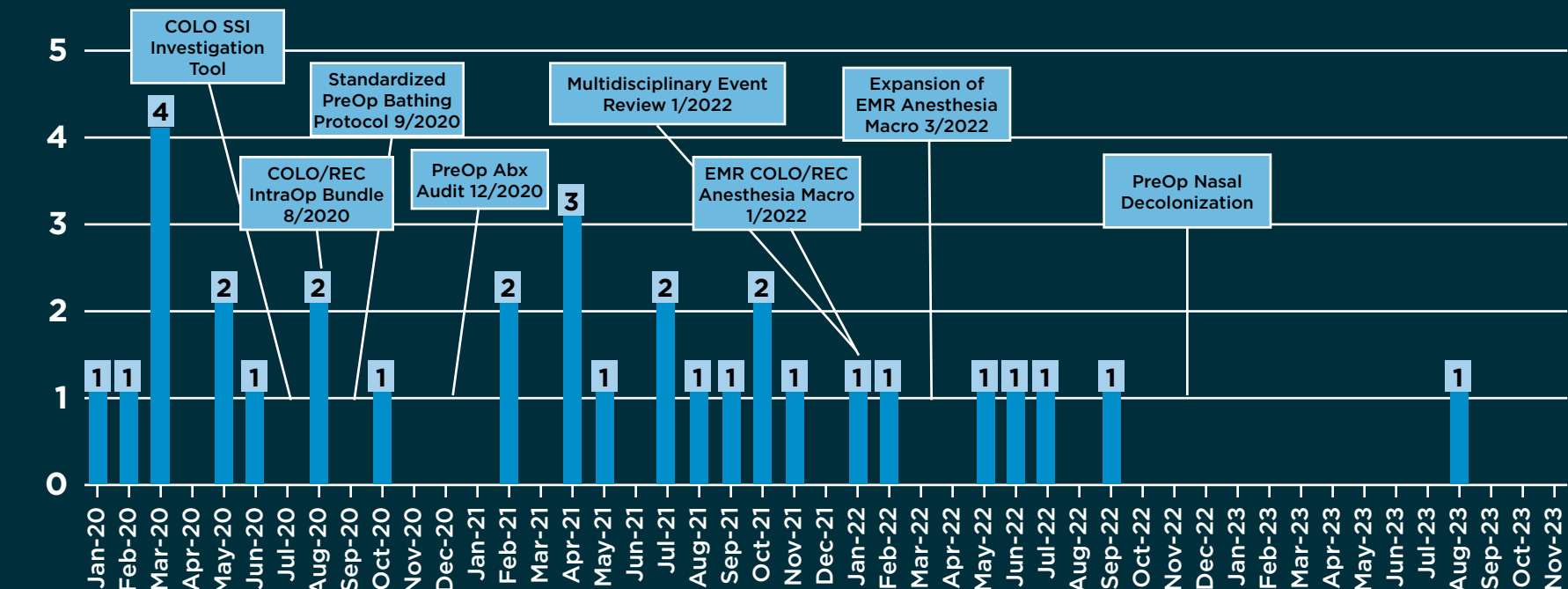
Methods

In May 2020, a multidisciplinary team consisting of infection preventionists, general surgeons, anesthesia providers, nursing, surgery schedulers, sterile processing technicians, pharmacists, environmental services, and electronic medical record (EMR) analysts was formed. After an evidence-based practice literature review, an eight-phase quality improvement intervention project was launched between July 2020 and November 2022. Interventions implemented included: a preoperative prophylactic antibiotic administration audit, a standardized preoperative bathing protocol, the addition of a preoperative nasal decolonization protocol with an alcohol-based antiseptic, an intraoperative surgical practices bundle, an EMR COLO anesthesia macro, expansion of the anesthesia macro to all bowel procedures, a standardized COLO SSI investigation tool, and multidisciplinary event reviews of Centers for Medicare and Medicaid reportable COLO SSIs. Outcomes were measured using the National Healthcare Safety Network (NHSN) 2015 baseline complex 30-day SSI SIR model for adult patients.

COLO Annual SIR for Complex 30-Day SSI



Monument Health Rapid City Hospital CMS COLO SSIs & Intervention Timeline



Results

Prior to completion of the phased intervention (January 2018-November 2022), the hospital observed 51 COLO SSIs with a calculated SIR of 1.757. Post implementation (December 2022-November 2023) the hospital observed 1 COLO SSI with a calculated SIR of 0.168: a 90.4% decrease from the pre-intervention baseline SIR (two-tailed p-value: 0.0008, 95% confidence interval: -99.5, -51).

Conclusions

Our study shows COLO SSI reduction can be achieved with a multidisciplinary collaborative and comprehensive approach. Implementation of best practices across all phases of care is critical for effectively reducing COLO SSIs.

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

- AAMC Association of American Medical Colleges
- AAMI Association for the Advancement of Medical Instrumentation
- ACS American College of Surgeons
- AHRQ Agency for Healthcare Research and Quality
- AORN Association of Perioperative Registered Nurses
- APIC Association for Professionals in Infection Control and Epidemiology
- ASA American Society of Anesthesiologists
- ASHP American Society of Health-System Pharmacists
- CDC Centers for Disease Control
- IDSA Infectious Disease Society of America
- SHEA Society for Healthcare Epidemiology

Learning Objectives

- Describe the importance of forming a multidisciplinary team for performance improvement projects.
- Describe the importance of implementing best practices through all phases of care for the reduction of surgical site infections.
- List three methods used for reducing colon surgical site infections.

Reference

Vadhvana, B., A. P., G. S. K., Reid, Claxton, D. F., Pyne, L., Chalmers, R., Malik, A. B., Bowers, D., & Groot-Wassink, T. (2020). Preoperative oral antibiotic bowel preparation in elective resectional colorectal surgery reduces rates of surgical site infections: A single-centre experience with a cost-effectiveness analysis. *Annals of the Royal College of Surgeons of England*, 102(2), 133-140. <https://doi.org/10.1308/rcsann.2019.0117>