Data, standardized processes, and interdisciplinary collaboration: a quality improvement project to reduce surgical site infection following Cesarean delivery

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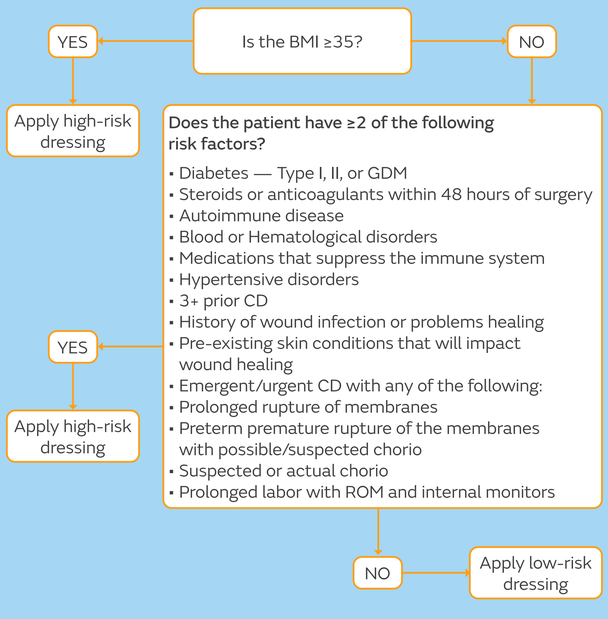
Introduction

Cesarean delivery (CD) facilitates delivery of a baby through an incision and is performed in situations where vaginal delivery poses risks to the mother, baby, or both.[1,2] CD is the most common surgery performed in the United States, with over 1.2 million procedures performed each year, accounting for approximately 32% of all deliveries.[3,4] Due to the volume of this surgical procedure, it is important to consider the risks associated with this potentially lifesaving surgery. The purpose of this analysis is to evaluate the process and subsequent outcomes of a quality improvement project (QIP) aimed to reduce surgical site infections (SSI) following CD in one 318-bed public district hospital in Washington State.

Methods

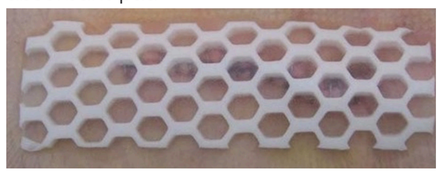
An interdisciplinary council was created to drive regular data analysis and sharing, interdisciplinary collaboration, and standardized processes to reduce SSI following CD. The standardized infection ratio (SIR), a summary measure used to track hospital-acquired infections at a national, state, or local level over time, was used.[5] Bundle components included: pre- and post-surgical education and access to follow up, peri- and intra-operative practice changes, and a risk-stratification tool for post-operative dressing selection.

Risk stratification tool used to determine risk category and appropriate postoperative dressing



Dressing selection options for patients deemed low- or high-risk via risk stratification tool

Low risk dressing selection: A waterproof, bacteria-proof dressing with see-through absorbant pad*

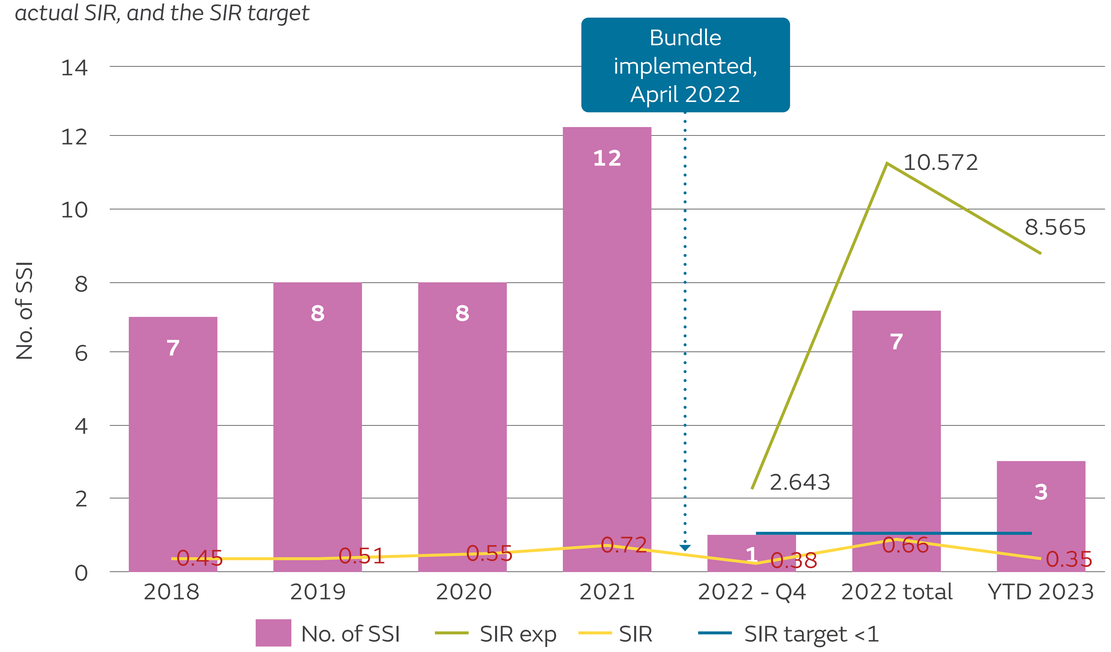


High risk dressing selection: Single use negative pressure wound therapy†

Results

The bundle was initiated in April 2022. After use was established for 6 months, the SIR was evaluated in the fourth quarter of 2022. The expected SIR for the hospital was 2.64, and the actual SIR measured just 0.38. In 2022, which included 3 months pre-bundle and 9 months post-bundle, the expected SIR was 10.57, with an actual SIR of just 0.66 for the full year. In 2023, the expected SIR is 8.57, with an actual SIR of 0.35 through September 2023. 98% of patients that underwent CD received the full bundle.

CD SSI data from 2018 — September 2023, indicating the actual number of infections, expected SIR, actual SIR, and the SIR target



Discussion

The ongoing analysis and sharing of data, the implementation of standardized processes, and interdisciplinary collaboration were imperative to the success of this hospital's QIP to reduce SSI for patients undergoing CD. The hospital has achieved a SIR for CD well below the national and Washington State SIR; in addition to the SIR goal set forth by the SSI council of <1.

*OPSITE® POST-OP VISIBLE. †PICO® Single Use Negative Pressure Wound Therapy System, Smith and Nephew, Hull, UK.

References. 1. Rahman M, Khan N, Rahman A, Alam M, Khan A. Long-term effects of caesarean deliver on health and behavioural outcomes of the mother and child in Bangladesh. *J Health Popul Nutr.* 2022;41(1):45. **2.** WHO. Caesarean section rates continue to rise, amid growing inequalities in access. https://www.who.int/news/item/16–06–2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access. Published 2021. Accessed October 9, 2023. **3.** Curtin SC, Gregory KD, Korst LM, Uddin SF. Maternal Morbidity for Vaginal and Cesarean Deliveries, According to Previous Cesarean History: New Data From the Birth Certificate, 2013. *Natl Vital Stat Rep.* 2015;64(4):1–13, back cover. **4.** Kawakita T, Landy HJ. Surgical site infections after cesarean delivery: epidemiology, prevention and treatment. *Matern Health Neonatol Perinatol.* 2017;3:12. **5.** The NHSN Standardized Infection Ratio (SIR). https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf April 2022.