

Executive Summary: Reducing Surgical Site Infections in the Hysterectomy Population

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Reducing Surgical Site Infections (SSIs) in the Hysterectomy Population

This Doctor of Nursing Practice project presented five main points, including the following:

- Hysterectomy SSIs Standard Infection Ratio (SIR) decreased by 5% following implementation of an evidence-based perioperative bundle.
- Bundle adherence improved, including higher rates of glove-changing (75-80%), dedicated closure-tray used (50-80%), and reduced operating room (OR) traffic (50-80%).
- SIR improvement by 3% and higher bundle adherence (75-87.5%) post implementation.
- Interdisciplinary collaboration enhanced workflow consistency, especially in antibiotic timing and documentation.
- The standardized bundle proved scalable, supporting broader perioperative quality improvement efforts.

Background and Purpose

Abdominal hysterectomy SSIs carry substantial financial burden, increase morbidity and mortality, and rank among the most expensive healthcare-associated infections (Centers for Medicare & Medicaid Services [CMS], 2022, 2024, 2025; National Healthcare Safety Network, 2025). Hospitals with higher abdominal hysterectomy SSI rates may experience reduced reimbursement from CMS when compared to national benchmarks (CMS, 2025). Despite widespread SSI-reduction initiatives, few standardized, hysterectomy-specific bundles exist, making a practice gap in perioperative reliability and monitoring. This project aimed to reduce preventable harm from hysterectomy SSIs through implementation of an evidence-based perioperative bundle supported by real-time monitoring. The intended audience included OR nurses, anesthesia providers, surgeons, infection-prevention specialists, quality improvement

leaders, and surgical services leadership responsible for strengthening perioperative reliability. These results guided refinement of standardized workflows, strengthened sustainability planning, and guided ongoing SSI reduction efforts across the organization.

Methodology

This project took place in a community-focused health system in central North Carolina with a high-volume surgical program. All hysterectomy patients with overnight stays contributed to process-measure monitoring, with abdominal hysterectomy SIR values calculated according to National Healthcare Safety Network (NHSN) definitions.

An interdisciplinary team, guided by the Iowa Model and Plan-Do-Study-Act cycles, developed and implemented a standardized SSI-prevention bundle. The team included surgeons, anesthesia providers, infection-prevention and quality improvement nurses, clinical nurse specialists, pharmacists, surgical services leadership, and OR nurses. The team integrated the bundle into OR nurse workflows and monitored adherence through automated extraction of OR nursing documentation into a vendor-supported electronic dashboard. Dashboard data, combined with monthly SIR trends, offered clear insight into implementation consistency and project outcomes.

Results

Implementation of the SSI-prevention bundle reduced the hysterectomy SIR from 1.28 to 1.21, achieving the primary outcome goal of a 5% reduction. OR nurses documented higher glove-changing reliability (75-80%), improved the use of dedicated closure-trays (50-80%), and reduced OR traffic (50-80%). Post-implementation data showed overall bundle adherence rate of 75-87.5%, reflecting successful integration of evidence-based practices in routine care. Continued dashboard monitoring demonstrated a sustained reduction in infection rates, with the

SIR decreasing further to 1.18 in April 2026, representing an additional 3% improvement. Neither OR nurses nor surgical services leadership reported negative impacts on workflow. Collectively, these findings indicate successful adoption of the evidence-based practices, improved adherence to the prevention bundle, and a corresponding reduction in infection rates. The results suggest that the intervention enhanced the safety, consistency, and reliability of care for patients undergoing hysterectomy.

Strengths and Limitations

Strong interdisciplinary engagement, consistent SSI-bundle leadership support, and collaboration with an external vendor facilitated successful implementation. Automated dashboard monitoring improved visibility and supported data-driven refinement, contributing to higher bundle adherence and reduction in SSI rates. Limitations included variable frontline nurse engagement, team attrition, and evolving clarity around sustainability ownership, now transitioned to surgical services, which may have affected consistency of bundle adoption and influenced the degree of improvement observed.

Implications and Conclusion

This project demonstrates the effectiveness of a standardized, evidence-based SSI-prevention bundle in reducing hysterectomy SSIs and improving the reliability of perioperative care processes. Real-time dashboard monitoring and interdisciplinary collaboration were critical to achieving and sustaining these improvements. The project also highlights the importance of early sustainability planning, clear ownership, and intuitive documentation workflows. For patients, these improvements translate into safer surgical care, fewer postoperative complications, and more consistent prevention practices. For the project site, the standardized bundle and automated monitoring enhanced workflow reliability, supported ongoing quality

improvement efforts, and reduced the financial impact of preventable infections. Beyond the project site, this work offers a scalable, evidence-informed framework that can be adapted across diverse surgical populations to improve patient safety, reduce postoperative complications, and enhance perioperative outcomes. Hospitals and surgical specialties can readily adapt this bundle by tailoring core elements, such as CHG bathing, antibiotic timing workflows, dedicated closure-tray used, and glove-changing protocols, to their specific procedures and perioperative environments. Consequently, the dashboard and documentation processes are compatible with multiple surgical approaches, allowing easy expansion across colorectal, orthopedic, spine, or general surgery programs to strengthen SSI-prevention reliability.

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