

Evidence to Practice: Implementing the Colorectal Bundle in the Operating Room

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Background

Surgical site infection (SSI) is a type of healthcare-associated infection (HAI) where an infection occurs in the part of the body where a surgery took place. In the 2023 report from the Center for Disease Control and Prevention (CDC), a 3% increase in SSI was noted between 2022 and 2023. Colorectal isolation technique is a widely used technique that prevents cross-contamination in bowel surgeries. In an urban teaching hospital, the protocol has yet to be adapted by the perioperative team to mitigate the risk for infection post-surgery. According to the evidence, in patients undergoing colorectal surgery in an urban teaching hospital, what is the impact of isolation technique protocol on the reduction of surgical site infection?

Design Description

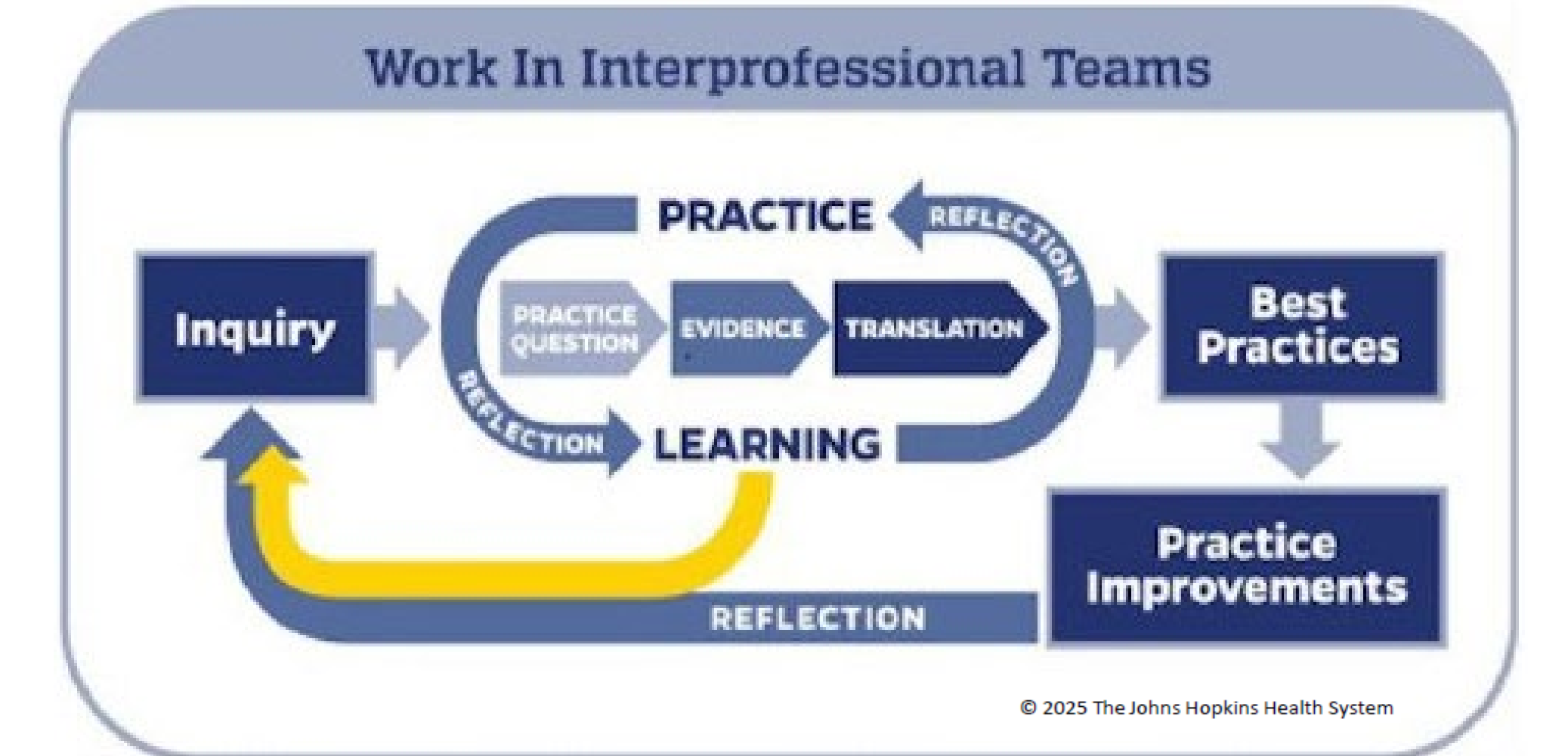
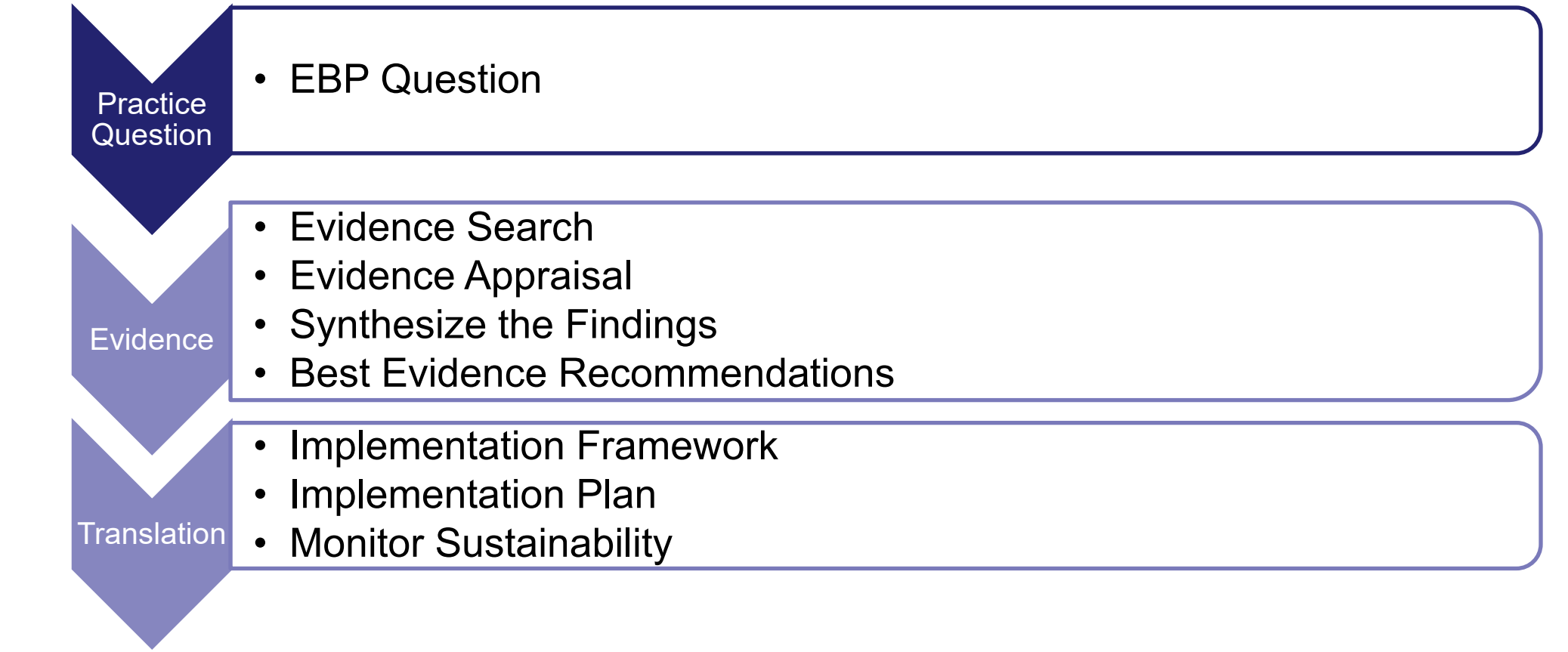


Figure 1: Johns Hopkins EBP Model

The Nursing Professional Development Practitioner (NPDS) and the colorectal surgery nursing team looked at current evidence-based practice (EBP) on isolation techniques used in colorectal surgery. The team collaborated with General and Colorectal surgeons on best practices to be implemented. The team decided to utilize the Johns Hopkins EBP Model in translating evidence to practice. The team evaluated current literature on bowel isolation technique protocols.



Evidence Table

Level	Authors	Year	Design	Key Findings
Level I	Foley, D, et al. Journal of Surgery	2022; 7(1):1-16	Meta-analysis	Colorectal wound bundles significantly reduce the risk of SSI and length of hospital stay. They should become routine in colorectal surgery.
Level I	Ademuyiwa, AO, et al. Lancet	2022; 400(10365):1767	Randomized Controlled Trial	SSI rates significantly decreased with implementation of routine glove and instrument changes before wound closure for abdominal procedures
Level II	Eto, S, et al. Journal of Investigative Medicine	2021; 68(3):256-259	Quasi-experimental Study	SSI significantly reduced with instrument changes and glove changes before closure, wound irrigation and antibiotic suture use.
Level III	Pop-Vicas, AE, et al. Infection Control and Hospital Epidemiology	2020; 41:805-812	Non-experimental Study	Preventive bundles emphasizing guideline-recommended elements from both standard of care as well as new interventions were most effective for SSI reduction following colorectal surgery.
Level III	Schlick, CJR, et al. Diseases of the Colon and Rectum	2021; 65(8) 1052-1061	Non-experimental Study	SSI reduction bundles decrease SSIs after colorectal resections, but bundles can be complex.
Level IV	Ruiz-Tovar, J, et al. Journal of the American College of Surgeons	2021; 234(1): 1-11	Consensus Panel	The consensus panel supported the use of wound protectors/retractors, sterile incision closure tray, pre-closure glove change, and antimicrobial sutures in reducing SSI along with wound irrigation with aqueous iodine and closed-incision negative pressure wound therapy in high-risk, contaminated wounds.
Level IV	Gustafsson, UO, et al. Surgery	2025; 184: 109397	Clinical Practice Guideline	A strong evidence on fluid normovolemia, normothermia, minimal invasive surgery technique and drains not routinely being used for colorectal surgery.
Level V	Rosa, R, et al. AORN Journal	2023; 117(5): 300-310	Literature Review	Surgical site infection prevention requires a multifaceted approach encompassing the continuum of medical and surgical care.
Level V	Allen, G. AORN Journal	2023; 117(6) 410-413	Literature Review	Use of wound bundles significantly reduces surgical site infections after colorectal surgery
Level V	Reese SM, et al. American Journal of Infection Control	2020; 48:1287-1291	Quality Improvement Project	The bundle approach to colon SSI prevention was successful in reducing the SSI rate. Success implementation of the bundle was due to the collaboration of nursing and physicians. Intraoperative bundle includes patient skin antisepsis, use of wound protector, perioperative antibiotics, glove change during facial closure, separate tray for closure.
Level V	White, C, et al. AORN Journal	2023; 118(5): 297-305	Quality Improvement Project	Bundle implementation decreased the infection ratio. Bundle focused on the use of CHG wipes, nasal decolonization, bowel preparation, maintaining patient normothermia and introducing a separate clean instrument tray for wound closure.

Methodology

The nursing team selected interventions based on evidence strength and collaboration with the surgical team. A preliminary education session was completed to familiarize the nursing team on the practice change. The team also collaborated with the Sterile Processing Service (SPS) on the creation of the closing mayo tray. An audit tool was created to track compliance of team members. Quarterly reports of SSI will be monitored to track the impact of the practice change to the reduction of SSI in the hospital.

Synthesis of Evidence

Colorectal Bundle Element	Number of Sources	Characteristic of the Recommendation
Use of bundle in colorectal surgery	Strong: 6	High certainty recommendation
Closing Mayo stand established at the beginning of case for closure	Strong: 3 Moderate: 1	Reasonable certainty recommendation
Towel and loban drape used	Moderate :1	Reasonable to low certainty recommendation
Gowns and glove changed prior to closing	Strong: 3 Moderate: 2	Reasonable certainty recommendation
Wound protector-retractor used (Alexis/Gelpert)	Strong: 3	High certainty recommendation

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