Program Lowers SSIs Following Colorectal Operations

A surgical patient safety program that combines three components—accurate outcome measurement, support of hospital leadership, and engaged frontline providers—reduces surgical site infections (SSIs) by 33 percent in patients who undergo colorectal procedures, according to a new study published in the August issue of the *Journal of the American College of Surgeons.*

SSIs are the most common complication for this high-risk population, occurring in 15 to 30 percent of patients after colorectal operations, according to the study authors. "Colorectal surgical site infections have been tough to prevent. This is a first step to understanding a strategy for prevention. Wound infections are an important risk factor for hospital re-admission, increased length-of-stay, and re-operations," said lead study author Elizabeth Wick, MD, FACS, a colorectal surgeon at The Johns Hopkins Hospital, and assistant professor of surgery at Johns Hopkins School of Medicine, Baltimore.

The Johns Hopkins Hospital participates in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP). ACS NSQIP is the leading nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care in private sector hospitals. While participating in a pilot program of ACS NSQIP called *Procedure Targeted Module*, which monitored outcomes in all patients undergoing colorectal surgery, the colorectal operating team at Johns Hopkins discovered that they had a very high colorectal wound infection rate, approximately 30 percent.

To address the problem, Dr. Wick and her colleagues decided to apply the comprehensive unit-based safety program, known as CUSP, to colorectal wound infections. The five-step quality improvement strategy was designed to bring about patient safety improvements through an interdisciplinary team approach focusing on frontline providers with the goal of changing the unit's workplace culture. "The CUSP program is unique because it focuses on the frontline providers—the nurses and the medical techs taking care of the patients day to day—and it gives them the power to identify and fix defects in the operating room. A key component of the program is that a hospital executive is part of the team to help overcome barriers and reiterate the importance of the work," Dr. Wick said.

For the study, the CUSP team identified four defects in their surgical care:

- Antibiotic selection and dosing
- Skin preparation
- Maintenance of normal body temperature

- Intra-operative sterile technique.

All defects surfaced from querying frontline providers. Further, to evaluate the association between the CUSP intervention and post-operative SSIs, the researchers studied patients undergoing colorectal operations over a two-year period. They used one year of pre- and post-CUSP intervention SSI rates from the ACS Procedure Targeted Module, which collects outcomes data on high-risk procedures such as colectomies (surgical excision of the colon) and proctectomies (surgical excision of the rectum).

The study included 278 colorectal surgery patients in the 12-month pre-intervention period and 324 patients in the 12-month post-intervention period. Patient risk factors were similar in both groups. In one year, researchers found that the overall SSI rate fell from 27.3 percent to 18.2 percent, a notable reduction of 33 percent in this high-risk patient population.

"Changes evolved over one year – it was not a bundle, it didn't happen all at once. Therefore, it's hard to figure out what specifically led to our wound infection reduction. But interestingly, as soon as we got this team together and engaged, our wound infection rate dropped," Dr. Wick observed. Based upon the post-CUSP implementation SSI rate, the study authors estimate that 28 infections were prevented during the study period, and that the CUSP intervention resulted in a cost savings of up to a $280,000 at the institution in one year.

"This project would not have been possible without ACS NSQIP. It gives feedback, which motivated the team to realize that this was a correctable problem and that played a role in improving patient outcomes," Dr. Wick said. "We had a clear metric and reliable data, which allowed for tangible improvements in patient safety." The study authors speculate that widespread application of the CUSP intervention may reduce the number of SSIs by 170,000 per year, saving up to $170 million each year.

Based on these results and the successful implementation of CUSP to reduce healthcare associ-ated infections in the OR, the researchers currently have Agency for Healthcare Research and Quality funding to reduce SSIs, and other major surgical complications, through a national implementation of a surgical-based CUSP program.

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