

## For Safer Care, Simple Steps, Consistently Applied, Yield Substantial Improvements in Colorectal Surgery

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Simple steps that include the consistent use of experienced medical teams for a single type of surgery, preemptive antibiotics before the procedure, less reliance on potent opioids during recovery and urging patients to get out of bed and move around sooner can not only prevent infections, blood clots and other serious complications in people undergoing colorectal operations, but can also accelerate recovery and reduce cost of care, according to results of an ongoing program at The Johns Hopkins Hospital.

The approach, dubbed Integrated Recovery Pathway, or IRP, and its impact on colorectal surgery care and cost are described online June 8 in the [\*Journal of the American College of Surgeons\*](#) under “articles in press.”

For their analysis, Johns Hopkins researchers collected information on length of stay, surgical and urinary tract infections, and blood clots among 310 patients who had colorectal surgery before the IRP model was implemented. They then compared the data with outcomes of 330 patients who underwent treatment after the program launch.

The average length of stay in the pre-IRP group was seven days, compared with five days for those treated under the new model. The rate of surgical infections dropped from 19 percent to 7 percent, while the rate of deep-vein clots fell from 3.5 percent to 1.6 percent, as did urinary tract infections — from 4 percent to 1.6 percent. The average cost of treatment decreased from nearly \$11,000 to \$9,000 per patient under the new protocol.

“Surgery is expensive and fraught with preventable harm, and attempts to make it safer should begin long before patients enter the OR and well after they leave it,” says study senior author Elizabeth Wick, M.D., a colorectal specialist and associate professor of surgery at the Johns Hopkins University School of Medicine. “The IRP model is a means of anticipating and addressing well-established vulnerabilities, and taking advantage of opportunities along the entire continuum of clinical care to improve safety and overall outcomes.”

The IRP approach doesn’t so much require new treatments or new science, Wick adds, but consistent application of practices that are evidence based, engage patients and require accountability among clinicians at all levels.

“Avoiding preventable harm and improving outcomes are the cornerstones of quality improvement, but a comprehensive safety effort takes more than checklists,” says Peter Pronovost, M.D., Ph.D., director of the Johns Hopkins Armstrong Institute for Patient Safety and Quality and co-author on the study. “They are rooted in a cultural shift and systematic solutions, and the findings of our study quantify the precise reduction in harm and cost and the improvements in patient scores as a result of such a cultural shift.”

The key aspects of the IRP model included:

- Adding oral antibiotics to the standard presurgical bowel cleanse

- Asking patients to wipe their bodies with washcloths soaked in antiseptic solution prior to surgery
- Use of epidural anesthesia in combination with intravenous anesthesia to minimize the need for inhaled gases and opioids, an approach that is far less taxing on the body's immune function and promotes faster recovery, the researchers say
- Favoring nonopioid drugs to treat pain during recovery to ward off unwanted side effects, like nausea and constipation, which can slow recovery
- Restricting the use of intravenous feeding in favor of resuming normal feeding earlier
- Getting patients out of bed and moving around sooner to foster a faster return to independence
- Preoperative patient education using information, supplies, checklists and instructions developed based on feedback from previous patients

“Questions like ‘What do you wish someone had told you? What do you wish you knew going into surgery?’ sound deceptively simple, but it’s remarkable how much we learn by simply asking,” Wick says.

Researchers believe the improvement in outcomes was at least in part fueled by efforts to involve patients more closely into decisions about their own care.

“Explaining to patients why they should take antibiotics before surgery or why we choose one pain medication over another can not only increase trust, but can also improve compliance,” Wick says.

Building on ongoing efforts at Johns Hopkins to improve workplace culture, the IRP team established an accountability process that involved senior hospital leadership and frontline clinicians, including:

- Real-time feedback on how well each medical team was doing and making swift adjustments where needed
- Asking senior leaders and frontline clinicians to reflect on and openly discuss their roles and responsibilities
- Creation of permanent clinical teams to boost cohesion and performance

“Prior to IRP, a pool of hundreds of anesthesiologists and nurse anesthetists were randomly assigned to colorectal surgery, which compromised bonding and trust among team members and challenged their ability to implement interventions reliably and smoothly,” says senior investigator **Christopher Wu, M.D.**, professor of anesthesiology and critical care medicine at the Johns Hopkins University School of Medicine. “Under the IRP model, a small cadre of anesthesiologists, residents and nurse anesthetists are now permanently assigned to colorectal surgeries.”

Researchers say the model’s value has been sufficiently demonstrated to spark its rollout in July in gynecologic cancer surgery and urologic surgery. It is already being used in liver surgery.

“Given that 50 million people have surgery each year in the United States, the rapid application of

IRP-style programs across the nation could yield serious improvements in patient safety and reduce the cost of care," Wick says.

Other investigators included Daniel Galante, Deborah Hobson, Jonathan Efron, Ken Lee and Sean Berenholtz, all of Johns Hopkins.

Surgical outcomes (deep vein thrombosis, urinary tract infections and surgical site infections) were tracked with the American College of Surgeons National Surgical Quality Improvement Program®.