Organizational Culture Changes Result in Improvement in Patient-Centered Outcomes: Implementation of an Integrated Recovery Pathway for Surgical Patients

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BACKGROUND: The goals of quality improvement are to partner with patients and loved ones to end preventable harm, continuously improve patient outcomes and experience, and eliminate waste, yet few programs have successfully worked on of all these in concert.

STUDY DESIGN: We evaluated implementation of a pathway designed to improve patient outcomes, value, and experience in colorectal surgery. The pathway expanded on pre-existing comprehensive unit-based safety program infrastructure and used trust-based accountability models at each level, from senior leaders (chief financial officer and senior vice president for patient safety and quality) to frontline staff. It included preoperative education, mechanical bowel preparation with oral antibiotics, chlorhexidine bathing, multimodal analgesia with thoracic epidurals or transversus abdominus plane blocks, a restricted intravenous fluids protocol, early mobilization, and resumption of oral intake. Eleven months of pre- and post-pathway outcomes, including length of stay (LOS), National Surgical Quality Improvement Program surgical site infection (SSI), venous thromboembolism, and urinary tract infection rates, patient experience, and variable direct costs were compared.

RESULTS: Three hundred ten patients underwent surgery in the baseline period, the mean LOS was 7 days, and the mean SSI rate was 18.8%. There were 330 patients who underwent surgery on the pathway, the LOS was 5 days, and the rate of SSI was 7.3%. Patient experience improved and variable direct costs decreased.

CONCLUSIONS: Our trust-based accountability model, which included both senior hospital leadership and frontline providers, provided an enabling structure to rapidly implement an integrated recovery pathway and quickly improve outcomes, value, and experience of patients undergoing colorectal surgery. The study findings have significant implications for spreading surgical quality improvement work. (J Am Coll Surg 2015;221:669–677. © 2015 by the American College of Surgeons)

Since the Institute of Medicine's report "To Err Is Human" in 2001, intense efforts have been directed to reducing adverse events in hospitalized patients.[1] The Centers for Medicare and Medicaid Services (CMS), along with others, initiated programs focused on eliminating preventable harm, yet results have been mixed, with significant improvement realized in some areas and little in others, including perioperative care.[2] Millions of people suffer the adverse effects of medical errors, including health care-associated infections, medication errors, errors during transitions from one health care setting to another, and loss of dignity and respect.

Although most patients suffer multiple harms, hospitals are addressing preventing 1 harm at a time. Improvement programs should aspire to eliminate all preventable harm

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Abbreviations and Acronyms

CUSP = Comprehensive Unit-Based Safety Program
HCAHPS = Hospital Consumer Assessment of Healthcare Providers and Systems
IRP = integrated recovery pathway
LOS = length of stay
SSI = surgical site infection
TRiP = translating research into practice
UTI = urinary tract infection
VTE = venous thromboembolism

(eg, fall prevention, venous thromboembolism [VTE] prophylaxis, surgical site infection [SSI]), increase value, and optimize patient experience concurrently using an interdependent, holistic, and integrated platform.[3] This systems approach is analogous to systems engineering, in which the care team works as a cohesive team, applies the most updated and valid science and evidence to patient care, uses robust process improvement methods, and engages patients and their families to ensure they participate in care. To be successful, hospital leadership must create multidisciplinary teams effective at developing systems solutions. Successful implementation of this infrastructure will result in a change in long-term organizational culture that will foster ongoing process improvement.[4] We previously used this approach and achieved significant and sustained reductions in one type of harm: health care-associated infections.[5] In this article, we describe the stepwise development and implementation of a comprehensive program to prevent harm, improve value, and optimize the patient experience in colorectal surgery patients.

METHODS

The program was developed and implemented at Johns Hopkins Hospital, a 1,059-bed tertiary care, academic medical center. The intervention focused on patients operated on by 5 colorectal surgeons with advanced training, who perform 500 major elective abdominal procedures annually. The Johns Hopkins University Institutional Review Board deemed this study exempt.

Organizational structure

Comprehensive unit-based safety program

The Comprehensive Unit-Based Safety Program (CUSP) was initially designed for the ICU and has been translated to different clinical areas.[6] Every clinical area that implements CUSP assembles a multidisciplinary team and follows 5 iterative steps: training in the science of safety, identifying patient safety hazards, partnering with senior executives, learning from defects, and implementing tools to improve teamwork and communication. After the success in the ICUs at Johns Hopkins Hospital, development of CUSP teams on inpatient units and preoperative/recovery room areas was a key element of the institutional strategic plan to improve surgical care, teamwork, and safety culture.[7] All teams included providers from relevant disciplines such as nurses, physicians, hospital infection control practitioners, technicians, advanced practice providers, resident physicians, and clerks.

Colorectal comprehensive unit-based safety program

In 2010, we piloted CUSP in the operating room with the goal of preventing harm and improving teamwork and safety culture, with a specific focus on addressing higher than expected rates of SSI in patients undergoing colorectal surgery.[8] The CUSP team included surgeons, anesthesiology providers, nurses, surgical technicians with local leadership (surgeon, anesthesia provider and nurse). The colorectal CUSP team integrated with the existing other CUSP infrastructure (inpatient units, preoperative and recovery rooms, and ICUs) to address issues that crossed work areas.

To further reduce preventable harm, optimize patient outcomes and experience, and reduce waste, the CUSP team used the model for translating research into practice (TRiP) as well as specific tools (staff safety assessment, learning from defects, and optimized briefings and debriefings for each procedure) combined with patient engagement strategies to develop, implement, and optimize a bundle of SSI-related interventions over 2½ years. These included focused infection-related preoperative education; mechanical bowel preparation with oral antibiotics; preoperative bathing with chlorhexidine washcloths; use of forced-air warming devices in the preoperative area; and standardized skin preparation with ChloraPrep (CareFusion). The efforts of the CUSP group resulted in a significant and sustained reduction of the SSI rate, from 27% to 18% over 3 years, yet SSI rates remained higher than those in comparable hospitals and the hospital leadership's goal of 10%.[8] In addition to persistently high SSI rates, VTE and UTI rates continued to be higher than expected, LOS for colorectal procedures exceeded those at comparable institutions, and patient satisfaction was low (Tables 1 and 2 and Fig. 1 A, B, and C).

Conceptual framework

To address all elements of preventable harm in colorectal surgery patients, we leveraged the existing CUSP infrastructure and developed a trust-based accountability model at each level, from senior leaders (chief financial