New Tactics for Lowering Readmissions

MPL under MACRA

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“The general goal is to help patients better endure, or more quickly recover from,
the physical trauma of major surgical procedures.”
—Cover story
Pressure on hospitals from third-party payers to reduce surgical readmissions—and their attendant costs—is likely to grow in the years ahead. In response, hospitals increasingly are looking to interventions in the presurgical environment as another means to help improve surgical outcomes. By better preparing patients for surgery, clinicians may be able to lower patients’ risk of a readmission needed to address surgery-related issues, such as infections.

Presurgical Preparation in a New Light

New approaches to improve surgical outcomes and reduce readmissions

Within the past decade, estimated rates of hospital readmission within 30 days of major surgery (predominantly abdominal or thoracic procedures) have varied widely. Merkow and colleagues (2015) calculated an average 5.7% readmission rate among almost 500,000 major surgeries, including bariatric procedures, colec- tomy, hysterectomy, and hernia repair, at 346 U.S. hospitals participating in the American College of Surgeons National Surgical Quality Improvement Program. The first and second most common reasons for unplanned hospital readmission were surgical site infection and gastrointestinal obstruction. Tsai and colleagues (2013) found a 13.1% readmission rate among 479,471 Medicare discharges for major sur-
gery, including coronary artery bypass grafting, pulmonary lobectomy, repair of abdominal aortic aneurysms, and colectomy, at 3,004 hospitals in the two-year period, 2009–2010. Hospitals with higher surgical volumes and lower surgical mortality rates had lower rates of readmission after surgery than other hospitals.7

To help address this issue, several researchers in recent years have examined whether efforts to upgrade patients’ general health before surgery might improve surgical outcomes and thereby reduce hospital readmission rates. These efforts, commonly termed “prehabilitation” (as opposed to postsurgical rehabilitation), address areas such as lifestyle changes (e.g., diet, exercise, smoking cessation) and improved management of chronic disease. The general goal is to help patients better endure, or more quickly recover from, the physical trauma of major surgical procedures. A search of ClinicalTrials.gov found about 40 ongoing trials of various prehabilitation strategies targeting primarily major abdominal or thoracic surgery (nine U.S. trials; 26 outside the U.S.), with a few addressing hip and knee arthroplasty or peripheral vessel revascularization.

ECRI Institute, an independent nonprofit health research organization, included presurgery programs on its 2017 Top 10 Hospital C-Suite Watch List.13

In the U.S., a few groups have implemented successful prehabilitation programs. Some have attempted to branch out from single centers or regional health systems to help other institutions replicate their efforts.

**MSHOP**

A team at the University of Michigan developed the Michigan Surgical and Health Optimization Program (MSHOP) to help healthcare professionals assess patient-specific risks before surgery, to improve subsequent outcomes for patients who had been referred for major abdominal surgery. With MSHOP, a surgeon adds a Web-based, risk-assessment app, available on smartphones and tablets, to his standard evaluation of surgical candidates.14 The application employs analytic morphomics to predict surgical risk, characterize overall health, and objectively measure age-independent patient frailty. Analytic morphomics uses diagnostic imaging scans to quantitatively measure patient-specific biomarkers including organ size and condition, muscle volume, fat density and distribution, bone structure and density, and vascular anatomy and condition.13 The application links to a central database and generates a composite score that encompasses risk for complications, extended length of stay, and mortality on a 0- to 100-point scale, and this individual risk score is presented in a format resembling an automobile speedometer to enhance patient comprehension.1 The application is intended to help clinicians explain surgical risk to patients and facilitate patients’ understanding of their respective risk if they opt for surgery versus more conservative management.4

After their risk assessment has been completed, patients who have been identified as having a remediable risk profile are invited to participate in a four-step preoperative training program intended to improve surgical outcomes. The four components include a walking and physical activity program, a respiratory exercise program to increase lung function, with smoking cessation aids if indicated, nutritional counseling, and stress reduction techniques to reduce pain and promote healing.15,16 An MSHOP coordinator initiates the patient training program and periodically contacts patients by phone, text message, or e-mail to track and encourage progress using both personal and automated messages. As part of the patient tracker component, the patient updates daily walking and lung-exercise logs to a secure website, with reminders sent via automated text message or e-mail to update his logs. A Web portal provides patient access to updated logs and various resource links (e.g., recipes, free exercise classes, smoking-cessation tips). The training and monitoring program lasts about one month before surgery.15,16

In published data from a pilot study (Englesbe et al., 2015), the MSHOP team reported that the program reduced average hospital stays from six to four days and average hospital costs by about $2,300 per major abdominal surgery patient.16 Based on the pilot’s success, the U.S. Centers for Medicare & Medicaid Services awarded the program developers a $6.4 million grant in late 2016 to determine whether MSHOP’s initial results could be replicated at 40 other Michigan hospitals. Results are expected by 2018.17 Further, the startup company Prenovo was formed to offer the MSHOP approach to hospitals outside Michigan.14 Prenovo claims to deliver scientifically validated solutions that reduce costs by 25% and improve patient outcomes. Its Web-based solution, Prenovo Prepare™, is intended to engage patients preparing for surgery and recovery beyond the clinical setting. The company states on its website that 80% of patients enrolled in the program stick with it. According to the company, the platform seeks to enhance “the patient-provider relationship with evidence-based teaching tools for shared decision-making.”18

**POET**

At Duke University Health System, the Department of Anesthesiology has championed the cause of improving outcomes of major elective surgeries through its Perioperative Enhancement Team (POET), launched in 2012. POET is dedicated to identifying high-risk patients before surgery and managing modifiable risk factors to reduce the incidence, or downstream impact, of adverse outcomes.19,20 When specific new goals to improve surgical outcomes are identified, POET works with other clinical departments and hospital administration to develop strategies and workflow changes designed to achieve those goals “to enhance the value proposition of perioperative care.”20 To date, POET has been instrumental in creating a preoperative anemia clinic to reduce the need for intra- or postoperative transfusions and a presurgical diabetes screening program for spinal surgery candidates to reduce postoperative infection risk. Other POET-led collaborations have addressed several areas related to improving surgical outcomes, including complex pain management; reductions in anticoagulation-
associated bleeding and blood-clotting risk in obstetric, cardiothoracic, and trauma surgery; physical conditioning and exercise tolerance; and counseling on proper nutrition and smoking cessation.10-20 Another POET-led initiative, Pain Assessment Risk Treatment for Novel Effective Recovery, sought to reduce the frequent emergency department encounters of “super users” and led to creation of an alternative clinical care pathway for patients with sickle cell disease, chronic headaches, and chronic pain to reduce avoidable emergency department visits.22

**Strong for Surgery program**

Researchers in Washington State’s Comparative Effectiveness Research Translation Network and Surgical Care and Outcomes Assessment Program developed the Strong for Surgery quality improvement initiative and launched it in facilities across the state in 2012. In 2016, the American College of Surgeons announced that it would gradually assume administration of the program, with the goal of broadening its exposure and reach to surgeons and hospitals across the U.S.21 Strong for Surgery focuses on identifying, evaluating, and disseminating evidence-based practices that can optimize surgical candidates’ health before elective surgery, to improve their outcomes after surgery. The program helps hospitals and surgeons integrate preoperative checklists into clinical practice, to assist with education, communication, and standardization of best practices. The program targets modifiable risk factors known to influence surgical outcomes that preoperative care can modify. The four areas addressed are nutrition, glycemt control, smoking cessation, and medication management, including over-the-counter drugs, nutritional supplements, and herbal remedies.22

**Outlook**

As developers of these and other surgical prehabilitation programs accumulate more data and disseminate their findings, other health-care stakeholders could take notice and champion their wider use. However, broader use of prehabilitation approaches is unlikely to occur in isolation, as demonstrated by the emergence of groups such as the ERAS® (Enhanced Recovery After Surgery) Society, whose stated mission is to improve perioperative care and recovery of surgical patients worldwide through research, education, audit, and implementation of evidence-based practice. Going forward, the most likely scenario is greater integration of prehabilitation programs, in tandem with efforts to reduce acute surgical complications as well as enhance postsurgical recovery, thus addressing the full continuum of surgical care. 

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