General Surgeons Identify Post-Op Complications As Strongest Re-admission Risk

Postoperative complications are the most significant independent risk factor leading to 30-day hospital re-admissions among general surgery patients, according to a new exploratory study published in the September issue of the *Journal of the American College of Surgeons*.

"Hospital readmissions are the tip of the iceberg, but when you dig deeper, it is the post-operative complications that drive re-admissions among general surgical patients," said senior study author John F. Sweeney, MD, FACS, chief, division of general and gastrointestinal surgery at Emory University School of Medicine, Atlanta. He also is director of the department of surgery's clinical quality and patient safety program. Dr. Sweeney and his co-authors note that, "Better understanding the predictors of re-admission for general surgery patients will allow hospitals to develop programs to decrease re-admission rates."

Researchers conducting this retrospective study analyzed patient records from hospitals that were enrolled in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP). Data from Emory University Hospital was merged with ACS NSQIP data to identify unplanned readmissions. Researchers reviewed the records of 1,442 general surgery patients who were operated on between 2009 and 2011. Of them, 163 patients, or 11.3 percent, were re-admitted to the hospital within 30 days of discharge. The researchers analyzed type of surgical procedure, post-operative complications, ICD-9 coding data, comorbidities, and patient demographics to identify common risk factors associated with readmissions.

"Surgical patients are different from medical patients because the surgical procedure, in and of itself, places them at risk for re-admission to the hospital, above and beyond the medical problems," Dr. Sweeney said.

The study authors said the current focus on hospital re-admission rates comes from changing regulations issued by the Centers for Medicare & Medicaid Services (CMS), now holding hospitals responsible for 30-day re-admissions for medical diseases with a plan to follow suit for surgical patients. The CMS policy means reduction of hospital reimbursements based on an adjustment factor determined by a hospital's expected and observed 30-day re-admission rates.

Researchers examined the reasons for hospital re-admission and found specific surgical procedures, the number of post-operative complications each patient experienced, and the severity of complications were leading risk factors for readmission. "Complex gastrointestinal procedures carry a higher risk of hospital re-admission," said Dr. Sweeney. "Pancreatectomy, colectomy, and liver resection

have a higher complication rate because of the surgical complexity."

Based on analysis of ICD-9 coding data, researchers reported that gastrointestinal complications carried a high—27.6 percent—risk of re-admission, while surgical infections reached 22.1 percent. These top two reasons accounted for nearly 50 percent of all re-admissions according to the researchers.

Dr. Sweeney and colleagues found the more post-operative complications a patient experiences, the more likely the risk of re-admission. "A patient who has one complication is more likely to be re-admitted than a patient with no complications," Dr. Sweeney said. "The more complications a patient experiences, the more likely the re-admission. In the hospital, a patient who experiences a complication has a lower risk of re-admission compared with a patient who develops a complication after going home."

The research team reported that patients who had one or more complications after their operation were four times more likely to be re-admitted to the hospital compared with those who had no complications. They found patients with the highest rate of re-admissions were those who experienced two post-operative complications. The study findings showed the median length of hospital stay was five days for patients with no complications; nine days for patients with one complication; and 24 days for patients with three or more complications.

Researchers found that patients with post-operative sepsis or urinary tract infections (UTIs) were about five times more likely to be re-admitted than patients without these complications. Post-operative wound infection and post-operative pulmonary complications carried a 3.5 fold increase in readmission rates. "The leading surgical complications are wound infections, pulmonary complications, and urinary tract infections," Dr. Sweeney said. "UTIs were the worst complication, we found, although they don't happen frequently, but they are associated with the highest risk of re-admission," he said.

A reduction in post-operative complications would carry huge financial implications for hospitals, patients, and payers, according to Dr. Sweeney.

Dr. Sweeney reported that the results of this investigation provided a framework for his research team to develop a simple complication-prevention plan that minimizes the risk of surgical patients developing complications. This patient safety approach includes engaging the post-operative care team to start transition-of-care planning early—especially for high risk patients—to encourage early discharge from the hospital.

"The biggest bang for the buck is going to be a combination of decrease of complications, and decrease of length-of-stay, resulting in decrease of re-admissions," Dr. Sweeney said. "Decreasing complications will benefit the patient, the hospital, and the payer, and will improve quality of care," he said. "It will decrease length-of-stay and decrease hospital readmissions," he concluded.