Hospitals share data to prevent colorectal SSIs

Why does our hospital have a higher rate of venous thromboembolism (VTE) than others in our state? How are others preventing surgical site infections (SSIs) after colorectal surgery? What’s behind our urinary tract infection (UTI) rate?

Hospitals in Tennessee are openly discussing issues like these through the Tennessee Surgical Quality Collaborative (TSQC), a 21-member state-level group focused on improving surgical outcomes.

Hospitals can reduce complications

Reducing surgical complications is a high priority as organizations seek to improve care and lower costs. Complications not only cause pain and suffering but increasingly are tied to reimbursement from Medicare and private payers.

The Tennessee project is showing that hospitals can reduce complication rates by sharing data, comparing results, and exchanging ideas on improving care.

TSQC is a partnership of the Tennessee Hospital Association (THA) and the state chapter of the American College of Surgeons (ACS), with funding from the Blue Cross Blue Shield of Tennessee Health Foundation. All participants are enrolled in the ACS National Surgical Quality Improvement Program (ACS NSQIP).

Similar collaboratives are underway in 9 states and at least 7 health systems, according to ACS, with Tennessee and Florida having the largest.

The Tennessee collaborative began in 2007. A report of results from 2009 through 2010 when there were 10 participants showed significant improvements in 5 of 21 types of complications for general and vascular surgery:

- acute renal failure
- graft/prosthesis/flap failure
- ventilator time >48 hours
- superficial SSI
- wound disruption.

Three outcomes got worse: deep vein thrombosis, pneumonia, and UTI. The report was published in the Journal of the American College of Surgeons.

Net costs avoided were estimated at $2.2 million per 10,000 cases. TSQC estimates overall savings of $8 million for that period based on annual volumes.

Though the reasons why the 5 measures improved so dramatically was not readily apparent, one reason might be willingness to share data and compare notes candidly, says Joseph B. Cofer, MD, FACS, head of TSQC and professor of surgery at the University of Tennessee College of Medicine, Chattanooga.

A more recent report, as yet unpublished, shows improvement has been sustained for 4 of 5 outcomes in the initial study.

“This has been a gradual process over 5 years,” he told OR Manager. “I think we’re going to see sustained improvement.”

Surgeons are willing to participate because the collaborative uses NSQIP, which is scientifically validated, says Dr Cofer, noting that “when you show surgeons the
Making a difference in care using NSQIP data

Hospitals that participate in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) get validated, risk-adjusted data on 30-day outcomes for surgical patients.

But how do you involve front-line staff so the data can make a difference in patient care?

At Baptist Memorial Hospital-Memphis, NSQIP data is shared with surgeons and nurses who are engaged in continuously improving care. The hospital is a member of the Tennessee Surgical Quality Collaborative (TSQC) (related article).

An example is the collaborative’s colon bundle for preventing surgical site infections (SSIs). At Baptist Memorial, the bundle’s interventions are posted above the scrub sinks where surgeons and staff can review it.

Here are steps the hospital is taking to implement the bundle’s 4 interventions.

**Maintaining normothermia**

**Goal:** Maintain temperature for colon surgery patients to be at least 36°C during the procedure.

All patients are prewarmed prior to surgery regardless of temperature using a warming gown (Bair Paws). Forced-air warming devices (Bair Hugger) are used during surgery.

“There is a real focus on normothermia for long procedures and for patients who present with comorbidities,” says Daryl Miller, BS, RN, director of surgical services.

“If nurses see a patient’s temperature is dropping, they can turn up the Bair Hugger,” adds Kay Loyd, BSN, RN, CEN, performance improvement specialist. Some surgeons also use warmed IV fluids.

**Supplemental oxygen**

**Goal:** Administer high-flow oxygen (FiO₂ at 80%) for the first 6 hours postoperatively.

Before this intervention was added to the postop orders, Loyd requested a review by pulmonologists at the request of risk management. Four pulmonologists reviewed it and saw no problem, she says. Anesthesia providers let the surgeons know if a patient is not a good candidate.

**Prophylactic antibiotics**

**Goal:** Select the appropriate antibiotic.

For the colon bundle, as with the SCIP measure, antibiotics are to be given consistently with current guidelines for colorectal surgery. (SCIP is the Surgical Care Improvement Project.)

**Postoperative glucose**

**Goal:** Maintain patients’ blood glucose level <200 mg/dL on the day of surgery (postop day zero).

Patients’ blood glucose is checked in the preoperative area and again in the postanesthesia care unit.

“The nurses know the goal is less than 200,” Loyd says. “If patients are diabetic, they are often checked intraoperatively as well.”

**Making a difference**

An example of how the data is applied is renal failure. Reviewing the results, a multidisciplinary group noticed renal failure outcomes were somewhat elevated. The pharmacist on the committee thought one reason might be the use of nonsteroidal anti-inflammatory agents for postop pain control. Certain of these agents carry a “black box” warning from the Food and Drug Administration.

The physicians were alerted and have become more conscious of NSAID use.

Within 6 months, the incidence of renal failure returned to an acceptable range.

“That was a great example of how a multidisciplinary team works,” she says.

**Sharing with surgeons**

Baptist Memorial’s surgeon champion, Stephen Behrman, MD, FACS, has asked that the NSQIP 30-day outcomes by surgeon be posted in the physicians’ lounge with names blinded. Surgeons can identify their own results by their ID numbers and compare them with peers.

“Dr Behrman can sit down with a surgeon if there’s a problem to see what can be done to improve their outcomes,” Loyd says.

She thinks the surgeons’ response to NSQIP has been more positive than it is to SCIP. She notes that more patients are audited, and the data is more specific.

“SCIP looks at patients only through postop day 2 or 3,” she says. “NSQIP looks at outcomes at up to 30 days postop. So we are getting a realistic view of how our patients do long term.”

—Pat Patterson
Developed by surgeons, NSQIP focuses on 30-day outcomes and uses data from patients’ charts, not claims. The data is risk adjusted, case-mix adjusted, and audited.

The collaborative’s funding supports about half of a hospital’s $120,000 annual cost for joining NSQIP. That includes membership plus a full-time surgical clinical reviewer (SCR), a requirement. The reviewer collects data on 40 surgical cases in an 8-day cycle and enters it in the NSQIP data base. Each hospital must also appoint an engaged surgeon champion.

Digging into data
The TSQC hospitals meet quarterly and share data in a blinded fashion. Though initial meetings were tentative, Dr Cofer says trust has developed.

“The members dig into the data and openly share with each other where the opportunities are,” adds Chris Clarke, BSN, RN, THA’s senior vice president of clinical services, who manages the project.

A participant might say, for example, “Our infection rate was high last year. What do you think we should be doing?”

Or a report might show Hospitals B and G have the lowest UTI rates. They volunteer to discuss their prevention efforts.

A colorectal SSI bundle
TSQC hospitals have agreed to trial a bundle of interventions for preventing SSIs from colorectal surgery that goes beyond measures in the Surgical Care Improvement Project (SCIP). The interventions are based on information NSQIP provided on SSI prevention.

“We looked at all of the promising practices, not just those that have Level 1 evidence,” Clarke says. “These are things we identified as enhanced opportunities beyond the standard SSI reduction strategies that would be worth trialing.”

The surgeon champions were asked to trial the bundle with their own patients and then to spread it among peers. The SCRs will track compliance.

The bundle includes:

• redosing the antibiotic for surgery lasting more than 3 1/2 hours
• adjusting the antibiotic dose for morbidly obese patients
• tracking patients’ blood glucose levels on the day of surgery regardless of whether they are diabetic
• monitoring patients’ temperatures continuously and keeping them warm throughout the case
• administering supplemental oxygen for 6 hours postoperatively.

“Our data in Tennessee suggests there is a correlation between high blood glucose and SSIs for colorectal surgery,” Clarke notes.

On normothermia, TSQC goes beyond documenting that a warming device was applied to include monitoring patients’ temperatures throughout the case. The reason is that a patient’s temperature can vary before, during, and after surgery, notes Cheri Cole-Jenkins, RNC, MPH, manager of the quality department at 300-bed Parkwest Medical Center in Knoxville, Tennessee, a TSQC participant.

“We’re challenging ourselves to see that the [warming device] is doing what it is intended to do, which is to maintain temperature,” she says.

For the surgical skin prep, most TSQC members already use an alcohol-chlorhexidine gluconate solution, which studies have found is associated with a lower SSI rate than povidone-iodine.
Making a difference for VTEs

Cole-Jenkins says data from TSQC has helped her hospital to highlight areas where it has strong results and other areas where there are challenges.

“We found we were a low outlier—a good thing—for pneumonia, particularly given that our population is fairly high in smoking,” says Cole-Jenkins. She attributes the result to the hospitalist program, an aggressive pulmonary group, and strong respiratory therapists.

With VTE, however, they found challenges. “Having the hard evidence [from TSQC] enabled us to recognize we were out of line with the rest of the participants. We were doing something significantly different,” she says.

A team led by the surgeon champion, who is chair of the endovascular team, narrowed the problem to peripherally inserted central catheter (PICC) lines.

The VTE rate decreased after 2 steps were taken:

• changing from using 3-lumen to 2-lumen PICC lines, unless there is a specific need
• providing the nursing staff with further education on site selection for PICC lines.

“It is highly motivating when you have data, can apply it, and realize it makes things better for patients,” Cole-Jenkins says.

“This is data, but it’s also people’s lives. The impact of having an SSI is possibly life-altering. Whatever we can do to keep that from happening is what we need to be doing.”

Sharing with surgeons

Some organizations share individual NSQIP data with the surgeons.

Dr Cofer provides individual outcomes data with faculty surgeons twice a year, showing them how they compare with the group with identities blinded.

After reviewing their reports, surgeons may come to him seeking more information. For example, they might want to know why their mortality rate was higher than their peers’ for the same procedure. The SCR can print a report that provides the details.

“We now have data that we didn’t have 5 or 6 years ago, and it’s data we can believe in,” Dr Cofer says.

—Pat Patterson

More about ACS NSQIP is at www.acsnsqip.org.

References
