

TSQC Colon Bundle

In the fall of 2011, three members of the leadership team for the Tennessee Surgical Quality Collaborative combined resources to create a colorectal bundle in an effort to reduce surgical site infection and improve patient outcomes.

Will Gibson, MD, FACS surgical champion for Parkwest Medical Center in Knoxville, **Barbara Martin, RN, MBA, CCRN** senior quality and patient safety advisor at Vanderbilt University Medical Center in Nashville, and **Chris Clarke, RN**, senior vice president for the Tennessee

Hospital Association and director of the Tennessee Center for Patient Safety, developed a set of clinical interventions to be used as part of a multi-hospital collaborative across the episode of care.

Gibson explained a surgical site infection (SSI) significantly increases both risk of morbidity and cost of care. However, he continued, following best practices could reduce poor outcomes and improve patient safety and quality while simultaneously reducing the total financial outlay.

The TSQC Colorectal SSI Reduction Initiative focused on four main elements:

- **Normothermia:** maintaining a core temperature $\geq 36^\circ$ during the perioperative period.
- **Normoglycemia:** maintaining blood glucose level < 200 mg/dl on the day of surgery and throughout the postoperative period.
- **Supplemental Oxygen:** administering supplemental oxygen at 80% intraoperatively and postoperatively.
- **Antimicrobial Prophylaxis:** providing appropriate antibiotic selection and timing per SCIP guidelines, which includes administering antibiotics within one hour prior to surgical incision and re-dosing as appropriate in operations lasting three or more hours.

Vanderbilt Augments the Basic Bundle

Vanderbilt University Medical Center staff ramped up the basic bundle and created a colon surgery system on steroids ... figuratively speaking, of course.

"We actually target colon surgery meaning we submit more colon cases than some of the other systems do ... plus we're a high-volume center," noted Martin, a senior quality and patient safety advisor at VUMC. "At Vanderbilt, we pushed it out to the institution and really saw dramatic improvement," she said.

Working from the key elements of the bundle Martin, Gibson and Clarke created, Vanderbilt took the program to the next level. "We started with those four and added a much more specific set of guidelines around management of elective colorectal surgery patients," Martin explained. Detailed steps and timing for preoperative, intraoperative and postoperative interventions were laid out ranging from oral antibiotic prep at 2, 4 and 10 pm the day before surgery to ensuring prophylactic antibiotics have been discontinued within 24 hours of surgery.

The next major step was to engage Tim Geiger, MD, chief of the Division of General Surgery and a colorectal specialist whose group was responsible for the majority of Vanderbilt's colon procedures. Geiger helped roll out the new colon

bundle in waves over a 12-month period to ensure everyone understood each of the processes being put in place. In Geiger, Martin noted, "We had someone who was not only willing to do it with his patients but to push it with others and their patients."



Martin said having clinical leadership buy into the bundle was critical to moving the new protocol from a nice concept to an actual change in actions. "What we saw was dramatic," she said of the shift in culture. "Our infection rates dropped by half."

Oscar Guillaumondegui, MD, VUMC's surgeon champion and chair of the TSQC Leadership Committee, said a lot of credit also goes to Vanderbilt's associate surgeon-in-chief Roger Dmochowski, MD, and quality advisor Rachel Hayes, BSN, PhD, who created a compliance tracking system. "You had to make sure you put each of the bundle parts in the post-operative chart. In doing so, it made you think about each of the elements," said Guillaumondegui. "I think it's a learned response, but we know that it works."

Then, he continued, the duo would send back a 'report card' to let surgeons know how well they did in implementing all the steps. "Surgeons are competitive ... you want a 100%," Guillaumondegui added with a laugh.

"We ended up developing a monitoring tool that we are continually updating," added Martin. "It's really hard to evaluate the success of your projects if you don't have process measures as well as outcomes measures."

The results have been so impressive that a team has been asked to present the Vanderbilt Colorectal Bundle processes and outcomes at the spring 2017 national meeting for the Association of periOperative Registered Nurses (AORN) in Boston.

Guillaumondegui said when surgical outcomes improve, it is often the physician that is credited with making the difference. However, he continued, moving the needle on quality and safety is always a team effort that requires many hands working together. That type of collegial, coordinated response is at the heart of the colon bundle and the many other TSQC initiatives.



Dr. Will Gibson



Dr. Oscar Guillaumondegui



Barbara Martin



The Tennessee Surgical Quality Collaborative is made up of more than 20 hospitals and health systems across the state and represents approximately 1,500 surgeons. TSQC is a collaboration of the Tennessee Chapter of the American College of Surgeons, member hospitals, and the Tennessee Hospital Association's Center for Patient Safety, which serves as the coordinating center.