

# Oral Antibiotics Lower Colon Surgery Infections

BY KERRI WACHTER

FROM THE ANNUAL MEETING OF THE AMERICAN SOCIETY FOR COLON AND RECTAL SURGEONS

MINNEAPOLIS — The use of oral antibiotics along with mechanical bowel preparation before colon resection significantly reduced the number of superficial surgical site infections, compared with the use of mechanical bowel preparation

alone, according to the results of a retrospective study of 227 patients.

Superficial surgical site infections occurred in 3% of patients who were given oral antibiotics along with mechanical bowel preparation (MBP) vs. 11% of those who had MBP alone. There were also trends toward fewer deep surgical site infections, organ space surgical site infections, and anastomotic

leaks, Dr. Khaled El-Badawi reported at the meeting.

The researchers performed a retrospective review of all elective segmental colon resections performed between 2007 and 2009. Patients were grouped by whether oral antibiotics had been used in conjunction with MBP. A total of 125 patients underwent MBP alone and 102 underwent MBP with oral antibiotics.

All patients were restricted to a clear liquid diet for at least 24 hours prior to surgery, and were also given 20 mg of bisacodyl and polyethylene glycol. Patients in the antibiotic group also received three doses of 1 g neomycin and 750 mg metronidazole on the day before surgery. Within 1 hour of surgical incision, all patients received 1 g ertapenem.

Dr. El-Badawi, who is a sur-

gical resident at Grand Rapids Medical Education Partners in Michigan, noted that there was a significant difference between the two groups in terms of operative time: 154 minutes for the MBP-alone group vs. 125 minutes for the antibiotics and MBP group. ■

**Disclosures:** Dr. El-Badawi reported that he had no relevant financial relationships.

## High Rates of Postop Sepsis Suggest Need for Screening

BY MARY ANN MOON

FROM ARCHIVES OF SURGERY

The rates of sepsis and septic shock following general surgery are so excessive that identifying high-risk patients and screening them at 12-hour intervals for signs and symptoms may be warranted, according to a report.

An analysis of data on more than 360,000 general surgery patients showed that those at highest risk are older than 60 years of age, undergo emergency rather than elective surgery, and have a major comorbidity. The findings suggest that patients with any of these three risk factors “warrant a high index of suspicion... and that this patient population would most likely benefit from mandatory sepsis screening,” said Dr. Laura J. Moore and her associates at Methodist Hospital, Houston.

To date, programs to limit perioperative complications have focused on prevention plus early recognition and treatment of thromboembolism, surgery-related MI, and surgical site infections. These efforts have produced a significant decline in all three complications and in related mortality.

But the incidences of postoperative sepsis and septic shock have remained alarmingly high—far greater than those of thromboembolism and MI—and the associated mortality also remains excessively high (50%).

To characterize the severity and extent of postoperative sepsis and septic shock, Dr. Moore and her colleagues analyzed information that had been collected prospectively in the American College of Surgeons NSQIP (National Surgical Quality Improvement Program) database. They examined data on 363,897 patients treated at 121 academic and community hospitals in 2005-2007.

A total of 8,350 patients (2.3%) developed sepsis, and 5,977 (1.6%) developed septic shock following general surgery. In comparison, pulmonary embolism developed in 0.3% and MI in 0.2%.

The development of sepsis raised the rate of 30-day mortality fourfold, whereas septic shock raised it 33-fold,

the researchers said (Arch. Surg. 2010;145:695-700).

“Septic shock occurs 10 times more frequently than MI and has the same mortality rate; thus, it kills 10 times more people,” they said. “Therefore, our level of vigilance in identifying sepsis and septic shock needs to mimic, if not surpass, our vigilance for identifying MI and PE.”

Because closer monitoring of all surgical patients for signs and symptoms of sepsis is not realistic, it should be limited to those at highest risk. In this analysis, the percentage of patients older than age 60 was only 40% in the overall study group, compared with 52% in the group that developed sepsis and 70% in the group that developed septic shock.

The rate of sepsis was only 2% and that of septic shock was only 1% in patients undergoing elective procedures, compared with rates of approximately 5% for both sepsis and septic shock in patients undergoing emergency procedures.

Finally, approximately 90% of patients who developed sepsis and 97% of those who developed septic shock had at least one major comorbidity, compared with only 70% of those who did not develop sepsis. “The presence of any of the NSQIP–documented comorbidities increased the odds of developing sepsis or septic shock by sixfold” and raised the 30-day mortality by 22-fold, Dr. Moore said.

They found that clinicians at Methodist did not always accurately identify sepsis at the bedside in the most timely way. “A distinct window of early intervention exists in which the septic source must be eliminated and physiologic derangements corrected,” the investigators said.

The hospital implemented a program in which patients with any of these risk factors were screened every 12 hours for heart rate, white blood cell count, temperature, and respiratory rate. The program decreased sepsis-related mortality. ■

**Disclosures:** This study was supported by the Methodist Hospital Research Institute, Houston. No disclosures were reported.

### COMMENTARY

#### Seize the Opportunity to Cut Sepsis Risk

Millions of patients in the United States undergo noncardiac surgery annually and complications are costly in both human and fiscal terms. The American College of Surgeons NSQIP (National Surgical Quality Improvement Program) database was created for the purpose of identifying perioperative quality improvement targets. This analysis emphasizes what we have accomplished with respect to minimizing perioperative morbidity and mortality from pulmonary emboli and myocardial infarction, but it also highlights the impact sepsis plays in our surgical patients.

Unlike PE, sepsis is not known to precipitate sudden death. Sepsis, presents with prodromal signs and symptoms that should make early detection and treatment possible. The study researchers note that closer postoperative monitoring would be difficult to apply to all postoperative patients, and thus propose a risk stratification scheme based on age, comorbidity, and the need for surgery (elective vs. emergent). This is a rational first step, yet there is much more to learn with respect to risk stratification and the monitoring and interventions that may improve perioperative outcomes in sepsis.

For example, do all comorbidities increase the risk for sepsis equally? Is age a continuous variable with respect to sepsis risk? How do we define emergency surgery and what are the important differences between emergency versus routine surgery? Is it a function of poor preoperative optimization or does it relate to the nature of the underlying condition itself (i.e. bowel perforation)? The more we can answer these questions, the more accurate our risk stratification will be.

The next issue to explore will be the intensity of monitoring for those identified as being at increased risk for sepsis. The monitoring program utilized by Methodist hospital was nothing more

than vital signs and serial WBC every 12 hours. I would argue that this level of monitoring is really not that difficult to apply universally to all surgical patients, let alone those we risk stratify to higher risk for sepsis. Most hospitalized patients get daily WBC (via complete blood count) and vital sign checks every 8 hours already. That being said, I question the incremental value of a WBC once or twice daily compared to more frequent vital sign assessment in identifying early sepsis. Much like the inherent flaw of serial blood counts to identify bleeding, real time vital sign measurement would be expected to be far more sensitive to early sepsis than blood work drawn hours earlier—and seen even later.

Regardless of how we risk stratify and monitor for sepsis, I suspect the most critical step will be when and how we act once early sepsis is present. What triggers do we put in place to initiate therapy? Who responds to the patient and what specific interventions will make the most difference? When do we start antibiotics? Do we move patients to a higher level of care?

Hospital studies highlighting “failure to rescue” were the driving force behind the development of rapid response teams. I expect similar processes of care will be needed for the patient that has signs of early sepsis. Once again, hospitalists will have an opportunity to play a pivotal role in the design and application of system solutions that will improve care. Just as hospitalists have embraced prevention and treatment of venous thromboembolism and other aspects of surgical co-management, I predict that hospitalists will embrace the monitoring, early detection, and treatment of sepsis.

DR. MICHOTA is the director of academic affairs in the Department of Hospital Medicine at the Cleveland Clinic.



BY FRANKLIN A. MICHOTA, M.D.