

Researchers identify the most effective operating room infection control practices

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While hospitals grapple with what operating room (OR) infection control procedures work best, a new study of Texas hospitals has determined two areas that stand out: mandating sterile operating conditions at or close to the wound itself; and tracking in-hospital outcomes on surgical site infections (SSIs) and sharing that information with surgeons and other OR staff.

"In contrast, our research team found that policies regulating the attire of OR personnel had no measurable impact on infection rates," said lead author Thomas A. Aloia, MD, FACS, department of surgical oncology, the University of Texas MD Anderson Cancer Center, Houston. Dr. Aloia presented the findings at the American College of Surgeons Quality and Safety Conference in New York in July. The results have been published online as an "article in press" on the website of the *Journal of the American College of Surgeons* in advance of print.

"Every institution wants to lower complication rates and, in particular, wound infection rates," Dr. Aloia said. "However, we have limited resources to carry out quality assessment and [quality improvement](#). What's important about this study is that it brings feasibility to hospitals that may be considering 80 possible variables to intervene on. To get off to a strong start, they can begin by looking at conditions right at the wound and their reporting practices. A focus on these elements should produce the biggest impact for quality improvement initiatives." He added, "our findings can really help individual hospitals that are working on OR attire policy and other standard operating procedures and

regulations to appropriately scale what they are going to emphasize."

SSIs impose a significant burden and cost on the health care system. A recent study found that 1 percent of all surgical patients develop a SSI during their admission for surgery, but rates are 30 percent higher for patients having gastrointestinal operations.¹ A study of non-cardiac operations at Veterans Affairs hospitals reported a surgical site infection rate of 4.6 percent.² SSIs account for almost one in six [hospital](#)-based infections³ and lead to higher rates of patient death and longer hospital and intensive care unit stays. Studies have estimated that cost for a patient with an SSI is almost double that of a patient who's had an uneventful operation. For gastrointestinal surgical patients, SSIs were found to increase hospital stays by an average of 10 days and add \$20,000 to the cost.¹

In response, several professional organizations have recommended a host of infection control practices, which hospitals have adopted to varying degrees. For this study, Dr. Aloia and his colleagues surveyed surgeon leaders at 20 Texas hospitals affiliated with the Texas Alliance for Surgical Quality (TASQ), a collaborative of the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP).

The survey asked respondents to rank how well the three key disciplines on the surgical team—surgery, anesthesia, and nursing—adhere to 38 separate infection control practices in six different categories: attire; preoperative preparation; during-surgery protocols; antibiotics; postoperative care; and outcomes reporting. The study used a four-point scale to rank the level of adherence. The researchers also collected outcomes data on risk-adjusted odds ratios of [surgical site infections](#) contained in the July 2016 ACS NSQIP hospital-level risk-adjusted reports. They then compared compliance rates between the best and worst performers.

Almost all hospitals reported maximal adherence to surgical care improvement project metrics, including removal of patient hair around the wound site with clippers and proper use and dosing of preventive antibiotics. The subset of hospitals that were most compliant with eight other practices demonstrated the lowest surgical site [infection rates](#). These practices included the patient showering before an operation; best practice preparation of the skin in the OR; and use of clean instruments, gowns, and gloves for closing wounds and changing dressings, Dr. Aloia said.

"The best performing hospitals were vigilant about skin prep, using a clean closure and giving antibiotics appropriately—all those things that happened right at the level of the wound," Dr. Aloia said. "In addition, the hospitals that reported out their data on a formal basis—monthly or quarterly—to their surgeons, departments, and institutions also had the highest performance."

"These findings are supported by three recently published studies, including [surgical site infection guidelines](#) from the Centers for Disease Control (2017) and the American College of Surgeons and Surgical Infection Society (2016)," the authors noted.

By the same token, Dr. Aloia and his colleagues found that OR attire practices, particularly those that apply to OR personnel away from the immediate field of surgery, had no impact on SSI rates. These practices included implementation of specific rules for surgical caps, undershirts, and shoes and shoe coverings; restrictions on jewelry and nail polish; coverage requirements for forearms and head and facial hair; and even presence of personal bags in the OR.

Those types of regulations actually provided the impetus for the study, Dr. Aloia explained. "Although we would never advocate sacrificing safety, such regulations don't seem to have data to back them up," he

said.

The next step, Dr. Aloia said, is to feed back the data to the participating programs and to revisit in a year how the lower performing programs have changed their [infection](#) control practices to be more vigilant about effective practices at and near the surgical field and report outcomes and if the SSI rates improve as a result. "If that happens and their performance improves, that improvement would validate the effects we saw in our study," he said.

More information: Multi-Institution Analysis of Infection Control Practices Identifies the Subset Associated with Best Surgical Site Infection Performance: A Texas Alliance for Surgical Quality Collaborative Project. *Journal of the American College of Surgeons*. Available at: [www.journalacs.org/article/S10 ... \(17\)31665-4/fulltext](http://www.journalacs.org/article/S10... (17)31665-4/fulltext)

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