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YOUR GUIDE TO

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MAKE IT SAFE, MAKE IT GREAT, MAKE IT PAY

Eight Keys to Laparoscopic Surgery Safety

Don't overlook these basic principles.

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Senior Associate Editor

While minimally invasive abdominal surgery can reduce procedure times, minimize scarring and shorten patient recovery, there's no guarantee of safety — and how your busy outpatient ORs prevent and respond to complications is critical. Here are the clinical and behavioral safeguards you should implement, according to experts.

Clinical: the nuts and bolts

1 Infection control First and foremost, the surgical basics observed for open procedures also apply to laparoscopic ones. “We

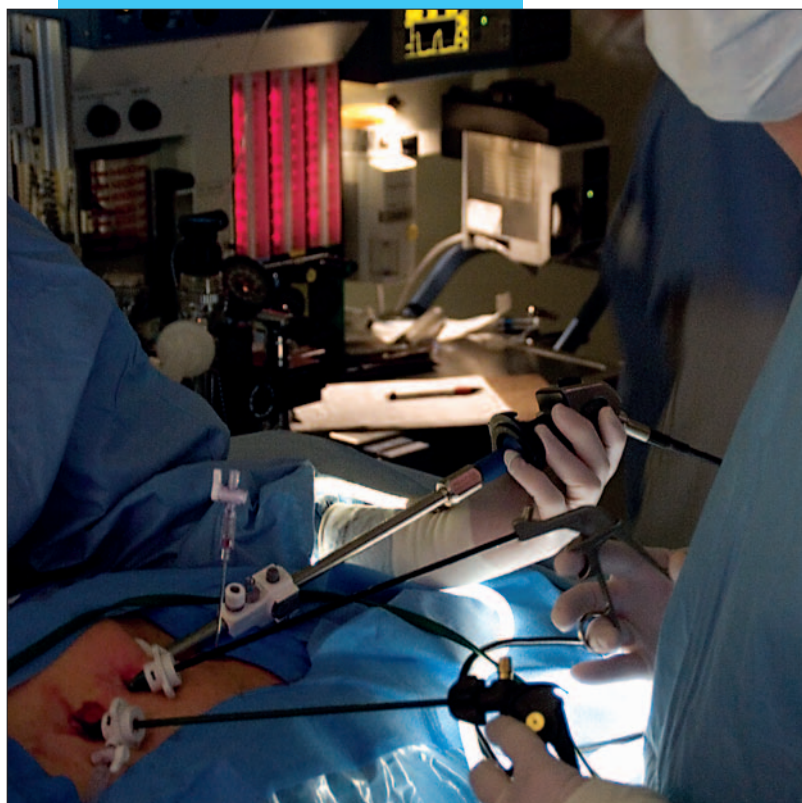
always worry about infections, and we always practice sterile technique,” says Kay Ball, RN, MSA, CNOR, FAAN, a nurse educator and consultant from Lewis Center, Ohio. The abdominal area is prone to bacterial presence, inside and out, and as such incisions are at particular risk for infection.

Infection prevention and control comes down to a vigilant follow-through in every situation, what Ms. Ball calls “surgical conscience.” For example, she says, “It's OK to contaminate during a procedure. It happens. Medicine is not an exact science, and sometimes an instrument that touched something unsterile is passed off.

“But,” she continues, “it's not OK not to do anything about it. What's not acceptable is not making the instrument and the sterile field sterile again.”

2 Visual due diligence Manufacturers have undoubtedly advanced

laparoscopy by developing the technology to enter the body and achieve surgery without the need for large, open incisions. Inside the cavity, however, these instruments have tunnel vision, says Ms. Ball. They can see the target site, but they can't look back on themselves to see what's going on along the length of the scope.



LIMITED SCOPE

Laparoscopic instruments provide a view of the target site, but not of the tissue that approaches it.

This limited visibility can be a hazard, Ms. Ball notes, as any injuries that laparoscopic instruments cause at locations outside the scope's direct field of view, such as perforations or electrosurgical burns, can go unnoticed as the procedure is concluded.

"That's how patients, three days later, show up in the ER with peritonitis because of a bowel leak and the resulting infection," she says. "You have to really look carefully inside the belly before you exit."

3 **Electrosurgery safety** There are three ways that electrosurgery and other surgical energies can cause laparoscopic burns — and one surefire way to prevent them from happening.

The first cause is direct coupling, in which an active electrode touching an uninsulated metal object transfers its current to the second object and any tissue in contact with it. This is a pilot error, but one that's rare and easily avoidable, says Ms. Ball, since surgeons know to steer metal instruments well clear of an active electrosurgery unit tip.

Insulation failure on an electrosurgery unit is a much greater hazard for burns, she says, and can be caused by the wear and tear of routine use and reprocessing. While your facility's biomedical staff should regularly inspect the device for nicks, breaches in the insulation can be pinhole-sized or smaller and difficult to see. Devices such as InsulScan can be used pre- and post-op to detect defects in an electrosurgery unit's insulation, but they can't eliminate insulation failure in the midst of surgery, says Ms. Ball. In the event that the user turns up the voltage while in coagulation mode, the resulting increase can force a hole through the insulation, leaving the patient at risk. For that reason, increasing the voltage mid-procedure should be avoided, she says.

The third hazard is capacitive coupling, which can occur when two conductors transfer electrical current even though they're separated by intact insulation. Their close proximity lets current pass through the insulation, burning to tissue elsewhere along the instruments. The risk is heightened when you use both reusable and disposable instruments.

Since capacitive coupling occurs even when insulation is intact, an electronic scan can't detect or pre-

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vent it. But one technology can: active electrode monitoring, or AEM, minimizes the risk of thermal burns from electrical current by automatically shutting off the ESU when it detects stray energies.

AEM devices are readily available and recommended by AORN for the prevention of electrosurgical burns, but not every OR is equipped with them. "Maybe because it requires changing practices, and change is hard," says Ms. Ball. "Either that, or a hospital has to have a lawsuit from a patient with electrosurgery burns to understand the importance of AEM." (For more, see "*Your Refresher on ESU Safety*" on page 30.)

4 **Surgical smoke** Cutting and coagulating in the abdominal cavity causes plumes of surgical smoke in the patient's belly. If this byproduct is not dealt with, the patient will absorb the smoke, his methemoglobin and carboxyhemoglobin levels will rise, and he'll suffer from PONV and headaches.

Using a smoke evacuator is therefore essential, says Ms. Ball. For the most effective use, you'll want to ensure it has low-pressure suction valves that collect the plume through a gentle air movement that won't destroy the pneumoperitoneum. Some smoke evacuator models automatically turn on when a plume of surgical smoke is created and turn off when the device that created it does.

She also recommends that you consider an evacuator that includes deinsufflation, since surgical smoke that escapes from the patient's body after laparoscopic ports are removed can disperse traces of the patient's blood and DNA into the air, presenting a potential infection risk to OR personnel.

5 **A change of plans** In the event that laparoscopic surgery must be abandoned mid-procedure and an open surgery begun, OR personnel must take particular caution, especially upon closing, warns Ms. Ball. There always exists the possibility that a physician skilled in laparoscopic proce-

dures is not as skilled, or has declined in experience, when the situation calls for open surgery. Additionally, after the procedure has changed course and become more complex, the risk of surgical instruments or sponges being accidentally left inside the patient's opened body increases.

Behavioral: A culture of safety

While the guidelines above address some of the most common safety situations your staff may face during laparoscopy, they don't cover all of them. In fact, the prevention of and preparation for unforeseen complications may be just as critical.

"You can teach intervention, but how do you teach prevention?" asks Vangie Dennis, RN, CNOR, CMLSO, the advanced technology coordinator for Gwinnett Hospital System in Lawrenceville, Ga. The answer is in building a culture of safety, which, as she notes, can emerge from more than one channel. "Success in life is the result of good judgment. Good judgment is the result of experience. Experience is the result of bad judgment."

1 **Continual assessment** Managing complications in laparoscopic surgery begins with thorough assessment at every step. "To a nurse, it's ingrained," says Ms. Dennis. "Assessment is part of our language," originating in nursing school coursework and honed by work experience.

In pre-op assessments, for instance, you'll talk with patients and review their history and physicals: Do they have any medication allergies? Are they suffering from adhesions? Have they had previous abdominal surgeries or radiation treatments? Nurses may also want to note patients' mobility and flexibility, perhaps even positioning them for surgery while they're awake.

The aim is prevention, says Ms. Dennis. If a nurse notices a potential complication or risk of injury, she can make a recommendation to the surgeon that may lead him to take a different, safer approach.

2 **Staff education** One way to keep assessment at the fore of surgical procedures is through regular staff education, teaching not only what events

may arise during laparoscopic procedures but also when and why they do and how to react to and interpret them, says Ms. Dennis. It's a wide subject. "Bladder, bowel, vascular, positioning, all these things come into play in abdominal surgery," she says.

Education also lets you implement the changes necessary toward creating more uniform surgical procedures and to measure the progress toward that goal. "When you start compromising education, you might not see it right away, but you'll see an increase in complications," says Ms. Dennis.

3 **Proactivity** Picture this: Your assessing, educated OR staff have kept on top of the procedure and are watching carefully, performing a "last look" technique to detect any overlooked injuries as the scope is removed, at which point scrub personnel notice a bleeder. It's more efficient to have the scrubs notify the circulator, who can get her hands on the supplies needed for closure, than it is to have OR personnel react to whatever the surgeon yells for. The key is to be proactive.

"Anticipating the surgeon's needs is what makes a good scrub team," says Ms. Dennis, noting that it's also key to participation in surgery.

When you add a new laparoscopic procedure, hold a mandatory in-service so staff know how to respond to the situations it may raise. This lets them prevent and handle complications while also taking ownership in the surgical successes.

Since the continuity of surgical care has evolved over the last two decades as outpatient procedures have changed the surgical industry, it's also critical that you vertically integrate post-operative care. In short, she says, everyone should know how to recognize and deal with the potential complications of laparoscopic surgery: your PACU and recovery staff, the 23-hour observation ward, nearby ERs and any other clinical areas patients may come in contact with after discharge.

"A cooperative effort is needed," says Ms. Dennis. "One way to make a policy fail is to write it as a nursing policy only." **OSM**