Hospitals are trying to make it safer for patients to go under the knife.

Surgery can be risky by its very nature, and the possibility of error or negligence makes it even more so. According to an analysis last year in the journal Patient Safety in Surgery, 46% to 65% of adverse events in hospitals are related to...
surgery, especially complex procedures. Despite years of prevention efforts, procedures are still performed on the wrong body part and surgical tools are sewn up in patients.

Now the movement to make things safer is taking on new urgency, as advocates inside and outside the surgical community push for a range of changes, and the cost of mishaps mounts.

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Hospitals are collecting more data about surgical errors so they can track their performance and learn best practices. They’re using big data to screen patients before surgery to get them better prepared for procedures. And they’re trying to educate surgeons about using potentially dangerous equipment—as well as pushing them to pay more attention to their operating-room team to make sure they’re all on the same page about safety.

“Given all of the current technology, strategies and tools that are available to prevent these occurrences, it is unacceptable that foreign objects are still being left in surgical sites and that wrong-site surgeries are still occurring,” says Lisa Freeman, executive director of the nonprofit Connecticut Center for Patient Safety.
The consequences of surgical error are huge, both for patient health and hospital finances. A 2012 study by researchers at Johns Hopkins estimated that there are 4,082 malpractice claims each year for “never events”—the type of shocking mistakes that should never occur, like operating on the wrong body part. In nearly 10,000 cases studied, which took place from 1990 to 2010, never events led to death in 6.6% of patients, permanent injury in 32.9% and temporary injury in 59.2%. The total payout in those cases was $1.3 billion.

Hospitals also face federal penalties from never events, and the government-mandated financial hit may get even bigger: Washington is preparing to overhaul the medical-reimbursement system by the end of 2018, planning to base 50% of Medicare payments to doctors and hospitals on the quality of care they provide, rather than the quantity.

**Getting Better Numbers**

Little wonder that hospitals are searching for new ways to get their safety numbers up. One such effort involves helping hospitals pinpoint their own problems. Many hospitals are participating in the National Surgical Quality Improvement Project, or NSQIP, overseen by the American College of Surgeons and adapted from an effort at Veterans Administration hospitals that helped decrease postoperative death rates by 47% from 1991 to 2006. “All too often, patients are being harmed by preventable complications,” says Clifford Ko, a colorectal surgeon at UCLA and director of NSQIP. Many hospitals don’t collect reliable data on their own adverse events, and “you can’t improve a hospital’s surgical quality if you can’t measure it.”

NSQIP works with about 600 hospitals to gather and analyze data on complications and provides resources to help them tackle safety gaps. Hospitals can review their own clinical data and compare it with that of other hospitals. If every U.S. hospital used the program, the surgeon’s group estimates, each year they could save 100,000 lives, prevent more than 2.5 million complications and reduce costs by more than $25 billion.

Two studies published in early February in the Journal of the American Medical Association appeared to challenge the approach, finding that outcomes have improved in hospitals generally in recent years whether they participated in NSQIP or not. One, by researchers at the Mayo Clinic, compared billing claims
data between participating and nonparticipating hospitals and found no statistically significant differences in the likelihood of complications, or death.

Dr. Ko counters that the use of billing data to measure quality is “flawed.” Peter Pronovost, a safety expert at Johns Hopkins Medicine in Baltimore, estimates that billing data is only accurate in measuring harm from surgical error about 29% of the time. Meanwhile, participants in the NSQIP program have published their own studies showing improvements from analyzing NSQIP data on their past errors and taking steps to fix problems.

In Tennessee, 10 hospitals participating in the program from 2009 to 2012 collected...
data on more than 55,000 surgical procedures and examined rates of 17 different types of surgical complications. Last July, they reported that they reduced complications by nearly 20% since 2009, saving at least 533 lives and $75.2 million in costs.

Oscar Guillamondegui, an associate professor of surgery at Vanderbilt University in Nashville who chairs the leadership committee for the Tennessee group, says the program enabled hospitals to focus on areas where improvement was needed. But he cautions that in some patients complications are inevitable. “As a surgeon I would love to see our rates go to zero, but the bottom line is that people are very sick, and some will have bad outcomes.”

NSQIP helped Saint Francis Hospital and Medical Center in Hartford, Conn., cut the number of patients experiencing surgical complications to under 10% in 2013 from nearly 22% in 2009. NSQIP data also showed that when OR teams used a surgical-safety checklist developed by the Association of periOperative Registered Nurses, there were fewer complications. “We have to stay preoccupied and focused on anything that can go wrong,” says Scott Ellner, vice chairman of surgery and director of surgical quality at the hospital.

Anesthesiologists, meanwhile, are taking their own steps to gather data about complications that can range from cardiac arrest during a procedure to damaged vocal cords from tubes in patients’ throats. About 25% of anesthesia practices in the U.S. are voluntarily providing data on adverse events to a new registry that enables practices to compare their data with those of peers.

**Patient Assessments**

Another safety effort focuses on patients. Hospitals are taking steps to better predict who will have the highest risk of complications from surgery or anesthesia, including those who are in poor health to begin with. They are delaying elective procedures and taking steps to strengthen patients, such as increasing their nutritional intake and getting them to quit smoking.

They are also preparing patients more carefully for surgery, such as making sure
they bathe with antiseptic wash the day before. After surgery, they are getting patients out of bed and walking sooner and giving them blood thinners to prevent clots.

Some hospitals are using big data to determine an individual patient’s risk and take steps to improve the odds of a good result, says B. Todd Heniford, chief of the division of gastrointestinal and minimally invasive surgery at Carolinas Medical Center, part of Carolinas HealthCare System in Charlotte, N.C. Dr. Heniford developed an app, known as Cedar, for the Carolinas Equation for Determining Associated Risks, which crunches data from patient outcomes after hernia surgery to calculate the chance of complications.

Dr. Heniford says data analysis can also help prevent foreign bodies from being left in patients when they do undergo surgery. A 2006 study he co-authored found that over 10 years, 30 patients at the medical center had objects such as sponges and instruments left inside, with 25 requiring another operation. Now, if a count at the end of a procedure indicates sponges or instruments are

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**Unkind Cuts**

Surgery problems in the U.S. by the numbers

39 The number of times a week a surgeon leaves a foreign object such as a sponge or a towel inside a patient’s body after an operation.

20 The number of times a week a surgeon performs the wrong procedure on a patient.

20 The number of times a week a surgeon operates on the wrong site.

157,000 The number of surgical-site infections in 2013.

Sources: Johns Hopkins, Surgery; Centers for Disease Control and Prevention

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missing, hospital policy requires an X-ray before the patient leaves the OR, which can’t be overruled by a surgeon as happened occasionally in the past.

Technology can also help avoid leaving surgical objects in patients, such as using sponges with radio-frequency identification tags. At Memorial Hermann Health System in Houston, after routine sponge counts, all open surgical patients are scanned before the incision is closed, which has led to the detection of sponges that might have been retained because the sponge count was thought to be correct, says M. Michael Shabot, chief clinical officer.

New efforts are also under way to educate surgeons about hazards in the operating room, notably devices that rely on energy from electrical current and other energy sources and can be a combustible mix with oxygen and materials in the OR. Used incorrectly, they can spark fires on patients’ skin and also cause internal burn injuries that might not be recognized immediately.

Studies estimate that 600 operating-room fires are reported to occur in the U.S. each year, though there may be many more that aren’t reported. “Surgeons and medical students are taught almost nothing about devices we use in the OR, and no one tells you they are potentially harmful to you or the patient,” says Daniel B. Jones, a professor at Harvard Medical School and vice chairman of surgery at Beth Israel Deaconess Medical Center in Boston.

Dr. Jones and other members of a task force from the Society of American Gastrointestinal and Endoscopic Surgeons developed an educational program called FUSE, for Fundamental Use of Surgical Energy, to train surgeons and other staffers and certify that they have basic knowledge to safely use energy devices in an operating room. The task force reported last year in the journal Surgical Endoscopy that a pilot version of the course dramatically improved knowledge about the function and safety of the devices.

There’s also a movement afoot to change how some surgeons behave. Often seen as the rock stars of medicine, surgeons can be hard to rein in, resisting efforts to conduct preoperative briefings and being dismissive and curt if not downright intimidating to underlings. According to a study in the American Journal of Surgery in January, they are the specialists most commonly identified as “disruptive physicians,” and their outbursts can shift the focus away from the patient and lead to increased mistakes during procedures and diminished
respect from colleagues.

Memorial Hermann is one of a number of health systems working closely with the Joint Commission, a nonprofit that accredits hospitals and since 2009 has required hospitals to “create and maintain” a culture of safety. Surgeons have been through training courses about teamwork, and Dr. Shabot says there is a zero-tolerance policy for intimidating or disdainful behavior that can prevent nurses and other staffers from speaking up about concerns.

Surgeons are also expected to follow strict infection-prevention guidelines, such as sterile procedures that include fully draping patients on the operating table and wearing caps and masks before putting in a central line, a tube inserted in the chest to administer IV fluids, drugs and blood. Dr. Shabot says one surgeon had a “hissy fit” and didn’t want to go through the protocol, but the bedside nurse covered the instruments and called top nursing brass, who said the procedure couldn’t go through. He reluctantly agreed to follow the rules, word of the event spread to other surgeons, “and it never happened again,” Dr. Shabot says.

At Memorial Hospital in Colorado Springs, part of University of Colorado Health, efforts to introduce teamwork training and preoperative briefings including safety checklists in the operating room in 2005 met with resistance from surgeons, according to a study published in 2009. But in rooms where the briefings took place, procedures went more efficiently.

Scott Hurlbert, senior medical director of surgery at Memorial and co-author of the study, says the briefings and checklists “are now part of our culture.” Resistance that remains tends to be among older surgeons, he says, “but new doctors coming out of training already know this is the expectation.”

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