Study examines counts, retained items

New research sheds light on how well surgical counting works as a patient safety method. The study shows that though counting is a pretty good way of preventing retained foreign bodies, it is not perfect.

In the study of more than 150,000 operations performed at Columbia University Medical Center in New York City, the count was off in 1,062 cases, a rate of 1 in 145 cases, or less than 1%. But when the count was off, the rate of a foreign body being left in a patient was more than 100 times higher than in cases where the count was correct.

At Columbia, all discrepant counts must be reported to a hospitalwide medical event reporting system, providing data the researchers could mine.

Overall, the rate of retained items was 1 in 7,000 cases. But when the count was off, the rate went up to 1 in 70 cases, noted Natalia Egorova, PhD, and her colleagues in their report in the January Annals of Surgery. They discussed the findings with OR Manager.

Of the 1,062 cases where the count was off, a missing item was discovered in only 51 cases. In 17 of those, the item was actually in the patient, and in 34, the item was discovered in the OR. There were also 5 instances where a foreign body was later found in a patient even though the count was thought to be correct.

For the first time, the researchers have put a price tag on discrepant counts—$932 for a coronary artery bypass graft (CABG) surgery, which is related to extra OR time and x-rays.

The findings can serve as a benchmark for assessing counting as a patient safety method, comments Annetine Gelijns, PhD, another member of the research team. They can also be used in measuring the cost-effectiveness of new technologies, such as bar coding and radio frequency (RF) tags for sponges.

How does counting measure up?

The researchers evaluated the sensitivity and specificity of counting, the same criteria used for evaluating medical tests. The results “were quite respectable,” researcher Alan Moskowitz, MD, told OR Manager.

Sensitivity was 77%, meaning counting catches 77% of foreign bodies and misses 23%. Specificity was 99.3%, which means 99.3% of the time, the count will correctly say there is no foreign body in a patient when there is none.

But because retained foreign bodies are rare, the “positive predictive value” of counts was only 1.6%, meaning only 1.6% of count discrepancies led to finding an item in a patient.

The most commonly retained items by far were needles, followed by instruments and sponges.

Factors associated with a higher frequency of count discrepancies were long cases, cases with 2 or more nursing teams, and procedures performed late in the day.

For CABG, independent predictors of count discrepancies were bypass time, intravenous nitroglycerin, and a myocardial infarction in the previous 24 hours. These are factors associated with longer and more urgent cases, the researchers note.

The complexity of surgery and high level of interdependence among team members are considered a source of system failures, the authors add. The multitasking roles of OR nurses, who also need to track and count hundreds of items, are a “for-
midable challenge,” they say, making the process of counting vulnerable to mistakes.

Another study from the University of California, San Francisco, published in the same issue, examined the accuracy of x-rays in detecting needles in the peritoneal cavity of pigs. They found that x-rays did well in detecting needles over 10 mm, but significantly less well for smaller needles. Usefulness of plain abdominal x-rays with shorter needles is debatable, the authors say.

**Changing practice**

Columbia’s operating rooms recently changed their practices based on the findings.

“Count discrepancies routinely indicate we should do an x-ray unless the missing item is so small it would not show up on an x-ray, such as needles,” says Dennis Fowler, MD, director of the operating rooms.

X-rays are also taken in situations associated with higher risk of a count discrepancy, such as emergencies, longer cases, and cases with multiple teams.

To reduce distractions in procedures with a higher risk of count discrepancies, the team observes a “quiet time” during the final count and final search of the cavity.

Columbia will measure the results in 6 months to see if the changes have made a difference.

**Counting technologies**

“How counting will remain the cornerstone of our efforts to eliminate retained foreign bodies, at least for the foreseeable future,” Dr Fowler commented. New technologies have potential to improve the process. Columbia is evaluating a bar-coding system for sponges, which scans the sponges before they are placed on the field and when they are taken off.

Two counting systems are currently on the market: Safety-Sponge System from SurgiCount Medical, distributed by Cardinal Health, which uses bar-coded sponges, and RF-Detect from RF Surgical Systems and Medline, in which sponges have RF tags. A third system, the SmartSponge system from ClearCount, to be introduced at the AORN Congress in April, uses a wand to detect RF-tagged sponges. Though there’s a cost to the technology, “you also have to factor in the human cost and morbidity of a retained item,” Dr Fowler says. A reoperation, treatment for complications, and the potential for a multimillion-dollar legal settlement, not to mention the human suffering when an item is left behind, mean counting technologies might be cost neutral or even cost beneficial, he says.

**Reference**
