Surgical counts are an established routine. An OR nurse performs them dozens of times a month. But when you dissect the process and see how it is carried out in a busy OR, it’s clear there are opportunities for errors.

After a couple of incidents of retained items, one health system stepped back to analyze the process. Leaders conducted a root-cause analysis. They called in human factors experts to get a fresh perspective. Then they worked with the staff to fix the process and staged a 5-week education campaign to make sure counts are done consistently in the system’s 4 surgical suites.

Creative communication helped get the point across. A clever PowerPoint presentation featured “Five Commandments of the Count.” Candy bars with wrappers that had the campaign’s slogan, “I Love to Count,” and the go-live date were handed out.

The count process applies to all 51 ORs in the 2 hospitals and 2 surgery centers in the Christiana Care Health System based in Newark, Del. Christiana embarked on the project after having 3 retained sponges and a retained clamp. There was also a near-miss with intentional packing in a patient leaving the OR.

Root-cause analysis
The root-cause analysis identified these factors as contributing to the retained items:

- relying on memory when documenting the baseline count
- variations in sterile setups (instrument trays) in ORs and procedure areas
- variations in the method for performing counts
- potential for distractions and interruptions during counting
- lack of consistency in assigning staff breaks and handoffs when going on break.

Breaks were sometimes taken during procedures as short as 30 minutes. “There was no rigor in how breaks and lunches were given and no rigor in how communication was passed along when the staff left the room,” says Judith Townsley, RN, MSN, CPAN, Christiana Care’s director of clinical operations for perioperative services.

Human factors experts observe counts
The human factors experts, Kathleen Harder, PhD, and John Bloomfield, PhD, cognitive psychologists from the University of Minnesota, Minneapolis, helped Christiana Care rethink the way counts were being conducted. They spent time in the OR observing both long and short procedures. Clinicians knew the experts were there but didn’t know they were looking specifically at counts.

The human factors experts employed what they call a process-analysis or systems-analysis approach.

“We don’t use an established form. We go in with open minds and take lots of notes,” Harder explains.

“We observed many kinds of procedures to get an overview of some of the prob-
### Human factors analysis of surgical counts

<table>
<thead>
<tr>
<th>Observation</th>
<th>Remedy</th>
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<tbody>
<tr>
<td>Baseline counts were not always performed before the patient arrived or even</td>
<td>Perform an uninterrupted count before the patient comes into the room.</td>
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<tr>
<td>the incision. “Once the patient arrives, other activities may distract the</td>
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<td>scrub and circulator, and the baseline count may not be accurate.”</td>
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<tr>
<td>A lack of rigor in how counts were conducted:</td>
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<tr>
<td>• Scrub person did not always arrive in time for a baseline count before the</td>
<td>Scrub and circulator visualize and count out loud together.</td>
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<tr>
<td>patient arrived.</td>
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<tr>
<td>• Scrub and circulator did not always count together out loud according to</td>
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<tr>
<td>policy.</td>
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<tr>
<td>Counts not always recorded immediately. Circulator relied on memory for</td>
<td>Use preformatted dry erase board to record baseline counts. The boards</td>
</tr>
<tr>
<td>documenting baseline count on form.</td>
<td>replace count worksheets.</td>
</tr>
<tr>
<td>Sterile setups varied in Christiana Care’s ORs.</td>
<td>Standardize sterile setups.</td>
</tr>
<tr>
<td>Counts not always conducted according to policy. For example, the policy</td>
<td>Counts will always be conducted according to policy.</td>
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<tr>
<td>called for a count when closing a cavity within a cavity, but that was not</td>
<td></td>
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<tr>
<td>always followed.</td>
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<tr>
<td>Counts were not always performed when one team member relieved another.</td>
<td>Staff are more mindful of the impact of break scheduling on patient</td>
</tr>
<tr>
<td>Breaks were not well controlled.</td>
<td>safety.</td>
</tr>
<tr>
<td>Multiple interruptions created distractions during counts. Final counts</td>
<td>Distractions will be minimized. Counts will not be interrupted. “Pause</td>
</tr>
<tr>
<td>were sometimes rushed.</td>
<td>for the count” may be called for final count if necessary.</td>
</tr>
<tr>
<td>When patients left the OR with intentional packing, that fact was not</td>
<td>Packing communication form is sent with patient, and purple bracelet</td>
</tr>
<tr>
<td>always communicated to receiving unit.</td>
<td>is placed on patient. Bracelet is removed after packing level reaches</td>
</tr>
<tr>
<td></td>
<td>zero and is confirmed by x-ray.</td>
</tr>
</tbody>
</table>

Source: Christiana Care Health System.
“I love to count”

Christiana Care’s initiative includes a revised counting policy backed by education plus physician and administrative support. Education laid the foundation for rollout of the new policy.

“It was absolutely critical to have education take place before we went live. We wanted everyone on the same page,” says Townsley.

The 5-week education initiative included these mandatory activities:

• in-service sessions on the procedure and process change
• demonstrations, practice, and return demonstrations by each staff member
• an online self-learning module.

It helped that the whole staff was involved in developing the policy. The effort included staff RNs and surgical technologists from all 4 sites as well as physicians, anesthesia providers, educators, perioperative leaders, and representatives from labor and delivery, cardiovascular services, performance improvement, and risk management.

It also helped that the message was the same for everyone on the surgical team. Perianesthesia educators aided in education of anesthesia providers. Townsley made presentations at the surgical executive committee and section meetings.

Nurse leaders added a playful touch. Along with the candy wrappers and the PowerPoint, they used posters and a video illustrating how to count correctly according to the policy.

Key changes

Among key changes in the count process:

Preformatted dry erase boards in each OR for the baseline count

The dry erase boards make the counts visible to everyone.

“This functions as a primary record. The surgeon and scrub can see the count. It acts as a double check for what the circulator is reporting,” says Mary Cay Curran, RN, MSN, CPAN, manager for process and system standards for perioperative services. “It also fosters a team spirit and brings everyone into the process.”

Completing baseline counts before the patient enters the OR

The human factors experts observed that the scrub and circulator were less likely to be distracted if the baseline count is performed before the patient arrives in the room. If they are distracted, the baseline count is less likely to be accurate.

“This was a dramatic change in practice for the staff. But after the 5 weeks of education, everyone knew what to expect.”

“The day it was rolled out was actually uneventful, it went so smoothly,” Townsley says. “People knew it was coming and seemed like they were ready.”

Support for staff for uninterrupted counts

Some staff members were concerned about whether surgeons and anesthesia providers would support uninterrupted counts.

“We told the staff that perioperative leadership was there to support them,” she says. “We tried to give them confidence to say, ‘This is a patient safety issue, and I need to count. I will not be answering your beeper for you during the final count.’

“The staff really stood up the few times when it was necessary and were advocates for their patients,” she says.

More controlled breaks and handoffs

The staff were asked to consider counts and patient safety in planning for breaks.

Decision not to make changes in the count policy for at least a year

The human factors experts explained that introducing changes too soon could confuse the staff and interfere with the goal of improving consistency.
Concern about turnover time

Some physicians expressed concern that turnover time would be longer if the baseline count is done before the patient enters the room. In meeting with the surgeons, Townsley says she emphasized patient safety and told them that being rigorous in the counting process could enhance patient safety and save the human and financial costs of retained items.

“I don’t think the uninterrupted counts increase your turnover time that dramatically. It’s just a matter of sequencing events,” she says. “It’s like people on the freeways rushing to work. They think driving 70 instead of 65 will get them there faster, when we are only talking about a minute or two.”

Resources

American College of Surgeons
Statement on prevention of retained foreign bodies after surgery (ST-51).
www.facs.org

Association of periOperative Registered Nurses
Recommended practices for sponge, sharp, and instrument counts. The national guideline for counts was revised for 2006.
www.aorn.org
Five Commandments of the Count

These five commandments were part of a PowerPoint presentation for Christiana Care’s education campaign on surgical counts.

I. Counts must be conducted for all procedures

**Baseline count**
- Initial counts provide a baseline for all other counts and are required for all surgical procedures.
- The baseline count must be recorded on a preformatted dry erase board.
- All items on the field must be included in the count.
- Counts must be performed by the RN assigned to the room at the time of the count.

**What to count**
- all radiopaque sponges
- all sharps
- miscellaneous items
- instruments on procedures in which there is a possibility of an instrument being retained.

**When to count**
- A count must be conducted:
  - before the procedure to establish a baseline
  - before closure of a cavity within a cavity
  - before wound closure begins
  - at skin closure or end of procedure
  - at the time of permanent relief of either the scrub person or the circulating nurse
  - whenever requested by any member of the surgical team.

II. Baseline counts must be completed before patient enters the room

**Adding items to the field**
- When additional sponges, sharps, needles, or small items are added to the sterile field, they will be counted when added and recorded as part of the count documentation.
- As items are counted off, they are subtracted from the tally on the dry erase board.
- All counted items must remain accessible in the room.
- Counts are recorded immediately on the preformatted dry erase board.

III. Count audibly

Sponges, sharps, and instruments must be counted audibly with the scrub person and the circulating nurse concurrently viewing each item as it is counted.

**Sponges**
- Sponges should be separated to determine whether a sponge has been inadvertently deleted or added to the package.
  - Perioperative personnel should never assume the count on prepackaged sterile sponges is correct.
  - A package containing an incorrect number of sponges should be bagged, labeled, and isolated from the rest of the sponges.
- Only radiopaque sponges with an x-ray detectable element should be placed on the sterile field.
  - X-ray detectable sponges facilitate finding an item that is lost or left in the patient should a count discrepancy occur.
  - X-ray detectable sponges must never be used as dressing sponges.

**Sharps**
- The needle count pad should be used to secure needles, hypodermic needles, scalpel blades, cautery blades, etc.
  - Sharps remaining free on the surgical field may be inadvertently introduced into the incision, penetrate the surgical drapes, or drop onto the floor.
  - Collecting used sharps in a container minimizes the chance of injuries.
- Whenever possible, handle sharps on an exchange basis only.
  - Do not discard any sharp that has inadvertently been discarded or dropped from the field until all counts are reconciled. Place in a puncture-proof cup until the case is over.

(Commandment III continues on next page.)
IV. Counts should not be interrupted

Cases in which there have been a change in staff, temporary or permanent, have a higher risk of a retained foreign object.

Whenever a circulator or scrub person is relieved during a case:
- A count should be done.
- The person leaving should communicate a brief report to his or her relief person, including:
  - sponges packed
  - number of needles up
  - type and strength of medications on the field
  - other pertinent information.
- Never offer or accept relief while a count is in progress.

V. No patient will leave the OR unless every team member is sure the count is reconciled

Interventions for an incorrect count
- Notify the surgeon immediately and state what is missing.
  - Request help if needed.
  - Recount.
  - Conduct a search for the missing item.
- If the item is located, a complete recount must be conducted.
- If the item is not located:
  - Notify the coordinator/charge nurse.
  - Request help if needed.
  - Notify the surgeon that an x-ray of the wound must be taken prior to the patient leaving the OR.
  - Call for an x-ray. The x-ray must be taken and read before the patient leaves the OR.
  - Complete an event report.
  - Document!

(Editor’s note: This commandment also includes documentation of counts and special events including emergencies, intentional packing, wounds packed open, and organ donors, which are not included here.)

Instruments
- Instruments should be counted by category.
  - Utilize the instrument list; follow the order instruments are presented in the list.
- All screws, nuts, blades, etc., should be accounted for.
  - If an instrument is disassembled or broken during a procedure, account for these items in their entirety.
  - If a part cannot be accounted for, the procedure for an incorrect count is followed.

Closing counts
- Gather closure supplies before starting.
- Place used sponges in the appropriate receptacle.
- Minimize distractions.
- Turn the radio off.
- Announce that counts are being initiated.
- Count must proceed as follows:
  - Gather closure supplies before starting.
  - Place used sponges in the appropriate receptacle.
  - Minimize distractions.
  - Turn the radio off.
  - Announce that counts are being initiated.
  - Count must proceed as follows:
    - Begin at the surgical site and immediate surrounding area: Mayo stand, back table, items discarded from the field.