



Retained Surgical Items: Events and Guidelines Revisited

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ABSTRACT

Surgical items such as sponges, sharps, and instruments may be retained during surgery and can lead to serious patient harm. Ongoing analysis of reports to the Pennsylvania Patient Safety Authority suggests retained surgical items (RSIs) remain a challenge to Pennsylvania hospitals. Analysis of data from 2014 through 2015 revealed 112 RSIs that met the definitions of both the National Quality Forum and the Joint Commission, and an additional 16 that met the Joint Commission definition alone, for a total of 128 RSIs. Analysts found surgical sponges were the most commonly retained item, followed by small miscellaneous items such as screws. Most RSIs were left behind in the abdomen and pelvis, followed by the vagina and chest. Analysts estimate that 1 to 2 RSIs occur per 100,000 patient procedures. Device fragments, such as broken drill bits or needle tips, could not be retrieved in 57 additional surgical cases. Since publication of the June 2012 Pennsylvania Patient Safety Advisory, both the Joint Commission and the Association of periOperative Registered Nurses published guidance for preventing RSIs, including minimizing distractions and participating in team-work training. The Joint Commission speaks to the role of weak or absent organizational leadership as reasons for the continuance of RSIs. (Pa Patient Saf Advis 2017 Mar; 14[1]:27-35.)

INTRODUCTION

Retained surgical items (RSIs)*—also known as unintended retained foreign objects or retained foreign bodies—can cause emotional and severe physical harm such as infection, loss of function, and even death.¹ Nationally, items left behind include sponges, sharps and needles, instruments, small miscellaneous items, devices, and device fragments.²

Patients may suffer for years with pain or other disabilities as a result of an undiagnosed RSI. For example, a sponge was found in a California woman four years after abdominal surgery. She complained of nausea, dehydration, and bleeding before the sponge was discovered during surgery for a suspected ovarian cyst.³

RSIs are considered a serious reportable event by the National Quality Forum⁴ (NQF) and a sentinel event by the Joint Commission.⁵ The organizations differ on criteria for the conclusion of surgery (see “Retained Surgical Item Definitions”). The Pennsylvania Patient Safety Authority does not endorse a particular RSI definition.

NQF endorses RSIs as one of 29 events suitable for public reporting so that organizations can take actions to prevent recurrence and deliver safer healthcare. The Joint Commission reports that organizations continue to struggle with RSIs, which were the most frequently reported sentinel event in 2014 and 2015, with 112 and 115 reported, respectively.⁶ The Centers for Medicare and Medicaid Services (CMS) includes RSIs as hospital-acquired conditions that should never happen.⁷

Articles published about RSIs in the *Pennsylvania Patient Safety Advisory* in 2009⁸ and 2012⁹ offer recommended best practices and guidance for preventing RSIs. Ongoing analysis of reports to the Authority suggests RSIs remain a challenge.

METHODS

Analysts queried the Pennsylvania Patient Safety Reporting System (PA-PSRS) database for reports of events that were discovered (date item was recognized) between January 2014 through December 2015 (inclusive) using search terms including “foreign,” “fb,” “retained,” “detected,” “retrieve,” “discover,” “missing,” “search,” “fragment,” “tip,” and “wrong count” regardless of care area (e.g., delivery suite, catheterization laboratory, operating room [OR]). The search term “RSI” yielded 19 cases: 8 were duplicates found through other search methods, 9 had the string “RSI” within other irrelevant reports (e.g., rapid sequence intubation), and 2 reported unsuccessful searches for possible foreign bodies. Events were excluded if the event narrative contained phrases such as “absence of foreign,” “x-ray found no,” “no evidence of foreign,” “no evidence of retained,” or “did not identify foreign.” Event reports identified via relevant monitor codes assigned by analysts to classify events were also included in the dataset.

Analysts manually reviewed the resulting set of event report narratives to identify reports describing RSI events and grouped them into related categories by harm score, anatomic site, event type categories, event reporting taxonomy, and by NQF and Joint Commission definitions.

Retained and unretrieved objects that were unrecognized[†] at the time they were left behind were classified into the following related categories using a taxonomy

* For the purposes of this article, the term retained surgical item or RSI will be used for any item or foreign object retained after a procedure, including surgery or vaginal delivery, and other health care procedures (e.g., dressing application), regardless of when the object was discovered.

† For the purposes of this article, “unrecognized” implies the device fragment was unknowingly left behind.



RETAINED SURGICAL ITEM DEFINITIONS

National Quality Forum*

The National Quality Forum defines retained surgical item as unintended retention of a foreign object in a patient after surgery or other invasive procedure. This includes medical or surgical items intentionally placed by providers that are unintentionally left in place. It excludes (1) objects present prior to surgery or other invasive procedure that are intentionally left in place, (2) objects intentionally implanted as part of a planned intervention, and (3) objects not present prior to surgery or a procedure that are intentionally left in when the risk of removal exceeds the risk of retention such as microneedles and broken screws.¹

This event is intended to capture:

- Occurrences of unintended retention of objects at any point after the surgery or procedure ends, regardless of setting (post-anesthesia recovery unit, surgical suite, emergency department, patient bedside) and regardless of whether the object is to be removed after discovery.
- Unintentionally retained objects (including such things as wound packing material, sponges, catheter tips, trocars, guide wires) in all applicable settings.¹

Surgery ends after devices such as all probes and instruments have been removed; if relevant, final surgical counts confirming accuracy of counts and resolving any discrepancies have concluded; all incisions or procedural access routes have been closed in their entirety; and the patient has been taken from the operating or procedure room.²

The Joint Commission†

The Joint Commission considers unintended retention of a foreign object in a patient after an invasive procedure a sentinel event.³

If a foreign object (e.g., a needle tip or screw) is left in the patient because of a clinical determination that the relative risk to the patient of searching for and removing the object exceeds the benefit of removal, this would not be considered a sentinel event to be reviewed. However, in such cases, the organization shall (1) disclose to the patient the unintended retention, and (2) keep a record of the retentions to identify trends and patterns (e.g., by type of procedure, by type of retained item, by manufacturer, by practitioner) that may identify opportunities for improvement.³

When, exactly, is “after surgery”?⁴

“After surgery” is any time after completion of the skin closure, even if the patient is still in the operating room under anesthesia.

adapted from NoThing Left Behind®², AORN⁹, and the U.S. Food and Drug Administration (FDA):¹⁰

- Items traditionally counted in the OR:
 - Soft goods (e.g., surgical sponges, surgical towels, dressing sponges, drape towels, packs, prep swabs, gauzes)
 - Sharps (e.g., scalpel blades, suture needles)
 - Instruments (e.g., the whole instrument such as forceps, scissors, retractors)
 - Small miscellaneous items (e.g., small intact items such as a wing nut, vessel loops, screws, nails)

- Other items:
 - Other soft goods (e.g., cotton ball, dressings placed outside of OR)
 - Unknown item (i.e., items not identified in the event narrative)
 - Devices (e.g., guidewires or catheters left in intravascular or interstitial spaces)
 - Unretrieved unrecognized device fragments (device fragments that are not retrieved because they are unrecognized (i.e., broken parts or pieces of devices and surgical items)

Unretrieved device fragments that were recognized but were left behind when

the risk of removal exceeded the risk of retention (e.g., broken screws, piece of a drill bit) were categorized separately. Items (e.g., sponges) that were intentionally placed and left in place either temporarily or permanently were excluded.

An approximate RSI statewide rate was calculated by dividing the total number of RSIs identified during procedures performed in OR suites in hospitals and ambulatory surgical facilities (excluding vaginal RSIs) divided by the total number of OR revenue codes (excluding labor room/delivery revenue codes) identified from statewide inpatient and outpatient hospitals and ambulatory surgery facilities.

RETAINED SURGICAL ITEM DEFINITIONS (continued)

Why was this particular point in the process selected as the definition of “after surgery”?

The decision to define “after surgery” as the completion of skin closure was based on the premise that a failure to identify and correct an unintended retention of a foreign object prior to that point in the procedure represents a significant system failure, which requires analysis and redesign. It also places the patient at additional risk by virtue of extending the surgical procedure and time under anesthesia.

Sometimes a needle or screw will break, leaving a fragment behind. Is this a reviewable sentinel event?

In some cases, a broken needle or screw fragment is recognized at the time of surgery and a clinical judgment is made to leave the fragment in the patient. That decision is based on an assessment of the relative risks of leaving it in versus removing it. Therefore, it would not be considered an unintentionally retained foreign object.

What about a retained sponge following vaginal delivery?

A retained sponge after a vaginal delivery is a reviewable sentinel event. The new language in the definition of reviewable sentinel events is, “Unintended retention of a foreign object in a patient after surgery or other procedure.” Note that it says “other procedure” not “other invasive procedure.” Vaginal delivery in the hospital is not an “invasive” procedure, but it is a procedure. More to the point, a retained sponge in this circumstance is indicative of the same underlying systemic problems that could cause other “retained foreign body” situations.

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† ©The Joint Commission, 2016. Reprinted with permission.

Notes

1. Serious reportable events in healthcare - 2011 update: a consensus report. Washington (DC): National Quality Forum; 2011. Appendix A. p. A4. Also available: https://www.qualityforum.org/Publications/2011/12/SRE_2011_Final_Report.aspx.
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OR revenue codes used are as follows:

- 0360: OR Services
- 0361: OR/Minor
- 0362: OR/Organ Trans
- 0367: OR/Kidney Trans
- 0369: OR/Other

Revenue code data was provided for 2014 through 2015 by the Pennsylvania

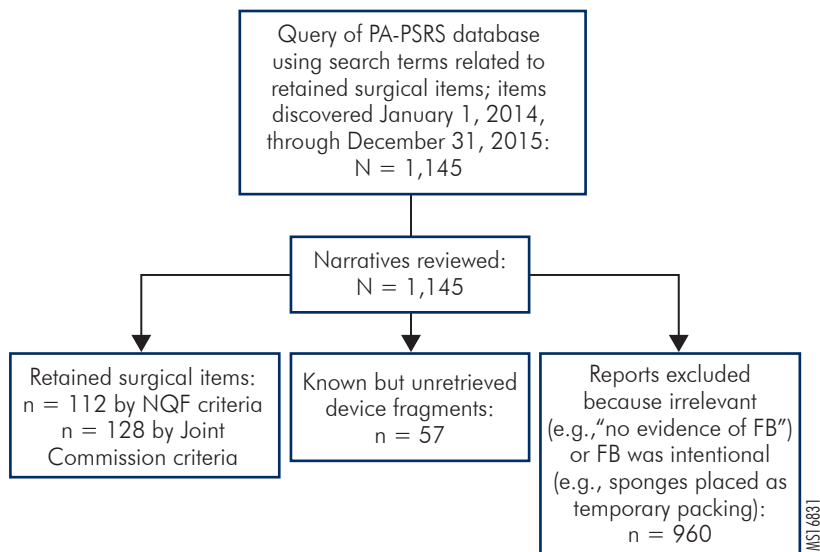
* The Pennsylvania Health Care Cost Containment Council (PHC4) is an independent state agency responsible for addressing the problem of escalating health costs, ensuring the quality of health care, and increasing access to health care for all citizens. While PHC4 has provided data for this study, PHC4 specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Health Care Cost Containment Council (PHC4);* and was compared to the number of RSIs from the same time period.† For rate calculation purposes, analysts considered the number of revenue codes to be a proxy for the number of procedures performed.

† Caution should be taken when interpreting results for the number of procedures performed in an operating room that is based on counting the number of operating room revenue codes. The inpatient report may under-represent the number of surgical procedures performed in an operating room, and the outpatient report may over-represent the number of surgical procedures performed. PHC4 data captures procedures that are performed per patient claim record. Also included on the claim record, when applicable, are operating room revenue codes. The report was produced using operating room revenue codes within a claim record to capture and count the number of operating room revenue codes per claim record. One inpatient claim record may have one or more operating room revenue codes associated with one or more procedures performed on the same day. One outpatient claim record may have one or more operating room revenue codes with associated procedures performed on the same day, but may also have other performed procedures associated with other revenue codes.

Analysts conducted a review of the literature to identify strategies to reduce RSIs and patient harm in healthcare facilities. Interviews with representatives of the Joint Commission and the Association of periOperative Registered Nurses (AORN) were also conducted to identify

Figure 1. Retained Surgical Item Flow Chart



FB, Foreign body; NQF, National Quality Forum; PA-PSRS, Pennsylvania Patient Safety Reporting System.

best practices and resources developed for reduction of RSI events.

RESULTS

Analysts identified 112 RSIs that met both NQF and Joint Commission definitions (see “Retained Surgical Item Definitions”), and an additional 16 that met Joint Commission definition alone, for a total of 128 RSIs.

The identified events were submitted in three PA-PSRS event type categories:

1. “Error related to procedure/treatment/test”
 - a. NQF: 90 (of 112, 80.4%)
 - b. Joint Commission: 103 (of 128, 80.5%)
2. “Complication of procedure/treatment test”
 - a. NQF: 18 (of 112, 16.1%)
 - b. Joint Commission: 21 (of 128, 16.4%)
3. “Other/miscellaneous”
 - a. NQF: 4 (of 112, 3.6%)

- b. Joint Commission: 4 (of 128, 3.1%)

All events were associated with hospitals and ambulatory surgical facilities (i.e., no events were identified from birthing or abortion centers).

Events were categorized by harm scores with 53.6% (60 of 112) reported as Serious Events according to NQF, and 53.9% (69 of 128) according to the Joint Commission. See Table for harm scores.

Taxonomy. Analysts categorized counted soft goods as the predominant RSI item reported by Pennsylvania healthcare facilities, using NQF (47/112, 42.0%) and Joint Commission (58/128, 45.3%) criteria.

Body site. Most RSIs were left in the abdomen or pelvis, followed by the vagina, chest, head, extremities, and soft tissue space (see Figure 3).

Unretrieved recognized device fragments. Analysts found an additional 57 event reports describing device fragments (e.g., broken screw, catheter tip, metallic

fragment) that were recognized but were intentionally not retrieved by the surgeon.

Occurrence. Excluding vaginal RSIs, analysts identified 82 (NQF criteria) and 97 (Joint Commission criteria) RSI reports that were discovered during the same time period that 5,493,283 OR revenue codes were submitted. Analysts estimate that 1.5 (NQF criteria) and 1.8 (Joint Commission criteria) RSIs occur per 100,000 patient procedures.

RSI Events

Analysts grouped RSI events into the following case scenarios with examples of events reported to the Authority:*

1. Surgical count correct; RSI found after surgery:

Patient underwent a right radical nephrectomy, with a robotic-assisted and hand-assisted port. All counts were correct. A few days later, the patient developed a fever and vomiting. An X-ray revealed a retained surgical sponge. The patient was taken back to the operating room for sponge removal.
2. Incision re-opened after incorrect sponge or instrument count:

Patient went to surgery for several procedures. After [the patient’s incision] was closed, the sponge count was found to be incorrect. First count of sponges was relayed as correct, second count was wrong. Patient was still under anesthesia and draped. Patient was reopened, the sponge removed and [incision] re-closed.
3. Surgical count correct; missing sponge identified by surgical counting device:

Initial and subsequent visual counts verified by circulator and surgical technician. Physician informed counts were correct. After close of skin, surgical counting device identified a missing sponge at final count. X-ray confirmed a sponge on right

* The details of the PA-PSRS event narratives in this article have been modified to preserve confidentiality.

side of abdomen. Incision was reopened and sponge was retrieved.

- RSI discovered during surgery for another procedure:

During patient's surgical procedure, the surgeon found part of a plastic drain in the patient's abdomen.

Retained sponge found in patient's abdomen when patient's chest was opened for transplant surgery.

- Vaginal RSI discovered by another healthcare provider:

Patient had a spontaneous vaginal delivery and had a small tear requiring a single stitch. At the patient's first post-partum visit, the nurse practitioner discovered a retained sponge.

The patient underwent removal of an ovarian cyst. A two-part uterine manipulator was inserted vaginally for the procedure. Three weeks later, one part of the manipulator was found in the patient during a post-op visit and removed.

Patient delivered vaginally with repair of episiotomy. She was discharged to home. Four weeks later, she went to the emergency department with complaints of vaginal pain. An examination revealed a retained vaginal sponge. The sponge was removed and the patient was discharged to home in stable condition.

- RSI discovered at another facility:

An x-ray from another facility revealed a retained foreign object.

Patient taken to OR for exploratory laparotomy, which revealed a foreign body that was removed.

The following case scenarios are examples of an unretrieved recognized device fragment:

During an operative procedure to fix a bone fracture, a drill bit broke and was intentionally left in place.

When the physician's assistant was closing the patient's wound, the tip of a needle broke off. The surgeon was notified and returned to the room. A flat plate was ordered and showed a very small foreign object within the leg. After attempting to retrieve the piece of metal unsuccessfully, the surgeon decided to continue with wound closure. The tip was approximately 2 millimeters. Surgeon felt retrieval of the needle tip would cause more harm than to leave the needle tip in place in soft tissue. Surgeon notified patient and spouse.

DISCUSSION RSI Reporting

There is controversy about the determination of when an item is "retained," according to Amber Wood, MSN, RN, CNOR, CIC, CPN, senior perioperative nursing specialist at AORN,¹¹ but both NQF and Joint Commission agree that RSIs pose serious complications for patients.

Any time an item is retained, a critical investigation should be conducted to see where the process failed, according to Wood. "It's important that we rectify the mistake and also use it as a learning opportunity to prevent it from happening in the future," she said.

Ronald M. Wyatt, MD, MHA, patient safety officer and medical director in the Division of Healthcare Improvement at the Joint Commission said the Joint Commission receives sentinel events in which the patient never leaves the OR.^{12,13} "We don't get into the location of the patient," he said. "If that patient is in the operating room or out of the operating room, and the team knows there was something left behind and it wasn't addressed, it is a URFO [unintended retained foreign object]." The commission uses the term "URFOs" since there is a "spectrum" of items that can be left behind that are not all surgical items, he said. Pennsylvania facilities can report these events through PA-PSRS using the event type "Events related to procedure/treatment/test," and selecting the subtypes "Surgery/invasive procedure problem," and "Foreign body in patient."¹⁴

Safety culture. "By definition, these events may have led to death, permanent harm, or severe temporary harm," Wyatt said.¹² When reviewing the causes that directly related to the event, the Joint Commission found limitations in leadership, communication, and teamwork as the top three root causes, he said.

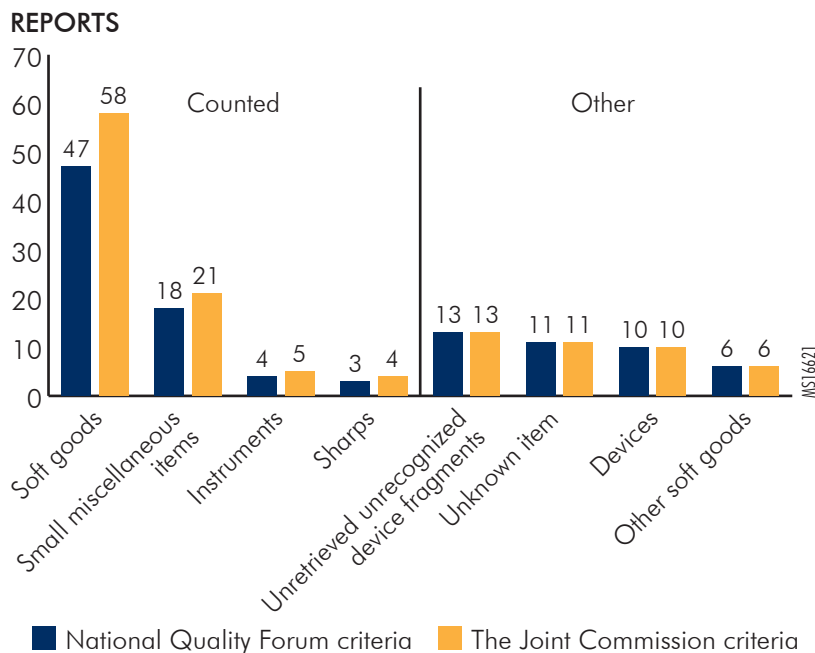
Table. Retained Surgical Item Events Reported to the Pennsylvania Patient Safety Authority, by Event Harm*

HARM (SCORE)	NO. (%) OF EVENTS	
	National Quality Forum Criteria (N = 112)	Joint Commission Criteria (N = 128)
Incident: Unsafe conditions (A)	3 (2.7%)	3 (2.3%)
Incident: No harm (B1 through D)	48 (42.9%)	55 (43.0%)
Serious Event: Temporary harm (E through F)	60 (53.6%)	69 (53.9%)
Serious Event: Significant harm (G through I)	1 (0.9%)	1 (0.8%)

Note: Data from January 2014 through December 2015. Events are as defined by the National Quality Forum and The Joint Commission.

* Event harm scores are defined by Pennsylvania Patient Safety Reporting System taxonomy and are assigned to events by healthcare facilities at the time of report submission. [http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2015/mar;12\(1\)/PublishingImages/taxonomy.pdf](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2015/mar;12(1)/PublishingImages/taxonomy.pdf)

Figure 2. Retained Surgical Items as Reported to the Pennsylvania Patient Safety Authority



Note: As Reported through the Pennsylvania Patient Safety Reporting system, January 2014 through December 2015; Analysis of data revealed 112 RSIS that met the definitions of both the National Quality Forum (NQF) and the Joint Commission, and an additional 16 that met the Joint Commission definition alone, for a total of 128 RSIs.

“Typically, what underscores all of those root causes is a failed safety culture,” Wyatt said. Teams that don’t work well together because of some team dynamic or dysfunction, will work around a process or a person until it results in a sentinel event, Wyatt said. “What we typically find is weak or absent leadership,” he said. “We can put in all kinds of processes, but if leadership is not working on building a strong culture of safety, we are going to keep seeing events.”

There are three victims: the patient, the care teams, and the organization, Wyatt said. “Folks in the community will not go there for surgery,” he said. “This is a reputational issue for the organization. Culture should not tolerate this type of behavior.”

NoThing Left Behind

Verna C. Gibbs, MD, clinical professor of surgery, University of California, San Francisco, and director of NoThing Left Behind®, a national surgical patient safety project to prevent retained surgical items, works with healthcare systems in Minnesota and California to help standardize event reporting of RSIs and understand root causes.² Using a structured taxonomy to classify RSIs, Gibbs found the most frequently retained item is the cotton gauze surgical sponge with most reports referring to a 4- by 4-inch sponge or the 18- by 18-inch laparotomy pad.²

Body sites. Gibbs found the most common body sites where RSIs are found are the abdomen/pelvis, the vagina, and then the chest, in that order.² In Pennsylvania,

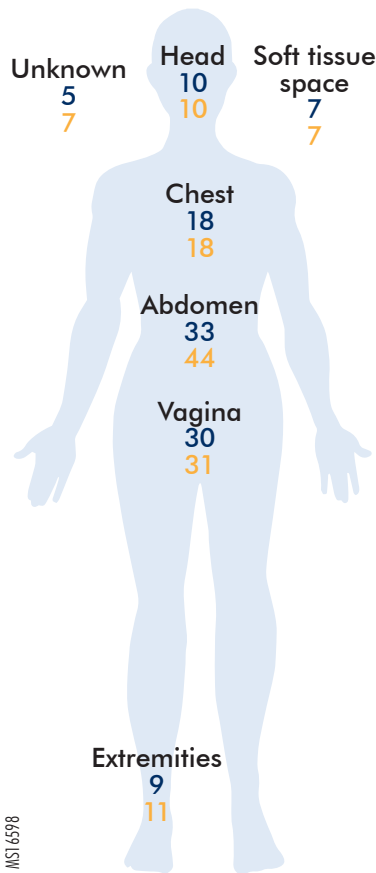
Authority analysts also found the same three most common sites. Increased appreciation has occurred around the problem of retained vaginal sponges and miscellaneous items left behind after spontaneous vaginal births as well as elective gynecological operative cases, according to Gibbs. This has led to efforts to move better safety and prevention strategies to labor and delivery areas in addition to the OR and other procedural areas, she said.

Rate of occurrence. The rate of occurrence varies in the literature and is difficult to compare because different RSI definitions, information sources, and taxonomy are used. The overall frequency is estimated at 1 in 1,500 abdominal operations and 1 in every 8,000 to 18,000 inpatient surgical procedures.^{15,16} Gibbs states on her website that estimates range from 2,000 to 4,000 events each year in the United States.²

Device Fragment Adverse Events

Device fragments are a concern because they can cause local tissue reaction, infection, perforation and obstruction of blood vessels, and death.^{10,17} Contributing or mitigating factors may include biocompatibility of the device materials, location of the fragment, potential migration of the fragment, and patient anatomy. During magnetic resonance imaging (MRI) procedures, magnetic fields may cause metallic fragments to migrate, and radio-frequency fields may cause them to heat, causing internal tissue damage and/or burns. In 2008, FDA published a Public Health Notification describing serious adverse events arising from fragments of medical devices left behind after surgical procedures.¹⁰ In contrast with FDA’s description, this *Advisory* article analysis differentiates whether the device fragment was knowingly left behind (versus discovered subsequently). Authority analysts found 57 unretrieved recognized device fragments known to the surgeon but left

Figure 3. Body Site of Retained Surgical Items



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- National Quality Forum criteria
- The Joint Commission criteria

Note: Data Reported to the Pennsylvania Patient Safety Reporting System from January 2014 through December 2015; as defined by the National Quality Forum and the Joint Commission. Not all RSI Events involved female patients.

behind because the risks of infection and trauma related to removal were believed to exceed the risks of retention.

PREVENTION GUIDELINES

Updated AORN and Joint Commission guidelines provide prevention methods to help perioperative team members

decrease the risk of RSIs during all facets of an invasive procedure.^{6,18} A consistent counting method, separating items (e.g., sponges), minimizing distractions, and team training are best practices, according to Wood.¹¹

“We found that when you’re standardizing your counting, that you’re less likely to make mistakes, and that is what the literature has showed us,” Wood said. “That is part of human factors and how human beings think.” AORN also recommends not subtracting or removing items from the count. “The more you are manipulating the count, the more risk you have for making a calculation error,” Wood said.

Team members may be helped by tools such as a Patient Safety First California Partnership for Health video featuring a sponge counting system presented by Gibbs (available at <http://www.hospitalcouncil.org/post/surgical-safety-preventing-retained-surgical-items>), AORN performance evaluations, and audit tools. In addition, a June 2014 *Pennsylvania Patient Safety Advisory* article, “Distractions in the Operating Room,” includes strategies to reduce distractions in the OR setting.¹⁹

The following highlights of the guidelines may be useful to healthcare facilities seeking to prevent and reduce RSIs:

Counting Process Suggestions

- Standardize count policies for all procedures.⁶
- Establish uniform documentation of the count process across all procedural areas, including areas where emergent procedures may be performed (e.g., emergency department, intensive care unit, or at the bedside on a nursing unit).
- Reconcile the count so the entire team is involved and supports the request.⁶
- Require full counts for breaks or shift changes such as lunch breaks.¹⁸

- Assess individuals’ competency in the count process prior to the completion of orientation and then annually.¹⁸
- View counts concurrently by two individuals including the nurse circulator.¹⁸
- Consider using a sponge pocketing system and pointing at the item while audibly counting.¹⁸

Minimize Distractions, Noise, and Interruptions¹⁸

- Minimize distractions, noise, and unnecessary interruptions during the surgical count. This can include limiting the number of individuals in the procedure room.
- Create a “no-interruption” zone and prohibit nonessential conversation and activities, including rushing the count.
- Consider restarting the count for a group of items (e.g., laparotomy sponge) if the count is interrupted.
- Conduct the initial count before the patient arrives in the surgical area.

Physical Environment⁶

- Standardize the layout of procedural areas to help teams working in new or unfamiliar locations.
- Adjust lighting levels to enhance visibility for adequate inspection of equipment and viewing of the white board.

Team Communication and Interaction

Develop policies that address physician-staff interaction, which may include:

- Requiring physician acknowledgment that the count is correct prior to completion of skin closure, performing a systematic sweep of the wound before closing, and examining the vagina after delivery.^{2,6}



- Calling out when an instrument is placed into a body cavity and not immediately removed.^{2,6}
- Alerting the team when packing is placed into a body cavity and not immediately removed.
- Requiring team affirmation that the patient meets criteria for an intraoperative x-ray to screen for RSIs.⁶

Systems Approach to Performance Improvement¹⁸

- Respond to errors with a focus on process improvement using human factors principles, rather than individual blame.
- Conduct an investigation regarding any adverse event or near miss related to RSIs.

NOTES

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LIMITATIONS

Limitations of this study include scant detail in some PA-PSRS reports, the potential to misinterpret information in the narrative descriptions in PA-PSRS reports, and the possibility that reporters used terms not included in the search strategy. The information provided by PHC4 may not have included all surgical procedures performed during the analysis period, and some RSIs may not have been identified or reported through PA-PSRS.

CONCLUSION

RSIs are uncommon, but they do occur, and may cause direct patient harm. In events reported through PA-PSRS, the most common locations for RSI are the abdomen and pelvis, followed by the vagina and chest. The most common type of item that is retained is the surgical

sponge. Detecting and reporting RSIs may help to determine patterns and root causes using a definition decided upon by the healthcare facility. Attention to components of the surgical item counting process may help prevent RSIs. AORN and the Joint Commission suggest standardizing counting protocols; providing visual cues when sets are incomplete; minimizing distractions; and promoting a systems approach to performance improvement.

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