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FACTORS CONTRIBUTING TO INCORRECT SURGICAL COUNTS AND SYSTEM-BASED PREVENTION STRATEGIES

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ABSTRACT

Background: Retained foreign objects (RFOs) can cause negative outcomes for patients such as infection, increased length of hospitalization, and death. Surgical counts are associated with a reduced likelihood of an RFO but the counting process is complex and prone to human error. To improve count accuracy the risk factors for a discrepancy must be identified so that mitigation strategies can be applied.

Objective: To identify the factors that contribute to surgical count discrepancies in order to provide mitigation strategies that will improve patient safety in the operating room.

Methods: An analysis of a sample of 1067 incident reports describing incorrect surgical counts was conducted. Reports were double-coded, by three specialists, on dimensions that included most likely contributing factor for the discrepancy, type and number of items involved, and actions taken to attempt to reconcile the count.

Results: Needles were most commonly involved in count discrepancies. The next most common was instruments. The most common factors reported as contributing to an incorrect count were item(s) being dropped, item(s) not counted during initial count, large case, packing related issue, and change in procedure. An x-ray was conducted in 71% of the reports but only 25% specified it was located in the operating theatre. Additional search strategies were used in a small proportion of reports and included the use of a magnet and microscope.

Conclusion: Surgical counting is a complex process and, in order to ensure count accuracy, a system-based solution is required. Recommended solutions are provided in order to reduce the likelihood of an error.

Surgical counts are recognized as the most widely used method for preventing RFOs.

INTRODUCTION

A retained foreign object (RFO) is a serious patient safety incident in which a surgical object is inappropriately left inside a patient.[1] Retained foreign objects can be associated with serious negative outcomes for patients including infection, sepsis, re-operation, increased length of hospitalization, readmission, and death.[2,3] Research, using various

The healthcare organization where this work took place has a voluntary incident reporting system and database that is used to capture information about adverse events, close calls, and hazards with the goal of sharing and learning.

populations and sample sizes, has estimated that the incidence of RFOs is between 1 in 3,800 to 1 in 19,000 surgeries.[4-9]

A surgical count is a process in which the items in the surgical field are manually counted prior to, throughout, and at the conclusion of a surgical procedure. Surgical counts are recognized as the most widely used method for preventing RFOs. Patients that have surgical counts performed are less likely to experience a RFO than patients that do not.[3,10-12] Manual counting is, however, a complex task that requires perioperative nurses to manage a large number of items while facing time pressures, distractions, interruptions, and high cognitive workload.[13] Surgical count discrepancies (i.e. incorrect counts) are, as a result, not uncommon and occur in anywhere between 1% and 13% of surgical cases.[14,15]

An intraoperative x-ray is required, in Canada, following all procedures that have an incorrect count in order to rule out a RFO.[16] While this is an effective method for preventing RFOs, it is costly and can have negative patient impacts such as exposure to unnecessary x-rays and increased anesthetic time if the discrepant item has simply been misplaced in the surgical theatre. Another type of counting error, which has been shown to be the factor most commonly associated with RFOs, is when the count is believed to be correct, but there is actually an item remaining inside the patient.[10] There is a need to improve surgical count accuracy in order to prevent both types of count errors and the risks and costs associated with them.

This article builds on previous research by describing an in-depth analysis of incident reports from a voluntary incident reporting system at a large provincial healthcare organization in Canada. The aim of this analysis is to identify and describe characteristics of incorrect counts, including clinician-reported contributing factors and the types of items that are most frequently involved in count discrepancies, so that system-focused preventative strategies can be developed and implemented to improve the accuracy of the counting process.

The incident reporting database reviewed in this study also provides a unique opportunity to see how clinicians respond to incorrect counts. Specifically, this analysis evaluated the follow-up activities that occurred in response to incorrect counts and also provides reasons as to why the ORNAC Standard of performing an x-ray might not be followed. This information can help organizations develop and refine existing policy and procedures for incorrect counts including appropriate follow-up activities and recommendations on improving documentation.

METHODS

The healthcare organization where this work took place has a voluntary incident reporting system and database that is used to capture information about adverse events, close calls, and hazards with the goal of sharing and learning. Care providers have the ability to enter a narrative account of any incidents they deem to meet this criteria. The incident reports are then coded by analysts, on a variety of dimensions, in order to facilitate analytics and review. Incident reports that were coded as related to "missing or retained objects" were obtained for the time period of January 1, 2013 to June 30, 2016. A total of 1824 incident reports were identified that met this criteria and were included in the initial analysis.

Three analysts independently reviewed two-thirds of the reports to first identify which reports described an incorrect count as compared to a different error

Table 1. Count of missing vs. extra items during incorrect counts.

Missing/extra	Count	% of Total
Missing item(s)	660	77%
Extra item(s)	169	20%
Extra and missing item(s)	27	3%
Total number of reports with sufficient detail for analysis	**856**	

Table 2. Types of items involved in incorrect counts.

Item category	Count	% of Total
Needles	514	49%
Instruments	273	26%
Sponges	209	20%
Other	108	10%
Total number of reports with sufficient detail for analysis	**1041**	

Table 3. Contributing factors for incorrect counts.

Contributing factor code	Count	% of Total
Item(s) dropped	109	36%
Item(s) not counted in	46	15%
Large case	45	15%
Packing related issue	27	9%
Change in procedure	17	6%
Emergency procedure	12	4%
Other	11	4%
Documentation error	10	3%
Emergency within a procedure	6	2%
Broken item(s)	5	2%
Item(s) removed from OR before count	5	2%
Distraction	3	1%
Item(s) removed from patient	3	1%
Item(s) in room from previous case	3	1%
Total number of reports with sufficient detail for analysis	**302**	

related to missing or retained objects. The analysis determined that 1067 of the incident reports were related to an incorrect count in the Operating Room (OR). Once the sample was narrowed down in scope, each report was coded on the following criteria:

- The most likely contributing factor for the discrepancy, if described;
- If the incorrect count involved extra or missing items, or both;
- What type of item(s) were involved (sponges, needles, instruments, other);
- Whether multiple items were involved in the event;
- What actions took place to attempt to locate item; and
- If no x-ray occurred, reasons why.

In order to increase accuracy, each specialist coded two-thirds of the reports so that each report was analyzed independently by two people. Each person coded approximately 120 reports per week over the course of 10 weeks. Weekly meetings were scheduled to review any conflicts and agree upon final codes for each report. At the start of this work the inter-rater reliability between the three coders was 88% and by the end it was 92%. All discrepancies were resolved, bringing overall group agreement on all reports to 100% at the conclusion of the study.

RESULTS

Table 1 shows the breakdown of whether items were missing (i.e. less items than expected during closure count), extra (i.e. more items than expected during closure count), or both in each incident report that described an incorrect count. In 211 reports the writer did not specify whether items were missing or extra; consequently, Table 1 only includes reports that provided this information (N = 856). The majority of the incorrect counts in the sample were characterized by missing item(s) (77%). However, 23% of the reports detailed an incident where more items were counted during a count than were counted during one of the previous counts (either extra items only or extra and missing item(s)).

A total of 1041 incident reports describing an incorrect count indicated the specific item(s) involved (Table 2). Needles (49%) were the item most commonly involved in an incorrect count, followed by instruments (26%) and sponges (20%). Note that the percentages in Table 2 exceed 100% due to the fact that 24% of the incorrect counts in the sample involved more than one item (N = 254).

Factors Contributing to Incorrect Counts

Of the 1067 incident reports that described an incorrect count, 302 provided sufficient detail to attribute a contributing factor for this outcome (Table 3). One contributing factor was applied to each report in order to represent the most probable contributor of the error. In the reports that provided sufficient detail, the most common contributing factors for an incorrect count were dropping, and subsequently losing, an item(s) (36%), failing to count an item(s) during the initial count (15%), large cases (i.e. lengthy case and/or a large number of items; 15%), issues related to packing (9%), and changes in procedure (6%). Contributing factors that occurred only once were grouped together under the "other" category and include factors such as contaminated set up, scrub nurse handing multiple items to surgeon at once, ambiguity about how to count items with multiple pieces, and unfamiliarity with policy.

Actions Taken to Reconcile Incorrect Counts

In the sample of 1067 incorrect counts analyzed, 955 reports specified information about the follow up actions taken in order to attempt to rectify the count. Table 4 shows the proportion of these reports that indicated an x-ray was taken or, if not, the reasons given. Only 25% of the incident reports specified that an x-ray was performed in the OR following an incorrect count. Twenty-three percent of the reports indicated that an x-ray was taken once the patient left the OR and another 22% indicated that an x-ray was taken but did not specify whether or not it occurred in the OR.

Table 4. Follow up for incorrect counts (x-ray vs. no x-ray).

Follow up activity	Count	% of Total
X-ray done	**676**	**71%**
X-ray in OR	243	25%
X-ray out of OR	219	23%
X-ray (location not specified)	214	22%
No X-ray done	**279**	**29%**
Surgeon declined x-ray (no additional details)	120	13%
No x-ray (no additional details)	51	5%
Surgeon declined x-ray: item not detectable	45	5%
Surgeon declined x-ray: nature of incision	15	2%
None needed: count rectified	12	1%
Surgeon declined x-ray: item not in surgical field	11	1%
Surgeon declined x-ray: patient returning to OR	10	1%
Surgeon declined x-ray: patient condition	6	1%
Surgeon declined x-ray: imaging throughout	5	1%
Surgeon declined x-ray: patient deceased	3	<1%
Item location known	1	<1%
Total number of reports with sufficient detail for analysis	**955**	

Table 5. Follow up strategies, other than x-ray alone, used in the case of an incorrect count.

Follow up activity	Count	% of Total
Neither magnet nor microscope	**883**	**92%**
Search with Magnet	**58**	**6%**
Magnet only	34	4%
Magnet and x-ray out of OR	14	1%
Magnet and x-ray in OR	4	<1%
Magnet and x-ray (location not specified)	4	<1%
Search with Microscope	**14**	**1%**
Microscope only	12	1%
Search with magnet and microscope only	**2**	**<1%**
Total number of reports with sufficient detail for analysis	**955**	

In this sample, 72 incident reports indicated that a search strategy was utilized in addition to or in place of an x-ray (Table 5). In, 6% of the 955 incidents reported that provided details regarding follow-up activities a magnet was used to search for a lost needle in the room and in 1% a microscope was used (e.g. to locate a needle lost during eye surgery). In the majority of these cases, an x-ray was not taken.

DISCUSSION

As is consistent with previous literature, needles were the item most commonly involved in an incorrect count in the sample of reports analyzed. Instruments were the second most common item, followed by sponges. Although sponges

are misplaced least frequently previous research has found that they are the item most commonly retained.[5,6] This apparent discrepancy may be because retained needles are difficult to detect due to their size and are less likely than sponges to result in an adverse patient outcome such as infection. Specific strategies for managing all types of items are discussed in this section (see Table 6 for a summary).

The majority of incorrect counts in the sample described an event where an item(s) was missing during a closure count but twenty-three percent of incorrect counts identified in this study involved extra items (i.e. more items were counted during a closure count than were documented on the count record). This error is likely due to one of two situations: failing to document an item(s) during the initial count or failing to document an addition(s) during the case. In these events, although the count does not indicate that an item(s) is missing, practitioners should not have confidence in the results of the rest of the count due to the error. Organizational policy should dictate that an x-ray is required to rule out an RFO whether items are missing or extra as compared to what is expected. It is also important when designing documentation to report incorrect counts, whether on a count record or in the perioperative record, to include specificity around what items were involved in the incorrect count and whether they were missing or extra. There are a number of strategies that could be used to prevent these errors from occurring, such as designing the count record so that items can be located and documented easily.

Contributing Factors and Solutions

In this study, the most commonly reported factor contributing to an incorrect count was an item being dropped. The overwhelming majority of these reports involved a dropped needle. This is likely due to their small size which makes them easy to drop and difficult to locate. There are a number of techniques that can help manage needles such as using a needle box to contain needles that are not in use[16,17] and inspecting equipment such as needle drivers prior to use to ensure they are functioning properly.[16] Other strategies that can be used to reduce the likelihood of dropping and misplacing needles and other items are related to the communication and teamwork between members of the surgical team. Specifically, needles should always be handed directly from one person to another, there should never be loose needles in or near the surgical field (e.g. on the mayo stand)[18,19], and any needles that are not in use should be placed in the needle box immediately[18,19]. Team dynamics and communication are also important in managing items. For example, the Association of periOperative Registered Nurses (AORN) states that any individual that observes an item dropped from the surgical field should immediately inform the surgical team[18]. Although the scrub nurse is technically responsible for the count, it is up to all members of the team to contribute to its accuracy, both in contributing to shared situational awareness and in eliminating factors that may contribute to errors such as interruptions and distractions[16,18].

Some commonly reported factors contributing to incorrect counts in this study are related to the management of items; specifically, failing to record an item(s) during the initial count and cases that require management of a large number of items. One strategy that could be used to address these challenges and help manage items during a case is standardizing the way that items are counted and set up on the scrub nurse's surgical table.[20] Specifically, strategies such as grouping like items together, organizing items the same way on the table as they are on the count record, and standardizing how the count is performed (e.g. who leads the count, repeat back protocols used by nursing staff, visualization and separation of instruments) can help maintain organization and standard process throughout a procedure.

There are also a number of innovations that can be used to help manage counted items during a case and could reduce the likelihood of a counting error. Pocketed

Table 6. Summary of system-based recommendations for improving count accuracy.

Recommendations for improving surgical count accuracy
Managing Surgical Items • Standardize the way items are counted and set up on surgical table. E.g. group like items together, organize items the same way on the table as the count record • Hand items directly, one at a time, between scrub nurse and surgeon so that scrub nurse can easily keep track of items • Consider the use of RFID or barcoding technology to automate the counting process and detect retained sponges to ensure that nothing is left in the patient ***Needles*** • Do not place loose needles on mayo stand or near the surgical field • Manage needles by using a needle box to contain needles that are not in use ***Instruments*** • Outline and standardize how surgical items such as needle drivers should be inspected prior to use to ensure that items are not broken/loose and that all pieces are present ***Sponges*** • Consider using a pocked sponge counting system to increase ability to visually differentiate individual sponges during counting
Count Process • Standardize the way the count is performed following best practice (who leads the count, repeat protocols, etc.) • Implement a requirement that a full initial count (including instruments) is performed for endoscopic cases in case it converts to an open case
Documentation • Design a standardized surgical count record using human factors principles (e.g. consider font size and type, use of white space, selective bolding, sentence-case lettering, alternate shading of rows, logical grouping of items) • Use shared visual reminders (e.g. whiteboard) to track items in emergent cases where there is no time to use a count record
Management of Therapeutic Packing • Use shared visual reminders to keep track of therapeutic packing during the case (e.g. whiteboard) • Standardize communication of packing to subsequent care teams to ensure it is removed. This should include a standard communication process with the type and number of items clearly described • Standardize documentation of therapeutic packing (location, type, and number). Ensuring that this information is always recorded in the same place will reduce the chance it is missed
Incorrect Count Policy / Procedure • Organizational policy should dictate the procedure for what to do if there is a count discrepancy with more items in the field than documented on count record. Any error invalidates the rest of the count and requires an x-ray to rule out a retained item • State in policy what, if any, specific situations a microscope may be used instead of an x-ray when an item is lost (e.g. small needles, ophthalmic surgery) • Use a magnet to aid in the visual search of the room (for needles). If the item can be found without an x-ray, this would be beneficial to patient
Reporting • Standardize expected content when reporting incorrect counts within organization (what error occurred, what items were involved, the contributing factor for the error (if known), all follow up actions taken (including location of x-ray if applicable), reasons for a declined x-ray (if applicable), and whether disclosure to patient occurred)

sponge bags can be used to increase visibility of sponges by clearly separating and displaying each sponge used in the case.[21] One sponge is placed in each pocket so they can be visualized and easily counted. One study reported that 97% of hospitals that have implemented the hanging sponge bag system had not had any RFO events for at least one year.[22] Technology can also be used to simplify and improve the accuracy of the counting process, such as the use of a barcoding system or radio-frequency identification (RFID) technology.[18] These techniques use scanning technology that allows clinicians to electronically track what items have been counted and, in the case of RFID technology, detect whether an item has been left inside a patient. Both barcoding and RFID technology have been associated with decreased rates of RFOs.[23-25]

Literature has found that documentation errors such as recording too many or too few items, or recording a count incorrectly, are common.[26] These errors often occur when a clinician is distracted or multitasking, which are circumstances that increase the likelihood of human error.[26,27] Documentation errors would be even more likely to occur if the count sheet is poorly designed or difficult to interpret. A low-cost solution to reduce the number of variables that may contribute to a documentation error would be to design an easy to use surgical count record with standardization in counting fields. In this study, a documentation error was explicitly suggested as a contributing factor for only 3% of the incorrect counts that provided this information. However, the consequences of a documentation error are high as it may result in a count that appears to be correct when an item is actually retained[10], or a count that appears incorrect when it actually is correct, which was reported to be the case in a number of the incident reports analyzed. In addition, clinicians often do not realize that a documentation error has occurred, as it is a mistake and not an intentional action, so it is likely documentation errors are underreported. One observational study found that 38% of the count discrepancies seen were due to a documentation error.[15]

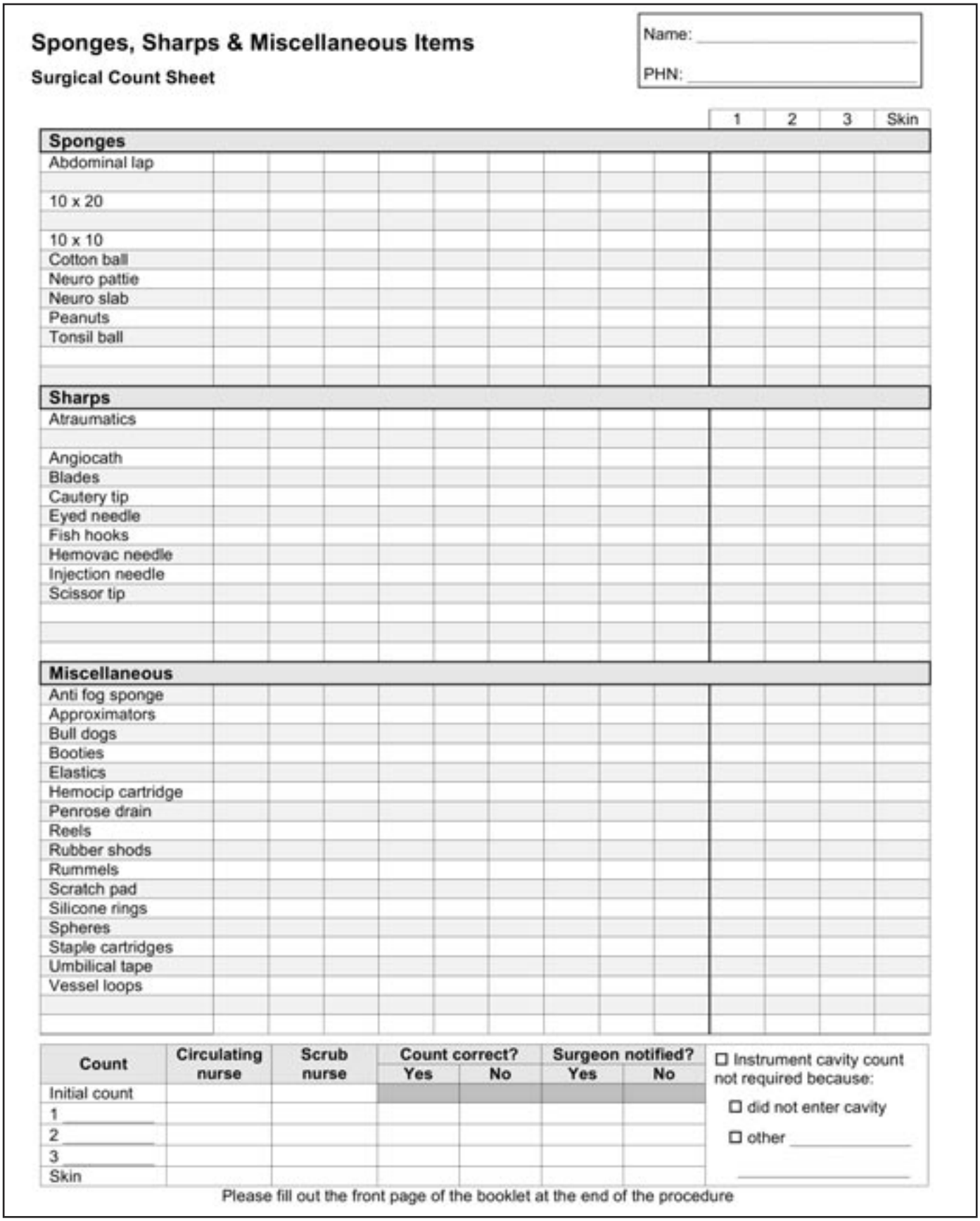
At the time of this work, the organization where this study took place was using 44 unique count sheets across different sites. These count sheets do not only differ in terms of content (e.g. items and instruments included), which is expected given the differences in procedures performed between sites, but also vary vastly in design and layout. Some of the count sheets are, as a result, more legible, easier to use, and better facilitate the count process than others. Providing a well-designed and easy to use count record could address multiple contributing factors including forgetting to count an item during the initial count, managing large cases, and documenting packing. It can also address ambiguity about what to count and where to document counts, as well as legibility concerns[16]. An optimally designed count record has been demonstrated to be particularly effective in improving tracking during large complex cases where multiple items and staff are involved.[28,29] Human factors principles should be considered, when designing a standardized count record, including the use of adequate font size and appropriate font type (e.g. minimum size 10, Arial), adequate white space, selective use of bolding, sentence-case lettering, alternating shading of rows, and logical grouping of items (such as by item type or surgical service).[27] Based on the findings from this study, as well as additional work in progress to improve surgical counting at the organization where this study took place, the authors of this paper have designed a standardized count record for large scale utilization that uses the human factors principles described above. The count record was designed using information design and human principles, as well as input and feedback from perioperative nurses in the organization. A picture of the count record can be seen in Figure 1 as an example of an optimally designed count record and additional information is available through the corresponding author.

Past studies have recommended, in addition to using an optimally designed count record to manage items, the use of shared visual reminders to guide attention in the OR.[20,30,31] One example of a visual reminder is the use of a large wall-mounted whiteboard that provides a visual representation of the count for the entire surgical team to see. In emergency cases, as an example which was reported as a contributing factor in this study, it may be difficult or impossible to complete a full count and so a whiteboard could be used to write down sponges and sharps to aid in tracking of items. The use of a whiteboard or other shared display is also an effective way of tracking therapeutic packing that is placed in the patient during, or at the conclusion of a procedure, which was another challenge identified in the sample of incident reports.

Another factor contributing to incorrect counts in this study was a change in procedure. Many of the reports described instances where staff did not perform a full initial count (i.e. did not count instruments) for an endoscopic case that ended up converting to an open case. The ORNAC Standards specify that a full initial count is required for all endoscopic cases and a minor closure count is required if these cases do not convert to open.[16] Organizational policy should specify the requirement to perform a full initial count in all endoscopic cases. In cases where a change in procedure is a possibility all possible required items should also be counted.

The use of therapeutic packing was reported as a contributing factor in a number of incident reports in the sample of incorrect counts. Specifically, errors included failing to record the number of items left in or removed from patient, not documenting and/or communicating packing to the subsequent surgical team, and discrepancies between what was recorded by the previous team and what was removed. There was also confusion surrounding how to document packing. Specifically, practitioners did not always know if the count should be marked as correct or incorrect when packing is involved in the case (i.e. either removed

Figure 1.



Sponges, Sharps & Miscellaneous Items

Surgical Count Sheet

Name: _____

PHN: _____

	1	2	3	Skin
Sponges				
Abdominal lap				
10 x 20				
10 x 10				
Cotton ball				
Neuro pattie				
Neuro slab				
Peanuts				
Tonsil ball				
Sharps				
Atraumatics				
Angiocath				
Blades				
Cautery tip				
Eyed needle				
Fish hooks				
Hemovac needle				
Injection needle				
Scissor tip				
Miscellaneous				
Anti fog sponge				
Approximators				
Bull dogs				
Booties				
Elastics				
Hemocip cartridge				
Penrose drain				
Reels				
Rubber shods				
Rummels				
Scratch pad				
Silicone rings				
Spheres				
Staple cartridges				
Umbilical tape				
Vessel loops				

Count	Circulating nurse	Scrub nurse	Count correct? Yes	Count correct? No	Surgeon notified? Yes	Surgeon notified? No
Initial count						
1 _____						
2 _____						
3 _____						
Skin						

☐ Instrument cavity count not required because:

☐ did not enter cavity

☐ other _____

_____

Please fill out the front page of the booklet at the end of the procedure

One page of the standardized count record template that was designed using human factors principles for the organization involved in this work.

from or left in the patient). To address these issues packing should be documented in a standardized location such as on the count record or in the patient's chart. Documentation should include the type and number of items as well as their location, and the fact that the count was incorrect.[16,18] These details should be reconciled upon removal and documented in a standardized location as well.

Response to an Incorrect Count

ORNAC stipulates that in the case of an incorrect count an x-ray is required to be performed in the OR, to rule out the possibility of an RFO, unless the patient's condition does not permit one.[16] As seen in this analysis, surgeons often, however, choose not to conduct an x-ray for reasons other than the patient's condition. Some reasons given in the reports analyzed include "seeing" the item fall on the floor nowhere near the patient, "an incision so small that the item could not possibly have entered", and specific needle sizes that are thought to not show up on an x-ray. In order to remove ambiguity from the process, and ensure organizational integrity in patient care, organizations need to develop standards and policy for when it is acceptable to not perform an x-ray thus removing the temptation to not x-ray due to inconvenience or time pressures.

Another reason that was given for not performing an intraoperative x-ray in a few cases was that the patient was coming back for another procedure in the future and so the item could be located then. This practice could lead to a retained object if the subsequent surgical team is not aware of the count discrepancy and is a course of action that does not align with the ORNAC Standards.[16] If an x-ray is not performed in the OR a standardized and explicit method of communication is necessary to alert the subsequent care provider of the need to perform an x-ray.

In addition to performing an x-ray to attempt to locate a missing item, two other strategies were reported. The first was the use of a magnet to locate a dropped needle. This approach can be used as an initial strategy to assist in the visual search of the room. Using a magnet as a first step to locate missing needles will increase the chance of finding the item which could eliminate the need to subject the patient to an x-ray. The second strategy, often in lieu of an x-ray, was the use of a microscope, most commonly when a needle was lost during ophthalmic surgery. There is a need for organizations to explicitly state in policy what, if any, specific situations a microscope may be used instead of an x-ray when an item is lost. Research has found that needles smaller than 10 or 13 mm cannot be reliably detected using an x-ray so there may be a need for an alternative search strategy for these items.[14,18,32]

Limitations and Future Research

The organization involved in this study uses a voluntary reporting system. It is not, as a result, possible to draw conclusions about the prevalence of incorrect counts. Due to the voluntary nature of the system it can, however, be inferred that count discrepancies are under-reported in the organization. Another challenge with the reporting system is that there is no standardization regarding what information is to be reported which makes it difficult to extract useful information for analysis. While some of the reports included detailed information about the event, others simply said "incorrect count occurred." It would be beneficial for organizations to provide structure in their reporting systems as far as what information is required when reporting an incorrect count. Based on the types of information that was used in this study to draw conclusions about contributing factors and mitigation strategies for incorrect counts, this study suggests a benefit in having reports include information such as what exact error occurred, what items were involved, the contributing factor for the error (if known), all follow up actions taken (including location of x-ray if applicable), reasons for a declined x-ray (if applicable), and whether disclosure

to patient occurred. Gathering and analyzing this information would be an effective way for organizations to better understand all of the factors that may be contributing to patient safety incidents in their operating rooms and develop appropriate mitigation strategies.

A large number of factors that contribute to incorrect counts and RFOs have been identified in this work and in the literature as a whole, as have a multitude of possible solutions to mitigate them. Future research is needed to understand the relative benefit of each proposed solution so that organizations can develop a surgical count strategy that is effective in terms of both patient safety and cost. There is no one solution that will eliminate counting errors on its own but, rather, a systems perspective must be taken that utilizes multiple strategies to address distinct contributing factors. Understanding the individual and combined benefit of various solutions is critical in eliminating RFOs within an organization.

In addition to the solutions discussed, it is critical to take into account operating room culture and team dynamics when implementing a strategy to improve surgical counting. While surgical counting is technically the responsibility of the perioperative nurses, other team members can impact the count with interruptions and distractions, and their willingness or unwillingness to assist e.g. in finding a missing item, or slowing down to allow the count to occur. Frustrations with the actions of surgical team members was noted in some of the incident reports, but was rarely called out as a specific contributing factor to an incorrect count. Despite this, training and education on both technical and non-technical skills, such as communication and situational awareness, is important in the development and maintenance of an effective, long-term, systems-based solution for improving surgical safety.[18]

CONCLUSION

The management of surgical items throughout a procedure is complex and stressful which makes it prone to human error even when performed by the most capable of clinicians. In order to ensure the accuracy of surgical counts and promote patient safety in the OR, it is critical to understand the factors that contribute to count discrepancies. This study analyzed a unique sample of incident reports from a large health care organization to identify clinician-reported factors that lead to count discrepancies as well as what actions occurred in response. System-based solutions are offered which could be implemented at a site or organization level to reduce the prevalence of count errors.

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