

Patient Safety Tip of the Week

March 17, 2015

Distractions in the OR

Distractions and interruptions are frequent contributing factors to errors in all healthcare settings. In the OR they are especially prone to result in errors that impact patient outcomes. Even short interruptions, especially if they occur during critical parts of procedures or when novel or unexpected events have occurred, could profoundly increase the odds of errors and untoward patient outcomes.

We discussed many aspects related to OR distractions and interruptions in our May 21, 2013 Patient Safety Tip of the Week "[Perioperative Distractions](#)". Interruptions increase the likelihood of errors because we must refocus to resume where we had left off in our task prior to the interruption. It turns out that even very brief interruptions can have a marked impact on our ability to resume those tasks. Altmann and colleagues studied the effect of short interruptions on performance of a task that required participants to maintain their place in a sequence of steps ([Altmann 2013](#)). Interruptions averaging just 2.8 s long doubled the rate of sequence errors and interruptions averaging 4.4 s long tripled the rate of sequence errors on post-interruption trials relative to baseline trials.

Another recent study has looked at distractions in the OR ([Wheelock 2015](#)). Not surprisingly, distractions occurred in 98% of cases. They occurred at a rate of 10.94 distractions per case or **one distraction every 10 minutes**.

The **most frequent** types of distraction were those initiated by **external staff entering the operating room**. The researchers note that such distractions were **unnecessary in 81% of cases!** While these researchers actually attributed less significance to their major outcome variables (like teamwork, stress, etc.), they do acknowledge the potential impact on surgical infection rates, which they did not monitor. In several Patient Safety Tips of the Week ("[HAI's: Looking in All the Wrong Places](#)", "[Prolonged Surgical Duration and Time Awareness](#)", "[Operative Duration and Infection](#)") we've noted the risk of infection increases each time the OR door is opened and foot traffic in and out of the OR increases.

Wheelock and colleagues also measured intensity of distractions. They found that the most intense distractions were those that were equipment-related (eg. wrong or missing equipment). **Equipment-related distractions** impacted all aspects of teamwork and also stress levels for nurses. And such distractions occurred about once every 90 minutes.

Distractions were generally associated with a negative impact on teamwork. **Irrelevant conversations** had negative influence on coordination and leadership scores for surgeons and anesthesiologists. Such distractions tended to occur more often during periods when workload was low.

Acoustic distractions were associated with higher stress levels for surgeons and higher workload for anesthesiologists. While they did not find a big impact from acoustic distractions, they did note the recent study demonstrating that excessive noise in a pediatric OR was associated with greater levels of surgeon stress and postoperative complications ([Engelmann 2014](#)). Also in our May 21, 2013 Patient Safety Tip of the Week “[Perioperative Distractions](#)” we noted a study on how **background noise in the OR** might interfere with surgical team communication ([Way 2013](#)). Those researchers found that the impact of noise is considerably greater when the participant is tasked. Moreover, the performance was poorer when the sentences were low in predictability. One can readily see from their results how background noise could interfere with the surgeon’s ability to understand communications during a critical task, particularly if the communication is not a predictable one. The authors conclude that to avoid possible miscommunication in the OR, attempts should be made to **reduce ambient noise levels**.

Note that the rate of one distraction every 10 minutes seen in the Wheelock study is actually very similar to the rates described in a variety of other healthcare venues and affecting **nurses** (see our columns August 25, 2009 “[Interruptions, Distractions, Inattention...Oops!](#)” and May 4, 2010 “[More on the Impact of Interruptions](#)”), **ER physicians** (March 8, 2011 “[Yes, Physicians Get Interrupted Too!](#)”), and **radiologists** (July 1, 2014 “[Interruptions and Radiologists](#)”, November 2014 “[More Radiologist Interruptions](#)”). Interestingly, in the Wheelock study distractions had lower frequency in longer cases.

It’s also important to recognize that distractions don’t just apply to the surgical procedure per se. Michelle Feil ([Feil 2014](#)), in her excellent article on OR incidents related to distractions in the Pennsylvania PA-PSRS database, notes that almost **20% of the errors were related to laboratory test problems**. These included specimen labeling errors, specimen quality problems, and specimen delivery problems.

So what are the strategies that can be employed to minimize the risks due to distractions?

Sterile cockpit

Of course, one way to help ensure that interruptions and distractions do not occur at critical junctures in procedures is use of the “**sterile cockpit**” concept. In aviation, all extraneous conversations are ceased during preparation for and undertaking takeoffs and landings. That helps ensure all attention is directed to the critical tasks at hand. Hence, the term “sterile cockpit”.

One important consideration, however, is that those critical junctures may differ for different OR team members ([Feil 2014](#)). Feil notes several examples of different critical junctures for surgeons, anesthesiologists, nurses, etc. A classic example is the surgical sponge and instrument “count” which requires undivided attention by the nurse(s) and surgical tech(s) who may be doing the count but may not reach the same level of attention by the surgeon and anesthesiologist (even though all should be focused on the count)..

In our May 21, 2013 Patient Safety Tip of the Week “[Perioperative Distractions](#)” we noted an editorial by Jacqueline Ross ([Ross 2013](#)) pointing out that many distractions and interruptions are likely not preventable but others are preventable. During crucial portions of a procedure (eg. pre-op huddle, surgical timeout, induction, surgical incision, closure, debriefing, anesthesia emergence, etc.) there should be no extraneous conversations and all should focus on the task at hand ([Ross 2013](#)). She suggests limiting the number of people entering or leaving the OR during those critical tasks.

Restricting OR traffic

As above, each time the door to the OR opens it introduces an opportunity for not only interruptions and distractions but also increases the potential for a surgical site infection. **Restricting OR traffic** was one of the two types of interventions Ross had noted as potentially useful in reducing interruptions ([Ross 2013](#)). Ross had suggested restricting OR traffic during critical periods that merit a sterile cockpit atmosphere. One might envision setting the OR up like a recording studio with its “On the Air” sign lighting up to restrict entry into the OR during such critical periods. But it makes sense to restrict unnecessary OR traffic whenever possible, not just during critical periods. In the Wheelock study ([Wheelock 2015](#)) the most frequent types of distractions were those initiated by external staff entering the operating room and such distractions were unnecessary in 81% of cases! Anecdotally, simply having everyone attempting to enter the OR fill out a log entry with the reason for entering substantially reduces the number of people entering.

Preoperative huddles/briefings

The value of **preoperative huddles/briefings** in avoiding delays and preventing unnecessary interruptions and distractions is immeasurable. The typical preoperative huddle/briefing is done before each case. However, some have used a **variant “the daily preoperative huddle”** ([Jain 2015](#)). In the latter, the team convenes and does the huddle at the start of the day and looks at the entire day’s cases. This gives the team a chance to identify potential problems, set expectations, and develop a shared mental model prior to beginning the day’s cases. Such a huddle works best when the entire team will be present for all the day’s cases. Thus, it really is intended for teams operating within specialty settings. In the Jain study all participants were orthopedic surgeons and the orthopedic teams.

In the pilot study by Jain and colleagues ([Jain 2015](#)) the daily huddle resulted in improvement of the surgeons’ perception of the “day’s flow”. The number of unexpected

delays dropped from 23% per case to 6.45% per case (and from 79% per day to 21% per day). It also impacted on interruptions, particularly those related to equipment issues, antibiotics, and issues regarding planned procedure. Overall, the number of total interruptions/questions decreased by 77% (from 2.51 per case before implementation of the daily huddle to 0.57 per case after).

As we've recommended in our numerous columns on preoperative huddles/briefings Jain and colleagues utilized a **structured tool** to help identify items to be discussed during the daily preoperative huddle.

Note, however, we suspect the daily huddle concept might be vulnerable to last minute changes in the OR schedule or changes in the schedule that occur after the morning huddle. We've seen too many disasters take place when patients are "taken out of turn" in the OR schedule. The "immediate" pre-op huddle is better timed to deal with such contingencies than is the "daily" pre-op huddle. So we would hope that some mechanism would be built in to systems using a daily huddle to add an "immediate" huddle any time an unanticipated change in schedule occurs.

Nevertheless, the concept of the "daily" preoperative huddle is one worth further exploring. We've actually advocated for the daily morning huddle in several other venues: the office or clinic, hospitalist rounds, bed coordination rounds, etc. (see our December 9, 2008 Patient Safety Tip of the Week "[Huddles in Healthcare](#)").

Post-operative debriefings

Post-operative debriefings are also very helpful at reducing interruptions and delays. Obviously they won't prevent an interruption in the case just finished but the issues identified can definitely help prevent interruptions in future cases. This is especially likely to be helpful in preventing equipment-related or supply-related issues. Think about how many times you've heard after an equipment malfunction "Oh, that happened the last time we used it, too!". Issues raised in debriefings need to be systematically addressed to provide fixes before they recur (see our July 22, 2014 Patient Safety Tip of the Week "[More on Operating Room Briefings and Debriefings](#)").

Policies on cellphone and other device use

The second area noted by Ross in which distractions might be prevented is use of wireless devices in these areas ([Ross 2013](#)). **Cellphone** use has become ubiquitous. There are many great advantages they provide us. But they also have a downside when used in the OR. Our May 21, 2013 Patient Safety Tip of the Week "[Perioperative Distractions](#)" discussed multiple examples of distractions related to cell phones in the OR. There are a multitude of issues related to cell phones in the OR including not only interruptions but also infection control issues, security and confidentiality issues, and detrimental effects on communication in the OR ([Byrne 2013](#)). Our recommendation is for all the OR team to **leave their cellphones at the main OR desk where someone can triage incoming**

phone calls (we used to say the same thing for pagers but we haven't seen a pager in a long time!).

Caregiver distractions from smartphones and other mobile devices even made ECRI Institute's annual list of Top 10 Technology Hazards for 2013 ([ECRI 2012](#)). A recent article in the lay press ([Hawryluk 2015](#)) discussed in detail the issue of distractions from smartphones in the OR, highlighting some of the work by anesthesiologist Dr. Peter Papadakos ([Papadakos 2011](#)) that we discussed in our May 21, 2013 Patient Safety Tip of the Week "[Perioperative Distractions](#)". The Hawryluk article notes several high profile cases in the press in which distractions occurred in the OR due to personal use of smartphones.

You'll, of course, get the argument "I use my cellphone to access important information pertinent to the case" (like guidelines, images, reports, etc.). But most of that information can be obtained from devices that do not also send instant messages, texts and phone calls. And if the surgeon really wants to see an imaging study you want him or her looking at it on a large computer screen rather than a small smartphone screen.

Nurses, and perhaps anesthesiologists, are increasingly using mobile devices to improve efficiencies in documentation within the OR and ensuring compliance with guidelines ([AORN 2015](#)). But, again, such devices can be configured not to allow distracting features like texting and instant messaging.

Other strategies

Michelle Feil, in addition to her excellent article on OR incidents related to distractions ([Feil 2014](#)), had previously researched the PA-PSRS database for events related to distractions in multiple healthcare venues ([Feil 2013](#)). She noted that most reports did not note the specific nature of the distraction. Nevertheless, she was able to glean insight from the narrative portion of the reports to provide case examples of the impact of distractions on nursing, surgeons, radiology, laboratory, anesthesia, pharmacy and multiple examples of the impact of distractions on medication errors. She provides a nice description of the constructs involved in memory and the effect of distractions on them. She has a section on sources of distractions that emphasizes "small talk" and technological devices as important sources of distraction.

In both articles, Feil provides multiple strategies to ameliorate the impact of distractions. Those include use of the "sterile cockpit" concept and pre-op huddles/briefings as we've discussed above. Others are use of checklists and teamwork training (eg. CRM, TeamSTEPPS™). She emphasizes, however, that **having a culture of safety is most important** and **surgeons must be engaged** and take leadership roles in developing that culture in the OR. She goes on to provide a list of risk reduction strategies you should consider implementing. Both the articles by Feil are insightful and useful and we encourage you to read them.

Ironically, most of us don't even recognize when and how often we are being distracted. There are a couple ways to get a better handle on that, though both are resource-intensive. One is to do the sort of direct observation as done by Wheelock and colleagues. The other is to do **video/audio recording in the OR** and then play it back for all parties in a constructive fashion so they can see how well (or not so well) they communicated and how distractions interfered with their communications. It can also help assess how well the team adheres to protocols like the Universal Protocol or surgical timeout procedures or the sponge/instrument "count". But it could be used to assess interruptions and distractions as well. Unfortunately, too many surgeons and hospital attorneys are loathe to use video taping even when it is clearly being done for quality improvement activities.

Prior Patient Safety Tips of the Week dealing with interruptions and distractions:

- August 25, 2009 [“Interruptions, Distractions, Inattention...Oops!”](#)
- November 3, 2009 [“Medication Safety: Frontline to the Rescue Again!”](#)
- December 15, 2009 [“The Weekend Effect”](#)
- May 4, 2010 [“More on the Impact of Interruptions”](#)
- October 12, 2010 [“Slowing Down in the OR”](#)
- March 8, 2011 [“Yes, Physicians Get Interrupted Too!”](#)
- July 31, 2012 [“Surgical Case Duration and Miscommunications”](#)
- August 28, 2012 [“New Care Model Copes with Interruptions Better”](#)
- November 27, 2012 [“Dealing with Distractions”](#)
- April 16, 2013 [“Distracted While Texting”](#)
- May 21, 2013 [“Perioperative Distractions”](#)
- July 1, 2014 [“Interruptions and Radiologists”](#)
- November 2014 [“More Radiologist Interruptions”](#)

See our prior columns on huddles, briefings, and debriefings:

- April 9, 2007 [“Make Your Surgical Timeouts More Useful”](#)
- May 22, 2007 [“More on TeamSTEPPS™”](#)
- December 9, 2008 [“Huddles in Healthcare”](#)
- March 10, 2009 [“Prolonged Surgical Duration and Time Awareness”](#)
- January 11, 2011 [“NPSA \(UK\) ‘How to Guide’: Five Steps to Safer Surgery”](#)
- March 2009 [“Surgical Team Training”](#)
- April 2012 [“Operating Room Briefings and Debriefings”](#)
- July 31, 2012 [“Surgical Case Duration and Miscommunications”](#)
- January 2014 [“A Tool to Assess Pre-op Briefings”](#)
- July 22, 2014 [“More on Operating Room Briefings and Debriefings”](#)

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