Distractions in the Operating Room, Radiology and Interventional Radiology

Robert Yonash, RN, CPPS
Pennsylvania Patient Authority
Objectives

By the end of this presentation, attendees will be able to:

1. Recognize the sources of distraction present in the operating room (OR), Radiology and Interventional Radiology (IR) and the ways in which they can lead to error.

2. Recall the predominant safety event types associated with distraction in the OR, IR and Radiology according to reports submitted to the Pennsylvania Patient Safety Authority.

3. List primary prevention strategies for limiting distractions in the OR, IR and Radiology.
Objectives (cont’d)

By the end of this presentation, attendees will be able to:

4. List secondary prevention strategies for ameliorating the impact of distractions in the OR, IR and Radiology.

5. Identify strategies to engage physicians and empower staff to prevent and/or better handle distractions in the OR, IR and Radiology.
Why Distraction? Why Now?

Order Interrupted by Test: Multitasking Mishap
AHRQ WebM&M, December 2011 (Halamka)

As Doctors Use More Devices, Potential for Distraction Grows
New York Times, December 14, 2011 (Richtel)

Distracted Doctoring: Physicians Text, Check Facebook in the OR
Becker’s Hospital Review, December 15, 2011 (Gamble)

Distracted Doctoring is a Workplace Safety Issue
Workplace Psychology, January 17, 2012 (Nguyen)

Analyzing, Educating and Collaborating for Patient Safety

© 2017 Pennsylvania Patient Safety Authority
In the News, April 2014

• A 61-year-old woman died 10 hours after undergoing an atrioventricular node ablation.
• The surgeon claims that the anesthesiologist failed to notice the patient’s dangerously low blood oxygen levels until "15 or 20 minutes after she turned blue" because he was using “either his phone or cell phone or pad or something.” (Nicholson)

Dallas Anesthesiologist Being Sued Over Deadly Surgery Admits to Texting, Reading iPad During Procedures – Dallas Observer, April 1, 2014

Analyzing, Educating and Collaborating for Patient Safety
“Distracted Doctoring”

• New term coined in the media (Richtel)
• Distractions from smartphones and other mobile devices identified as a top ten technology hazard (ECRI Institute)
Distraction

“To draw or direct (as one's attention) to a different object or in different directions at the same time.” (Merriam-Webster)
Memory

• Declarative memory
  – Conscious recall of general knowledge, facts, and personal experiences

• Procedural memory
  – Recall of processes necessary to perform actions, often subconscious

(Schacter)
Forgetting Curve

- Transience is memory loss that occurs with the passing of time.
- Rate of information loss is highest immediately following an experience or learning.

(Schacter)

Analyzing, Educating and Collaborating for Patient Safety

© 2017 Pennsylvania Patient Safety Authority
Working Memory

• Process of holding onto small pieces of information between the moment of perception and the establishment of long-lasting memory

(Schacter)

Analyzing, Educating and Collaborating for Patient Safety
Encoding

• Manipulation and encoding of information is dependent upon executive function and attention.

• More elaborate encoding = less memory loss over time (e.g., telling stories, mnemonics, rehearsal).

(Schacter)
Absentmindedness

• Lapses of attention that result in failing to remember information

• Lapses occur during:
  – Encoding (information not available)
  – Retrieval (information available but overlooked)

(Schacter)
Multitasking

• Omnipresent and constant challenge in healthcare
• Essential skill for healthcare workers
• Observed to occur more frequently than perceived by healthcare workers
• Creates stream of interruptions that may be necessary and may increase efficiency to a degree
• Capacity is limited in the human brain
Task Switching

• Distraction diverts attention from a primary task. When returning to the primary task, this can result in impaired performance due to:
  – Resumption lag (time required to resume the primary task)
  – Error

(Li et al.)

Analyzing, Educating and Collaborating for Patient Safety
Variables Influencing the Impact of Interruptions on Clinicians

• Working memory load
  – Interruption during times of high working memory load is associated with decreased performance of the primary task.

• Interruption similarity
  – Interruption that is similar to the primary task is more disruptive than a dissimilar interruption.

(Li et al.)
Variables Influencing the Impact of Interruptions on Clinicians (cont’d)

• Interruption position
  – Interruption occurring during task performance is more detrimental to performance than interruption occurring between tasks.

• Interruption modality
  – Interruption presenting through a modality different from the primary task (e.g., auditory versus visual) is less disruptive to performance than interruption presenting through the same modality.

(Li et al.)
Variables Influencing the Impact of Interruptions on Clinicians (cont’d)

- Practice/experience
  - Practice of the primary task is important to procedural tasks—practice increases association between steps in the primary task process, freeing up cognitive resources to be able to handle interruption.
  - Practice of interruption-handling strategies is important to decision-making tasks—practice in dealing with interruptions improves performance of the primary task.

(Li et al.)
Variables Influencing the Impact of Interruptions on Clinicians (cont’d)

• Interruption-handling strategies
  – Being able to control when to deal with interruption is less disruptive than having no control. Task performance and effective response to interruption are improved when clinicians have a repertoire of strategies for handling interruption.

(Li et al.)
Cognitive Load and Multitasking

Intrinsic cognitive load

complexity of information
LOW = changing a patient gown
HIGH = calculating the dose for a weight-based drug

Extrinsic cognitive load

type and amount of new information
LOW = no interruptions or distractions
HIGH = many interruptions and distractions

• Decreasing the cognitive load required for either has been shown to free up cognitive resources necessary for the other (i.e., minimizing distractions increases the ability to perform complex tasks, decreasing the complexity of tasks increases the ability to handle distractions).

(Sweller)

Analyzing, Educating and Collaborating for Patient Safety
Is This a Problem in Pennsylvania ORs?

- 910 events occurring in the OR were reported to the Authority from 2010 through 2015 in which distractions and/or interruptions were indicated as contributing factors.

![Pie chart showing reports of distraction related to the operating room, 2010-2015.](chart.png)
What about Radiology/Interventional Radiology? n=111

- 111 events occurring in Radiology/Interventional Radiology were reported to the Authority from 2010 through 2015 in which distractions and/or interruptions were indicated as contributing factors.
Serious Events Impacted by Distraction in the OR

- The following are examples of Serious Events (i.e., events involving patient harm) reported to the Authority associated with distraction in the OR:
  - Wrong-side surgery
  - Transfusion of the wrong blood to the wrong patient
  - Failure to remove a piece of resected bowel, requiring a return to the OR
Serious Events Impacted by Distraction in the OR (cont’d)

– Injection of a patient using an unlabeled syringe and needle previously used on another patient

– Failure to notice a significant loss of evoked potential from a patient’s arm during spinal surgery

– Inflation of a tourniquet applied to a patient’s leg for longer than intended, resulting in neurovascular changes
Serious Events Impacted by Distraction in Radiology/IR

- Stat chest x-ray completed on the wrong patient.
- Incorrect nuclear test performed on patient who was to have IR procedure.
- Due to distraction patient received incorrect dose of medication.
- Stat x-ray on wrong body part performed after tech was distracted by co-worker inquiring about another patient.
Patient had PCA (patient-controlled analgesia) and nerve block. Pumps were side by side. The anesthesiologist identified the nerve block pump and tubing to administer a bolus via the route. He was distracted and, upon returning to give bolus, did not reidentify the pump. He programmed the wrong pump for the bolus. The patient received HYDROMorphone PCA bolus, requiring naloxone rescue.
What Caused the Distraction?

• The majority of reports do not identify the source of the distraction.
• A small number of reports attribute the distraction to being “busy” or specifically mention distractions from phones, computers, or other technology.
Sources of Distraction

- Self-initiated
- Other-initiated
- “Clinically Irrelevant Communications” (Sevdalis et al. 2007)
- Technology
- Music

Analyzing, Educating and Collaborating for Patient Safety
In the News, July 2014


- An RN who wears bilateral hearing aids was working in the orthopedic OR as a circulating nurse for 14 months. The hospital said he was removed from his position for performance problems, however he claims the director of surgical services told him that his hearing was the issue, and that the surgeons were frustrated with “having to tell you something twice.” The hospital downplayed the hearing loss saying he only “had trouble hearing some things if the radio was too loud in the operating room.”
New Research

• Communication from staff outside the OR directed to the surgeon or the entire OR team was statistically the most distracting (p < 0.05).
• Lack of coordination between hospital departments was the most disruptive problem.
• More frequent and/or severe communication distractions correlated with failure to complete intraoperative patient safety checks, even with experienced teams (p < 0.05).

(Sevdalis et al. 2014)

Analyzing, Educating and Collaborating for Patient Safety
What Can We Do?

Analyzing, Educating and Collaborating for Patient Safety

© 2017 Pennsylvania Patient Safety Authority
Risk Reduction Strategies

Primary Prevention
Limiting Distractions

- “Sterile cockpit”
- Reduce distractions from technology
- Reduce distractions from noise

Secondary Prevention
Ameliorating the Impact of Distractions

- Surgical checklists
- Preoperative briefings

Empowering the Surgical Team

- Teamwork training
- Surgeon engagement and leadership

Analyzing, Educating and Collaborating for Patient Safety

© 2017 Pennsylvania Patient Safety Authority
“Sterile Cockpit”

• A protocol developed in aviation that applies during critical periods of high mental workload and high risk, when all communication in the cockpit is restricted to information necessary for handling the plane.

(14 CFR § 121.542)
“Sterile Cockpit” in the OR

• Assemble an interdisciplinary team to identify critical phases of operative procedures that are not to be interrupted.
  – Preoperative briefing
  – Preprocedural time-out
  – Postoperative debriefing
  – Specific procedural steps (e.g., induction, creation of anastomoses, nerve dissection)
Reduce Distractions from Technology

• Establish guidelines and expectations, applicable to all members of the surgical team, for the appropriate use of cell phones, pagers, smartphones, and other personal electronic devices (PEDs) in the OR, and monitor for compliance.

• Educate staff about electronic distraction and its potential detrimental effect on patient safety.

• Raise awareness of the addictive component of PEDs and other technologies.
Reduce Distractions from Noise

• Limit conversation not relevant to the current procedure.
• Lower the volume of background music.
• Adjust surgical equipment settings to reduce excess noise, as able.
• Customize alarm settings for individual patients, and use smart alarms, when available.

© 2017 Pennsylvania Patient Safety Authority
Surgical Checklists

• Utilize surgical checklists to:
  – Focus the attention of the surgical team on the primary task (i.e., the operative procedure)
  – Make explicit the minimum expected steps that comprise a complex process and aid memory recall, particularly in situations that are distraction-prone and require high cognitive workload
Preoperative Briefings

• Conduct preoperative briefings to:
  – Convey instructions and essential information about the primary task (i.e., the operative procedure) to all members of the surgical team
  – Promote mindful engagement, open communication, and a shared mental model for the team
Teamwork Training

• Provide teamwork training, such as Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) to empower the OR team to:
  – Take action to promote an environment with reduced distractions
  – Speak up when distraction is recognized to be impairing performance

(Agency for Healthcare Research and Quality)
Analyzing, Educating and Collaborating for Patient Safety

© 2017 Pennsylvania Patient Safety Authority
Teamwork Training (cont’d)

• Use TeamSTEPPS skills that apply directly to managing distractions in the OR:
  – **Cross-monitoring** (i.e., “watching each other’s back”)
  – **Advocacy and assertion** (i.e., speaking up about patient safety concerns, such as when distraction is impacting performance of the team)

(Agency for Healthcare Research and Quality)
Surgeon Engagement and Leadership

• Engage surgeons in patient safety teamwork training and quality improvement projects targeted to reducing distraction.

• Ensure that surgeons and other team leaders promote a culture of patient safety, encouraging all team members to practice skills necessary for situation monitoring and to voice concerns at any point during a procedure.
General Risk Reduction Strategies

• Educate clinicians about distraction.
• Teach interruption-handling strategies.
• Provide simulation training.
• Consider offering a course in mindfulness meditation for clinical staff.
Questions?
References


• ECRI Institute. Top ten health technology hazards for 2013 [guidance article]. Health Devices Alerts 2012 Nov.

References (cont’d)


References (cont’d)

• Nicholson E. Dallas anesthesiologist being sued over deadly surgery admits to texting, reading iPad during procedures [online]. Dallas Obs 2014 April 1 [cited 2014 May 2].

• Richtel M. As doctors use more devices, potential for distraction grows [online]. N Y Times 2011 Dec 14 [cited 2013 Apr 10].
References (cont’d)

More Information

For more information, please access the following Advisory articles online:

  http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2013/Mar;10(1)/Pages/01.aspx