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What's New in the Patient Safety World

November 2023

- **TeamSTEPPS 3.0 is Here!**
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- **EHR Usability and Patient Safety**
- **Importance of Timeouts Outside the OR**

TeamSTEPPS 3.0 is Here!

We've been huge fans of the TeamSTEPPS program since its inception. It's the team training program developed by the Department of Defense (DoD) in collaboration with the Agency for Healthcare Research and Quality (AHRQ). The free resources in this program have been rolled out to hundreds of hospitals and thousands of healthcare workers over the years. Its "Train the Trainer" approach has allowed healthcare organizations to send one or a few workers for training and then benefit from those workers training many workers back home.

The TeamSTEPPS™ resources include presentation modules, great videos of bad and good team interactions and communications, implementation and action planning tools, evaluation tools, a pocket guide and posters. Many of the resources are available online and others are provided on CD/DVD's. Topics covered include developing teams, use of briefs, brief checklists, huddles, debriefing, situation monitoring, cross monitoring, SBAR, handoffs, and others.

AHRQ recently announced the launch of TeamSTEPPS 3.0, the latest version of this highly successful program (Umscheid 2023). Several new features designed to keep pace with the ever-changing dynamics of healthcare delivery are included in the updated version:

- **Increased Patient Focus:** Training updates help increase the involvement of patients and family caregivers in care processes and decision making, including some new engagement methods, such as patient videos, simulation training, and a guide for patients and family caregivers.

- **Integrated TeamSTEPPS Platform:** The new TeamSTEPPS 3.0 curriculum consolidates content from prior versions that were created for separate care settings.
- **Modular Course Design:** TeamSTEPPS 3.0 can be taught in sessions of varying lengths to accommodate time constraints.
- **Active Learning Strategies:** Instead of passive lectures, the curriculum provides various teaching options including discussions, online group exercises, and video-based simulations.
- **Addressing Potential Team Challenges and Leveraging New Opportunities:** . TeamSTEPPS 3.0 emphasizes that the healthcare workforce is becoming more diverse and multigenerational as the technology to support healthcare delivery, such as instant messaging and telemedicine, is rapidly changing.

The TeamSTEPPS 3.0 Curriculum Materials are organized into modules:

- Introduction to Curriculum
- Module 1: Communication
- Module 2: Team Leadership
- Module 3: Situation Monitoring
- Module 4: Mutual Support
- Implementation of TeamSTEPPS 3.0

Yes, there are other teamwork training and crew resource management programs out there. But the TeamSTEPPS program is time-tested and, best of all, free!

References:

Umscheid C, Haugstetter M. With TeamSTEPPS 3.0, AHRQ Refreshes a Landmark Patient Safety Training Curriculum. AHRQ 2023; September 12, 2023 https://www.ahrq.gov/news/blog/ahrqviews/teamstepps-30.html (Umscheid 2023)

AHRQ. TeamSTEPPS 3.0 Curriculum Materials. AHRQ July 2023 https://www.ahrq.gov/teamstepps-program/curriculum/index.html

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Bad Practices Lead to Fatal Medication Error

ISMP recently described a case where a typical cascade of errors led to a fatal medication error (ISMP 2023). There are several valuable lessons learned from this unfortunate case.

An ICU patient with rectal bleeding was scheduled to have a colonoscopy the following day. A **SUPREP BOWEL PREP KIT** (sodium sulfate, potassium sulfate, and magnesium sulfate) was ordered, to be administered orally for cleansing of the colon as a preparation for the colonoscopy. Unfortunately, instead of **SUPREP**, the patient was mistakenly given **NATURALYTE**, which is a liquid acid concentrate for bicarbonate hemodialysis, used as a dialysate with hemodialysis equipment after proper dilution.

A nurse went to the medication area and saw a large plastic container of **NATURALYTE.** The nurse assumed this was similar to **GOLYTELY** (polyethylene glycol 3350 and electrolytes for oral solution), the widely used bowel prep, which is much more familiar than **SUPREP**. The **NATURALYTE** did have a barcode and the nurse attempted to scan it but it did not register, likely because is not a medication and the barcode does not contain a national drug code (NDC), so many medication barcoding systems do not recognize its barcode.

The article speculates the nurse might have thought **NaturaLyte** was a generic replacement for **GoLYTELY**, given that many generic products have different brand names than the original product name and the labels list many similar ingredients, including magnesium, potassium, and sodium. Also, both are in large plastic containers.

Because the barcode scan failed, the nurse called the pharmacy. But rather than sending a new labeled medication (Suprep), or physically reviewing the product that would not scan, a pharmacist sent a patient label that contained a barcode through the tube system for the correct medication, Suprep. The nurse scanned the patient's armband, scanned the label provided by pharmacy, and administered about 240 mL of the NaturaLyte in its concentrated form. The patient began to drink the liquid but could not tolerate it all due to the bad taste and became nauseous. Because the patient could not drink more of the product, a physician noted that a feeding tube would be needed to administer the remainder of the medication. Another nurse (on the next shift) administered the rest of the concentrated NaturaLyte liquid through the feeding tube. That second nurse also thought that Suprep was similar to GoLYTELY and had been substituted with NaturaLyte. The patient died the following day. Cause of death was not known in the ISMP article.

Lessons learned:

- Dialysis products should not be left intermingled with medications. ISMP notes previous incidents where 23.4% sodium chloride injection vials were left on a nursing unit. (The same applies to anyone leaving unusual items in medication areas. The ISMP article also mentioned a transplant team leaving a highly concentrated potassium cold storage preparation in a medication area. And our

February 7, 2012 Patient Safety Tip of the Week "Another Neuromuscular Blocking Agent Incident" mentioned a case where an anesthesiologist left a vial of atracurium in the refrigerator of a nursery that had a similar appearance to vaccine vials.)

- If a barcode is scanned and fails to be recognized, one should consider the possibility the substance scanned is not a medication.
- This combination was another **LASA (Look-Alike, Sound-Alike) example**. While we always try to identify drug pairs with similar names, who considers similarity of names of substances other than drugs?
- **Barcoding workarounds** keep popping up, tarnishing what is arguably our most potent medication safety technology. Sending a copy of a barcode through the pneumatic tube system was a glaring violation of barcoding safety. ISMP recommends that when a barcode will not scan, pharmacists need to visually verify that the medication matches what is ordered for the patient. It is not safe to send a label by itself. Labels must be considered part of the dispensing process and should only be placed on products by pharmacy personnel.
- When **new medications** are added to the hospital formulary (or when they are introduced to areas of the hospital where they are not normally used) there needs to be widespread inservice education, memos, internal newsletter articles, and/or huddles. Suprep was relatively unfamiliar to the ICU staff, compared to the more familiar GoLYTELY.

Of course, there were likely other factors contributing to this incident. The nurse involved was covering more than the usual number of patients that day because of a staffing shortage. ISMP also wondered whether pharmacy staffing that day may have prevented the pharmacist from going to the floor to visualize the product that would not scan or simply taking a new Suprep kit up to the ICU.

See some of our other Patient Safety Tip of the Week columns dealing with barcoding:

- June 17, 2008 "Technology Workarounds Defeat Safety Intent"
- April 5, 2016 "Workarounds Overriding Safety"
- February 28, 2017 "The Copy and Paste ETTO"
- January 2018 "Can We Improve Barcoding?"
- September 2020 "More on Workarounds"
- September 28, 2021 "Barcoding Better? Not So Fast!"
- June 2022 "Where Are You Barcoding?"
- May 23, 2023 "Smudges as Patient Safety Threats"

Some of our prior columns related to workarounds:

September 4, 2007 "Workarounds as a Safety Issue"
May 2008 "UK NPSA Alert on Heparin Flushes"

June 17, 2008	"Technology Workarounds Defeat Safety Intent"
September 15, 2009	"ETTO's: Efficiency-Thoroughness Trade-Offs"
August 24, 2010	"The BP Oil Spill - Analogies in Healthcare"
March 6, 2012	"Lab Error"
July 2, 2013	"Issues in Alarm Management"
April 8, 2014	"FMEA to Avoid Breastmilk Mixups"
October 7, 2014	"Our Take on Patient Safety Walk Rounds"
April 5, 2016	"Workarounds Overriding Safety"
June 2016	"ISMP Article on Workarounds"
September 2020	"More on Workarounds"
May 23, 2023	"Smudges as Patient Safety Threats"

References:

ISMP (Institute for Safe Medication Practices). Patient Death Tied to Lack of Proper Escalation Process for Barcode Scanning Failures. ISMP Medication Safety Alert! Acute Care Edition 2023; 28(19): 1-3 September 21, 2023 https://www.ismp.org/resources/patient-death-tied-lack-proper-escalation-process-barcode-scanning-failures

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EHR Usability and Patient Safety

A new study has confirmed an association between poor EHR usability and EHR safety performance. Classen et al. (Classen 2023) note that, despite the demonstrated ability of EHR's to reduce medication errors, commercial EHR systems have largely failed to consistently deliver this benefit. They also note that one explanation for these results has been poor EHR system usability, which has been shown to negatively affect the safety of these systems, not only failing to prevent, but in several cases leading to, medication errors. So, they decided to formally assess the relationship between usability and an objective measure of safety. The primary outcomes were hospital performance on the Leapfrog Health IT Safety measure (overall and 10 subcomponents) and the ARCH collaborative frontline user experience scores (overall and 8 subcomponents). We've discussed the Leapfrog Health IT Safety evaluation tool in several columns (listed below).

There were 112 hospitals and 5689 frontline user surveys included in the study. Hospitals scored a mean of 0.673 on the Leapfrog Health IT safety measure. The mean ARCH EHR user experience score was 3.377 (range, 1 [best] to 5 [worst]). The adjusted β coefficient between the overall safety score and overall user experience score was 0.011. The ARCH overall score was also significantly associated with 10 subcategory scores of the Leapfrog Health IT safety score, and the overall Leapfrog score was associated with the 8 subcategory scores of the ARCH user experience score.

The authors note that the Leapfrog EHR/CPOE safety measurements primarily focus on prescriber medication ordering. There was a significant association between the safety of the operational EHR and the experience that frontline clinicians have in using it. They note this is probably related in part to the frustration that they experience with medication ordering in poorly designed HER's (for example, too many clicks and too many alerts often frustrate physicians but also cause them to ignore the alerts).

Though an association does not prove causality, the positive association between frontline user–rated EHR usability and EHR safety performance in this study certainly identifies a need to improve EHR usability. The authors conclude that both health systems and vendors need to consider usability as critical for the frontline users and also as a critical safety issue and, as such, should work together with frontline users and organizations to improve usability without compromising the integrity of safety performance.

See some of our previous columns dealing with the Leapfrog CPOE EHR evaluaton tool:

- July 27, 2010 "EMR's Still Have a Long Way to Go"
- June 2012 "Leapfrog CPOE Simulation: Improvement But Still Shortfalls"
- April 23, 2013 "Plethora of Medication Safety Studies"
- March 2015 "CPOE Fails to Catch Prescribing Errors"
- May 3, 2016 "Clinical Decision Support Malfunction"
- November 22, 2016 "Leapfrog, Picklists, and Healthcare IT Vulnerabilities"
- June 2020 "EMR and Medication Safety: Better But Not Yet There"

References:

Classen DC, Longhurst CA, Davis T, Milstein JA, Bates DW. Inpatient EHR User Experience and Hospital EHR Safety Performance. JAMA Netw Open 2023; 6(9): e2333152
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2809149

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Importance of Timeouts Outside the OR

The primary purpose of the surgical timeout is to ensure the correct patient, correct procedure, correct body part, and correct laterality. While the timeout process was originally intended for surgical cases in the OR, it's clear that this should be performed prior to any procedure done in any venue. That would include the radiology suite, cath lab, bedside, emergency department, or outpatient clinic or office. A recent AHRQ PSNet WebM&M (Bellini 2023) described a case where a failed timeout process led to a "double" never event: wrong patient and wrong side.

A first-year orthopedic surgery resident was consulted to aspirate fluid from the left ankle of a patient in the intensive care unit. The resident, accompanied by a second resident, approached the wrong patient, obtained consent from the patient's wife via telephone, and inserted the needle into the patient's right ankle. At this point, a third resident entered the room and stated that it was the incorrect patient. The procedure was immediately terminated and patient and family were notified of the error. There apparently were no negative sequelae for that patient. The correct patient was 2 beds away.

The original (incorrect) patient was not competent to provide informed consent. The patient's wife affirmed the patient's name, which was incorrect, and consented to the procedure. The report does not state how the discussion with the wife was handled but it sounds like verification of the patient's name may have been via a passive rather than active process.

A timeout was apparently done (with the two residents and the bedside nurse). But it did not include verification of the patient and procedure location. (One wonders what was actually done during this "timeout"). The nurse questioned why an ankle aspiration procedure was being done on a patient who had wounds on both feet and osteomyelitis in his left foot. The resident responded that the aspiration was to collect fluid, not to treat osteomyelitis. One of the residents stepped away to confirm the patient's identity in the electronic health record and returned confident that they were working with the correct patient. The nurse's concern was not resolved and the procedure was initiated on the wrong patient and wrong site.

Unfortunately, we continue to see bedside procedures performed without timeouts. Often a resident simply goes to the supply room, grabs a procedure kit, goes to the bedside, and performs the procedure on the patient without any assistant to help. Prior to the patient safety "era", we even used to pride ourselves in being able to do things like the "one-

handed lumbar puncture" without any assistance. Boy, were we lucky we didn't do things on the wrong patient or wrong body part!

Our June 6, 2011 Patient Safety Tip of the Week "Timeouts Outside the OR" highlighted a study from Northwestern University (Barsuk 2011) on re-engineering processes for compliance with Universal Protocol for bedside procedures. They looked at lumbar punctures, thoracenteses and paracenteses done on the medicine services at their facilities. Analyzing their processes, they found that staff were often unaware of Universal Protocol (or perhaps unaware that it was required not just for OR procedures, but for bedside procedures as well) and that nurses were frequently never notified by physicians when their patients were undergoing such procedures. In their redesigned process the physician initiates the process by entering an order via CPOE with an anticipated time. This order would automatically populate the nurse's alert list and provide the nurse with a timeout form and notice of a procedure-specific supply kit to procure. Only the nurse has a key to those procedure kits. This is a forcing function that forces the physician-nurse communication to take place. The nurse brings the timeout checklist and the kit to the bedside at the specified time and the nurse and physician go through the timeout procedure, which gets documented in the EMR. Compliance with Universal Protocol went from 16% before to 94% after implementation of this redesigned process. Elegant! That is a process we have advocated ever since. We also recommend that a copy of the timeout checklist should be attached to the front of all procedure kits and the kit should not be opened until the items on the checklist have been agreed upon by all.

Of course, your timeout checklist would likely contain several other items, such as why the procedure is being done, that informed consent has been obtained, and what you expect to do with any specimens from the procedure.

The authors of the WebM&M case also stress the importance of communication and TeamSTEPPS concepts for improving teamwork. During a timeout everyone must agree on all the items or the procedure needs to be paused for clarification. Anyone's concerns need to be addressed, such as the nurse questioning the reason for the procedure and the site.

It's essential that all members of the healthcare team understand the intent and importance of the timeout and adhere to the process religiously.

Some of our prior columns related to wrong-site surgery:

September 23, 2008	"Checklists and Wrong Site Surgery"
June 5, 2007	"Patient Safety in Ambulatory Surgery"
July 2007	"Pennsylvania PSA: Preventing Wrong-Site Surgery"
March 11, 2008	"Lessons from Ophthalmology"
July 1, 2008	"WHO's New Surgical Safety Checklist"
January 20, 2009	"The WHO Surgical Safety Checklist Delivers the Outcomes"
September 14, 2010	"Wrong-Site Craniotomy: Lessons Learned"

November 25, 2008	"Wrong-Site Neurosurgery"
January 19, 2010	"Timeouts and Safe Surgery"
June 8, 2010	"Surgical Safety Checklist for Cataract Surgery"
December 6, 2010	"More Tips to Prevent Wrong-Site Surgery"
June 6, 2011	"Timeouts Outside the OR"
August 2011	"New Wrong-Site Surgery Resources"
December 2011	"Novel Technique to Prevent Wrong Level Spine Surgery"
October 30, 2012	"Surgical Scheduling Errors"
January 2013	"How Frequent are Surgical Never Events?"
January 1, 2013	"Don't Throw Away Those View Boxes Yet"
August 27, 2013	"Lessons on Wrong-Site Surgery"
September 10, 2013	"Informed Consent and Wrong-Site Surgery"
July 2014	"Wrong-Sided Thoracenteses"
March 15, 2016	"Dental Patient Safety"
May 17, 2016	"Patient Safety Issues in Cataract Surgery"
July 19, 2016	"Infants and Wrong Site Surgery"
September 13, 2016	"Vanderbilt's Electronic Procedural Timeout"
May 2017	"Another Success for the Safe Surgery Checklist"
May 2, 2017	"Anatomy of a Wrong Procedure"
June 2017	"Another Way to Verify Checklist Compliance"
March 26, 2019	"Patient Misidentification"
May 14, 2019	"Wrong-Site Surgery and Difficult-to-Mark Sites"
May 2020	"Poor Timeout Compliance: Ring a Bell?"
September 14, 2021	"Wrong Eye Injections"
October 5, 2021	"Wrong Side Again"
November 9, 2021	"Ensuring Safe Site Surgery"
February 15, 2022	"Wrong-Side Chest Tubes"
May 2022	"PPSA: Updated Wrong-Site Surgery Recommendations"
June 13, 2023	"Preventing Wrong-Site Surgery"

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Bellini A, Salcedo ES. A Double "Never Event": Wrong Patient and Wrong Side. AHRQ PSNet WebM&M: Case Studies 2023; September 27, 2023
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Barsuk JH, Brake H, Caprio T, Barnard C, Anderson DY, Williams MV. Process Changes to Increase Compliance With the Universal Protocol for Bedside Procedures. Arch Intern Med 2011; 171(10): 941-954
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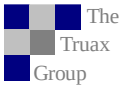

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