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Patient safety

'Preflight checklist' builds safety culture, reduces nurse turnover

A time-out before surgery is now routine as part of surgical site verification. Before the incision is made, the team stops to make sure they have the right patient, right procedure, and the right surgical site.

What if the briefing was extended to cover other important aspects of the case? Would that make a difference in patient safety and collaboration?

Kaiser Permanente's (KP) Southern California Region has shown it can. Since the briefings began, no incidents of wrong-site surgery have happened, staff morale has risen, and nurse turnover has declined. They've just won KP's first national David M. Lawrence Patient Safety Award for their efforts.

Patient safety briefings have been a reality in the ORs at Kaiser's Anaheim Medical Center in Anaheim, Calif, for more than a year. The hospital, with five ORs and one cysto room, performs about 7,000 cases annually.

Before each surgical case, the OR team takes a minute or two right after anesthesia induction to run through a set of criteria much like a "preflight checklist." The circulating nurse usually starts the briefing, but any team member can initiate it.

"We already have a time-out to identify the patient, procedure, and site. We said, 'Let's expand that,'" says Jim DeFontes, MD, physician director of KP's Orange County, Calif, surgical service line, who fostered the project. He also serves as chief of anesthesia for KP's Southern California region.

> "Our surgeons have really embraced it"

During the safety briefing, all four team members bring up what is relevant about the patient and procedure—a missing instrument, whether blood will be needed, the timing of an intraoperative x-ray, medications on the sterile field.

It might be something as simple as, "My name is Bob. I haven't worked with you before. Please let me know if I am doing something wrong or can help in any way."

Each OR has a whiteboard where the circulating nurse writes the patient's name, diagnosis, and names of the team members. Research has shown that familiarity with other team members improves safety. In aviation, 74% of crashes occur on the first day a crew is working together.

At first, some objected the briefings would be too time-consuming.

"We role played to show it really didn't take much more time—maybe 30 to 45 seconds," Dr DeFontes says. "And it might actually save you 5, 10, or even 30 minutes in the procedure because you know up front what is going to be needed."

Hurry-up environment

He thinks the briefings make sense in today's hurry-up environment.

"Fast turnovers and good outcomes require teamwork. Every day in the OR, we have multiple handoffs between experts and novices and full-time and part-time staff, not to mention changes in the schedule and the patient's status," he notes.

The person who sets up the case may not be the one circulating or scrubbing. And except for short cases, it's routine for the staff to hand off to each other during the same case for breaks and change of shifts. The surgeon probably has not seen the patient since the office visit and has just finished another case or rushed in from the office.

With all of these factors, "there is a real need to create a team that has a shared mental model for this particular patient and procedure," Dr DeFontes said.

During the briefing, team members are not supposed to be doing anything else.

"They are supposed to stop what they are doing and have a conversation," he says.

Borrowing from aviation

Dr DeFontes learned about the safety briefings when he attended human factors training given by KP and the University of Texas (UT) at Austin. UT's Psychology Department is known for its pioneering work in creating team environments in aviation and is now transferring that work to health care (sidebar).

He decided to take the idea back and turn it into a rapid-cycle improvement project for Orange County. The purpose of the project was "to improve safety by enhancing teamwork, collaboration, and communication among team members in the perioperative setting."

Specific objectives included:

- building awareness of the safety culture and identifying safety needs

Kaiser Permanente Human Factors Safety Briefing

Orange County Service Area

Surgeon	Circulator	Scrub person	Anesthesia provider
• ID patient and site • What type of surgery? • Realistic time estimate • What is the desired position? • Any special equipment needed? • Is this a standard procedure or are there special needs? • Are there any anticipated problems? • Will we need pathology? • Is a C-arm or portable x-ray unit needed, and has it been requested? • Are there any special intraoperative requests, ie, wake-up, hypothermia? • Plan to transfuse? Wet vs dry. • Use of drugs on the field? • Do you want lines? • Postop pain management special requests (blocks, etc)	• Identify patient site and marking • Allergies? • Verification of medication on the back table • X-ray available and other special services (ie, pacemaker, Cell Saver, sales rep, laser) • Blood available?	• What special instrumentation do we need? • Are any instruments missing from the tray? • Are all of the instruments working? • Are there any questions about the instruments? • Do we have all of the instruments? • What type(s) of suture or staples are needed?	• What type of anesthesia will be used? • Risks? • Should we anticipate any problems? • Are there any special needs (eg, positioning, medications)? • Special lines driven by anesthesia

Note: These are examples only. Briefing questions are individualized to each case.

Human factors address the interpersonal skills generally implicated in adverse outcomes. It is about detecting threats to patient safety, avoiding errors, and managing in a team-based environment. In Orange County, the primary concept applied in the perioperative setting is the use of briefings similar to preflight briefings in the aviation industry.

A Safety Briefing is an opportunity for team members to share pertinent information regarding the patient's care prior to and during the surgical procedure. This allows all team members to share the same mental model.

Who participates in a Safety Briefing? There are four roles in a Safety Briefing, each equally important. A Safety Briefing is the responsibility of the entire team; however, the circulator is responsible for initiating the Safety Briefing.

When and where does a Safety Briefing occur? In the operating room, postinduction and precut.

Source: Anaheim Medical Center, Anaheim, Calif. Reprinted with permission.

- building support by enhancing staff knowledge of the existing OR culture and potential barriers to safety in that environment
- developing and implementing a safety briefing model to enhance communication and anticipation and management of threats and errors
- evaluating the model's success using pre- and post- attitudinal surveys.

Before the project started, OR staff and physicians completed a Safety Attitudinal Questionnaire (SAQ) to gather baseline data on their opinions on the OR's current team climate. The questionnaire, developed by UT, is designed to measure and compare physicians' and nurses' attitudes and beliefs about the safety climate in their practice area.

Developing the model

The safety briefing model was developed in Fall 2001 by an Orange County KP team representing OR staff and physicians from different disciplines, including union representatives. The team developed a one-page guide for conducting the briefing (sidebar). They also developed a brief education module with a short introduction to human fac-

Team communication and safety

Over the past 20 years, researchers at the University of Texas (UT) at Austin have found that how well cockpit crews communicate has a lot to do with the safety of flying.

Now these same researchers are exploring the connection between teamwork in health care and outcomes such as error rates and nurse turnover.

"We are marrying the idea of teamwork climate and collaboration with outcomes like nursing turnover, and we are beginning to demonstrate linkages," says J. Bryan Sexton, PhD, a social psychologist in UT's Center of Excellence for Patient Safety Research and Practice.

A few studies have been published, and more are in press. Kaiser Permanente drew on this research in its pilot for patient safety briefings in surgery (related article).

Some of the findings:

Does everybody know your name?

Like the Cheers theme, people rank teamwork more highly if they know the people they are working with.

In a study conducted at the University of Basel in Switzerland, researchers stood outside 12 ORs for 3 days and asked clinicians coming out of surgery a few brief questions. They asked them to rate the quality of communication in that team on a 10-point scale. They then asked them to give the names of the other individuals involved in the procedure.

"We found we could predict a person's communication score using two different methods," says Sexton. The first was the percentage of names the person got correct (whom you know), and the second was the percentage of the rest of the team who knew that person's name (who knows you).

The importance of knowing team members' names is not unique to medicine, Sexton notes. The National Transportation Safety Board has found that 74% of accidents in commercial aviation happen on the first day a crew is flying together.

He collaborated with Swiss physician Nicholas Milliet in the study, which is unpublished.

Nurse turnover is lower when team collaboration is high

Nurses who rate teamwork between RNs and physicians as high are more likely to stay on the job.

UT researchers surveyed individual nurses on a patient care unit for their attitudes about the teamwork climate. Three years later, they went back to see how many nurses were still there. Among nurses who had rated teamwork as low, there had been 40% turnover over the 3 years. Those who rated teamwork as high had a much lower turnover, 23%, for the same period. The data have not yet been published.

In a recent study at Johns Hopkins Hospital in Baltimore, the researchers found that improving teamwork and the safety climate resulted in improved clinical outcomes (bloodstream infection rates, length of stay, and error rates) as well as improved nurse turnover, which declined from 9% to 2%. The study by Peter Pronovost, MD, and colleagues has been submitted for publication.

Nurses and physicians see the culture differently

In a study of 1,033 physicians and nurses working in ORs and intensive care units in the US and abroad, surgeons and surgical residents reported high levels of teamwork with other surgeons and surgical residents, with scores of 64% or above. But anesthesia residents, nurse anesthetists, and surgical nurses had a much different perception, with only 10%, 26%, and 28% rating their teamwork with surgeons as high.

In intensive care, though 77% of physicians reported high levels of teamwork with nurses, only 40% of nurses felt the same about teamwork with physicians.

The study by Sexton, E. J. Thomas, and Robert J. Helmreich was published in the *British Medical Journal.* March 18, 2000;320:745-749.

Information about the University of Texas's Center of Excellence for Patient Safety Research and Practice, is at www.uth.tmc.edu/schools/med/imed/patient_safety

tors and a post-test. The module is an easy way to introduce new staff members and residents to the briefings. The guide also is posted throughout the department, including in each OR.

As the team developed the model, they gathered feedback using an anonymous suggestion box and a short version of the SAQ. The whiteboard was one idea from the suggestion box.

The team took about 2 months to refine the model and provide education to the staff and physicians. They then conducted a 6-month pilot beginning in February 2002.

A significant impact

The team found the briefings had a significant impact.

No wrong-site surgeries have been reported since the briefings began. In reviewing incidents from 2001, quality managers determined the incidents might have been prevented with the briefings. They also found near-miss reports had gone up, indicating staff and physicians felt more comfortable reporting close calls. Reports of faulty or missing equipment and instruments declined slightly. The number of delayed or canceled cases also declined.

In addition:

- Employee satisfaction rose by 19%.
- Nurse turnover decreased from 23% to 7%.
- Staff ratings of the safety climate improved from "good" to "outstanding."

Physicians and nurses reported they thought OR problems were being identified and resolved earlier.

Among near misses caught was finding potassium chloride in a bin where Flagyl, an antibiotic, is stored. In another situation, a team caught a case that was scheduled as a thoracotomy when it should have been a thoracoscopy.

"We've seen a significant increase in those responding to items such as, 'Nurses' input is well received in the OR, 'All OR personnel take responsibility for patient safety,' and 'Medical errors are handled appropriately here,'" adds Sheila Smith, RN, MHA, CNOR, Anaheim's department administrator for perioperative services.

Charge nurse Georgina Hayman, RN, adds, "At first, when we were learning it, the briefing seemed a little awkward, but now it only takes a few minutes. It pre-

vents problems that can come up." For example, the nurse can inform the surgeon at the beginning of a case that a piece of equipment he is used to has been replaced because it wasn't working.

Barriers come down

Dr DeFontes acknowledges that not everyone was enthusiastic at first.

"There are those who said, 'This is ridiculous. We're all professional. Let's just do our jobs.'"

To help get the project off the ground, he involved clinical champions. He also selected teams where the quality of care was high but communication gaps existed among the surgeons, anesthesiologists, and nurses.

"Once we got them all together in a room, they saw they all wanted the same thing—the best outcome for the patient. They also wanted less stress, and they wanted to solve problems. They saw the briefings were a way to do that. Then the barriers came down.

"Our surgeons have really embraced it," he adds. Those who didn't initially tended to be those who didn't use the facility often. In a few cases, DeFontes made calls to explain the project. "When they understood, they would say, 'Oh, this is a great idea.'"

The briefings have also helped novices feel more like part of the team.

"The way experts and novices process information and communicate is very different," Dr DeFontes notes. "It is important to make sure the least experienced person on the team is on the same page as everyone else. Usually, that is the person who is going to identify something is wrong. If you haven't empowered that person or given them the information, they aren't going to be able to do that."

He knew the project was headed in the right direction when a nursing student came up to him one day and said, "This is wonderful. Before, they didn't even know my name. I didn't feel confident enough to point anything out because they didn't even acknowledge me as part of the team." The briefings have given her more confidence to speak up. The student then said she wanted to come to work at Anaheim.

Now the norm

Safety briefings have become the norm in Anaheim's ORs and are required for every case around the clock. They are part of nurses' skill assessments. Every new physician who joins the staff receives the education module, with the quick post-test. The module also is posted in hallways, ORs, bathrooms, and on bulletin boards.

The team is already working on a process for postoperative debriefings and briefings at handoffs and breaks.

Safety briefings are being expanded to the hospital's radiology and labor and delivery areas as well as to other hospitals in Kaiser's network. Kaiser also reports receiving inquiries from other organizations, including Harvard and the University of Michigan. ❖