

STANDARDIZING SAFETY

Borrowing Lessons Learned from the Airline Industry, Hospitals See the Results of Teamwork and Clear Communication

The safety record of our health care system is in need of serious improvement, according to recent studies and reports. And the heart of the problem appears to be something as simple, yet critical, as effective communication.

According to the Joint Commission on Accreditation of Health-care Organizations, the primary cause of patient harm reported in 2,966 sentinel events occurring between January 1995 and December 2004 was communication failure, accounting for 66 percent of incidents. Approximately 75 percent of those patients affected by sentinel events died over this 10-year period.

Unfortunately, the problem doesn't appear to be on the decline: a 2001 Kaiser Public Opinion Spotlight reported by the Kaiser Family Foundation revealed that one in three Americans has been personally involved in a situation where a preventable medical error was made in their own care or that of a family member. Reports such as these have hospitals searching for answers and, in some instances, finding solutions in unconventional places.

In one approach, some hospitals are training their staff with the same proven communication tools and safety processes adopted by the aviation industry over the last 25 years. Hospitals hope that these processes, which have been attributed to helping reduce flight accidents and transforming the aviation industry into one of the safest in the world, will do the same for health care.

"If an operating room team worked together as fluently as a flight team, they'd communicate more effectively, make fewer errors and lose fewer lives," says Drew Gaffney, a cardiologist and chief quality and patient safety officer at Vanderbilt University Medical Center in Nashville, Tenn.

That's exactly the goal behind crew resource management

(CRM), a safety program developed by the aviation industry and now embraced by hospitals such as Vanderbilt over the past three years in their efforts to improve patient safety. Hospitals are hiring consulting firms who specialize in CRM training to educate and train their clinicians in these aviation-tested safety techniques. While CRM programs do require a financial investment, trustees such as Ed Nelson, a member of the medical center board at Vanderbilt, says one must consider the return on investment versus the costs of not investing in quality-improving programs.

"The quality and safety of medical practice is important to our board," Nelson says. "That concern goes well beyond [just] controlling malpractice costs, to making sure we build a total environment that makes safe, effective and efficient practice the invariable outcome. Quality and quality improvement just need to be part of the way we work. The real budget buster would be poor quality. Think of the impact on our reputation, on our ability to attract patients, on our referral base."

How can aviation-based safety practices work in the health care setting? Hospitals that use CRM say it works because of the many striking parallels between the airplane cockpit and the operating room or emergency department. Flight crews and physicians and other health care staff are highly trained professionals working in complex and technically demanding situations. In both places, routine decisions have life-and-death consequences. In both settings, team members are sometimes strangers. In the OR, like the cockpit, there are a large number of professionals trained in a variety of disciplines. (Although most commercial cockpits have two crew members, long-distance commercial flights may have two full crews, and military transports may have five crew

BY SUSAN MEYERS

members or more.) In both places, there is a lead professional who sets the tone of the team's work. And in both places, fatigue and routine can be the enemy of precision.

Nelson describes the similarities succinctly: "An experienced pilot once told me that every landing was a carefully controlled crash. The operating room has a great many parallels. Dropping something from 10,000 feet and expecting it to land gently is a lot like cutting someone open and expecting [him or her] to survive. Both happen by a combination of great science and careful teamwork. Crew resource management takes the lessons learned by air safety experts over the past 30 years and applies them to the operating room. Flying is hands down the safest way to travel because of those learned lessons. Surgery can be just as safe."

Stephen Harden, a former Navy Top Gun pilot and president of Memphis, Tenn.-based LifeWings Partners, LLC, is the principal architect of LifeWing's CRM program, which adapts aviation safety practices to health care. He says CRM can be applied to any area of the hospital where care is provided by a team. Most hospitals have focused on high pressure areas such as critical care units, operating rooms, catheterization labs, intensive care units, emergency departments, chest pain teams and trauma units. "These are the areas that generally have more communication and teamwork problems, start and stop situations, high stress and time pressures," Harden explains. "Although we have seen just as much success in noncritical care units as well."

Vanderbilt, which began implementing CRM in 2003, has focused on procedure-based areas. So far, the hospital has trained nearly half of its 6,000 clinicians in CRM methodology, with the goal of training the remaining 3,000 providers by 2009.

The Nebraska Medical Center in Omaha, Neb., is fairly new to the CRM process, but is already an ardent supporter, asserting that CRM is the right thing to do. "There are costs to doing business, and this is a cost that should be a top priority for any hospital that wants to make safety and quality their top initiatives," says the facility's Chief Medical Officer Stephen Smith. "We believe we are at the forefront of a huge cultural shift in health care—one that focuses on improved communication and teamwork to enhance safety and reliability for our patients."

The Nebraska Medical Center, which began providing CRM training to clinicians in February, has recently implemented the program in its operating rooms. The hospital plans eventually to adapt the process to all procedure-based areas in the hospital. "Already the feedback has been very positive, and other departments are asking when they can begin training," Smith says.

First however, hospital leadership must be ready to support CRM and adapt it fully into its environment. To build that support, LifeWings introduces the concept with a three-day "leadership summit" attended by administration and senior medical and nursing staff. In addition to a comprehensive discussion of the CRM concept and processes, presenters explain how to build buy-in and support, implementation, and how to handle resistance to the program.

"At the end of the three days, we were all convinced that we needed to move forward with this program," says Byers Shaw Jr., chair of the department of surgery in the College of Medicine at the University of Nebraska Medical Center and a member of the board, who initially introduced the concept to the

hospital. "After that meeting, getting board support was very easy," he says. "Our CEO was already behind it, as were the other physician and nurse leaders who attended the meeting."

Once an organization is ready to begin implementing CRM, LifeWings conducts a safety climate survey to determine an organization's attitudes toward safety issues and practices. LifeWings observes clinical areas to evaluate system processes that may expose patients to unnecessary risks, and looks at the level of cooperation, coordination and communication among team members to help determine the tools needed to build efficiency. This information is used to develop customized "hardwired" tools for each clinical area, such as presurgical briefings, preoperative assessments and handoff tools. These safety tools ensure that staff actually use, on a daily basis, the teamwork and communication skills learned in the training classes. This is a key component of the program that helps ensure permanent behavior change. A measurement system to track results is also developed. Hospital staff training is next implemented on a department-by-department basis.

According to Harden, it generally takes a hospital approximately six months to move from the initial buy-in process to actual training and implementation of CRM tools. The price tag varies, depending on the extent to which the institution uses the expertise of LifeWings staff. For a hospital that chooses to implement the entire program, it might cost approximately \$100,000 to \$200,000 for the first department to put CRM in place, with that number dropping for each subsequent department that adopts it. A hospital can also choose to do a train-the-trainer program so that they can carry on the program on their own after the initial training offered by LifeWings. A smaller, community hospital might spend between \$60,000 to \$80,000 for the complete program, including the first department's leadership training.

Introducing the CRM concepts to staff involves a comprehensive eight-hour classroom training program that: explains what CRM is and how it is applied to health care; teaches participants about patient safety breakdowns and how to avoid them; fosters team-building and team decision-making strategies; teaches how to recognize impending adverse situations; and explains cross-checking, effective communication techniques and effective debriefing methods.

The philosophy behind crew resource management is to emphasize communication and teamwork so that each team member shares responsibility for communication and outcomes. To remind health care workers of this responsibility, CRM uses the mantra: "See it, say it, fix it."

"The use of CRM creates an atmosphere of mutual responsibility, not only for making sure everyone does his or her job, but also for making sure everyone else on the team is informed," says Shelly Schwedhelm, R.N., director of Perioperative and Emergency Services at The Nebraska Medical Center. "By replacing guessing and assumptions with clear communication techniques, CRM enhances safety and optimizes clinical performance."

Before the introduction of crew resource management, airline crew members all too often viewed the captain as supreme commander, someone whose decisions or judgments could not be challenged. A similar shift in philosophy applies to health care. "Under crew resource management, the surgeon is still 'captain

of the ship,” explains Shaw. “But that captain openly invites and expects the other members of the crew to speak up whenever they notice something that appears unusual or out of place.”

CRM brings a set of skills and processes to medicine that in some cases, didn't exist, and in other cases, needed to be formalized and standardized. These include the introduction of such safety tools as surgical routines, protocols, debriefings and check lists that can be reviewed prior to surgery, before patient rounds or during handoffs with the intention of detecting and preventing small errors before they become more serious.

The development of these safety tools is critical to the success of the program, notes Harden. “Putting system enhancement tools in place and requiring teams to use them, ensures that they use the models and communication skills we teach,” he says.

The Nebraska Medical Center felt the impact of these safety tools during the first week of implementation. While conducting the presurgical “time-out” briefing, Smith says the CRM process identified issues in three different cases that may have led to a potential error or problem during the surgery: an equipment problem was identified; antibiotic delivery was improved; and missing ordered blood was discovered.

The presurgical briefing, which can be conducted in a minute or two, involves the following steps: introduction of all team members present; stating the patient's name; stating the procedure, site and side of the body; stating any special requirements or procedures; reviewing appropriate positioning of the patient during surgery; discussing his or her allergies and/or known adverse side effects experienced from previously administered medications or procedures; listing all antibiotics, blood products, films, implants, supplies, instruments, medications and fluids to be used; post-op plans; and special concerns or red flags. Last, the surgeon will ask if everyone is ready, and surgery will not begin until everyone has responded affirmatively.

“The process is simple, but very effective,” Schwedhelm says. “By using a checklist, it helps eliminate confusion and variation and allows everyone an opportunity to speak up.”

Achieving buy-in and cooperation from physicians who may view CRM as another safety mandate that consumes valuable time can sometimes pose a challenge. “Every surgeon thinks that [his or her] OR is safe,” notes Shaw. “Safety has been so pummeled into us that it's become a buzzword that physicians have grown tired of hearing.” Shaw suggests a slightly different approach. “If you explain to your surgeons that you are going to create an atmosphere of a highly trained crew where there is tremendous efficiency, a more reliable environment and everyone knows exactly what they are supposed to do, you may be more successful at getting their attention.”

To ensure training uniformity and user compliance, The Nebraska Medical Center executives and several board members agreed during their leadership “summit” that all physicians who work in the operating room would be required to undergo

CRM training and apply the tools during practice. A policy was also put into place to deal with resisters or disruptive behavior. While there was some resistance among a few surgeons at the beginning, primarily because they didn't understand what CRM could do for their OR, they are now the most ardent supporters, Shaw says. “Eventually, we will see a new generation of physicians and clinicians who will consider this the norm,” he says.

While the goal of CRM is to improve safety and reduce errors, hospitals are seeing a host of other residual benefits as well, including improved communication, increased efficiencies, increased nursing and physician satisfaction, less turnover and greater collegiality among staff.

Vanderbilt has seen similar results. “Since using CRM, we are seeing better outcomes, we're spending less on malpractice, and we're seeing greater satisfaction among staff,” Gaffney says. For instance, nursing turnover in surgical areas, typically 8 percent to 12 percent nationally, is under 2 percent at Vanderbilt since implementing CRM. Gaffney says they have also seen: a dramatic drop in “wrong” surgeries (wrong patient, wrong site, wrong device) to almost none at all; improved delivery of on-time antibiotics to more than 90 percent in some ORs; and fewer patient identification problems.

“While CRM isn't the only thing we're doing to meet safety goals, I believe [it] lays the foundation to reach these goals,” Gaffney says. “If you don't have communication and teamwork, then you don't have anything.”

Also validating this claim is the fact that Vanderbilt recently ranked in the top 10 percent of almost 900 hospitals that sub-

mitted information for the 2005 Leapfrog Hospital Quality and Safety Survey.

“We are astounded at the kind of benefits this program has brought,” Nelson says. “Of course, we monitor carefully our quality and safety improvements. But CRM has produced profound changes in other realms as well. The approach values every person in the OR. We like to think of ourselves as a pretty collegial place, but today we see real differences in the quality of working relationships, job satisfaction and retention, especially among OR nurses and techs who feel both valued and empowered.”

Harden stresses the benefits CRM can bring to physician relations. “This is a great way to open lines of communication with your physicians and show that you are committed to making your hospital a better place to work,” he says. “All physicians want greater efficiency. With CRM, physicians see that the hospital is committed to providing a better place to practice medicine. When you improve the level of teamwork and competency, the variability in quality of the team goes down. You start seeing [surgeries in] ORs begin on time and quicker turnaround between procedures. With more standardization, your processes become more efficient, you become safer, and things work like clockwork.” **T**

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—Shelly Schwedhelm, R.N.