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What Pilots Can Teach Hospitals About Patient Safety

By KATE MURPHY

Wearing scrubs and slouching in their chairs, the emergency room staff members, assembled for a patient-safety seminar, largely ignored the hospital's chief executive while she made her opening remarks. They talked on their cell phones and got up to freshen their coffee or snag another danish.

But the room became still and silent when an airline pilot who used to fly F-14 Tomcats for the Navy took the lectern. Handsome, upright and meticulously dressed, the pilot began by recounting how in 1977, a series of human errors caused two Boeing 747s to collide on a foggy runway in the Canary Islands, killing 583 people. Riveted, a surgeon gripped his pen with both hands as if he might break it, an anesthetist stopped maniacally chewing his gum, and a wide-eyed nurse bit her lip.

An attention grabber, yes, but what does an airplane crash have to do with patient safety?

A growing number of health care providers are trying to learn from aviation accidents and, more specifically, from what the airlines have done to prevent them. In the last five years, several major hospitals have hired professional pilots to train their critical-care staff members on how to apply aviation safety principles to their work.

They learn standard cockpit procedures like communication protocols, checklists and crew briefings to improve patient care, if not save patients' lives. Though health care experts disagree on how to incorporate aviation-based safety measures, few argue about the parallels between the two industries or the value of borrowing the best practices.

Spurred by a 1999 report by the Institute of Medicine, an arm of the National Academies, titled "To Err Is Human," which estimated that as many as 98,000 patients die annually from preventable medical errors, and by more recent bad publicity from mistakes like amputations of the wrong limbs, many health care providers are redoubling their efforts to improve patient safety.

"We're where the airline industry was 30 years ago" when a series of fatal mistakes increased scrutiny and provoked change, said Dr. Stephen B. Smith, chief medical officer at the Nebraska Medical Center in Omaha, the teaching hospital for the University of Nebraska.

It is well established that, like airplane crashes, the majority of adverse events in health care are the result of human error, particularly failures in communication, leadership and decision-making.

"The culture in the operating room has always been the surgeon as the captain at the controls with a crew of anesthesiologists, nurses and techs hinting at problems and hoping they will be addressed," Dr. Smith said. "We need to change the culture so communication is more organized, regimented and collaborative, like what you find now in the cockpit of an airplane."



After the Canary Islands accident, NASA convened a panel to address aviation safety and came up with a program called Cockpit or Crew Resource Management. The Federal Aviation Administration requires that all pilots for commercial airlines and the military undergo the training. They learn, among other things, to recognize human limitations and the impact of fatigue, to identify and effectively communicate problems, to support and listen to team members, resolve conflicts, develop contingency plans and use all available resources to make decisions.

Recognizing the positive impact of the program on the aviation industry's safety record, the Institute of Medicine in 2001 recommended similar training for health care workers. The National Academies, the Agency for Healthcare Research and Quality and the Institute for Healthcare Improvement also advocate the training, as well as the use of other aviation-inspired practices like pre- and post-operative briefings, simulator training, checklists, annual competency reviews and incident reporting systems.

The British medical journal BMJ, The Journal of the American Medical Association and The Journal of Critical Care have also published research suggesting that hospitals that adopt these measures have fewer malpractice suits and postsurgical infections. Patient recovery times tend to be lower, and employee satisfaction is higher.

With these endorsements, and with the airline industry cutting salaries, benefits and flight time, many pilots have become part-time health care consultants. For fees that range from \$7,000 to \$40,000, they offer training and help devise and put in place systemwide safety protocols and procedures. Among the growing number of health care institutions that have hired aviation consultants or adopted aviation safety practices in the last five years are Vanderbilt University Medical Center; Johns Hopkins Medical Institutions; Cedars-Sinai Medical Center in Los Angeles; Vassar Brothers Medical Center in Poughkeepsie, N.Y.; the University of Nebraska; and the University of Texas Medical Branch at Galveston.

"The trend is not surprising given the similarities between health care and aviation," said Dr. David M. Gaba, associate dean of immersive and simulation-based learning at the Stanford University School of Medicine in Palo Alto, Calif.

"Both involve hours of boredom punctuated by moments of sheer terror," he said.

In addition to sometimes having to make life-and-death decisions in seconds, pilots and physicians also tend to be highly skilled, Type A personalities, who rely heavily on technology to do their jobs.

Even so, some hospital administrators and experts in human factors argue that aviation safety principles are not wholly transferable to health care. "Medicine is a more complex environment with more professionals interacting than in aviation," said Robert Helmreich, professor of psychology at the University of Texas at Austin and director of its Human Factors Research Project, which studies team performance and the influence of culture and behavior in aviation and health care.

The definition of an error in health care, Professor Helmreich said, is "fuzzier" than in aviation, where it is easier to identify a "foul-up" and who was responsible. Health care providers' fear of litigation and losing their medical licenses also hinders the honest reporting of mistakes, whereas aviators are often inoculated against punishment if they

promptly report incidents to the authorities. Training programs developed by pilots without knowledge of health care realities can be “appallingly bad,” he said.

More successful are programs developed by consulting firms like LifeWings in Memphis and the Surgical Safety Institute in Tampa, Fla., both of which have professional pilots and physicians developing their training materials and serving on their advisory boards.

Some institutions, like Johns Hopkins, have created their own in-house training programs and safety structures based on aviation. “Aviation provided us with the ideas, which we then modified for health care as well as our particular situation,” said Dr. Peter Pronovost, the director of the Center of Innovation in Quality Patient Care at Johns Hopkins.

Employees who work at hospitals that have adopted these kinds of aviation-based safety programs are mostly enthusiastic. Many say they are more confident doing their jobs thanks to posted checklists, which, for example, include reminders to wash their hands, confirm the identity of the patient and check for drug allergies. They appreciate the fact that they are now not only encouraged to speak up if they are concerned about something, but also required to do so.

“Communication is so much better,” said Shelly Schwedhelm, a nurse and director of perioperative and emergency services at Nebraska Medical Center, which instituted aviation-style safety measures a year ago.

“We now have debriefings after every surgery, during which we identify what we could do better but also what went right,” she said. “I’m hearing compliments and acknowledgment, which has really boosted morale.”

Still, some doctors balk at the rote quality of the procedures, claiming that they are unnecessary and undermine their authority.

“I had one surgeon tell me that checklists are for the lame and weak,” said Professor Helmreich of the University of Texas.

Even the most recalcitrant tend to come around, however, when a safety check catches one of their mistakes, possibly saving a patient and preventing a malpractice suit.

“I’m seeing errors caught virtually every day” in the operating room, said Dr. Timothy Dowd, the chairman of the anesthesiology department at Vassar Brothers, where critical-care staff members underwent aviation-based patient-safety training six months ago.

“Even the most curmudgeonly surgeon has to admit this is a better way,” he said.