Journey to high-reliability health care

By Dan Wolterman, and Dr. M. Michael Shabot | October 26, 2012 | Updated: November 7, 2012 11:22am

To many people, hospitals are considered safe havens where they go to get well - not a place where they could suffer a preventable harm event resulting in greater sickness, or worse, death. Intuitively, most people perceive hospitals as being High Reliability Organizations (HRO) where zero error is the norm. The reality, however, is far different, and begs the question: Can hospitals be evaluated by HRO standards?

In general the answer seems to be no, according to the Institute of Medicine’s 2000 publication of "To Err is Human" and continuing to the 2010 U.S. Office of Inspector General report that one in seven Medicare beneficiaries (13.5 percent) suffers a preventable serious adverse event during their hospital stay.

We believe, however, that hospitals can and should aspire to become HROs. Why? Everyone counts on HROs to ensure our personal safety when we fly on commercial airliners or travel near a nuclear power plant. Air traffic control, nuclear submarines, nuclear aircraft carriers and naval aviation all have well-deserved reputations as high reliability operations.

Patients and their families should have that same trust and confidence when they are admitted to a hospital, but we must earn it.

Before we discuss how hospitals get there let’s look at where we are now: The Journal of the American Medical Association reports that nearly 100,000 people die annually in hospitals from medical errors. Of this group, 80,000 die from hospital acquired infections, many of which can be prevented. Put into perspective, it would take about two hundred 747 airliners crashing annually to equal 100,000 preventable deaths.

Clearly, the above statistics are tragically abysmal, and if healthcare consumers were aware of them, they likely would avoid hospitals whenever possible. There is little doubt that hospitals must earn the trust of patients and their families by operationally functioning to HRO standards - which bring us to the question: How do hospitals become HROs?

A journey towards high reliability demands the highest quality clinical and administrative leadership. A major part of this journey is transforming the cultural approach to quality, patient safety, and infection control. Development of robust methodologies to “hardwire” quality and safety must be key objectives for any hospital aspiring to HRO’s five operational processes that are:

**Sensitivity to operations:** HROs recognize policies and procedures constantly change, and are mindful of the complexity of the systems in which they work. Sensitivity to operations will both reduce the number of errors and allow errors to be quickly identified and corrected before they have a chance to reach a patient.

**Reluctance to simplify:** HROs refuse to simplify or ignore the explanations for the complex difficulties and problems they face.

**Preoccupation with failure:** HROs are focused on predicting and eliminating failures rather than reacting to them.

**Deference to expertise:** HROs cultivate a culture in which team members and organizational leaders defer to the person with the most knowledge relevant to the issue they are confronting, which may be different from the traditional physician, nurse and technician hierarchy. A high reliability culture requires staff at every level to be comfortable sharing information and their concerns with others – and to be commended when they do so.

**Resilience:** A HRO assumes that, despite considerable safeguards, a system may fail in unanticipated ways. They anticipate these failures by developing systems of care that catch errors before they can reach patients, by training staff to perform quick situational assessments, and by practicing responses to system failures.

In 2006, Memorial Hermann embarked on a quest to become a HRO, with an aspiration to rank in the upper few percentiles of all hospitals and health systems in the country. We implemented our HRO program called “Breakthrough in Patient Safety” or BIPS.

Engineers and other experts from nuclear power, commercial aviation, naval aviation and other HROs were brought in to train all of our employees to perform tasks in a...
safe, highly reliable manner. The training was a requirement for everyone, and eventually more than 20,000 employees were trained in classrooms away from their job site.

Among other safety behaviors, employees were trained to take a one second stop - called STAR for Stop, Think, Act and Review - before taking an action like injecting a medication, since a one second stop has been proven to reduce errors by 90%. The one second stop has saved countless lives and many clinical meetings start with a safety story told by a nurse, physician, pharmacist, or other employee.

As a ubiquitous reminder, BIPS themed motivational materials were placed in public hallways and all patient rooms. Internal goals were set that rewarded 100 percent compliance with Centers for Medicare & Medicaid Services or CMS, and Joint Commission Core Quality Measures and no occurrences of adverse events like hospital acquired infections (HAIs), Patient Safety Indicators and Hospital Acquired Conditions (HACs).

Moreover, a comprehensive Electronic Health Record (EHR) was implemented for all patient care areas, including computerized physician order entry (CPOE) in all hospitals, automated computerized decision support and bar code bedside medication administration to ensure that the right patient was receiving the right medication.

Additionally, HRO methods were applied to blood sampling and blood administration. Checklists were implemented in all operating rooms and we worked with the Joint Commission's Center for Transforming Healthcare to radically improve hand hygiene.

In 2010 and 2011 the results of these initiatives began to be encouragingly apparent. When blood transfusions for the January 2007-August 2012 time period were tallied for a population of 1.3 million adjusted inpatients and 7.2 million days of care, more than 679,000 transfusions had been administered with zero cases of Blood Incompatibility (transfusion reaction).

Notably, several of our hospitals have gone years without a Ventilator Associated Pneumonia (VAP) or a central line associated blood stream infection (CLABSI). Additionally, serious medication errors decreased to zero most months even though over a million meds per month were being administered.

In February 2011, one of our busier community hospitals had remarkably gone a year since its last iatrogenic Pneumothorax - or a collapsed lung - as a result of air or gas getting into the chest due to a placement of a central venous catheter. Between then and now, a total of eight Memorial Hermann entities had gone a year or longer without an iatrogenic Pneumothorax, including eight community Emergency Departments that care for over 330,000 patients a year and who use ultrasound guidance for all central line insertions.

To recognize high reliability behavior, we created the Memorial Hermann High Reliability Certified Zero Award for hospitals that go for a year or longer without adverse events in Federally defined categories. We call the award "certified" because these results are formally certified in monthly reports to CMS. Since the program started in 2011, Memorial Hermann hospitals have earned a total of 77 Certified Zero Awards for avoiding hospital acquired infections, safety events and conditions for a year or more.

In March 2011, CMS published a national hospital listing for eight Hospital Acquired Conditions occurring in the October 2008-June 2010 time period. Our system had 48 possible entries, and 31 of the 48 entries were zero. More would have been zero if coding errors had been corrected in a timely way, a problem that has been addressed.

While we are encouraged by our patient safety achievements, we also recognize that becoming a HRO is a never-ending quest. Our goal is zero harm while providing safe and effective care to every patient and family. While all illnesses and injuries are not curable, it is possible to take excellent care of patients without incurring additional illness or injury.

As a rule, most hospitals do most things right. When aberrations occur, they can result in grave consequences for patients and their families. That's why hospitals must hardwire patient safety as a core value from the top down. At Memorial Hermann, ensuring patient safety is our core value, and it's our only core value. Our staff and physicians strive daily to live up to that standard. That's the thinking of a High Reliability Organization.

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