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Changing The Culture In Medical Education To Teach Patient Safety

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ABSTRACT In 1999 a seminal Institute of Medicine report estimated that preventable medical errors accounted for 44,000–98,000 patient deaths annually in U.S. hospitals. In response to this problem, the nation’s medical schools, teaching hospitals, and health systems recognized that achieving greater patient safety requires more than a brief course in an already crowded medical school curriculum. It requires a fundamental culture change across all phases of medical education. This includes graduate medical education, which is already teaching the next generation of physicians to approach patient safety in a new way. In this paper the authors explore five factors critical to transforming the culture for patient safety and reflect on one real-world example at the University of North Carolina School of Medicine.

When a report on medical errors comes out, the response often is the question: “Why aren’t they teaching this in medical school?” As noted by the Institute of Medicine (IOM) a decade ago in *To Err Is Human*,¹ one’s first reaction to a medical error is to blame someone. The report noted, however, that blame may be misplaced, because the conditions of the current health care delivery system can contribute to errors. Therefore, the IOM stated, a multilayered approach—one that addresses systems errors as well as human ones—must be taken to prevent medical errors. There is no “magic bullet” to fix this problem. Advancing patient safety requires a fundamental culture change in health care.

Medical education alone cannot accomplish this shift. However, critical elements of the change are evolving in the nation’s teaching hospitals and medical schools—collectively referred to as “academic medicine.” These institutions recognize that although they produce the best clinicians and scientific experts in the world and provide them with a great body of knowledge, today’s challenge lies in getting these experts to

work well together in the clinical environment.

Both individually and collectively as the academic medicine community, these institutions are changing their overall culture to bring about an environment more conducive to patient safety. They are putting processes in place to ensure that clinicians deliver care in optimal ways and, in doing so, are fostering the learning environment needed for resident physicians to become the central change agents for patient safety.

This paper provides an overview of this cultural change, identifies five factors critical to that change, and offers examples of how those factors are being implemented at the University of North Carolina (UNC) School of Medicine, one of the nation’s academic medical centers. Along with many other academic medical centers, the school is participating in the Agency for Healthcare Research and Quality (AHRQ) patient safety initiative called TeamSTEPPS (Strategies and Tools to Enhance Performance and Patient Safety).

TeamSTEPPS is a set of tools used to assess an institution’s readiness for change. The program offers patient safety training for health care staff

that is tailored to individual institutions and helps them adopt, sustain, and expand constructive changes. As implemented by the UNC School of Medicine as well as other academic medical centers, TeamSTEPPS exemplifies the cultural shift under way in health care. It demonstrates why academic medicine is uniquely positioned to advance patient safety culture.

Ongoing Culture Change

The nation's medical schools, teaching hospitals, and health systems are making the transition from the old culture of autonomy and independence to the new world of shared accountability, interdependence, and teamwork. Building a culture of safety has been a natural outgrowth of that process.

Part of this cultural shift is the view that medical education should be a continuum of building physician competence, rather than merely a sequence of independent compartments of pre-medical, medical, residency, and continuing medical education. In terms of improving care, this means that patient safety training cannot consist of a static, one-time lecture. Even though formal patient safety courses have increased in number fivefold in recent years,² more is needed. Patient safety training should be part of ongoing learning experiences integrated throughout the medical education curriculum, culminating with the modeling of best practices in the clinical setting. For example, although students are taught to wash their hands before tending to each patient, they will only truly learn this if it is reinforced by resident and faculty physician behavior in the clinical setting.

Although the medical school curriculum is an important part of this integrated continuum, curriculum changes alone are not sufficient. To achieve the culture change necessary to improve patient safety, medical schools and clinical practices must work together more effectively.

As stated in a second IOM report, *Crossing the Quality Chasm*, clinical training programs are so separate and dispersed that they “inhibit the types and magnitude of change in clinical education.”³ Unprecedented collaboration between medical schools and their partnering health systems will be required before the teaching of patient safety results in clinical improvements.

Critical Success Factors

No single action can transform an institution. However, several factors can help develop a culture for safety.

LEADERSHIP FROM THE TOP The first factor is explicit leadership from the top, which lends

credence to the importance of patient safety as integral to institutional culture. Within academic medicine, quality and safety progress when medical school and hospital leaders demonstrate that they value quality improvement by setting explicit goals that support institution-wide clinical excellence. Clinical quality should be recognized as readily as are high-revenue care and well-funded research grants.

INVOLVING STUDENTS The second factor is the early involvement of health professions students. More than 70,000 U.S. medical students⁴ are engaged almost daily in learning about the practice of medicine in the classroom, in the lab, and through observation and supervised participation in patient care. As students learn the fundamentals of science and medicine from labs and textbooks, they are also “imprinted” by the clinical work they see on rotations through clinical settings. Students learn from resident physicians, and both students and residents learn from faculty, thereby creating a powerful informal curriculum through the observation of care delivery.

According to a recent survey, the vast majority of graduate medical education programs nationwide work to have a major impact when students begin their residencies—a time during which they are especially impressionable. For example, well over 90 percent of graduate medical education programs include quality and safety in resident orientation and explicitly cover those subjects in conferences and rounds. The same survey shows that 87 percent of institutions directly engage residents in such activities as assigning residents to serve on institutional quality and safety committees.⁵

FOCUS DURING RESIDENCY The third factor is to use residents to teach medical students, more junior residents, and faculty simultaneously about patient safety. These residents are in a unique position, as learners gaining knowledge from faculty physicians through observation and targeted questioning, and as teachers modeling behaviors and techniques for health professions students. As such, residents can bring issues of patient safety to the forefront of care delivery, affecting the practices of their more senior and junior colleagues alike. They can serve as change agents by both mentoring students and “reverse mentoring” faculty.

HEALTH INFORMATION TECHNOLOGY The fourth factor is health information technology (IT). As health IT systems become more fully developed and widespread, real-time data can help detect and prevent adverse events, improve communication among providers, and support better documentation. Given their lifelong familiarity with technology, the newest generation of physi-

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Critical Success Factors

There are five factors critical to the success of developing a culture of safety:

- (1) explicit leadership from the top;
- (2) early engagement of health professions students;
- (3) having residents teach others about patient safety;
- (4) the use of health information technology; and
- (5) promoting teamwork among health professions.

cians will play a key role in the more extensive use of health IT to promote quality and safety.

TEAMWORK AMONG HEALTH PROFESSIONS The fifth factor is teamwork with other health professions. Interprofessional activities empower all health professions workers—regardless of their field—to identify issues that might lead to a medical error. This, in turn, facilitates the teamwork that is vital to truly patient-centered care.

Graduate medical education programs actively provide this interprofessional training, which is further evidence of the overall culture change taking place in medical schools and teaching hospitals. Of the teaching hospitals surveyed in 2010, for example, 78 percent had interprofessional rounds, in which an interdisciplinary team of health professionals visits the patient. Forty-seven percent of teaching hospitals had interprofessional care-based rotations that educate residents alongside other health professions students. Forty-five percent of teaching hospitals used interprofessional care models in all residency programs.⁵

The UNC Change Experience

An example of how these five factors come together to advance culture change can be found at the graduate medical education program at the University of North Carolina School of Medicine.

MAKING PATIENT SAFETY THE TOP PRIORITY Since the publication of *To Err Is Human*, the school's leadership has made it clear that patient safety is its highest priority—a reflection of the first success factor cited above. The medical school has reduced errors and improved care through cultural and curricular change across its entire continuum of medical education.

The school has positioned resident physicians as key actors in the movement for patient safety culture change. It has engaged them early in the process—success factors numbers two and three—in a variety of ways. Although residents sit on the patient safety council of UNC hospitals, resident physicians with faculty mentoring have also formed their own patient safety council, thereby making leadership their direct responsibility.

Residents have voting membership on the medical staff executive committee, which governs all committees within the hospital. They also have voting membership on the professional liability advisory committee. This panel examines and assesses acts resulting in legal claims, as well as cases in which human or systems errors may have occurred, even if no patient was harmed in the process.

MORBIDITY AND MORTALITY CONFERENCES

Morbidity and mortality conferences create “teachable moments” out of poor medical outcomes. These have been standardized at the University of North Carolina, with all cases presented by a resident and the supervising faculty member. Among the issues assessed are human error and performance, fatigue and fitness for duty, and attending physician supervision. A systems-based approach that addresses physicians' conduct within the context of the care environment is used to suggest improvements and to identify factors that might harm another patient if the error recurs. In other words, instead of “shame and blame,” these conferences are used to ask questions such as: “Is this an error specific to the individual and his or her level of training, or would another practitioner placed in the same situation be likely to make the same error?”

The challenge for teaching hospitals, in a climate that is often litigious, lies in creating a culture of continuous improvement in which mistakes are readily acknowledged. Thus, the open approach to morbidity and mortality conferences allows everyone on the care team to talk about and analyze systems errors. To ensure that the discussion is protected legally, a medical school hospital risk manager is assigned to attend the conference and functions as the “go-between” to take issues to other departments.

SAFETY ELECTIVE The UNC School of Medicine also offers a one-month patient safety elective to any resident in any program. The safety elective covers topics such as how communication relates to safety, followed by discussion with clinical leaders. Residents must then complete a patient safety project that is approved by a mentor from their program. In fact, numerous UNC School of Medicine programs now require residents to formulate and complete these projects. This requirement also helps develop a pool of faculty members to mentor the process.

USE OF HIGH-TECH SIMULATION The University of North Carolina medical school has implemented the fourth and fifth success factors—health IT and teamwork—gradually, over time. For example, the school has used high-fidelity patient simulation—life-sized, anatomically correct, computerized mannequins—since 1994. The simulation exercises were originally part of a manual skills lab to teach such techniques as the administration of intravenous medicine. Now, however, simulation scenarios include discussions about care processes with other health professionals, preparing students in next-to-real settings for interprofessional work.

USE OF TEAMSTEPS As mentioned above, one of the most notable examples of successful patient safety culture change at the UNC School of

Medicine has been the implementation of the TeamSTEPPS program. Cosponsored by the Agency for Healthcare Research and Quality and the U.S. Department of Defense, TeamSTEPPS teaches residents the value of working in multidisciplinary and multiprofessional teams. National implementation of this initiative is organized around five core resource centers that provide master training courses in patient safety to front-line providers.

TeamSTEPPS was first implemented in the UNC School of Medicine's intensive care units and then expanded to each area before, during, and after surgery, as well as to other departments. Today, there are more than thirty master trainers at the school, some of whom are resident physicians.

EFFECTS ON OUTCOMES All of these cultural changes implemented at the UNC School of Medicine are having a positive effect on patient outcomes. For example, the medical school has reported a decrease in hospital-acquired infections—such as intravenous central line infections and ventilator-associated pneumonias. The institution also has seen a substantial increase in inpatient satisfaction.

An Evolving Culture of Safety

When it comes to patient safety and culture change, all health care is local, and each institution has unique challenges and opportunities. Success stories are emerging daily from academic medical centers such as the UNC School of Medicine. These institutions go beyond simply teaching isolated courses to integrating

safety into learning and clinical practice.

It has become clear that resident education can be a key driver of culture change, which, in turn, corresponds to improvements in quality and safety. However, the approximately 25,000 physicians completing training every year enter a complex health care system that has nearly 835,000 active physicians,⁴ more than 2.5 million registered nurses,⁶ and countless other health professionals. Simply stated, newly minted physicians do not have the critical mass to single-handedly transform health care. This means that the goals justifiably espoused by so many will not be reached overnight.

Yet there is reason to be optimistic. With its long history of advancing the science behind health care, academic medicine is uniquely positioned to advance the culture of patient safety. In addition to nurturing the next generation of physicians, academic medical centers have a built-in capability to conduct health services research. When combined with a growing investment in comparative effectiveness research, these factors will help physicians improve care at the bedside.

Attaining the nation's goals in patient safety and clinical quality will require unprecedented integration among educational, scientific, and clinical care enterprises. This integration cannot be legislated but rather will require teachers, learners, researchers, and clinical care providers to work in concert to finally bridge the "quality chasm." The work described above that is taking place in academic medical centers demonstrates that this process is already well under way. ■

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NOTES

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Kirch became president of the association in 2006, following six years as senior vice president for health affairs, dean of the college of medicine, and CEO of the Milton S. Hershey Medical Center at the Pennsylvania State University. Trained as both a psychiatrist and a neuroscientist, he previously served at the National Institute of Mental Health, where he was named acting scientific director in 1993.



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Kirch and Boyesen have long-standing interests in improving patient safety and reducing medical errors. Kirch is particularly concerned with changing the culture of medical schools. "The culture of safety cannot be separated from the broader cultural change to patient-centered systems, where collaborative teams of health professionals provide highly coordinated care. If we are able to establish these teams and the systems to support them, then patient safety will follow," Kirch says.

Both Kirch and Boyesen are proponents of changing the "shame and blame" environment prevalent in many teaching hospitals in favor of holding systems accountable and taking the necessary steps to improve them. "The enemy is not the person" said to have committed an error, Boyesen says; rather, the enemy is "the mistake, the error, the imperfect system."

Both men believe that promoting a more open patient-centered environment is key. Says Kirch, "Increasingly, our schools are working to ensure that students

have patient contact from their earliest days and are also building the communication skills that are so essential to trust."

For Kirch and Boyesen, personal experience has profoundly shaped their thinking on medical errors. Says Kirch, "No experience was more emotionally powerful than working with patients and their families after errors had taken their very human toll. Most health care leaders are motivated by these very personal experiences, rather than external mandates around safety."

Boyesen recalls an instance during his residency when he gave the wrong drug to a patient intravenously. He admitted his mistake to his supervising attending physician. "Rather than tear into me, he calmly looked at the anesthesia cart, syringes, vials, identifying stickers. He remarked that the two vials look almost exactly alike. It turned out many people had made the same mistake. He contacted the company, and they changed the vials," Boyesen says.

"I had made an error that fortunately did not harm the patient in my care," he reflects. "I could have said nothing, and the attending could have treated me like some idiot. Both of us did the right thing, and patient safety was improved. I have never forgotten that lesson."