The Future of Graduate Medical Education: A Systems-Based Approach to Ensure Patient Safety

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Abstract

In the past 15 years, there has been growing recognition that improving patient safety must be more systems based and sophisticated than the traditional approach of simply telling health care providers to "be more careful." Drawing from his own experience, the author discusses barriers to systems-based patient safety initiatives and emphasizes the importance of overcoming those barriers. Physicians may be slow to adopt standardized patient safety initiatives because of a resistance to standardization, but faculty in training institutions have a responsibility to model safe, effective, systems-based approaches to patient care in order to instill these values in the residents they teach. Importantly, graduate medical education (GME) is well positioned to influence not only how future physicians provide care to patients but also how today's physicians and health care systems improve patient safety and care. The necessary systems-based knowledge and skills are rooted in both understanding and proficiently identifying threats to patient safety, their underlying causes, the development and implementation of effective countermeasures, and the measurement of whether the threat has been successfully addressed. This knowledge and its application is notably absent in the operation of most institutions that sponsor GME training programs in terms of didactic instruction and everyday demonstrated proficiency. Most important of all, faculty must model the behavior and competencies that are desirable in future physicians and not fall into the trap of the "do as I say, not as I do" mentality, which can have a corrosive deleterious effect on the next generation of physicians.

The practice of medicine has changed and evolved over time, and the past 15 years have been a period of particularly rapid change especially with regard to the emphasis on patient safety. Before this period, isolated pockets of clinical care systems had considered systematic identification and mitigation of hazards that negatively impacted patient safety. The U.S. health care system in general, however, had essentially ignored this facet of medical care until it was highlighted both to the industry and to the public in the Institute of Medicine (IOM) report "To Err Is Human," which was released at the end of 1999.[1] This report stated that 44,000 to 98,000 patients died as the result of medical error annually in the United States. Although there was much debate as to the accuracy of this number, there was little doubt that the number of patients who were harmed or who died was higher than was acceptable.

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Patient Safety Efforts in the United States

Prior to the publication of "To Err Is Human," the U.S. Department of Veterans Affairs (VA) had already created and implemented a comprehensive patient safety program. These efforts included the creation of the National Center for Patient Safety (NCPS), which was formed in response to the recommendations of an outside oversight committee tasked by the VA undersecretary of health in 1997 with recommending how the VA could better address challenges to patient safety. I was privileged both to serve as chair of this oversight committee and to be the founding director of the VA NCPS as well as the first chief patient safety officer of the Veterans Health Administration. In 1999, even before the publication of "To Err Is Human," the VA had already begun the extensive rollout of its patient safety initiative throughout the entire VA system. One of the first things the VA did was to devise a Culture of Safety Survey, which served both to characterize the status quo to inform needs and implementation strategies, and to provide a frame of reference to judge progress.[2]

During this rollout I approached the Joint Commission (TJC) and sought their cooperation as we implemented the VA patient safety system. The VA system went into much more depth than the existing TJC patient safety standards. The VA implemented a program that went much further than root cause analysis and encompassed the definition of explicit requirements regarding prioritization, causal determination, and action implementation and measurement.[3–6] On the basis of the experience with the VA's successes in this endeavor, TJC instituted patient-safety-related standards that were based on the VA's program.[7] These same strategies were also employed by a number of other institutions both within the United States as well as in a number of other countries.

Subsequently, TJC, the Centers for Medicare and Medicaid Services, and myriad regulatory and other organizations promulgated a number of practices and metrics that were aimed at improving the safety and quality of patient care with varying success. These efforts have both introduced technologically based tools to mitigate risk as well as inadvertently introduced new risks that in some cases are rooted in the lack of explicit technological and organizational means to deal

with the continually changing clinical environment in which patient care occurs. The change that is of the greatest concern is not the change which is technologically based but that which involves the culture and method by which medicine is practiced as well as adopts and adapts to these technology-based changes. Presently, the emphasis on the quality, safety, and efficiency of medical care is greater than at any time in the past and is not only of interest to the profession but to the public as well. Graduate medical education (GME) is uniquely positioned to play a pivotal role in the successful adaptation to this change, and the time to act is now.

Of course, GME plays a major role in the way health care is delivered to patients, not only in the present, as residents and fellows care for patients during their residency, but especially in the future when these physicians will be leading their own care delivery teams. GME is part of a greater system, and because of this inextricable relationship, the interaction between GME and the daily practice of medicine must be taken into account when considering any changes that might be made to how patient safety is taught during GME.

The Need for a Systems-Based Approach to Patient Safety

Medicine has not traditionally intervened proactively to correct organizational or clinical problems in any consistent systems-based matter but, rather, has tended to focus on a much narrower, more reactive approach. One concrete example of this failure to view problems in a systems-based way is the past practice surrounding the use of concentrated electrolytes, such as potassium chloride, that had to be prepared for IV administration by nurses on the patient care floors. Occasionally a nurse would mistakenly administer the concentrated electrolyte solution directly into the patient IV without first diluting it in the IV bag or bottle, resulting in the death of the patient. The typical countermeasure used to prevent these events was to instruct nurses to "be careful," which was obviously not effective. It was not until approximately the year 2000 that the more systems-based approach of having IV fluids premixed by the manufacturer or pharmacy to provide IV solutions containing the desired concentrations of potassium chloride was widely implemented, thus virtually eliminating the chance of these errors occurring.

The recent proliferation of the term "patient-centered care" is another example of a reactive approach to addressing a problem. When we call for a focus on patient-centered care, we are responding to physicians' all-too-frequent concentration on specific tasks or their own personal priorities without adequately considering the true needs and wishes of the patient. But what is modern medicine if it is not patient centered? Is it income centered, status centered, time-off centered? This is especially curious when one considers that if there were no patients, there would be no need for health care in the first place. As William J. Mayo put it in 1910, "The best interest of the patient is the only interest to be considered."[8] The recent cry to return to a "patient-centered" model of care demonstrates a concrete lack of a systems approach to health care delivery that is focused on the needs of the patient as the driving force.

There is also evidence of a lack of a systems-based approach to problem solving at a more tactical level. For example, when an adverse event results in injury to a patient, the common kneejerk reaction is to conclude that this event is attributable to personal error on the part of the caregiver most proximate to the event, often resulting in a response that merely admonishes those involved either to "try harder" or "be more careful" or, worse, to punish those parties involved as well.[9] Such medieval countermeasures are ineffective at best; they can demoralize those involved, motivate the concealment of problems that could be mitigated, and result in repeated adverse events. This approach shows a lack of appreciation for the complex set of circumstances that cause adverse events and the need for systems-based solutions that can provide effective sustainable improvement.

The lack of a systems-based approach that addresses the needs and problems in health care is not surprising because a more reactionary, superficial, blame-based approach is common outside of medicine as well. Throughout society, our initial reaction to a problem is often to ask whose fault it is, which implies that if we just find the guilty party and appropriately punish or train them, the problem will never occur in the future. This failed approach comes in large part from a failure to understand that the overall strategic goal is not to seek out errors and those individuals associated with them but, rather, to provide the patient with care at a level of quality and safety that meets or exceeds their expectations.

With regard to patient safety, the goal should be the prevention of unintended harm to the patient while under our care. Industries outside of medicine provide models for achieving this goal. The aviation and nuclear power industries are two examples of high-reliability industries that have long been notable exceptions to the traditional superficial and kneejerk way of handling adverse events. These industries are much more methodical in identifying overarching goals, determining the systems-based root cause of problems, formulating appropriate countermeasures, defining metrics for assessing success, establishing schedules and individuals responsible for execution of all actions, and standardizing processes to eliminate needless variation that contributes to poor performance. These industries are also much more proactive in identifying not only current problems but also potential problems, often referred to as close calls or near misses. They routinely use formal tools, such as root cause analysis, to examine these close calls, and risk-based prioritization tools to identify the hazards that need to be addressed first and to openly communicate internally and externally about the problems encountered, how prioritization is done, and which corrective actions will be taken by whom and by what time.

In contrast, to my knowledge, only a small minority of health care institutions even accept reports of close calls, and only a small percentage of these ever take action to understand or mitigate the underlying hazards causing the close calls. The failure to encourage the reporting of close calls or to take action to mitigate the underlying causes brought to light by close calls virtually guarantees that systematic learning will only happen after a patient has been harmed by an adverse event. This traditional ineffective and inefficient approach would seem to exemplify the old "experience is the best teacher" approach to learning. Unfortunately, in the health care domain,

the individual who pays the "tuition" for this educational approach with the currency of human suffering and added medical expenditures is primarily the patient, not the health care provider. The incentives associated with risk and reward in patient safety are obviously not appropriately aligned.

The Role of GME in Creating a Systems-Based Approach to Patient Safety

At an organizational level, the Accreditation Council for Graduate Medical Education (ACGME) has begun to address these problems through its Next Accreditation System (NAS) and particularly through the Clinical Learning Environment Review (CLER). The decision to embark on these new endeavors arose out of the ACGME's taskforce on resident duty hours that was convened in response to the 2009 IOM report "Resident Duty Hours: Enhancing Sleep, Supervision, and Safety."[10]

The question related to duty hours is, of course, only a small part of the overall objective of the ACGME, which can be summarized as making sure that physicians-in-training become competent to practice medicine in both the short and long term, as well as ensuring that patients are not inadvertently harmed in the process of residents' training. The taskforce's recognition of the importance of taking this broader perspective caused the Taskforce on Resident Duty Hours to change its name to the Taskforce on Patient Safety and Professionalism, and its subsequent refocused activities led to the CLER being included as a component of the NAS.[11,12]

The CLER looks at six domains—patient safety; health care quality; care transitions; supervision; duty hours and fatigue mitigation; and professionalism. The objective is to assess how the environment in which trainees are immersed on a daily basis provides a positive example through which the trainees will learn to provide safe, high-quality patient care. To date, CLER visits at hundreds of institutions have observed a general lack of resident exposure to and engagement in a systems-based practice of medicine in the clinical environments in which they train, especially with regard to quality and safety. Based on early findings, our patients are not being cared for in an optimal clinical environment because the faculty often do not practice medicine or pursue opportunities for improvement in quality and safety in a systems-based manner, which means that the residents seldom see it demonstrated in actual practice.[13] Worse yet, the contradiction and apparent hypocrisy as demonstrated in the difference between what residents are told in a didactic setting and what they see in the actual practice of the faculty and operation of the institutions where they receive their training can imbue cynicism in the trainees. The responsibility for improving this lackluster performance does not just reside with GME but also with the clinical operation of the institutions in which training takes place. Failure to address systems-based issues at an institutional level causes residents to enter practice with little knowledge about or experience with providing systems-based patient-centered care, let alone ability to act as leaders to advance care along these lines throughout their careers.

The skills necessary to achieve the goals that the ACGME has set are well documented although not consistently or widely practiced. The most significant obstacle is not one of a lack of knowledge but one of a cultural nature and a lack of desire or sense of urgency to move from the status quo. It has been reported that it takes around 17 years before 50% of clinicians actually adopt clinical practices that have been conclusively demonstrated to be the treatment of choice.[14] This discouraging statistic suggests a culture in which clinicians paradoxically profess that they value research and well-run studies that produce reliable evidence but then do not incorporate this evidence into their own clinical practice. They often hide behind excuses such as "we don't do it that way here," often justified by unsubstantiated assertions that their patients are different because they are older, sicker, poorer, etc.

The resistance to standardization, which may be derided as "cookie cutter medicine," demonstrates a lack of understanding regarding the harm to patients that results from needless variation. Standardization does not denote a mindless lockstep uniformity but, rather, implies that activities are carried out in a consistent manner leading to more consistent and reproducible results. Standardization also improves team communication and outcomes because team members can anticipate what is supposed to happen and be better prepared to facilitate assistance when necessary or more readily detect things that are beginning to go awry in time to mitigate the hazard. Resistance to change does not pervade all aspects of a clinician's life, of course. Clinicians certainly did not take 17 years for a 50% adoption of smartphones or to comply with various filing requirements in order to be paid by insurers. So why is the motivation to improve patient care not as strong as the motivation to buy a new smartphone? There is likely widespread ignorance regarding the underlying understanding of a systems-based approach to improvement and a resignation to the perception that clinicians feel they are powerless to make changes in their care environment.

Just as we have begun to move away from eminence-based medicine toward evidence-based medicine, we need to move from the reactive, blame-based response in dealing with adverse events to a proactive, risk- and systems-based method of identifying hazards and mitigating risk to patients. GME is in the prime position to impact the practice of medicine decades into the future. To be successful it will take more than simply providing residents with the knowledge required for them to more effectively recognize and mitigate problems; it will actually require those who train and mentor residents to lead by example. This will require senior clinicians to acquire not only an academic knowledge but also a working knowledge of systems-based, risk-mitigating skill sets and then demonstrate these skills routinely by applying them every day. Gaining expertise in these nonclinical areas is not optional to practice medicine, it is absolutely required.

The days when clinicians could delude themselves into thinking that an individual's clinical knowledge and expertise were all that was required are in the past. The on-site cyclical CLER visits and assessments provide one form of feedback to inform institutions about their strengths, weaknesses, and opportunities for improvement. More than ever, patient care is a team sport, and clinicians will be irrelevant if they do not acquire and embrace the systems-based skills needed to ensure that

patients receive the best possible team- and systems-based care. It is especially important for faculty in training institutions to gain these skills and experience as soon as possible because they are the role models after which the residents pattern their own actions. To do less creates the hypocritical atmosphere typified by the mentality "Do as I say, not as I do." Our physicians-in-training and especially our patients deserve better.

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