The July Effect: Fertile Ground for Systems Improvement

A decade after the publication of the Institute of Medicine report *To Err Is Human* (1), health care still is considered a low-reliability industry associated with significant preventable patient harm. An editorial describing the experience of 2 physicians, father and son, during their first night of call separated by 30 years offers sobering insight into the preventable harm and terrors experienced by rookie physicians as they confront their first patients (2). It highlights why academic health centers brace themselves for the arrival of new trainees and describes an almost unchanged experience, despite the passage of time and the institution of systems to improve the safety and quality of clinical care and learning in teaching hospitals (2).

Despite these systems, significant risk for patient harm in teaching hospitals is a persistent problem, largely because of the lack of safeguards surrounding inexperienced new physicians when they are first entrusted with major clinical responsibilities. Policies, guidelines, and checklists help raise awareness and prevent some harm, but they appear to fall short of helping create an ultrasafe system (3). Despite unprecedented levels of spending, preventable medical errors abound, uncoordinated care still frustrates patients and providers, and health care costs continue to rise (4).

High reliability—or consistent performance at high levels of safety at all period—is a hallmark for other high-risk industries, such as aviation and nuclear power (5). Reliable patient care is the ultimate responsibility of the attending physician and the clinical microsystem. Clinical microsystems provide a conceptual and practical framework for thinking about the organization and the mindful delivery of safe care (6, 7). Medical education, from the first year of medical school through the end of residency training, requires learners to assume graded responsibility and autonomy in clinical practice while the trainees engage as the mechanisms that cause these outcome changes, despite the passage of time and the institution of systems to improve the safety and quality of clinical care and learning in teaching hospitals (2).

The superb systematic review by Young and colleagues (8) adds evidence to the long-held suspicion that in practice, the quality of care in teaching hospitals decreases at the start of the academic year. Patients and physicians have suspected this, but individual studies often offered inconclusive findings. Now we have the evidence. The review clearly traces the worsening in patient quality and safety by new interns and residents as they advance toward mastering patient care. Higher-quality studies have consistently found greater evidence of a true “July effect” throughout training.

The finding is sobering. The public expects safe, high-quality health care and wants its teaching hospitals to lead the way: in generating and applying new knowledge, in teaching the next generation of health professionals, and in demonstrating high scores on publically reported quality and safety measures. The evidence from closed-claims studies comparing medical errors in teaching and nonteaching settings does not bear this out (10).

Clearly highlighted by the review, and potentially even more disturbing, is that the debate over the existence, magnitude, and impact of the July effect spans 20 years. Even if one interprets Young and colleagues’ comments that “unpublished studies may be more likely to have negative results,” the existence of this phenomenon seems incontrovertible and unsettling. Alarming, Young and colleagues note that effective interventions will benefit from better information about the causes and magnitudes of harm in a variety of clinical settings and that until efficient models are developed, “addressing the effects of changeovers will probably require considerable resources.” Thus, the July effect can be added to patient outcomes that require further study or have solutions that are considered out of financial reach for a nation that already spends more than 16% of a sizable gross domestic product on health care. Members of the medical and education communities may acknowledge the July effect as a topic requiring further study; a problem with an unfunded mandate; or, worse, a necessary tradeoff in institutions where learners participate in care. None of these are acceptable.

We should accept that Young and colleagues’ review provides the best available evidence and that effective interventions requiring implementation and robust evaluation exist. “Good” science involves more than evidence of effect; it requires innovative research methods, including action research, observational methods, and improvement science methods to better understand how to socialize and support new physicians during large cohort turnovers. These new methods can help shed light on the relationships and interactions between trainees and their teachers and between patients and the technologies that support this interaction. When cohort turnover studies are decoupled from practice and are poorly reconciled with the practical, material, and temporal arrangements of delivering health care services, they miss the organizational, political, and emotional processes of learning and their effect on the socialization of trainees (11).

Young and colleagues’ review identified clinical inexperience, inadequate supervision of trainees functioning in new clinical roles, and loss of “systems knowledge” due to team turnover and departure of the experienced, “systems-literate” clinicians as the mechanisms that cause these outcomes.
comes. The relevant empiric work has been done. Needed now is the courage to apply existing data on the effectiveness of interventions in these areas to attenuate or eliminate the July effect. The solutions—such as enhancing supervision, reducing the tempo of the uptake of clinical responsibilities in the first weeks of service, avoiding overnight responsibilities during that period, coupling experienced providers with inexperienced ones in a buddy system, and implementing even more involved interventions (for example, staggering the start dates of trainees over the year)—will greatly enhance individual learning, performance, and patient safety. Simulation, team training, and better “on-boarding” of new trainees centered on the clinical microsystem will help transfer knowledge from departing trainees. Many of these interventions already are standard approaches currently included in the Accreditation Council for Graduate Medical Education’s accreditation standards, and the enhancements to the supervision standards to be implemented in July 2011 are particularly relevant (12). These interventions require no future “test of concept” studies; they require political will and financial support for implementation and evaluation.

Ensuring safe care in teaching hospitals in July cannot wait any longer. It will require the ability to pool data from local tests of change. Ideally, identical interventions will be implemented across several settings, and the studies will be powered to ascertain the effectiveness of the change and to ensure sufficient organizational breadth for generalizability across different teaching institutions. Finally, future work should address the dearth of data on the effect of the changeover in the ambulatory setting. The effect among outpatients may be more subtle; data already suggest that harm is common (13), and less than one half of ambulatory patients receive the health services indicated to optimally manage their health (14).

Reliable quality and safe patient care throughout the academic year will require a multipronged approach, one that recognizes the need to immerse trainees in a new clinical environment but with seasoned mentorship, close supervision, and graduated clinical responsibilities. The complex interrelationships among the July effect, handoffs of clinical care, excessive work hours, sleep deprivation, and increased medical errors highlight a profound need for a robust and resilient systems approach to mitigate the chaotic healthcare settings in which trainees must perform and survive. It is time to move beyond the “counting and control model” to one that enables and supports dedicated trainees struggling to manage the ever-growing complexity of their new social and technical environments. We need to better understand how best to protect patients and providers during cohort turnovers while developing a culture where trainees feel psychologically safe to speak up, admit error, challenge poor practices, and learn to be accountable for their actions (15).

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