

Knowing the Science Is Not Enough: Integrating Health Care Delivery and Services Into GME

DAVID P. SKLAR, MD

The current US health care system is expensive,¹ provides an uneven quality of care,² and leaves about 40% of US adults uninsured or underinsured.³ The medical education system in the United States may contribute to these problems through its emphasis on the treatment of disease rather than addressing patient safety, cost-effective health care delivery, and population health. Graduate medical education (GME) occurs at the fulcrum of clinical care delivery and medical school, and could play an important role in altering medical education to better address features of clinical quality, health care costs, and access to health services. In the process, GME could bring about needed improvements in the delivery of health care services and prevention of disease and injury. To accomplish these goals, GME will have to build bridges between the clinical and educational enterprises. GME could begin a radical reconceptualization of the medical education continuum through the blending of health services concepts and competencies with traditional biomedical, bioscience models. In doing so, the prioritization of time and effort for residents and faculty would have to change to allow excellence in clinical quality to become the driving force for GME, and ultimately for the continuum of medical education.

Bioscience Versus Clinical Quality Paradigms

One hundred years ago the traditional model of medical education grew out of Flexner's emphasis of the scientific basis for medical education. At the time, this model arose partly as a reaction to some medical schools that used nonscientific conceptions of health and disease. Flexner's recommendations led to the closure of many substandard medical schools and the basing of medical education upon a scientific foundation.⁴ Current concerns about health care quality derive from problems in the care delivery system rather than the bioscientific model of disease.² If effective treatments are not reaching patients because of barriers in the delivery system, the effect upon quality of care is the same as if ineffective treatments were being administered. Training physicians in the latest procedures for treatment

of disease will be of little use if the patients are not able to access the treatments, or teams of nurses and technicians are not available to prevent complications during convalescence from the treatment. The many facets of health services delivery should be joined with the bioscientific model of disease to create an overarching model of clinical care quality as a new foundation for GME.

The Institute of Medicine has offered a description of the attributes of high-quality medical care that can be useful in exploring the implications of clinical quality as a rubric for medical education.⁵ High-quality medical care should be safe, timely, effective, efficient, equitable, and patient centered. These attributes provide aims for the process of medical education and can be used to identify areas of knowledge and experience that will lead to achievement of these aims. By analyzing what topics or experiences would contribute to expertise in each of the desired attributes, a method for prioritizing topic areas for education could be derived. An example for how this might be accomplished in the undergraduate medical curriculum has been presented and could be applied to GME in each specialty.⁶ The current curricular struggles to add new topics within an already packed curriculum might be minimized if attributes of clinical quality drove medical education curriculum development rather than disease- or specialty-centered care.

GME's Potential to Transform

Because GME is generally located within the clinical care environment, it has the potential to transform and be transformed through engagement in health services. It can *transform* health services through the scholarly application of evidence-based medical concepts to improve quality, as has occurred in the analysis of the best approaches to diagnose a pulmonary embolism,⁷ treat pneumonia,⁸ or avoid a central-line infection.⁹ It can *be transformed* by health services by altering how and where residents use their time, what problems are presented to them for solution, and what parameters are used to judge their performance. If those parameters are associated with the attributes of quality, residency will be revolutionized. For example, one can only imagine how residents would prioritize their activities (and time) if their evaluations were based at least in part upon rehospitalization rates of patients with congestive heart failure or after elective

David P. Sklar, MD, is Associate Dean for Graduate Medical Education and Professor of Emergency Medicine at the University of New Mexico School of Medicine.

Corresponding author: David P. Sklar, MD, 1 University of New Mexico, MSC 11 6093, Albuquerque, NM 87131, 505.272.6225, DSKlar@salud.unm.edu

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surgery. Making them co-accountable for these outcomes might enhance their interest and engagement in information systems and data management, outpatient scheduling, and communications. Because residents provide a significant share of the education of medical students and soon will be independently practicing physicians, their augmented knowledge and skills can rapidly diffuse into the arenas of undergraduate medical education and continuing medical education. Current divisions between the phases of medical education have created complex bureaucracies that oversee each phase of education. A reconceptualization of medical education around the concept of clinical quality will provide the opportunity to reexamine the current continuum of medical education and identify opportunities to reduce duplication, and perhaps shorten time in some phases of the educational process.

Practical Implications of a Clinical Quality Focus for GME

The practical implications of a reconceptualization of medical education around quality will change how residents progress through the education process. Current allocation of resident training has been based upon a fixed duration of time spent at a particular level. The philosophy behind such allocation of time has been that through exposure to a certain number of patients and performance of certain number of procedures—both under the supervision of expert attendings—the average resident is able to achieve competence. However, the evidence base for such assumptions is limited.¹⁰ The Accreditation Council for Graduate Medical Education is currently developing educational milestones¹¹ that may allow some flexibility in the time spent to reach a particular milestone. A reconceptualization around clinical quality would go further. The achievement of resident competence through the performance of procedures, both simulated and live, would be a shared goal between educators, and hospital and clinic administration. The performance of an adequate number of procedures, as a surrogate for competency, would be replaced by documentation of achievement of competence through a mix of simulation and actual patient experience. This mix would incorporate the variety and quantity of experience needed to achieve competence for a particular practice environment.

The integration of health services and health policy with patient care during GME requires increased engagement of residents in the processes of health care delivery improvement. Such involvement must be a central care aspect of residency training¹² rather than the limited peripheral role it currently plays in GME in most institutions. This would require a broad cultural change for medical education.¹³ Residents, by virtue of their presence within most steps of the health care system, may often understand some of the

system-based barriers. They are also generally aware of many of the dangers to patients in their hospital wards and clinics. They may have clear ideas regarding potential solutions to improve safety, improve quality, or lower cost. However, they have neither the quality-improvement or leadership skills nor the institutional empowerment to institute change. If those quality-improvement skills were strengthened, residents could participate in improving the quality of health care delivery systems.¹⁴ GME institutions, in turn, should be required to train residents only in high-quality, responsive health care systems. The specific areas of emphasis would likely differ in each specialty. What would be most important is the joining of health services and health policy with bioscientific concepts, those concepts that have driven medical education for the past hundred years.

In this new educational model, education deans would meet regularly with nursing administration, hospital administration, and clinic administration, and the achievement of high-performance quality outcomes would be a shared goal with shared incentives and consequences for failure. This, in turn, would ultimately provide an appropriately trained workforce with the skills and motivation to improve the US health care system so that it can deliver high-quality, safe medical care in a cost-efficient manner to the entire population.

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