

Repeal and Replace? A Note of Caution for Medical School Curriculum Reformers

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Abstract

The sudden, dramatic collapse of the seven-year struggle in Congress to repeal and replace the Affordable Care Act holds important lessons for all would-be reformers, including those advocating fundamental changes in medical education. In this Invited Commentary, the author draws parallels between reform initiatives in health policy and those in medical education, highlighting that, in both settings, stakeholders rarely support “repeal” in the absence of a superior replacement, even when they view the status quo as deeply flawed.

For more than three decades, reformers have worked to overhaul the

preclerkship medical school curriculum. The author compares two broad categories of these reform initiatives. First, pedagogical reforms largely preserve existing curricular content, instead seeking to maximize active learning principles from educational psychology. By contrast, content reformers attribute the traditional curriculum’s shortcomings mainly to what students are taught, rather than how they learn, and seek to swap out significant portions of the existing basic science curriculum to make room for more clinically relevant material. While pedagogical innovations currently dominate reform efforts, few

medical education research studies have rigorously proved the impact of different teaching strategies on the outcome of greatest interest to future patients and the public at large: Do new teaching methods yield better doctors?

The persistent reliance of residency programs on United States Medical Licensing Examination Step 1 scores in the resident selection process constitutes the single greatest barrier to fundamental paradigm shifts in undergraduate medical education. The author concludes by proposing a solution to overcome this barrier.

The sudden, dramatic collapse of the seven-year struggle in Congress to repeal and replace the Affordable Care Act (ACA) holds important lessons for all would-be reformers, including those advocating fundamental changes in medical education. Perhaps the most cogent insight that the defeat of the ACA repeal offers is that, even when widespread misgivings arise about the status quo, the success of repeal initiatives depends on establishing public trust in the proposed replacement. Repeal movements succeed only when reformers present a detailed, clearly articulated alternative plan that stands ready for implementation and that most stakeholders deem preferable to the status quo. The hastily contrived plans offered as replacements to the ACA fell well short of this standard, and repeal failed.

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Contrast this failure with the brisk, wholesale restructuring of U.S. and Canadian medical education that followed the publication of Abraham Flexner’s¹ 1910 report to the Carnegie Foundation, which called for replacing proprietary medical schools that lacked laboratory and clinical teaching facilities with schools that required college graduates to complete two years of rigorous, laboratory-based training in the basic sciences followed by two years of supervised hospital practice. The resulting “2 + 2” medical school model, with basic science courses followed by clinical clerkships, quickly became the standard, which has proven remarkably durable in the United States and abroad.

For several decades, however, changes in the clinic and hospital have outpaced those in the classroom, resulting in a declining relevance of the traditional curriculum and a growing urgency for yet another paradigm shift in medical education. In a recent, provocative perspective, Schwartzstein and Roberts² laid out a case for repealing the time-honored lectures that have served as the “main course” for generations of medical students:

So is the lecture dead? If “lecture” refers to the traditional picture of a professor standing in front of and talking at a large group of students who are passively absorbing information, then yes, we believe medical schools should be largely abandoning that teaching format.

Reform on this scale demands caution. Repeal comes quickly and easily, but durable replacement demands persistence and long, often-contentious debate. Reformers must meet the high bar of genuine reform—not just providing better teaching but producing better doctors.

The Origins of “Repeal and Replace” in Medical Education

Toward the end of the last century, a consensus emerged at many U.S. medical schools that their existing curricula had grown sufficiently out of sync with current educational needs and methods to justify a fundamental overhaul.³ Even before the advent of personal computers, the Internet, and smartphones, subjecting early-stage learners to the draconian memorization of minutiae seemed increasingly wasteful. In 1983, Barrows⁴ articulated the concerns, and proposed remedies, that would animate the reform movement in the ensuing decades:

There is an increasing concern that the curricula of many medical schools put too heavy an emphasis on memorization of facts and little stress on problem solving or self-directed study skills necessary for the practice of medicine. Problem-based, self-directed learning is a teaching-learning method specifically designed to emphasize these skills and to increase the retention of facts and their recall in the clinical situation. This approach, built on research into the problem-solving skills of physicians and principles of educational psychology, is employed by several medical schools and serves as an antidote to the many educational abuses seen in more traditional approaches.

Both Barrows's diagnosis and his proposed solution continue to exert a strong influence, driving the bulk of educational reforms implemented in the ensuing three and a half decades. However, as in the clinic, objectivity requires educators to critically appraise both the diagnosis and the proposed treatment and to seriously consider alternatives.

A Shared Vision of "Repeal," Differing Views on "Replace": Pedagogical vs. Content Reform

As the reform movement has gathered momentum in the 21st century, medical schools have devised and tested a broad range of curriculum innovations to address the perceived shortcomings of the traditional, lecture-based approach. Whereas consensus exists that the classic curriculum underperforms in the current care environment, no similar agreement has emerged on its specific shortcomings, nor on the changes that will reliably yield superior educational outcomes. Most curriculum revisions fall into one of two broad categories: pedagogical reform or content reform. Pedagogical reforms enhance but largely preserve existing curricular content and instead seek to maximize active learning using principles drawn from educational psychology. Content reformers attribute the classic curriculum's shortcomings mainly to what students are taught rather than how they learn, and they seek to swap out significant portions of the existing basic science curriculum to make room for more clinically relevant material. This material includes formal course work in evidence-based clinical reasoning, high-value care delivery, medical error reduction, and quality improvement, as well as early, hands-on clinical

experiences. A 2003 Institute of Medicine report articulated the case for content reform:

... clinicians are confronted with a rapidly expanding evidence base upon which health care decisions should ideally be made, but are not consistently schooled in how to search and evaluate this evidence base and apply it to practice. Although there is a spotlight on the serious mismatch between what we know to be good quality care and the care that is actually delivered, students and health professionals have few opportunities to avail themselves of coursework and other educational interventions that would aid them in analyzing the root causes of errors and other quality problems and in designing systemwide fixes.⁵

In essence, medical education reform faces a fundamental divide. Those favoring pedagogical updates to existing content adhere to the view that students should learn to draw largely on their personal understanding of anatomy, physiology, pathology, and pharmacology when carrying out clinical reasoning and decision making at the bedside. Approaches like case-based learning of basic science content reinforce this view. However, beginning in clerkships, students will work with clinicians who view an understanding of disease mechanisms to be a necessary but insufficient foundation for optimal clinical decision making. In most current practice settings, clinicians look to the best available evidence from clinical trials and outcomes studies to choose tests and treatments. In the content revision paradigm then, learners must master the fundamentals of the basic sciences, as well as achieve expertise in clinical epidemiology, study design, the critical appraisal of clinical trials, comparative effectiveness, high-value care, the stewardship of costly medical technologies, and shared decision making by clinical teams with input from patients and families.

Barriers to the Implementation of Evidence-Based Curriculum Reform

While significant urgency and zeal to improve the undergraduate curriculum exist at many schools, the barriers to substantive reform remain formidable. First, curriculum revision is inherently a zero-sum game. Each time faculty agree to add a new element to the curriculum,

they must choose to discard existing content occupying a similar amount of curriculum time. Eliminating long-taught material can prove agonizing, especially when it entails sharply reducing participation by esteemed basic science faculty colleagues who have served for decades as the stalwarts of preclerkship medical education. Next, transitioning from a few basic scientists lecturing entire classes from the podium to numerous small groups often tutored by clinical faculty can disrupt long-standing relationships between deans' offices and the basic science departments, while dramatically increasing the teaching demands on faculty clinicians.

Finally, eventually and inevitably, the need to prepare students for Step 1 of the United States Medical Licensing Examination (USMLE) comes up as a justification for maintaining the status quo. By requiring students to memorize vast amounts of questionably relevant basic science content—all of which is readily accessible online—this exam, and the weight that residency programs continue to place on test scores, remains the single greatest barrier to substantive preclerkship curriculum improvement. The Step 1 exam creates a real catch-22. On one hand, nearly all medical educators reject the notion of "teaching to the test." On the other hand, from the first week of medical school forward, nearly every student's backpack contains proprietary board preparation materials, such as the popular *First Aid* series,⁶ and one of the principal jobs that students have "hired" preclerkship faculty to perform is to prepare them to score well on this high-stakes test. Students' faculty and course evaluations—key to academic advancement for teaching faculty—reflect this expectation. This results in an ongoing struggle at most schools to find a balance between "the wards and the boards."

Solutions to this dilemma, though readily at hand, lie outside the control of undergraduate medical educators. They require both creativity and action from residency selection committees and the USMLE's sponsors—the Federation of State Medical Boards and the National Board of Medical Examiners—who must address several constraints. First, because applicants to most residencies vastly outnumber the positions available,

programs rely on numerical metrics both to set thresholds for detailed review of applicants' files and as a component of the ultimate rankings for Match lists. The Step 1 exam, as currently configured, meets this need reliably, though with questionable validity, given the gap between tested content and the knowledge needed to excel in residency and clinical practice.

However, the USMLE's sponsors could easily close this gap by simply offering updated, clinically relevant versions of the Step 1 exam. This would require little effort because they already possess a vast bank of thoroughly vetted multiple-choice questions covering most facets of clinical medicine and related disciplines, which are currently deployed across all three Step exams. They could therefore offer several versions of the Step 1 exam, varying the mix of basic science, clinical problem-solving, and health systems science questions. Residency programs could let applicants know which version they prefer, and students could sit for the version(s) that meets the requirements of the residency programs to which they are applying. This approach would provide residency programs with the numeric scores they need to filter their applicant pools while relieving the "boards vs. wards" dilemma that continues to plague preclerkship students and faculty. The infrastructure needed to rapidly implement this solution—large banks of exam items and methods for reweighting exam content—already exists. But the impetus for making this change must come from the USMLE's key customers—residency program directors.

The Current State of Medical School Curriculum Reform

More than three decades into the curriculum reform movement, undergraduate medical education remains in a period of rapid transition, without a strong consensus on the

most effective educational innovations. While the medical education research literature is replete with observational and experimental studies of newer pedagogic approaches, such as problem-based learning and flipped classrooms, few studies have rigorously captured the impact of these different teaching strategies on the outcome of greatest interest to educators, learners, and the public at large: Do these new methods yield better doctors?

We have reached a point in curriculum reform when we must begin to take trade-offs seriously. We can either teach all of the named foramina in the skull base or the circumstances under which a CT scan is indicated to evaluate a nontraumatic headache, but not both. We can continue to require that students memorize the mechanisms by which different classes of antibiotics kill bacteria or how to rapidly choose and initiate empiric therapy for suspected urosepsis, but not both. We likely have time to thoroughly teach either embryology or comparative effectiveness, but not both. The time for hard choices has arrived, and a broad range of stakeholders, including ourselves as the future patients of our current students, are counting on those who control the curriculum to choose wisely.

The Future of Medical School Curriculum Reform

Most readers will have gleaned by now that I reside in the content reform camp and favor a repeal of major parts of the traditional undergraduate medical education curriculum to make room for the lessons that will allow students to achieve mastery of modern clinical reasoning and decision making. In short, we should be preparing future physicians to deliver the care we want to receive as patients.⁷ When we fall ill, we want an accurate diagnosis; a fair and balanced explanation of the benefits, risks, and

alternatives of available treatments; and skillful elicitation of our personal values and goals of treatment. We hope then to receive an individualized plan of care that reflects our physician's mastery of basic physiology, awareness of the best current evidence, skillful patient communication, and shared decision making. There is surely time between the white coat ceremony and the recitation of the Hippocratic Oath at graduation to lay a firm foundation for these educational objectives. The traditional lecture-based curriculum has failed to accomplish this outcome, and insufficient evidence exists to judge whether flipped classrooms and learning studios will achieve these goals. As educators and curriculum reformers, we likely have substantial repealing and replacing left before us.

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Disclaimer: This Invited Commentary represents the author's personal opinions, not those of CareOregon, Inc.

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