



The NEW ENGLAND JOURNAL of MEDICINE

Perspective

Innovation in Medical Education

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On July 29, 2014, the Institute of Medicine (IOM) released its report on the governance and financing of graduate medical education (GME).¹ An important incidental finding of the IOM's study was

that the evidence base available to inform future directions for the substance, organization, and financing of GME is quite limited. The limited evidence reflects a systematic lack of research investment in an area of health care that we believe deserves better.

Our nation's lack of research in medical education contrasts starkly with the large and essential commitment to biomedical research funded by industry, philanthropic organizations, and the public. No one questions the need for sustained support for research in cancer, heart disease, or dementia. But despite medical education's central role in creating a

workforce capable of delivering the resulting biomedical advances — and despite the \$15 billion in annual public investment in the medical education enterprise — funding for medical education research is conspicuously absent. As a result, we lack evidence that is essential for guiding improvements in the clinical workforce.

The current duration, settings, and organization of GME are more the product of tradition than of evidence and have changed little in the face of substantial changes in the health needs of patients and the systems for delivering care.² We face questions about the most appropriate struc-

ture and content for GME, along with questions that extend beyond GME: What should change in undergraduate medical education, and how should we ensure the continued competence of physicians 20 to 30 years into practice? We also face active debate and a lack of evidence about how to better distribute financial support for GME, whether and how to support the education of other clinicians (in addition to physicians), and to what extent federal GME funding is an effective or appropriate tool for addressing imbalances in the geographic or specialty distribution of health care providers.

The research that could answer these questions requires funding and organization that don't currently exist. The Centers for Medicare and Medicaid Services pays about \$10 billion a year toward

GME but has neither a research-and-development budget to ensure that this investment is achieving its objectives nor even a clear definition of what those objectives are. Overall, the United States spends nearly \$3 trillion a year on health care, nearly all of it delivered through clinicians, with no organized research investment directed at improving the way those clinicians are produced.

The IOM committee has proposed a “Transformation Fund” to fill this void. The fund would be directed toward research and innovation in the substance of GME as well as its organization and financing, and the proposal echoes the recommendations of other consensus reports.² The committee also proposed a governance mechanism to set research priorities and coordinate large-scale efforts such as multi-institutional studies or nationwide pilot programs. We propose the following approach.

First, valid and feasible measures of training success need to be defined. The fundamental goal of medical training is the production of a workforce capable of delivering economically sustainable care that will improve the health of patients and populations in a changing environment. Our system of medical education should be judged against those goals.³ Medical education is currently assessed through process measures (whether residents get enough cases, enough lectures, enough sleep) or intermediate outcomes such as exam performance. Although competency assessment is receiving increased attention, the connections between resident competency and patient outcomes are assumed rather than demonstrated. In order to evaluate alternative processes of

medical education, we need systems for routinely assessing meaningful outcomes: the quality, distribution, and cost of care delivered by the graduates of our schools and training programs. Outcomes-driven approaches have the additional advantage of fostering innovation, because when success is determined by outcomes, alternative processes can be tried as ways to get there.⁴

Second, we need to examine fundamental changes to the structure and content of medical education. Optimal approaches for medical training may differ dramatically from current practice. With meaningful outcomes measures in hand, we can examine more fundamental questions, such as whether graduation from medical school or residency training should be time-based or competency-based, whether the current delineation of specialties and subspecialties aligns with the country’s health care needs, and which teaching strategies are best for delivering a curriculum that produces graduates who can efficiently serve the broad and changing needs of a diverse public. We also need research that can inform decisions about the most useful mix of clinical training sites and the best ways to utilize the evolving capabilities of health information technology. Indeed, the increasing availability of medical information at the point of care might allow us to reduce the time and cost of creating new physicians and redirect some resources toward keeping the practices of established physicians current.

Third, new models for financing medical education could be piloted. One reason that GME gets so much attention is that a lot of money flows through it.

Currently Medicare (mostly) pays hospitals (mostly) for training residents (exclusively physicians), using a historical formula that is largely untethered to current goals. Effective change requires that we develop and test better approaches. Innovative funding experiments could include directing federal funds through state or regional consortia focused on population needs, replacing hospital cost reimbursement with vouchers that medical school graduates carry to their selected training sites, or allowing some residents (perhaps defined by specialty or institution) to bill for their services instead of having their institutions receive federal GME funding. Other experiments might assess the effect of using larger payments to direct trainees toward undersupplied specialties or geographic areas, or eliminating stipends — or even charging tuition — for subspecialties that are oversubscribed.⁵ Pilot programs might also distribute support across undergraduate, graduate, and continuing medical education — or to nonphysicians — potentially enhancing the leverage of public investment.

The fact that we lack evidence today doesn’t mean that we can’t have evidence for the education we will deliver or the policy changes we will need to make in 10 or 20 years. But we need to start today if we want answers then. The care we deliver to patients with cancer may require chemotherapy, radiation therapy, or surgery, and each of those treatments has an evidence base behind it — one that’s supported by a research investment that allows us to innovate and improve. Behind each of these treatments are also clinicians, and their development is also worthy of in-

novation. With some funding and an organized approach to research investment, we can innovate toward the future workforce we need.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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This article was published on July 30, 2014, at NEJM.org.

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DOI: 10.1056/NEJMp1407463

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