

Medical education risks becoming two-tiered unless strong research focus is preserved

April 29 2015



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For more than 100 years, exposing students to basic and clinical research has been an essential component of a medical school education in the United States. However, today, new models of medical education in which research plays a minimal role are likely to create a two-tiered system of education, decrease the physician-scientist pipeline and

diminish the application of scientific advances to patient care.

Those are the concerns outlined in "American Medical Education at a Crossroads" - a position paper published April 29 by *Science Translational Medicine* and co-authored by Arthur Feldman, MD, PhD, Executive Dean of Temple University School of Medicine and Chief Academic Officer for the Temple University Health System, Arthur H. Rubenstein, MBCh, Professor of Medicine at the Perelman School of Medicine at the University of Pennsylvania, and colleagues. The abstract explores the reasons why research is being deemphasized, particularly at some of the nation's newer medical schools, and at those which are not affiliated with a major research university. The authors argue that the U.S. is headed for a two-tiered system, one that exposes students to research and physician-scientists, and another that trains students with exclusively practitioners as role models.

"Research at our nation's medical schools has led to discoveries that have changed the face of American medicine," says Dr. Feldman.

"Unfortunately, many of the nation's newer medical schools do not prioritize research or are unable to compete for scarce research funding. The result is an increased proportion of U.S. medical school graduates matriculating from programs where the faculty members pursue little to no clinical or translational research."

According to the authors, many of the new U.S. medical schools share other features beyond just the absence of a research portfolio: they are not partnered with major research universities; they have a small basic science faculty; and, in many cases, their students take clerkships solely in community hospitals rather than in research-oriented quaternary care hospitals.

Proponents of this model argue that empiric instruction (i.e., exposure to clinical settings) is sufficient and students who intend to pursue a career

in primary care do not require hands-on exposure to laboratory-based translational research, to [clinical research](#) that is focused on the complex array of disease found in research-oriented hospitals, or to outcomes research, comparative effectiveness research and investigations centered on health care delivery systems.

The authors find this argument problematic. Just as it is axiomatic that clinical medicine is best taught at the bedside, the authors believe that the most effective means by which a student can learn the complexities of clinical and translational science is through exposure to actual research studies and to the physician scientists who pursue translational research.

Students must learn to amass, synthesize, critique and apply new scientific data to the care of an individual patient. How we provide our students with the skills to amass this data both in the short term and over a lifetime of learning will have a major impact on their clinical capabilities, they write.

"Research is just as important for the student who plans to pursue primary care as it for the physician-scientists in training," said Dr. Rubenstein, who also served as dean of Penn's Perelman School of Medicine from 2001 to 2011. "It is becoming increasingly important for all students to be in an environment where both attending physicians and trainees take the opportunity to explore at the bedside how the bi-directional highway of translational science can be taken advantage of to inform clinical decision making."

Dr. Feldman, Dr. Rubenstein and the authors write that it is not surprising that many new medical schools do not, or cannot, support basic or clinical research. The 2013 National Institutes of Health (NIH) budget was 21.9 percent below its 2003 level when adjusted for inflation, pharmaceutical support for research has diminished, changes

in reimbursement policies make it problematic to support research with clinical revenues, and proposed cuts to direct and indirect [medical education](#) payments threaten funding for residents and teaching faculty. In addition, due to the high cost of maintaining research programs, many schools find it more advantageous to shrink or eliminate these programs.

"Without question, omitting research improves the finances of a school of medicine," write the authors. "Indeed, a 2011 report from the Association of American Osteopathic Colleges demonstrated that a medical school achieves a positive margin when it does not have to support basic or translational research or a research-oriented clinical program. There is the very real threat that at a time of decreased NIH funding, some medical schools and/or their parent universities will meet their budgetary goals by decreasing their support for medical research, shrinking the size of the [medical school](#) faculty and divesting their [research](#)-oriented hospitals."

The authors suggest several steps to ensure that the changes taking place in medical education do not have unintended consequences.

These include objective evaluation of these new models by academic organizations and regulatory bodies; a commitment from universities to bear the significant cost of maintaining basic science faculty members and a quality medical education; public education about the value inherent in a scientifically based education; and enhanced support from the NIH for new physician-scientists in order to ensure that there will be an adequate supply of instructors and mentors to train the next generation of medical students.

"We need to continue to educate highly competent physicians and assiduously avoid the creation of a group of physicians who will be unable to apply the scientific advances of medicine for the benefit of their patients," the authors say.

More information: "American medical education at a crossroads," by A.M. Feldman et al. *Science Translational Medicine*, [stm.sciencemag.org/lookup/doi/ ... scitranslmed.aaa2039](https://doi.org/10.1126/scitranslmed.aaa2039)

Provided by Temple University

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