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## Advances in Medical Training: Simulation, Improvisation, and Innovation

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Despite recent highly publicized advances in medical treatment, the U.S. medical school curriculum has remained largely unchanged well into the beginning of the 21st century. As recently as 2014, medical journals routinely lamented our nation's lack of research investment in medical education, in stark contrast to the relatively large financial commitment to biomedical research that has been funded by the pharmaceutical industry, philanthropic organizations, and the public.<sup>1</sup> However, some provisions of the Affordable Care Act (ACA) include policy elements that address the following: deficiencies in the composition and training of the healthcare workforce; innovation in care delivery; health disparities among different segments of the population; data mining; and the need for renewed investments in primary care, public health, and disease prevention—now collectively referred to as population health.<sup>2</sup> Given the staggering medical costs in our country, the extent of dedicated federal funding is nowhere near what is required to prepare the healthcare workforce to deal with these important issues.

Numerous professional articles and reports undoubtedly influenced the ACA's population health provisions. Before the passage of the ACA, a 2004 report from the Institute of Medicine (now the National Academy of Medicine or NAM) provided irrefutable evidence that our traditional approach to training physicians has fallen woefully short in terms of addressing disparities in access to care and in

patient outcomes, an alarming number of medical errors, and out-of-control costs.<sup>3,4</sup> Traditionally, education for clinicians has focused narrowly on acute medical conditions and has neglected the principles of population health and wellness that are necessary to achieve meaningful improvement in our nation's health. Reform of medical education and training, according to the NAM, the American Medical Association (AMA), the Accreditation Council for Graduate Medical Education (ACGME) and others, requires fundamental redesign to integrate new skills and approaches to improve quality and lower costs.<sup>5</sup>

The Institute for Healthcare Improvement (IHI), founded in 1991, has worked to incorporate the teaching of quality improvement into the medical school curricula. It has identified eight knowledge domains as essential core content for all students as part of their training: healthcare as a process, system; variation and measurement; customer-beneficiary knowledge; leading, following, and making changes in healthcare; collaboration (working effectively in teams); social context and accountability (including an understanding of the financial impact and costs of care); developing new locally useful knowledge; and knowledge of their specific discipline, along with the ability to connect it to the other domains.<sup>6</sup>

<sup>3</sup> *Ibid.*

<sup>4</sup> Ann C. Greiner and Elisa Knebel, eds., *Health Professions Education: A Bridge to Quality*, Institute of Medicine of the National Academies (Washington, D.C.: National Academies Press, 2003).

<sup>5</sup> David B. Nash, et al., *Population Health: Creating a Culture of Wellness*, Second Edition (Burlington, MA: Jones and Bartlett, 2016).

<sup>6</sup> Toni Kfuri and Nancy L. Davis, "External Quality Improvement: Accreditation, Quality Improvement Education, and Certification," in *Medical Quality Management: Theory and Practice*, ed. Prathibha

<sup>1</sup> David A. Asch, Debra F. Weinstein, "Innovation in Medical Education," *The New England Journal of Medicine*, August 2014.

<sup>2</sup> David B. Nash, et al., *Population Health: Creating a Culture of Wellness*, Second Edition (Burlington, MA: Jones and Bartlett, 2016).

Obviously, assessment of competency is crucial to quality improvement.<sup>7</sup> Although physician competency assessments are receiving more attention than they used to, it is still often the case that the correlation between resident competency and patient outcomes is assumed and not necessarily demonstrated.<sup>8</sup> A number of medical schools have begun using case studies, patient simulators, and observations in practice, along with quality improvement tools and techniques, to ensure that students are able to apply the knowledge learned in the classroom.<sup>9</sup>

Given the magnitude of the healthcare crisis, and an inadequately funded mandate to improve, medical schools are responding to the challenge in new and creative ways. The University of Vermont's Larner College of Medicine, for instance, is phasing out lectures and introducing "active learning" this year.<sup>10</sup> At Dell Medical School at the University of Texas at Austin, the traditional medical school curriculum has been redesigned to train doctors to work in a healthcare system that emphasizes value-based care over the volume of patients seen. Instead of two years of classroom work in basic sciences followed by two years of clinical experience, students begin 40-week clinical clerkships in their second year, where they follow patients from admission to post-discharge.<sup>11</sup> At Hofstra Northwell School of Medicine (formerly Hofstra North Shore-LIJ School of Medicine), doctors receive training in scenarios ranging from terrorism drills in the

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Varkey (Sudbury, MA: Jones and Bartlett, 2010), 167-196.

<sup>7</sup> *Ibid.*

<sup>8</sup> David A. Asch, Debra F. Weinstein, "Innovation in Medical Education," *The New England Journal of Medicine*, August 2014.

<sup>9</sup> Toni Kfuri, Nancy L. Davis, "External Quality Improvement: Accreditation, Quality Improvement Education, and Certification," in *Medical Quality Management: Theory and Practice*, ed. Prathibha Varkey (Sudbury, MA: Jones and Bartlett, 2010), 167-196.

<sup>10</sup> Joanne Finnegan, "Medical schools incorporate population health to train doctors of the future," *Fierce Healthcare*, August 2017, [www.fiercehealthcare.com/practices/medical-schools-incorporate-population-health-to-train-doctors-future](http://www.fiercehealthcare.com/practices/medical-schools-incorporate-population-health-to-train-doctors-future).

<sup>11</sup> *Ibid.*

field (e.g., in the New York City subway) to delivering bad news to patients and their families—a grim but important task.<sup>12</sup> Delivering bad or difficult news appropriately can build trust with patients, and medical schools are recognizing that developing this skill has long-term benefits for the doctor-patient relationship. A handful of colleges and schools of population health have sprung up since 2008, when the Jefferson College of Population Health first opened its doors in Philadelphia. Many other medical schools have introduced courses in population health (with a primary focus on quality and safety), and have integrated them into their curricula.

It turns out that improving healthcare quality can have the unexpected benefit of lowering costs over the long term. As one blog post succinctly put it, "at the core of population health is the notion that it's far better to practice the things that will keep you healthy instead of treating the consequences of poor choices."<sup>13</sup> As a result, the Centers for Medicare and Medicaid Services (CMS) and other healthcare payers are increasingly moving away from traditional "fee-for-service" arrangements in favor of payment models that work to achieve the so-called Triple Aim: improve outcomes, lower costs, and improve the patient experience of care.<sup>14,15</sup> This message is being communicated to students from the moment they enter medical school.

By now it's readily apparent to all current and incoming medical students—if not to all practicing physicians—that merely sitting in a classroom, passively learning about anatomy and human disease provides inadequate

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<sup>12</sup> "Rx: Doctors of Tomorrow," PBS Video, 27:04, January 2015, [www.pbs.org/video/wttw-featured-rx-doctors-tomorrow](http://www.pbs.org/video/wttw-featured-rx-doctors-tomorrow).

<sup>13</sup> Dalton Ruer, "Visualizing Population Health from a Global Perspective," Qlik Dork (blog), July 2017, <http://qlikdork.com/2017/07/visualizing-population-health-from-a-global-perspective>.

<sup>14</sup> Donald M. Berwick, Thomas W. Nolan, John Whittington, "The Triple Aim: Care, Health, and Cost," *Health Affairs*, May 2008.

<sup>15</sup> Karen Hacker, Deborah Klein Walker, "Achieving Population Health in Accountable Care Organizations," *American Journal of Public Health*, June 2013.

preparation for the practice of medicine. The transformation in medical education that has been fostered as a result of the ACA mandates and new guidelines issued by prominent

medical organizations will likely continue for the foreseeable future, regardless of whether or not the ACA continues in its present form.

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