

The Nation's Physician Workforce and Future Challenges

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ABSTRACT

There is much debate about the adequacy of the U.S. physician workforce and projections of its future size, distribution and composition. Beginning with 3 observations about the workforce we believe are largely not subject to dispute, we address the debate by providing an overview of the current state of the workforce and Graduate Medical Education in the United States; a brief history of both calls for graduate medical education reform since 1910 and the recent, intense debate about the reliability of workforce projections; and a discussion of the challenges to understanding the physician workforce. We draw 3 concluding observations: (1) Precisely because projections can be unpredictable in their impact on both physician workforce behavior and public policy development, policy makers need to devote more attention to workforce projections, not less. (2) More research devoted specifically to the workforce implications of delivery and payment reforms is strongly needed. (3) Such research must be pursued with a sense of urgency, given the rapid aging of the Baby Boom generation, which will put a disproportionate demand on the nation's physician workforce.

Key Indexing Terms: Physician workforce; Graduate Medical Education; Public policy; Health policy; Medicare. [*Am J Med Sci* 2016;351(1):11–19.]

There is much debate about the adequacy of the U.S. physician workforce. U.S. medical education, training, and healthcare delivery are referred to as: (1) the envy of the world, or (2) out-of-date and out-of-tune with the needs of the nation and the reality of the market place, or (3) some combination of both.

To address these conflicting views, we discuss the status of the nation's physician workforce, a brief history of calls for change affecting the physician workforce that have occurred for more than a century, the current workforce debate, and challenges facing the future physician workforce.

We begin with 3 observations we believe are generally not subject to dispute:

First, since the late 1800s, the U.S. physician workforce has continually evolved in response to a never ending series of social, economic, technological, demographic, and medical challenges that again and again have changed healthcare overall.¹ This paper speaks to challenges facing U.S. healthcare posed by an ongoing national debate over whether we are collectively at risk of a serious physician workforce shortage within the next decade. The nature of these challenges may change over time, but the fact of change itself is an enduring reality.

Second, U.S. healthcare and medical education have undergone numerous significant changes for more than a century. Still, the U.S. model of undergraduate medical education and graduate medical education (GME) remains primarily led by universities and teaching hospitals as recommended by the 1910 Flexner report. U.S. medical education is focused in its early years on rigorous, graduate level academic studies organized for

the most part by university-affiliated medical schools, and it is focused in the later years on hands-on training in the care of a broad spectrum of patients in a variety of largely university hospital-related or other clinical settings, including primary care and other ambulatory care settings. Training is overseen by more senior medical faculty who often bridge the missions of care, education, and research.

In the view of some academic leaders, today's GME programs take insufficient advantage of the academic setting for training physicians to become "scientific practitioners," expert in "how to approach patients in a rigorous scientific way," which was at the heart of the model of medical education Abraham Flexner championed.² However, other leaders' concern about a lack of sufficient emphasis on primary and preventive care causes them to promote the need for more training in sites outside the university medical centers settings, even as ambulatory site training has become a common part of GME programs.

Neither perspective precludes the other. No one would disagree with the view that modern medical education must produce physicians who are "critical thinkers" in the fast-changing worlds of both academic and non-academic medicine.³

Third, a distinguishing attribute of the U.S. physician workforce is that it relies in part on the collective result of individual physicians' personal choices to fulfill the nation's physician workforce needs. Their choices about where and what to study, to train, and to practice shape our physician workforce decade after decade far more than any single government dictate or incentive.

The availability of training sites, accessibility of financial aid for students and opportunities for practice locations—as well as the extent of federal, state and local investments in medical education and attracting physicians to practice in targeted areas—are all influential. Indeed, the rationale for public investment originates in the long-standing and widely held conviction that physician training is a societal good; government funding fulfills an implicit social contract. Still, individual choice remains a significant determinant in how well our physician workforce meets society's needs, in part because it is consistent with U.S. culture's emphasis on individualism and in part because efforts to direct personal choice have not had significant impact.

In this paper, our examination of the differing views on the nation's physician workforce needs is guided by these consensus points: change is constant, we need critical thinkers in medicine, and physicians' personal career choices are fundamental to understanding U.S. physician workforce dynamics.

OVERVIEW OF THE U.S. PHYSICIAN WORKFORCE AND GME

Whereas the exact number of clinically active physicians is difficult to pinpoint owing to limitations of available data,⁴ estimates of the current supply are generally around 750,000 patient care physicians who have been awarded M.D. or D.O. degrees.⁵ An additional 234,000 trainees are in the undergraduate medical education and GME pipeline in the U.S. in hopes of becoming practicing physicians. As of the writing of this article, there were 144 schools of medicine with full, provisional, or preliminary accreditation, from which 85,000 students were seeking their M.D. degrees, including 20,000 first year students. An additional 30 accredited schools of osteopathic medicine awarding D.O. degrees had more than 24,000 students, including 6,800 first year students.⁶

The Accreditation Council for Graduate Medical Education (ACGME) accredited about 9,600 residency programs in medicine, educating more than 120,000 residents in more than 130 specialties and subspecialties in approximately 700 sponsoring institutions in the academic year 2013-2014, the most recent years for which data are available.⁷ This does not include an additional 5,000 physicians training in American Osteopathic Association (AOA) accredited residencies not jointly accredited by ACGME. (AOA accredited residency programs are transitioning to a single accreditation system for both M.D.s and D.O.s to be administered by ACGME by June 2020.)⁸

Despite these seemingly large numbers and the nation's well-known disproportionately high per capita healthcare spending by international standards, the U.S. has a relatively low physician to population ratio compared with other countries. In a comparison of 11 industrialized nations' experience, the U.S. number of

practicing physicians per 1,000 population was second lowest at 2.5, compared with 2.3 for Japan, which was the lowest rate, 4.2 for Norway (per 2012 data), which was the highest rate, and the median of 3.1. Although the U.S. is criticized for having high rates of testing and physician induced demand, and is above the OECD median on measures like MRIs and hip replacements, it is important to keep in mind that the U.S. is nonetheless below the OECD median in terms of physician visits and hospital discharges. The average annual number of physician visits per capita was 4.0 for the U.S. compared with the highest rate of 13.0 for Japan, the lowest rate of 3.7 for New Zealand, and the median of 6.7. The average number of hospital discharges per 1,000 population in the U.S. was 125, compared with the high of 251 for Germany, the low of 83 for Canada, and the median of 163.⁹

In response to Association of American Medical Colleges' (AAMC's) and others' projections of workforce shortages and the association's 2006 call for expanding the number of medical school graduates by 30%, medical schools have increased enrollment by 23% and are expected to reach the 30% growth goal by the end of this decade. Schools of osteopathic medicine are expected to increase enrollment during the same time interval by 162%, yielding a combined 49% increase in the number of first year students entering medical school in 2019 compared with 2002 levels. All of these physicians will be required to complete some GME training before becoming licensed.¹⁰

In 1997, the federal Balanced Budget Act placed a hospital-specific cap on the number of resident full time equivalents (FTEs) for which each eligible hospital can claim Medicare GME reimbursement. In the 21st century, this cap has not prevented the opening of new residency programs and slots with federal and non-federal funds, but it is seen as a substantial disincentive, given the high cost of a resident's multi-year training without Medicare GME support.¹¹

The number of first year ACGME residency training positions has grown approximately 1% per year between 2002 and 2014; but undergraduate medical education—for both M.D. and D.O. degrees combined—has been growing by about 2.8% annually. About 29,000 residents will complete training and enter practice in 2015. According to current estimates, 29% are likely to become primary care providers defined as physicians with a specialty of general and family practice, general internal medicine, general pediatrics, or geriatric medicine (this does not separate out those who will practice hospitalist medicine); 18% will enter medical subspecialties and another 18% will enter surgical specialties; and the balance will enter other specialties.¹²

These graduates will need, in part, to supplant an aging physician workforce in which more than 1 in 4 (27.6%) active physicians is aged 60 and older and therefore likely to retire in the next 10 years.¹² This will become increasingly challenging as the growing number of U.S. medical school graduates begins to result in a squeeze on

available certified residencies in the years ahead. For example, not counting D.O. residencies certified by AOA, which eventually will require ACGME certification instead by 2020, there were fewer than 27,300 ACGME certified residency positions available for the 2015 NRMP Match but 28,055 U.S. first year students in academic year 2014-2015 seeking M.D. or D.O. degrees.¹³

The percentage of women in the workforce is growing. Whereas today 32.6% of practicing physicians are women, 46.1% of residents are women. Pediatrics and obstetrics or gynecology have the greatest percent of women in their fields (60.4% and 51.8%, respectively). Some predominantly male specialties are starting to see changes, with 37.5% of general surgery residents now female compared with 17.6% of general surgeons in practice.¹⁴ Historically women have worked fewer hours than men—a trend that continues today. As they become an increasing proportion of the physician workforce that can have a significant effect on FTE estimates when aggregated nationally. However, there is evidence that male doctors are working fewer hours, too.⁴

The percentages of self-identified Blacks or African Americans, Hispanics or Native Americans in medicine remain at low levels; they represented only 8.9% of physicians in practice in 2013 and 15% of medical school matriculants in 2011.¹⁵ In the 1990s the academic medical community adopted a “3000 by 2000” goal to increase the number of underrepresented minority physicians entering medicine. Although a decade later than desired, the U.S. crossed the 3,000 threshold, largely due to growth in Hispanics entering medicine and growth in the number of African American females. But this is far from where the physician workforce needs to be—a degree of multi-faceted diversity that is representative of society and also contributes to the achievement of excellence in healthcare choice, access and outcomes.¹⁶

In some instances, the workforce has moved backwards. Today fewer African American males are entering medical school than there were in 1978, partly due to the prohibitive costs of medical education.¹⁷ The number of students with a rural background is declining.¹⁸ It is more difficult to track socio-economic status, but there is some evidence community colleges could be important for diversifying the national student body, including those with low socio-economic status.¹⁹

International medical graduates (IMGs) are about 24% of the U.S. physician workforce and 25.9% of those in residency training. This varies by specialty; geriatric medicine and nephrology have among the highest percentages of IMGs in both practice and training. An increasing percentage of IMGs are U.S. citizens who went to medical school in the Caribbean.²⁰

HISTORY OF CALLS FOR REFORM AND THE ROLE OF WORKFORCE PROJECTIONS

Because medical education, the physician workforce and the whole of healthcare are so intertwined, it is not

surprising that, at recurring intervals since the Flexner Report's publication, the size, composition and geographic distribution of the nation's physician workforce often have been a major concern.

Kenneth M. Ludmerer, historian of physician training, divides the evolution of U.S. medical education into 3 eras. In response to the Flexner Report, medical education was driven by a focus on the educational requirements of physicians' training—a vision of it as graduate level university education, not vocational training—which lasted into World War II (WWII).

From the end of WWII until the 1960s, several things made scientific research a high priority in physician education: a national reverence for science, a generation of physicians returning from war seeking career advancement through specialization and a relatively abundant economy.

Since then, the nation has experienced the development of national, state and local programs of health insurance—principally Medicare, Medicaid, Children's Health Insurance Programs (CHIP) and the Affordable Care Act (ACA). Coupled with budget analysts' alarm at the rapid growth in healthcare costs, this development has shifted physician training away from focusing on education and research, Ludmerer argues, to what seems to some an all-consuming preoccupation with managing care, maximizing “through put” and clinical revenues, and holding down costs.²¹

Cutting across those 3 multi-generational eras has been a plentitude of reports, articles and other publications—sometimes government sponsored, sometimes private—that have raised and attempted to address challenges facing healthcare in general and the adequacy of the physician workforce in particular. Their workforce projections have swung back and forth, starting with a shortage of adequately trained physicians cited by Flexner and today ending with most projecting a shortage although a small but growing chorus of vocal critics question that view.

Among the many reports were those that foresaw workforce surpluses—the 1932 first “Rappleye report,” 1980 GMENAC report, a number of annual COGME reports beginning in the 1990s, the 1994 “Weiner” article on managed care's impact, the 1997 “Consensus Statement on Physician Workforce” and others.

There have also been many reports that projected shortages: the 1910 Flexner Report, 1940 second “Rappleye report,” 1958 “Bayne-Jones report,” 1959 “Bane report,” 1965 “Coggeshall report,” 1967 report of the National Advisory Committee on Health Manpower Shortage, 2002 “Cooper” article, 2005 annual COGME report, the series of AAMC publications on shortage projections in 2008, 2010, 2015 and others.

The cyclical quality of physician workforce projections—shortages foreseen in 1 decade followed by surpluses foreseen in the next—has drawn criticism. It has been most trenchantly characterized by health economist Gail Wilensky, who has observed on a

number of occasions, “What appears to be clear is that past studies and projections have produced highly variable and frequently contradictory responses and that past projections have sometimes not even been directionally correct.”²² The implication of such an observation is that projections should be ignored or not taken seriously.

Indeed, the ebb tide of projected surpluses overtaken by projected shortages overtaken by surpluses again has seemed to be more predictable than the quantitative accuracy of projections. However, this observation fails to take into account that past projections by design were built upon an elaborate set of assumptions that health-care would change (often dramatically) but did not. And more significantly, projections can affect both policy making and medical student decisions.

For example, the Department of Health, Education, and Welfare’s “Bayne-Jones” report of 1958 as well as the “Bane” report of 1959 laid the groundwork for Congress repeatedly investing federal funding in the expansion of medical schools and the training of medical students in the 1960s and 1970s through enactment of the Health Professions Education Act of 1963 and subsequent repeated amendment of Title VII of the Public Health Service Act. While it lasted, such funding resulted in an expansion of the workforce in the 1980s not previously forecast. And the surpluses frequently reported by COGME and many others in the 1980s became part of the justification for ending federal support for medical school expansion and subsequent capping Medicare GME financing in 1997. Some supporters of the caps, including leaders in academic medicine such as the AAMC, have more recently become deeply concerned about new projections of shortfalls in the 2000s.²³

Similarly, reports of too many physicians of 1 specialty or another can influence medical students’ specialty choices even in the absence of any policy change, as was the case with anesthesiologists in the 1990s, when the numbers entering the field plummeted in response to projected surpluses, and later quickly rebounded when it became clear they were in high demand.²⁴

Primary care experienced the opposite trajectory with a rapid rise in the mid-1990s in response to concerns specialists would be “driving taxi cabs” (a common expression of the day) due to gate keeping by tightly managed care organizations. When managed care proved not to dominate healthcare delivery as previously expected, the number choosing primary care careers declined steadily until the mid-2000s and has since plateaued, although the number choosing family medicine increased by 6% between 2010 and 2013, compared with the 3% increase overall.²⁵

The implication of all of this is not to disregard projections. Instead analysts and policy makers need to focus more attention on projections—understanding their strengths and weaknesses not only to be able to

improve them in the future but also to be able to interpret them more reliably today. This will require efforts to improve physician data, such as the National Center for Health Workforce Analysis’ efforts to develop a Minimum Data Set, as well as investing in research to better understand the workforce implications of new payment and delivery models and how to account for the growth of nurse practitioners and physician assistants in physician workforce estimates.

THE CURRENT DEBATE

Given the growth and aging of the national population and the aging of the physician workforce in particular, most recent reports on the future of the workforce project shortages among both primary care and specialist physicians. However, the significant growth in numbers of nurse practitioners and physician assistants, adoption of new technology, reduction in the rate of growth in healthcare spending and new payment and delivery models aimed at increased efficiency have led to recurring questions about whether serious shortages will materialize.²⁶

For example, the nurse practitioner workforce is projected to nearly double between now and 2025 and the physician assistant workforce doubled during the previous decade and is on a continued growth trajectory,²⁷ leading to questions about whether the nation will soon face a surplus of such health professionals. The 2010 enactment of the ACA has substantially increased the percentage of insured Americans. It also has authorized billions of dollars invested in demonstrations of a host of potential reforms of healthcare financing and delivery.

Workforce researchers are seeking to analyze the projected impact of these changes, with some foreseeing the elimination of national physician shortages whereas others, including the AAMC, conclude that substantial shortages will persist in the absence of comprehensive, multi-faceted efforts to both grow the physician workforce and change healthcare delivery.

For example, in a comprehensive analysis commissioned in 2014 by AAMC, the analytical firm IHS Inc. used what it considered to be the best available data on assumptions about the kinds of potentially dramatic market changes underway, including demographic changes in the U.S. and physician populations, the development of accountable care organizations (ACOs) and payment reforms such as bundled reimbursement, the growing participation of nurse practitioners in healthcare, and the emergence of “retail clinics” in sites such as pharmacies. All were modeled as possible scenarios, not fixed assumptions about the future, recognizing that there is no definitive evidence they will play out as expected.

IHS projected nationwide shortages of 46,100-90,400 FTE physicians by 2025, smaller than earlier projections but still substantial. Unlike past projections, which foresaw primary and specialty care physician

shortages of comparable numbers, the new projections anticipate greater shortages of specialists—particularly surgeons.¹² This is significant, in part because the surgical workforce is often key to ensuring rural hospitals remain open. A national shortage of surgeons could accelerate maldistribution challenges.

MEDICAL EDUCATION AND GME REFORMS

Because they foresee such shortages, the AAMC and others recommend increased federal investment to train more physicians nationally while also strengthening government support for efforts to address geographic and specialty maldistributions, such as the National Health Service Corps and Title VII of the Public Health Service Act. These investments need to be accompanied by provider leadership to make changes in care delivery and financing.

In contrast, there are others who believe the nation does not face a shortage overall and raise questions about whether we even need to increase the number of residents trained and how much of the cost of training residents the federal government should cover. These questions are accompanied by calls for greater accountability and oversight in federal funding for GME.

The resulting debate over workforce projections and policy can be intense, because it threatens to disrupt public policy and financing at a time of continuing public budget shortfalls as well as concerns about the risk of not being ready to meet the enormous healthcare needs of the aging Baby Boom generation.

Over the decades, physician workforce reports have focused again and again on these kinds of questions as well as others: Should separate direct medical education (DGME) and indirect medical education (IME) payments (intended for specialized patient care) through Medicare be retained and if so, how? To what extent should funding be used as incentives—in the form of loan guarantees and forgiveness, grants, or training locations—to encourage residents to pursue primary care or devote their medical careers to services to low-income and underserved populations? How effective are these policies when compared to the market forces driven by reimbursement policy?

However, such reports are sometimes short on presenting the ways that medical education and GME are already undergoing significant reform, as academic medicine has shifted its focus from process to outcomes—in terms of identification of “competencies” that students and residents must demonstrate in order to progress through the multiple years of undergraduate, graduate, residency and fellowship training required to become a licensed, practicing physician.

- *Medical school admissions policy:* Medical school admission is changing with the institution in 2015 of a new version of the MCAT entrance exam, which is expanded in scope to encompass new areas of

knowledge as well as aptitude for the skills required for patient care, including psychology and sociology. It is coupled with “holistic review” that takes into account not only applicants' academic readiness but also pre-professional readiness and diversity of applicants' experiences.²⁸ Holistic review is now expanding to residency programs.²⁹

- *Residency preparation requirements:* The completion of medical school and readiness for residency training are determined in part by students' ability to demonstrate 15 core competencies such as service orientation, cultural competence, and oral communication. They also include students' ability to perform a list of 13 core “entrustable” activities on day-one of a residency, such as administer a physical exam and order medications.³⁰
- *Licensed practice preparation:* The completion of residency training is governed by the training program's ability to demonstrate, for purposes of earning and retaining ACGME accreditation, that residents finish training proficient in six core competencies: patient care, medical knowledge, interpersonal and communication skills, professionalism, practice-based learning and improvement, and systems-based practice. They are translated into “milestones” specific to the specialty in which a resident is training.³¹

Medical schools and teaching hospitals are developing multiple locations—in and outside the hospital—for residency training, including private practices and clinics in low-income rural areas. According to the ACGME's Data Resource Book for the 2012-2013 academic year, 93% of GME programs in specialties leading to initial board certification—including both primary and non-primary care specialties—place residents in non-hospital and ambulatory settings for portions of their training. Schools also are opening in new locations, developing new primary care training tracks, and focusing on interprofessional training models.³²

While these reforms are taking place, there is no shortage of proposals for additional reforms, both new and old. The following are proposals put forward in the past 2 years:

- *2014 IOM Committee Report:* Having rejected national projections but agreed with regional shortage and specialty shortage projections such as primary care, the Institute of Medicine (IOM) Committee on Governance and Financing of Graduate Medical Education put forth recommendations for achieving accountability from training programs for fulfilling national workforce needs: more physicians serving in rural and other underserved areas, more physicians entering primary care, more minorities choosing careers as doctors, more evidence that new physicians are able to provide the best care at the lowest cost, a workforce that improves the health of the population, not just the care of the individual patient. To that end, the committee has recommended the

consolidation of Medicare DGME and IME funding into 2 new funding pools, one to be used for DGME payment and the other for new government bureaucracies and experimentation in untested training and accountability models, effectively ending IME support for patient care by teaching hospitals.²⁶

- *AAFP recommendations:* Motivated by a strong commitment to primary care, American Academy of Family Physicians (AAFP) has recommended that Medicare “(l)imit payments for direct GME and indirect medical education (IME) to training for first-certificate residency programs.”³³ Since most first-certificate residency programs lead to certification for a practice in primary care, such a change in policy could dramatically reduce Medicare GME support for specialty training.
- *S. 2728, Community-Based Medical Education Act of 2014:* Similarly focused on the primary care workforce the AOA, AAFP, and other primary care training supporters endorsed S. 2728 introduced in 2014 by Senator Patty Murray (D-WA) that would create 1,500 primary care residencies eligible for Medicare GME payments, to be financed by a reduction in IME—patient care funding for teaching hospitals.³⁴
- *Josiah Macy Foundation Recommendations:* Believing an administrative reorganization of federal policy on physician workforce is needed to achieve appropriate accountability for the use of federal GME payments, the Josiah Macy Foundation and IOM Committee have proposed new administrative structures for implementation of federal GME policy, including accountability for use of federal GME funding and focused research on physician workforce issues, including GME.³⁵
- *H.R. 3292, the Medicare IME Pool Act of 2015:* In the name of sustaining federal Medicare GME funding as part of an effort to advance a larger package Medicare payment reforms, Rep. Kevin Brady (R-TX), then chairman of the House Ways and Means Health Subcommittee, sponsored H.R. 3292 in 2015, to delink Medicare IME payment adjustments from a hospital’s volume of Medicare service and complexity of patient care, in order to reallocate the funds used for IME payments among teaching hospitals.³⁶
- *H.R. 2124 and S. 1148, the Resident Physician Shortage Reduction Act of 2015:* Persuaded by the growing healthcare needs of a rapidly aging population and workforce projections of significant shortages in the 2020s and beyond, despite financing and delivery reforms now underway, AAMC as well as the American Association of Colleges of Osteopathic Medicine, American Hospital Association and AOA have endorsed Medicare legislation to fund training for an additional 3,000 residents per year—H.R. 2124 by Rep. Joseph Crowley (D-NY) and S. 1148 by Sen. Bill Nelson. AAMC and others also have supported legislation to place a reasonable percentage of IME funding at risk pending achievement of consensus-based federal GME accountability and reporting requirements.³⁷

FUTURE CHALLENGES TO THE PHYSICIAN WORKFORCE AND MEDICAL EDUCATION

All sides recognize there are multiple challenges facing the workforce ahead: distribution, recruitment and retention, new team members and roles, developing payment models that reward value, new models of care, improving diversity, and developing data and metrics to assess changes in capacity to care for patients. Many of these challenges have existed for decades and will continue to be difficult to resolve.

Shortages—nationally, regionally, by specialty, and by cultural competency—make the job of recruitment and retention more difficult and expensive.³⁸ For example, in rural areas, spousal employment, schools and other community factors are additional barriers. In our experience, which includes medical center administration, such positions become more expensive because of the need to compete on benefits as well as salaries. Lack of successful retention increases loss of experience and time to recruiting replacements. These challenges are exacerbated in a financing system under pressure to change rapidly.

Demographic changes in terms of race, ethnicity and socio-economic status of the patient population of the future pose special challenges for the recruitment of classes of medical students that are as diverse as the population for which they will care. The nation is on the verge of a seismic shift from a solid white majority of a generation ago to a nationwide “minority majority” population within a generation from now. It is already a reality in some parts of the country.³⁹ At the same time, a major challenge is the development of new, evidence-based curricula that can keep pace with care delivery, evaluation, organizing and financing that are fast changing.

These realities raise larger concerns. With so much change occurring in the financing, organization, and delivery of care as well as the conduct of basic and translational research in times of chronic federal, state and private insurance budgetary squeezes, will the resources required to sustain and grow a robust high quality, cost effective clinical enterprise be available? Health insurance coverage is expanding, but the budget pressures on investment in healthcare reimbursement, research and education are downward. Ultimately medical education and training programs are only as good as our healthcare system itself is—the system from which students and residents learn most effectively by direct interaction.

There are a host of analytical challenges posed to effective workforce studies by the magnitude and speed of changes in the healthcare system. As noted previously, workforce projections have not always appeared to be “directionally” accurate due to the fact that the projections themselves trigger changes in healthcare and workforce that can reverse workforce analysis.

It may be true the pace with which change is occurring in health systems is now faster (and quite different) than available data and analytical resources

can keep up with. As a result analysts and advocates alike can be vulnerable to “blind spots,” in which personal expectations of healthcare reform reducing demand for physicians seem so logical and inevitable even when specific peer-reviewed evidence is lacking, the line between conviction and knowledge can become obscured. Most prior projections assumed major changes in healthcare that never materialized.

To paraphrase an often used quote, “In theory there's no difference between theory and practice. But in practice there is.”⁴⁰

Current assumptions about the impact that efforts to redesign care, such as ACOs and patient-centered medical homes, will have on demand for physician services may be similarly unrealistic. Many point to these reforms as obviating a primary care shortage, but there is little evidence to support these claims.⁴¹ For example, 1 recent comprehensive study of a medical home project in Pennsylvania found it was associated with increased primary care utilization as well as improvements in quality and reduced use of hospital services.⁴² Similarly, analysis of managed care utilization (used as a proxy for new models) showed an increase in primary care demand for those patients compared with others.¹²

Few evaluations of other models of new care and financing have provided evidence of major changes. However, belief in such changes is leading to strong statements that new delivery and payment models will result in reduced demand for physicians.²⁶ To date, we do not have a strong database to support such conclusions. But we need to study the workforce implications of these models and build the evidence base as the research demonstrates.

The U.S. is likely years away from “knowing” via peer reviewed and accepted research findings whether ACOs, bundled payments, interprofessional education and team-based delivery, and e-health technologies will fulfill their potential to improve health and outcomes of care while also reducing cost. Even less is known about both how and how long any proven innovations might take to bring to scale or how they ultimately will impact demand for physician services. There are a host of assumptions made with no evidence that new models of care increase overall capacity to care for more patients. In many cases it is simply too soon to assess definitively the impact of such changes. The field may lack the tools—even the databases—needed to undertake such analysis.

What we do know is that past expectations have not always been met. For example, the promises of telemedicine in general and e-medicine in particular are decades old but have not yet had a large scale, transformational impact.

Further compounding the problem is the intensity of opposing views on of all sides of the ongoing workforce policy debate, which can have the effect of focusing attention on the divide between players, rather than common ground on which all could stand. Such

divisions make more difficult the ability to achieve the requisite consensus needed to make analytical progress—such as difficulties in redefining health professional shortage areas, funding the workforce commission created by the ACA, developing and implementing a minimum data set to track and monitor the health workforce, or developing, testing and implementing measurements to guide future workforce investments. If continued, impasses in each area mean a decade could easily pass with little to show for it analytically.

Of all of the many challenges that face our ability to achieve and maintain the physician workforce the nation needs, and increasingly demands, the biggest may simply be the frequency and magnitude of change occurring within the healthcare economy. Consider just the last 25 years and the changes in both delivery and financing of care that have occurred, which have had consequences for projections and the workforce:

- Political healthcare reform debate of 1993-1994.
- Private insurance promotion of managed care in the early to mid-1990s.
- Consumer backlash to closed panel managed care; emergence of the preferred provider option in the late 1990s and 2000s.
- Technology developments, particularly in information technology, of the late 1990s and 2000s.
- Economic crisis of 2008-2012.
- Political healthcare reform debate and enactment of the ACA in 2008-2010.
- Market-based delivery reform as well as ACA implementation, including both delivery and financing innovations—2010-future.

And throughout this period we have continued to have access issues that are “constant” despite concerns about excess supply in the past when considering ideal states.

What does this all mean? In medical education, the ultimate “competence” for our physician workforce will be “adaptability” at the physician and workforce levels. We have decades of change ahead of us as the nation continually seeks to increase access, improve quality and outcomes, reduce cost, and manage supply and demand. Adaptability by individuals and the entire workforce will be the prerequisite of a productive physician's career and a productive healthcare workforce.

CONCLUDING OBSERVATIONS

It is the assessment of the AAMC that if unaddressed, the nation faces a serious physician shortage—nationally, regionally and by specialty—in the decade ahead. The growing healthcare needs of a rapidly aging Baby Boom generation threaten to outstrip our aging physician workforce, despite the significant changes in healthcare delivery and financing now underway. Ensuring access requires a comprehensive strategy of federal

GME policy changes and further healthcare delivery innovations. To that assessment, we would add three broad observations drawn from our discussion of the ongoing physician workforce debate.

First, the work of developing, publishing and debating healthcare workforce projections overall and physician workforce projections in particular is more important than ever to the nation's ability to plan ahead for the needs of a fast-changing population and the realities of a fast-changing healthcare system, which will affect both supply and demand. Projections provide not only an intellectual framework in which to evaluate changes in the workforce, but they also play a major role in planning for future workforce needs. The take away message for policy makers is as follows: Precisely because projections are not guaranteed forecasts of the future, it is critical that policy makers pay more attention to workforce projections, their analysis, and their refinement, not less, in order to appreciate the potential changes the future can bring.

Second, the ongoing workforce debate cries out for more research that specifically examines the workforce implications of new payment and delivery models—ACOs, bundled payments, team-based care, patient care centered medical homes, tele-health. Many, including the AAMC, cite these models for their potential to mitigate shortages. Yet, there is little research to date that delves explicitly into how increased efficiency of care affects demand for physicians or resolution of health inequities. Because expectations for the outcomes of delivery and financing reforms are understandably high, it is especially important for research to focus on how projections are built.

Third, many factors make the need for research an urgent one, in particular the accelerated aging of the Baby Boom generation over the next decade, with its disproportionate need not only for healthcare but especially for specialty care. A multi-pronged strategy that includes delivery reform, continued focus on addressing maldistribution, development of GME accountability, and increased funding for GME is required to ensure that our growing and aging population has access to high quality care when they need it.³³

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