Who are the physicians of tomorrow and what will they do?

Shaping the Answer—The Leadership Challenge

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Introduction

I am delighted to have the opportunity to consider the question "Who are the physicians of tomorrow and what will they do?" The true power of this question lies in understanding that it has not yet been answered. One of our roles in this conference is to consider what the answer should be and then to shape our health care systems, practice environments, and medical schools in ways that will help achieve the desired result.

I approach this question from several perspectives. First, I present some of the available data, trends, and projections about the physician workforce in the United States. I then describe the three generations that are currently engaged in the practice of medicine or will be engaged in medical practice in the year 2020, and I consider how this information can help us understand what we see today and can help us shape the future. I conclude with several predictions about the future, which are intended as much to stimulate discussion as to answer the question posed by the conference organizers.

Data, Trends, and Projections

After years of suggestions that the United States was heading toward an oversupply of physicians, more recent predictions indicate that the country will instead face a substantial shortage of physicians by 2020, particularly in certain parts of the country and among certain groups of people.[1-6] Shortages are predicted in both generalist and specialty disciplines, and these shortages will be exacerbated by geographic maldistribution of many specialist physicians. The physician shortage will be caused by many factors, including the aging of the population, the expanding life span, and the increasing possibilities in medical diagnosis and therapy. Medicine is only one of several health professions with current or predicted shortages; nursing and pharmacy are two other prominent examples.[7,8] A number of strategies have been proposed for addressing physician workforce shortages.[6] These include further expanding medical school enrollment, expanding the number of graduate medical education positions in existing programs, and increasing the number of medical schools and residency programs, particularly in underserved areas.

The anticipated shortage of physicians is being addressed by the expansion of existing class sizes and by the development of new medical schools. In 2004, a survey of the deans of U.S. allopathic medical schools demonstrated that 31% of the schools would definitely or probably expand class size at their institutions.[8] In early 2005, the Association of American Medical Colleges (AAMC) called for an increase of 15% in medical school enrollment by 2015.[9] In fact, the 2005 entering class numbers more than 17,000 and reflects a 2.1% increase over 2004 numbers.[10]

The number of accredited allopathic medical schools has remained relatively constant since 1978 (currently 125 in the United States and 17 in Canada).[11] However, in 2001 a new medical school was established at Florida State University,[12] and in 2002 the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, a school focused on educating clinician investigators, was established.[13] In contrast, the number of osteopathic medical schools has increased dramatically since 1978, with the addition of 6 new schools for a total of 20, as well as the establishment of 3 second campuses for existing schools.[14] Over the past 25 years, the number of graduates from

allopathic medical schools has not changed substantially, whereas the number of graduates from osteopathic medical schools has more than doubled.[15] Approximately 6% of the physician workforce in the United States is composed of osteopathic physicians, and their numbers are growing four times faster than are the numbers of physicians who have graduated from the allopathic medical schools.[2] Differences between allopathic and osteopathic medicine are diminishing.

A substantial change in the U.S. physician workforce in recent years has been the increasing participation of women in the medical profession. Recent statistics indicate that there are more than 225,000 female physicians in the United States. This number accounts for almost 26% of the physician population, a substantial increase from 1980, when women accounted for only 11.6% of the physician population.[16] Although women participate in all medical and surgical specialties, disciplinary representation varies substantially. The specialties with the largest numbers of female physicians are internal medicine, pediatrics, family medicine, obstetrics-gynecology, psychiatry, and anesthesiology.[16]

Although women account for a larger proportion of the physician workforce today, they are at the more junior levels in both private practice settings and academic medicine.[17,18] For example, although women accounted for approximately 30% of medical school faculty members in 2004, they accounted for only 15% of the full professors.[17] In 2003, 10% of academic department chairs and 10% of medical school deans were women.[19] These differences cannot be accounted for strictly by women's relatively recent entry into the profession.

In 2003, women accounted for 40.7% of all residents. The specialties with the largest number of female residents are internal medicine and pediatrics.[16] Women are more interested than men in primary care specialties. Surgery is still the discipline with the lowest number of female residents, although the proportion of women among all general surgery residents increased from 17.1% in 1993 to 25.4% in 2003.[19]

In 2003, for the first time, female applicants to medical school outnumbered male applicants, and in 2004 just more than half (50.4%) of medical school applicants were women. In 2003-04, 47.9% of enrolled medical students were female.[20] The number of female graduates from medical school doubled between 1980 and 2004.[17]

International medical graduates play an important role in the U.S. physician workforce. Of the 20,000 positions available in the National Residency Matching Program, only 65% are filled by U.S. medical school graduates. The remaining positions are filled by international medical graduates or by U.S. graduates of foreign medical schools. Approximately 25% of the practicing physicians in the United States graduated from foreign medical schools.[2] Annually, approximately 5,000 international medical graduates enter residency programs, and many stay in the United States to establish their practice. A disproportionate number of them become primary care physicians and work in underserved areas.[15] Approximately 17% of the workforce in family practice is composed of international medical graduates.[21]

African Americans, Hispanics, Native Americans, and Native Hawaiians are underrepresented in medicine: the numbers of physicians from these groups are substantially lower than would be expected given American societal demographics. Fewer than 10% of physicians and surgeons in the United States are members of racial and ethnic minority groups. At the end of 2004, members of minority groups made up approximately 19% of faculty members at U.S. medical schools; most of them are at the level of assistant professor.[17] This disproportionate representation has been linked to substantial health disparities that remain in American society.[22]

The number of minority applicants to medical schools peaked in 1996, declined for the next six years, and began to rise again in 2003. In 2004, an approximately equal percentage of blacks (7.8%) and Hispanics (7.1%) applied to medical schools. On a positive note, the AAMC has reported that the number of Hispanic applicants to medical schools in 2005 was 4.6% higher than that in 2004, and the number of Asian applicants was 8.1% higher. However, the number of black applicants did not change appreciably.[10]

A trend of national import is the movement away from the generalist (primary care) specialties of family medicine, general pediatrics, and general internal medicine and toward the non-generalist and technical specialties. A number of factors seem to have contributed to this trend, including the relatively higher incomes and more controllable lifestyles associated with non-generalist specialties. Importantly, students' interest in a controllable lifestyle is not solely a female phenomenon; men want control of their lifestyles as well.[23]

As interest in primary care has declined, other members of the U.S. health professions workforce have taken on expanding roles. Physician's assistants, advanced nurse practitioners, and other health professionals increasingly perform activities that were previously limited to physicians. These activities include diagnosis and prescription. These expanded scopes of practice have been furthered by health financing policies that have provided reimbursement for these services. For example, Medicare legislation may soon make it possible for pharmacists to be reimbursed for medication management services.[24] A report by the National Institute of Medicine highlighted the importance of high-functioning interdisciplinary health professional teams in reducing medical error and increasing patient safety.[25] However, true interdisciplinary training and practice remain more of a dream than a reality.

Generational Issues

Generational differences contribute to the demographic shifts and changing practice preferences that are noted today. Most of the physicians currently in the workforce are members of two generations in American society: the Baby Boom (Boomer) Generation (those born between 1943 and 1960), and Generation X (those born between 1961 and 1981). Some members of the Silent Generation (born between 1925 and 1942) remain in the workforce, and members of the Millennial Generation (born between 1982 and 2001) are beginning to enter the nation's medical schools. In the year 2020, the physician workforce will include three generational groups: Boomers, Generation X, and the Millennial Generation. A full description of generational characteristics is beyond the scope of this paper, and the reader is referred elsewhere.[26-29] However, substantial differences between the Boomer and Generation X archetypes account for many of the shifts being seen in the physician workforce.

Boomers were raised during robust economic times, in a society in which most children grew up in two-parent households with a stay-at-home mother. An optimistic generation, Boomers are known for their intense work ethic that incorporates long hours, willingness to perform uncompensated activities, and loyalty to their organizations. Boomers value teams and have a "can do" spirit. Paying one's dues is an expected part of life, and rewards are often justified on the basis of seniority.

Physician members of the Boomer generation are typically male. Current leaders in practice groups, academic medicine, and organized medicine are typically members of this generation. Hard work and long hours are typical of these physicians, and they often identify strongly with their hospital or organization. The dramatic changes in medical practice that have occurred during these physicians' careers have led some to early retirement.[30]

Members of Generation X, in contrast, were raised during difficult economic times; their experiences contributed to the financial wariness and cynicism of this generation. Unlike Boomers, a substantial number of Generation X children grew up in families in which both parents worked full-time outside the home. Divorce was a common experience for children of this generation. The combination of small family size, two working parents, and divorce led to a generation of latch-key children, many of whom grew up with relatively little parental involvement. Generation Xers have responded to this experience by being very involved in their own children's lives and by demonstrating a strong commitment to balance and integration between their personal and professional lives.

Generation Xers are hard workers and are far more adept at technology than are their older colleagues. Their work ethic focuses on completing a job well and does not necessarily incorporate long hours, enthusiasm for extra work without compensation, or intense loyalty to the organization. Generation Xers want to perform interesting work in flexible environments that provide continual feedback and opportunities for personal and professional growth. Whereas Boomers reward seniority, Generation Xers reward and respect competence.

Most Generation X physicians are male; however, most female physicians are members of this generation. Because of their comfort with technology, many Generation X physicians have spearheaded the introduction of electronic medical records and other technologies into their practice settings. Generation X's experiences of difficult economic times during their formative years underlie these physicians' interest in income and their expectation of compensation for activities (e.g., work on medical staff committees) that earlier generations may have considered voluntary. Given their collective experiences in a time of dramatic change in family structures, it is not surprising that Generation X

physicians—male and female—place a premium on personal time, involvement in their children's activities, and a balanced lifestyle. These physicians measure their work by the activities completed more than by the time spent at the hospital or in the office. They do not join groups, professional or otherwise, without expecting to receive direct benefits from the experience.

Early descriptions of the Millennial Generation suggest that these trends in the medical workforce will continue to evolve. Rather than being isolated during their childhoods, Millennials have been very much the focus of their parents' attention. This focus is associated with substantial economic, educational, and experiential opportunities; Millennials are the most traveled, tutored, and scheduled generation to date. Members of this generation tend to be optimistic and confident in their abilities. At the same time, they often find themselves in high-pressure environments, with high expectations placed upon them by their parents and others.

These young people work well in teams and often learn in groups, either in person or via technology. Learning from books has been supplemented (or, some might suggest, supplanted) by learning from the Web; how much this shift will affect the thought processes (e.g., linear or Web thinking) of the Millennials remains to be seen. This is a generation of active learners who prefer science and mathematics to the arts and literature. They learn by doing, have relatively short attention spans, and are less introspective than previous generations. They are used to multitasking, and technology is a crucial part of their lives. Groups of Millennials routinely converse without making eye contact or speaking, because instant messaging and chat rooms make such actions unnecessary.

Millennials are growing up in a society that is increasingly racially and ethnically diverse. Diversity of lifestyles and gender roles are also far more apparent to these children than they were to previous generations. The global community is a reality even to the younger members of this generation through Web sites, e-mail, and blogs. This generation values diversity and tends to rebel against intolerance.

The practicing physician workforce does not yet include Millennials; however, this generation is currently beginning to enter medical schools. The learning styles and

expectations of Millennials will challenge medical educators, but their altruism, confidence, and desire to make a difference offer great promise to the medical profession.

Predicting the Future and Shaping Initiatives

What do these considerations of changing practice styles, specialty preferences, and lifestyle constructs add to our consideration of the doctors of the future and what they will do? What are the implications of these characteristics for our training settings, our curricula, and our medical education settings and medical workplaces? The following predictions and proposed strategies are intended to stimulate discussion and to provide some possible answers to the questions posed.

1. The United States is hampered by the lack of a clear national public health policy. This lack of a national health policy contributes to lack of clarity in workforce needs, to health disparities among U.S. citizens, and to the escalation of health care expenditures at an unsustainable rate. This situation is not tenable, and substantial movement toward a national health policy will occur within the next fifteen years. In the meantime, the American Medical Association, the Association of American Medical Colleges, and a cadre of respected scholars will continue to play important roles in delineating health workforce needs and advocating for policies to address those needs.

2. There will be greater attention to the needs of “customers,” be they patients choosing a health care delivery systems or medical students contemplating a choice of specialty. The concept of trainee as “customer” will require leaders in various specialties to reconsider the nature of their training programs and practice models.

Two examples may be helpful. First, it is recognized that trainees are not selecting primary care disciplines. Relatively low incomes, perceptions of lifestyle difficulties, and low status have been proposed as possible reasons. Further defining the complex reasons behind movement away from these specialties is important. As these reasons are identified, substantial efforts aimed at addressing them will be necessary. Such efforts may include advocacy for improved compensation of physicians in these specialties and the development of new practice models that facilitate a controllable lifestyle while offering the opportunity for engagement in quality patient care.

A second example relates to the many reports noting that women do not pursue careers in surgery. However, the fact that obstetrics-gynecology is a popular specialty among women suggests that many women enjoy surgical practice, have the requisite skills to be accomplished surgeons, and do, in fact, choose a surgical field. Research has documented that female medical students experience specific discrimination and harassment on surgery rotations.[31,32] Do women deselect surgery, or does surgery deselect women? Whatever the reasons, surgical disciplines and training programs that fail to attract women will find a substantial pool of talented candidates unavailable to them. To remain competitive for the largest pool of candidates and the best students, specialties and training programs must consider their selection process and the nature of their training programs.

3. There will be a substantial redesign of generalist medical training, with a movement toward recognition of family medicine, general pediatrics, and general internal medicine as "specialties of comprehensive medicine." Efforts by organizations such as the AAMC to redefine training experiences for the care of chronic diseases across the continuum of medical education provide one example of attempts to change the perceptions of and the capabilities needed for these disciplines of medicine.[33]

4. The upcoming decade will see increased tensions between Boomer and Generation X physicians. Business tools that have been developed for improving understanding and communication between generations will also be useful in the health care setting. Institutions and practice settings that effectively address these tensions will have a competitive advantage in attracting and retaining physicians and other workers.

5. International medical graduates will continue to be of substantial importance in the U.S. health care system. The importance of these trainees and practicing physicians as practitioners and educators will increase, as will their numbers. The openness of members of the Millennial generation may help reduce barriers that have sometimes occurred between physicians trained in the United States and those trained in other countries. National policy must be sensitive to physician shortages in countries exporting physicians to the United States and to the concerns of some countries that they are subsidizing the costs of U.S. health care by educating physicians who ultimately practice in the United States.

6. The scopes of practice of other health care professionals will continue to expand. Advance practice nurses, dentists, and pharmacists will be engaged in caring for the health of the public to substantially greater degrees. In patient-centered and evidence-based health systems, it will be crucially important that physicians work effectively with these other health care professionals. Interdisciplinary team learning will be an important challenge for health care professions educators across the continuum of practice. The Millennial Generation's comfort with diversity may provide a unique opportunity for making interdisciplinary training and practice a reality.

7. Members of the medical profession, particularly leaders in the various medical and surgical disciplines, will need to deconstruct—and reconstruct—our operating definitions of professionalism. Disagreement exists between Boomer and Generation X physicians about what constitutes professional and unprofessional behaviors.[34] Although I believe that there is more commonality than difference between the positions of the two groups on this issue, dialogue on the issues must occur. For example, physicians of both generations agree that patient-centeredness is an appropriate core principle of professionalism, but they may disagree about how this principle translates into expectations of work hours.

8. The learning styles, communication preferences, and technologic competence of the Millennial Generation learners will place great strain on current medical education systems. Educators may find it necessary to devote additional curricular time to communication skills training and medical humanities instruction. Active learning, simulations and models, on-demand learning, and team experiences will be expected. Providers of continuing professional education will be called upon to manage the dramatically different learning styles of the Boomer, Generation X, and Millennial physicians who attend the same continuing education programs.

9. Health systems, medical schools, and hospitals will pay increasing attention to the learning and work environments of students and physicians. High standards, commitment to excellence, flexibility, technological advances, substantive involvement, pleasant work environments, opportunities to live a balanced life, and opportunities for professional and personal growth are of particular importance to members of Generation X and the Millennial Generation. Many of these workplace attributes are considered more

important than financial rewards. Those organizations that can best engage the hearts and hands of the new generations of physicians are the organizations that will have these practitioners on their staffs and faculties; other organizations will not.

Conclusion

In this paper, I have presented data suggesting that a physician workforce shortage is in the offing in the United States. U.S. physicians are increasingly likely to be female, to prefer non-generalist disciplines, and to value controllable lifestyle practice settings. As the need for physicians increases and the size of the population pool decreases, greater attention must be paid to matching the learning and work environments to the needs and strengths of the incoming Generation X and Millennial physicians while maintaining a patient-centered focus.

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References

1. The Physician Workforce: Position Statement. AAMC, February 22, 2005. Available at http://www.ahme.org/events/spring2005/handouts/Salsberg_Presentation2.pdf#search='Physician%20Workforce%20Position%20Statement%20AAMC'.
2. Sheldon GF. Great expectations: the 21st century health workforce. Am J Surg 2003;185:35-41.
3. Biola H, Green LA, Phillips RL, Guirguis-Blake J, Fryer GE. The U.S. primary care physician workforce: Persistently declining interest in primary care medical specialties. Am Fam Physician 2003;68:1484.
4. Angus DC, Kelley MA, Schmitz RJ, White A, Popovich J. Caring for the critically ill patient. Current and projected workforce requirements for care of the critically ill and patients with pulmonary disease: can we meet the requirements of an aging population? JAMA 2000;284(21):2762-70.
5. Physician Workforce Policy Guidelines for the United States, 2000-2020. Council on Graduate Medical Education, Sixteenth Report, January 2005. Available at http://www.cogme.gov/report16.htm#sumrec.
6. Report of the Council on Medical Education. The physician workforce. Recommendations for policy implementation. CME Report 8-A-05. Chicago: American Medical Association, July 2005. Available at http://www.ama-assn.org/ama1/pub/upload/mm/377/cme8a-05.doc.
7. Nursing shortage. Fact Sheet. American Association of Colleges of Nursing, October 2005. Available at http://www.aacn.nche.edu/Media/FactSheets/NursingShortage.htm.
8. Facts at a glance: the pharmacist shortage. American Foundation for Pharmaceutical Education, 2003. Available at http://www.afpenet.org/news_facts_at_a_glance.htm.
9. AAMC calls for modest increase in medical school enrollment. Press release from the Association of American medical Colleges. Available at http://www.aamc.org/newsroom/pressrel/2005/050222.htm.

10. AAMC reports major increase in U.S. medical school enrollment. AAMC press release, October 25, 2005. Available at www.aamc.org/newsroom/pressrel/2005/051025.htm.
11. Medical schools. Association of American Medical Colleges. Available at http://www.aamc.org/medicalschools.htm.
12. Patchin RJ. Report of the Council on Medical Education. American Medical Association House of Delegates report, 2002. Available at http://www.ama-assn.org/ama1/pub/upload/mm/377/report4.doc.
13. The Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. Available at http://www.clevelandclinic.org/cclcm/thecollege.htm.
14. Colleges of osteopathic medicine. American Association of Colleges of Osteopathic Medicine. Available at http://www.aacom.org/colleges/.
15. A word from the president: "Filling the workforce gap." AAMC Reporter: April 2005. Available at www.aamc.org/newsroom/reporter/april05/word.htm.
16. Freeman CK. Physician characteristics and distribution in the US. Chicago: American Medical Association, 2005.
17. Minorities in medical education: Facts & Figures 2005. AAMC, 2005. Available at https://services.aamc.org/Publications/showfile.cfm?file=version42.pdf&prd_id=133&prv_id=154&pdf_id=42.
18. Bickel J, Wara D, Atkinson BF, Cohen LS, Dunn M, Hostler S, Johnson TRB, Morahan P, Rubenstein AH, Sheldon GF, Stokes E. Increasing women's leadership in academic medicine: report of the AAMC Project Implementation Committee. Acad Med 2002;77:1043-1061.
19. Magrane D, Clark V, Yamagata H, Chapman W. Women in U.S. academic medicine statistics and medical school benchmarking 2003-2004. Association of American Medical Colleges, 2004. Available at http://www.aamc.org/members/wim/statistics/stats04/start.htm.
20. Barzansky B, Etzel SI. Educational programs in US medical schools, 2003-2004. JAMA 2004;292:1025-31.
21. Family physicians and the primary care physicians workforce in 2004. Am Fam Physician 2005;71(12):2260.

22. Missing persons: minorities in the health professions. A report of the Sullivan Commission on Diversity in the Healthcare Workforce. Available at http://admissions.duhs.duke.edu/sullivancommission/documents/Sullivan_Final_Report_000.pdf#search='missing%20persons%20minorities%20in%20health%20Sullivan'
23. Dorsey ER, Jarjoura D, Rutecki GW. The influence of controllable lifestyle and sex on the specialty choices of graduating U.S. medical students, 1996-2003. Acad Med 2005;80:791-6.
24. Murphy C, Green C, Rodis JL. Medicare has our number! Under new benefit, pharmacists may be paid for MTMS. Hot News. Ohio Pharmacists Association, October 13, 2005. Available at http://www.ohiopharmacists.org/.
25. Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human: building a safer health system. Committee on Quality of Health Care in America, Institute of Medicine. Washington, DC: National Academy Press, 1999. Available at http://books.nap.edu/html/to_err_is_human/exec_summ.html.
26. Florida R. The rise of the creative class: and how it's transforming work, leisure, community, and everyday life. New York: Basic Books, 2003.
27. Howe N, Strauss W. Millennials rising: the next great generation. New York: Knopf Publishing Group, 2000;
28. Lancaster L, Stillman D. When generations collide: who they are, why they clash, how to solve the generation puzzle at work. New York: HarperCollins Publishers, 2003.
29. Zemke R, Raines C, Filipczak B. Generations at work: managing the clash of veterans, boomers, Xers, nexters in your workplace. New York: American Management Association 2000.
30. Kletke PR, Polsky D, Wozniak GD, Escarce JJ. The effect of HMO penetration on physician retirement. Health Serv Res 2000;35(5 Pt 3):17-31.
31. Stratton TD, McLaughlin MA, Witte FM, Fosson SE, Nora LM. Does students' exposure to gender discrimination and sexual harassment in medical school affect specialty choice and residency program selection? Acad Med 2005;80:400-8.

32. Nora LM, McLaughlin MA, Fosson SE, Jacob SK, Schmidt JL, Witzke DB. Does exposure to gender discrimination and sexual harassment impact medical students' specialty choices and residency program selection? Acad Med 1996;71:S22-4.
33. Whitcomb ME. Who's going to take care of the folks [editorial]? Acad Med 2005;80:789-790.
34. Smith LG. Medical professionalism and the generation gap. Am J Med 2005;118:439-42.