noticeable but that in the aggregate constitute a monumental hurdle for those who threaten the status quo. There is no reason for us to believe that academic medicine is immune to this all-too-familiar glass-ceiling phenomenon.[5,6]

It is unclear whether these or other seemingly benign explanations account for the notable lag in academic advancement among minority faculty or whether these faculty are still being victimized by invidious racial discrimination. But no matter. These observations send a disturbing message that should arouse everyone to action. At a minimum, deans, department chairs, division chiefs, and everyone else connected to the decision process for promotion and tenure should reexamine the procedures they use to ensure that established standards are applied equitably.

Perhaps even more important, concerted and systematic efforts need to be mounted to establish effective mentoring and faculty development programs, not just for minority faculty, of course, but it is clear that the need is especially acute for this group. Committed mentors, particularly those chosen by the ones being mentored, can be a powerful developmental influence on young faculty and an invaluable guide through the complicated academic reward system.[7]

If medicine is ever going to close the horrendous diversity gap that plagues our profession, we must find answers to the questions raised in the study by Palepu et al.[3] A racially and ethnically diverse faculty, fully empowered by the equitable presence of minorities within all ranks of the academy, is the only conceivable bridge to the diverse physician workforce and the culturally competent health care system that the full spectrum of the American public deserves. As long as our medical school faculties have little more than token representation from many sectors of the richly diverse American culture, and as long as faculty advancement, for whatever reason, is grossly distorted by race and ethnicity, the medical profession cannot truly lay claim to the ethical and moral high ground it professes to occupy.

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1. *Minority Students in Medical Education, Facts and Figures 9*. Washington, DC: Association of American Medical Colleges; 1996:109.
2. *US Medical School Faculty 1997*. Washington, DC: Association of American Medical Colleges; 1997.
3. Palepu A, Carr PL, Friedman RH, Amos H, Ash AS, Moskowitz MA. Minority faculty and academic rank in medicine. *JAMA*. 1998;280:767-771.
4. Petersdorf RG, Turner KT, Nickens HW, Ready T. Minorities in medicine: past, present, and future. *Acad Med*. 1989;65:663-670.
5. Tesch BJ, Wood HM, Helwig AL, Nattinger AB. Promotion of women physicians: glass ceiling or sticky floor? *JAMA*. 1995;273:1022-1025.
6. Carr PL, Friedman RH, Moskowitz MA, Kazis LE. Comparing the status of women and men in academic medicine. *Ann Intern Med*. 1993;119:908-913.
7. Johnson JC, Jayadevappa R, Taylor L, Askew A, Williams B, Johnson B. Extending the pipeline for minority physicians: a comprehensive program for minority faculty development. *Acad Med*. 1998;73:237-244.

Creating an Effective Physician Workforce Marketplace

The rapid evolution of the health care system has brought enhanced cost consciousness, curricular reform for practicing in the managed care setting, and an increased focus on the economics of care delivery.[1] The latest challenge entails building a more functional market for physician services. Positive activity in this direction has already begun, but there are also serious impediments.

See also pp 777.

First, the US physician workforce has one of the largest physician-to-population ratios in the world[2]; this supply will remain dominant for decades, no matter what changes are made in medical education. In addition, the overall appeal of a career in medicine remains strong, with more than 2 applicants for every entering position in medical schools.[3]

Second, there are now nearly 2 medical specialists for every generalist.[4] This large proportion of specialists has been blamed by payers and others for overusing medical technologies and escalating health care costs, without producing an observable improvement in patient outcomes. Powerful incentives continue to foster a generalist-specialist imbalance. For example, in 1997 the Health Professions Education Assistance Act provided nearly $200 million to encourage training of primary care physicians (R. M. Politzer, ScD, oral communication, July 6, 1998). This allotment was eclipsed the same year by the more than $16 billion in direct graduate medical education (GME) support from Medicare and other third-party payers that favor specialty training in the inpatient setting (R. M. Politzer, oral communication, July 6, 1998).

Third, efforts to call attention to an impending physician surplus, while no longer contested by organized medicine, have failed to spark widespread interest in workforce planning. The Executive Branch and Congress, until recently active partners in physician workforce reform, have effectively withdrawn from considering these issues, except for the ongoing debate on how to finance GME. In the absence of federal leadership on physician workforce issues, state governments have taken some initiative in revising physician workforce policy. In New York, an incentive program to downsize residency programs is being piloted through Medicare. In Tennessee, state Medicaid GME dollars are being leveraged to expand the availability of primary care in rural areas. These targeted solutions are designed to affect regional problems.[5] Unless such practices are adopted widely, there is slight prospect of a national approach to physician workforce issues in the near term.

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Fourth, the demand for physician services may be decreasing. In recent years, managed care organizations have reduced overall physician utilization by expanding the responsibilities of generalists and nonphysician practitioners. The reduction in utilization has been especially dramatic for subspecialty medicine.[4,6] Some equilibration is required between physician workforce supply and demand.

The positive outlook for change in the physician workforce is being fueled by data that confirm a restrictive market for physician services in some specialties and regions of the country.[7] Two of these surveys, completed by residency program directors, found that physicians who pursued generalist careers had less difficulty finding preferred positions than those who pursued nongeneralist specialties.[8,9] Although in a few specialties as many as 10% of the resident physicians completing training in 1995 did not find a full-time position in their specialty or subspecialty, only 2.2% overall were unemployed or had taken a position in a specialty or subspecialty outside the one in which they were last trained.[8]

The study by Miller et al[10] in this issue of THE JOURNAL reports the results of a survey of both residency program directors and resident physicians concerning job prospects of residents in the spring of 1996 (prior to the completion of their residencies) and presents a more extreme situation.[10] These results reflected a notable discrepancy between the information reported by residents and by program directors. Of the resident physicians seeking employment at the time they completed the survey, 7.1% had not secured a position. Among the resident physicians who found a clinical position, 22.4% reported "significant difficulty" in finding that position. In contrast, the program directors reported an unemployment rate of only 1.2% of their program graduates and responded that 6% experienced difficulty finding employment, consistent with previous surveys. The differential in job prospects across specialties was similar to that reported in earlier analyses.[6]

The difference between the 2 groups of respondents in their perception of the physician job market is particularly disturbing because it suggests either reluctance on the part of graduates to candidly inform their program directors of the results of their job searches or failure of program directors (who are an important source of career advice for physicians in training) to accurately assess the experiences of their trainees. Both of these shortcomings could be operating. These new data may, for the first time, provide support to those who suggest that the long-predicted physician surplus has finally arrived. Until now, economists inferred the existence of a physician surplus by suggesting that some services physicians rendered were unnecessary because they did not improve patient outcomes. Since consumers do not pay for health care out-of-pocket, this disequilibrium did not manifest itself as a classic surplus situation. Now we are beginning to see the emergence of a real surplus, defined as a lack of job opportunities. As Miller et al report, physicians in influential positions (ie, program directors) are not sufficiently aware of the extent to which the tightening job market is affecting physicians.

Without national direction, changes in the proportion of residents in specialty vs generalist positions and adjustments in the overall numbers of residency positions will most likely be effected piecemeal by leaders in the individual academic health centers, some of whom may not be adequately prepared for such a role.[11] This situation represents a pivotal opportunity for the leadership of academic medicine to fulfill its appropriate role by participating more actively in physician workforce management. Comparatively little is known about the relative impact of various specialties in diagnosing and treating patients with various conditions and the results they achieve. This information is essential for reshaping the US physician workforce to best serve the needs of medicine and the public.

The tight marketplace has already mobilized several specialties to obtain the information they will need to understand their role in the existing marketplace and to chart new training policies. Analyses of the workforce and the unique contributions of several specialties have been recently completed or are under way (K. Sheahan, oral communication, July 6, 1998).[12-17] The first step in this process often involves bringing together the leadership of the various groups that represent the specialty to define the goals of the study. For example, 5 separate groups coalesced to oversee the recent gastroenterology workforce study.[12] Analyses have typically included supply projections for the specialty well into the 21st century to inform training policy. The American Gastroenterologic Association, after considering informal accounts of scarce job opportunities for its graduating fellows and reviewing its future supply under varying assumptions, elected to endorse a goal of 25% reduction in residency training positions.[12] Otolaryngologists are seriously pondering a different problem. Based on our ongoing work, it has been discovered that, while their current numbers may be appropriate, their age distribution is projected to produce a massive wave of retirement in the year 2010.

In addition to the analysis of future supply, these studies are determining the services the specialty provides and the extent to which these services are also provided by other specialists and nonphysician practitioners. A recent examination of the content of the practices of specialist physicians found that specialists, at times, deliver some generalist care, in particular to patients for whom they provide the majority of care.[18] With this information, some specialties are assessing options for their future patient orientation. Increased overlap with family physicians and nurse practitioners, for example, stimulated obstetrician-gynecologists to consider opportunities for expanding their participation in providing more primary care, especially for elderly women.[13]

The proportion of procedures that are exclusive to a specialty or even performed most often by a specialty is often surprisingly small. For example, only a few highly specialized procedures (eg, percutaneous transluminal angioplasty, endoscopic retrograde pancreatography) are performed solely by physicians in 1 specialty. The remaining procedures are often performed by several specialties, which may be able to manage them as well as the specialty most associated with the procedure.[12] For instance, colposcopy, once the purview of obstetrician-gynecologists,[13] is now often performed by generalist physicians and by nonphysician practitioners. Otolaryngologists share the management of sinus conditions with allergists and compete with head and neck surgeons, plastic surgeons, and maxillofacial surgeons for a number of procedures. This significant overlap in specialty domains makes it difficult to define a specialty's identity and plan training programs.

The important next step in defining appropriate roles for specialties will involve studies to identify which specialty groups provide care that results in the best outcomes for specific conditions. These studies will help define the boundaries within which physicians of various specialties provide the most cost-effective care. Using this information, program directors

will be able to direct the content of training to the realities of future practice and, ultimately, with careful attention to antitrust issues, provide rational data on which to base the management of the future size and composition of the physician workforce. A much more systematic effort is warranted by specialty groups to study outcomes of the procedures they manage. These data will form a substantive basis to aid health plans, consortia of large employers, and group practices in defining practice guidelines and in assigning workload appropriately among specialties, recognizing that a large portion of medicine is equally well managed by several specialties. To be complete, these analyses also should account for the role of complementary medical therapies and nonphysician providers in caring for these conditions.

Building on the work of Miller et al,[10] reliable employment information should be made available to aid medical students in making career choices. It would be desirable for a public-private partnership to conduct an annual survey of the employment status of recently graduated residents and disseminate the results widely so that graduating medical students and residents could make informed decisions on specialty choice. Important metrics to capture in these surveys would include residents' perceived difficulties and successes in finding a desired position, as well as the practice characteristics of that position.

The physician workforce apparently has responded decisively to such data. Over the last several years, analyses of specialty choices made by medical school graduates have revealed a dramatic shift in residency choices of graduating medical students.[19] The rapidly evolving career preferences of physicians in training indicate that medical students are taking their advice from the columns of the *Wall Street Journal* as well as from traditional sources such as clinical mentors and deans of student affairs. As a result, 96% of generalist residencies—family practice, internal medicine, and pediatrics—were filled in the 1997 match, while some specialty programs, such as anesthesiology, were not.[3] A recent study of internal medicine residents' choices regarding subspecialization decisions indicates that the greater the managed care penetration in the market, the less likely a physician will be to choose to specialize.[20] Market forces have proved more effective than government programs for fostering primary care.

With the federal government and Congress at least temporarily abdicating their former roles in shaping physician workforce policies, an increasing number of specialty societies are funding studies to help determine how many training positions to offer, the appropriate content of their training programs, and the quality of their contribution to health care. Capitalizing on the informatics revolution, these data will provide feedback to medical educators, enabling them both to monitor patient outcomes and to improve on the quality and value of care. This effort will require the introduction of basic clinical epidemiology and outcomes research into all residency programs. Expanded activity of physicians in determining their own workforce policies, as well as broad dissemination of outcome data and labor market information, will help ensure that the evolution of physician services and training will rest on a rational foundation.

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1. Winslow R. Health-care inflation revives in Minneapolis despite cost cutting. *Wall Street Journal.* May 19, 1998:1.
2. Organisation for Economic Co-operation and Development. *Organisation for Economic Co-operation and Development Health Data 97.* Paris, France: Organisation for Economic Co-operation and Development; 1997.
3. Association of American Medical Colleges. *AAMC Data Book.* Washington, DC: Association of American Medical Colleges; 1998.
4. Weiner JP. Forecasting the effects of health reform on US physician workforce requirement: evidence from HMO staffing patterns. *JAMA.* 1994;272:222-230.
5. Summitt RL, Herrick RR, Martins M. Addressing a state's physician workforce priorities through the funding of graduate medical education: the TennCare model. *JAMA.* 1998;279:767-771.
6. Wennberg JE, Goodman DC, Nease RF, Keller RB. Finding equilibrium in U.S. physician supply. *Health Aff (Millwood).* 1993;12(2):89-103.
7. Stillman AE. Modern times. *N Engl J Med.* 1995;333:1086-1087.
8. Miller RS, Dunn MR, Whitcomb ME. Initial employment status of resident physicians completing training in 1995. *JAMA.* 1997;277:1699-1704.
9. Miller RS, Jonas HS, Whitcomb ME. The initial employment status of physicians completing training in 1994. *JAMA.* 1996;275:708-712.
10. Miller RS, Dunn MR, Richter TH, Whitcomb ME. Employment-seeking experiences of resident physicians completing training during 1996. *JAMA.* 1998;280:777-783.
11. Stevens DP. GME reform needs visionary academic leadership. *Acad Med.* 1997;72:986-987.
12. Meyer GS, Jacoby I, Krakauer H, Powell DW, Aurand J, McCardle P. Gastroenterology workforce modeling. *JAMA.* 1996;276:689-694.
13. Jacoby I, Meyer GS, Haffner W, Cheng EY, Potter AL, Pearse WH. Modeling the future workforce of obstetrics and gynecology. *Obstet Gynecol.* In press.
14. Lee PP, Jackson C, Relles DA. *Estimating Eye Care Provider Supply and Workforce Requirements.* Santa Monica, Calif: RAND; 1995.
15. Marder WD, Meenan RF, Felson DT, et al. The present and future adequacy of rheumatology manpower. *Arthritis Rheum.* 1991;34:1209-1217.
16. Close LG, Miller RH. Head and neck surgery workforce in the year 2014. *Laryngoscope.* 1995;105:1081-1085.
17. Goldstein JC. The current manpower situation in American otolaryngology–head and neck surgery. *Laryngoscope.* 1995;105(9, pt 1):892.
18. Rosenblatt RA, Hart LG, Baldwin L, Chan L, Schneeweiss R. The generalist role of specialty physicians. *JAMA.* 1998;279:1364-1370.
19. Andriole D, Ryan K, Haire-Joshu D. A comparison of the overall NRMP match results with the results for 19 specialties for senior U.S. medical students. *Acad Med.* 1997;72:801-803.
20. Valente E. Is the market influencing internal medicine residents' decisions to subspecialize? *Ann Intern Med.* 1998;128:915-921.