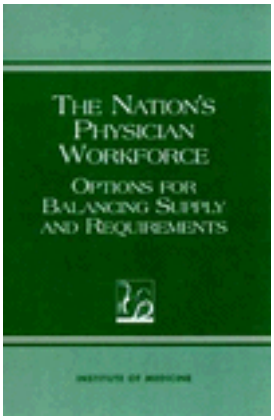

The Nation's Physician Workforce: Options for Balancing Supply and Requirements

Kathleen N. Lohr, Neal A. Vanselow, and Don E. Detmer, Editors; Committee on the U.S. Physician Supply, Institute of Medicine

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Division of Health Care Services

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This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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The serpent has been a symbol of long life, healing, and knowledge among almost all cultures and religions since the beginning of recorded history. The image adopted as a logotype by the Institute of Medicine is based on a relief carving from ancient Greece, now held by the Staatlichemuseen in Berlin.

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Preface

The U.S. health care system is in a period of enormous change. Catalyzed by market forces rather than government-initiated reforms, these changes are fundamental and are occurring rapidly. Although it is difficult to predict what the system will look like when a period of stability is reached, it is clear that the changes being made in its organization and in the financing of health care will have an impact on all components of the health care workforce. The numbers and types of health professionals required and the roles of each health profession will surely be much different in the future than in the past.

This study by the Institute of Medicine (IOM) is the result of a number of widely held concerns about the size of the U.S. physician workforce and the direction in which it is moving. Despite numerous studies in the past 15 years, which have indicated that the U.S. physician supply will exceed requirements, the number of doctors in residency training has continued to grow each year. At the same time, there is evidence that the demand for physician services will be reduced as a result of the growth of managed care. All of this is taking place at a time that the United States has no coordinated and widely accepted physician workforce policy, as had been laid out during the period that comprehensive health care reform at the national level was being debated.

Sensing that the nation was drifting in terms of a sound, defensible approach to its physician workforce needs and recognizing that a physician surplus carried at least the potential for adverse consequences, the IOM elected to undertake a short and focused study of the aggregate U.S. physician supply. The limited scope of the study should not be construed to imply the absence of other important physician workforce issues, such as specialty and geographic mal

distribution or lack of diversity. These problems are far from solved and must be addressed in their own right.

The present study was designed to examine three questions:

1. Is there an aggregate physician surplus?
2. If there is a surplus, what is its likely impact on cost, quality, and access to health care and on the efficient use of human resources?
3. What realistic steps might be taken to deal with any surplus that exists?

A broadly representative IOM committee met on a single occasion to discuss these questions. Prior to the meeting, committee members were provided with an extensive series of relevant articles from the published literature and a background paper prepared by IOM staff. It is a tribute to the hard work of both committee members and Kathleen Lohr, Director of the IOM Division of Health Care Services, who staffed the study, that so much consensus on the three questions could be reached in the short time available.

It is our hope that this report will stimulate renewed interest in physician supply issues and catalyze efforts to resolve the problems it identifies.

Neal A. Vanselow, M.D.
Co-Chair
Don E. Detmer, M.D.
Co-Chair

Acknowledgments

At its single meeting in July 1995, the committee profited greatly from thoughtful and informative presentations from two experts in this field—John Eisenberg, M.D., Chairman and Physician-in-Chief, Department of Medicine, Georgetown University; and Fitzhugh Mullan, M.D., Assistant Surgeon General and Director of the Bureau of Health Professions of the Department of Health and Human Services—and it wishes to express its deep appreciation for their efforts. Also very helpful were other staff of the Health Resources and Services Administration, including Carol Bazell, M.D., the government's project officer for the Bureau of Health Professions, Philip Salladay of the Bureau of Primary Health Care, and Robert Politzer, Chief, Workforce Analysis and Research.

The committee also acknowledges the considerable assistance rendered to this project by several members of the Institute of Medicine (IOM) staff. Molla Donaldson, a senior staff officer, was generous in sharing materials and insights from a related study on primary care. Holly Dawkins, research assistant at the IOM, helped with checking facts and improving the manuscript at a key juncture. Moeen Darwiesh, the IOM's computer specialist, and Nina Spruill, the financial associate for the Division of Health Care Services, rendered key assistance when most needed. Finally, Don Tiller, the division's administrative assistant, graciously undertook to be project assistant at a time when he was already fully occupied.

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The Nation's Physician Workforce: Options for Balancing Supply and Requirements

Summary

As the twenty-first century draws near, the size and composition of the physician workforce trouble both health professionals and policymakers, particularly because of the radical, rapid, and unpredictable transformation of the health care delivery system. With the collapse of efforts between 1992 and 1994 to enact comprehensive health care reform, much of this restructuring is taking place through changes in the private sector, with-as yet-unforeseen consequences. An ongoing debate is anticipated about how many and what mix of health care personnel the nation needs and judges affordable.

These questions are complex and deserve careful, rigorous, and sustained study. This fact notwithstanding, the Institute of Medicine (IOM) concluded that a brief review of data on aggregate supply and requirements and an examination of options for dealing with the physician workforce would be a valuable—and more timely—contribution in the current policy environment. Given the present lack of a clear locus for informed debate and decisionmaking, the IOM appointed an expert committee to carry out a short but substantive review of existing data about the U.S. physician supply, to identify positive and negative implications of the possible mismatch between supply and requirements in coming years, and to lay out possible options for addressing any perceived problems.

During the spring and summer of 1995, the committee reviewed a wide range of materials on these issues; it met once in July 1995 to discuss the issues

and come to consensus on conclusions and recommendations. The committee ended its deliberations with three principles. First, the nation should not tie national workforce policy or graduate medical education to the service delivery needs of selected parts of the health care system. Second, long-term physician workforce policy should be driven by aggregate requirements nationally, and meeting those requirements should be cued more to the output of U.S. allopathic and osteopathic schools than it is today. Third, opportunities in the United States for careers in the healing arts, such as medicine, should be reserved first for graduates of U.S. schools. Its draft report, grounded in those principles, underwent external review in accordance with procedures of the National Research Council, and this monograph is the committee's final report.

U.S. PHYSICIAN SUPPLY AND REQUIREMENTS

Most studies of the adequacy of the physician workforce for the past 15 years have concluded that the United States has an oversupply of physicians, generally characterized as a large surplus of most nonprimary care specialists and either a shortage or relative balance in the supply of primary care physicians. Workforce experts often characterize physician supply in terms of total active physicians. In 1970, the United States had a total of 308,487 active physicians (both allopathic and osteopathic), or a ratio of 151.4 physicians per 100,000 population; in 1992, the respective figures were 627,723 and 245.0, which represented an increase in the physician-to-population ratio of about 62 percent. Another important number involves active physicians in patient care (excluding those in training). In 1970, the figure was 222,657, with a physician-population ratio of 109.2 per 100,000; two decades later, the number was 461,405, giving a ratio of 180.1 physicians per 100,000 population in that year (an increase in the ratio of about 65 percent).

These figures should be interpreted in light of a landmark report in 1981 on the adequacy of the U.S. physician workforce from the Graduate Medical Education National Advisory Committee (GMENAC). Its estimating techniques forecast a supply of nearly 536,000 professionally active physicians in 1990 and nearly 643,000 in the year 2000—for physician-to-population ratios of 220 and 247, respectively, per 100,000 persons. GMENAC concluded that the nation could expect to have a surplus of physicians in the future (not a shortage) and that the surplus would grow from 70,000 physicians in 1990 to 145,000 by the year 2000. Looked at another way, for the past two decades the U.S. physician supply grew at one and one-half times the rate of growth of the general population. Clearly, by the mid-1990s, the nation was well on its way to surpassing the GMENAC predictions.

Graduate medical education (GME) plays a significant role in U.S. physician supply because doctors in graduate training (interns, residents, and fellows) provide considerable patient care and because GME is the necessary pathway to a medical career. More than 99,000 physicians were in graduate training in 1992. The number increases steadily at about 4 percent per year; more than 108,000 physicians were in GME training in 1993-1994 as compared to fewer than 85,000 in 1988-1989. The rise in these GME figures is explained by three factors:

1. Physicians in residency training are a source of financial support for hospitals through the current incentives and mechanisms of GME payments from the federal government.
2. On average, residents remain in training longer than they once did.
3. In large part, the increasing numbers of residency positions are occupied by growing numbers of international medical graduates (IMGs).

The number of U.S. medical graduates (USMGs) in GME training has remained stable since the early 1980s, but between 1988 and 1993, the number of IMGs in residency or fellowship training increased by 80 percent (from 12,433 to 22,706); the number of IMGs in first-year residency positions grew by more than 3,200 between 1988 and 1993, whereas the number of USMGs declined by nearly 230 individuals. The vast majority of IMGs are not born in this country but instead are foreign born (FNIMGs); as many as 75 percent of the FNIMGs who take their residency training in the United States will remain in this country to practice. In short, the issue of the long-term match between the supply of physicians in this country and the expected requirements for physician services cannot be addressed without consideration of the role of GME and the role of IMGs within GME.

This committee was not unanimous in labeling the current number of physicians as an absolute oversupply or excess, for two reasons: (1) the need or demand for physicians is better understood as requirements for physician *services*, and (2) the idea that a surplus exists (or does not) is best settled in the context of explicit assumptions about the goals and characteristics of the health care system now (and in the future) and about different ways in which those goals might be met. Rather, the committee concluded (as discussed in Chapter 2 of the text) that

- the nation, at present, clearly has an abundant supply of physicians—which some members of the committee were prepared to label a surplus;
- judgments about the implications of those numbers must be made in the context of the overall U.S. health care system and the components of that

system of greatest concern—the quality and costs of health care and access to services;

- the increase in the numbers of physicians in training and entering practice each year is sufficient to cause concern that supply in the future will be excessive, regardless of the assumptions made about the structure of the health care system; and
- the steady growth in numbers of physicians coming into practice is attributable primarily to ever increasing numbers of IMGs, about which the committee is very concerned.

RELATIONSHIP OF PHYSICIAN SUPPLY TO KEY ELEMENTS OF THE HEALTH CARE SYSTEM

Will the current or anticipated numbers of physicians have, on balance, positive or negative consequences for costs, accessibility, and quality of health care in the nation? Will that supply have beneficial or harmful effects on such matters as the efficient use of human resources and the long-term future of the nation's academic health centers? Will these judgments differ depending on where the U.S. health care system ultimately settles on a spectrum from tightly controlled capitated managed care to loosely controlled fee-for-service medicine?

As elaborated in Chapter 3 of the text, the committee's review of data and published materials, discussions with physician workforce experts at its July meeting, and further deliberations led it to conclude that an oversupply of physicians in this country poses more problems for than solutions to the nation's health care issues. Taken as a whole, the literature on empirical inquiries into the relationship between the overall supply of physicians (on the one hand) and phenomena such as access to health care, quality of health care, and its costs (on the other) is, unfortunately, quite ambiguous. Among the points to be emphasized are the following:

- No firm evidence can be marshaled to show a beneficial effect of a physician oversupply on costs, access, or quality. It is difficult to see that an oversupply will have much effect on problems of access to care in this country; an abundance of physicians will not solve the problems of maldistribution by geographic area or specialty. Furthermore, evidence is mixed about the impact of a substantial oversupply on either the quality or the costs of care, in part because the effects of restructuring health care toward much greater penetration of managed care are unpredictable. One cannot demonstrate that a surplus will improve the quality of patient care; in some scenarios, it may dilute quality, and a surplus will contribute to higher aggregate health care costs at least as long as the nation has a significant fee-for-service sector.

- Having far more physicians than needed to meet the nation's requirements is a waste of the federal resources currently spent on physician graduate education, and it may also be a poor personal investment on the part of prospective medical students. When individuals pursue a medical career in the face of a significant oversupply of physicians, their underemployment or underutilization is a tremendous waste of human resources for them and for the nation.
- Use of large numbers of IMGs here lowers opportunities for able young persons from the United States to enter the medical profession, and some might argue that it also deprives the citizens of other nations of their own talented youth.

Thus, the committee believes that however a better balance is to be achieved, it is in the national interest to avoid a serious oversupply of physicians. If the nation had to choose today between too many physicians and too few, it would prefer an excess to a dearth, but little appears to be gained from a huge imbalance between supply and requirements, especially if circumstances adverse to cost, quality, or access were to result. The committee agrees with this assessment—recognizing that an accurate balance between physician supply and societal requirements is an unachievable goal and generally favoring too many rather than too few physicians.

The net effects of very high numbers of physicians over time are difficult to predict. The interactions of the underlying forces that shape the U.S. health care system are complex and evolving; in particular, the influence that the managed care revolution will exert is uncertain (although a physician surplus might speed the move toward better managed care). Furthermore, good data on patterns of production and employment of the entire health care workforce, as they relate to these systemwide changes, are sparse.

Nevertheless, the committee believes that, on balance, the large and rising numbers of physicians in this nation can have some negative consequences. Apart from those just noted (and discussed in Chapter 3 of the text of this report), a physician surplus could also demoralize U.S. physicians or complicate the future of academic health centers. Predicaments such as these will be far more difficult to address and resolve in the future than they are today. For this reason, the committee advocates action on several fronts to moderate current growth in the U.S. physician supply and to forestall the potentially deleterious effects of unfettered increases. Some concrete steps need to be taken, and they need to be taken soon.

STRATEGIES FOR ADDRESSING PHYSICIAN SUPPLY ISSUES

Three categories of strategic choices were discussed by the committee: an extreme laissez-faire approach; a strong regulatory program; and a regulated or planned market strategy. In the end, the committee in toto did not embrace the two extreme positions (all market, all regulatory), although some members voiced strong arguments in favor of a free market orientation and others spoke up for various regulatory tactics. Rather, for pragmatic and philosophical reasons, the committee examined several "constrained market" steps and reached five policy recommendations that are elaborated in Chapter 4 of this report (see Box).

Producing Physicians from U.S. Medical Schools

The committee concluded that increasing the number of students at U.S. allopathic and osteopathic medical schools would be unwise public policy; the nation clearly graduates a sufficient number of physicians today. It opted for a steady-state approach to undergraduate medical education. Specifically, **the committee recommends that no new schools of allopathic or osteopathic medicine be opened, that class sizes in existing schools not be increased, and that public funds not be made available to open new schools or expand class size**. Maintaining, but not increasing, the current number of medical graduates, especially if more minorities are brought into the student bodies, was judged to be the most appealing short-run strategy for undergraduate medical education.

Although some downsizing might occur over time, the committee has not advised specific action in this direction, for various reasons. First, in the 1960s and 1970s, public policy and government programs led to an overexpansion of U.S. schools and class sizes, and this contributed to a significant increase in physicians who remain in practice today. However, the number of physicians graduating from U.S. schools has now stabilized at a level that seems consistent with likely requirements and the nation's ability to absorb them. Second, recent increases in the number of residents in training are due almost exclusively to increases in IMG trainees. Because 75 percent or more of IMG residents remain in the United States to practice, these increases will result in continued growth in the nation's physician supply. No persuasive rationale can be put forward for leaving the incentives and openings in place for IMGs to practice in the United States while curtailing the opportunities for the nation's own youth to enter a distinguished profession. Third, closing medical schools or reducing class sizes might well undermine efforts to bring more minorities into the profession. In the main, therefore, the committee could not accept the view that decreasing

opportunities for young people of this country, while leaving open those same opportunities for those from abroad, is acceptable social or health care policy.

Revamping Graduate Medical Training

The present system of Medicare reimbursement for residencies through direct and indirect medical education (DME, IME) payments is a major incentive for teaching institutions to keep their numbers of residency positions high and expanding. One part of the solution to potential oversupply problems in the future is to revamp the ways in which federal programs support GME. In keeping with the principles stated earlier and the committee's concerns about the growing number and proportion of IMGs in the nation's physician supply, **the committee recommends that the federal government reform policies relating to the funding of graduate medical education, with the aim of bringing support for the total number of first-year residency slots much closer to the current number of graduates of U.S. medical schools.** Specifically, the committee believes that the government ought to limit the number of GME positions that it funds through the Medicare program and that this limited number of residency positions should be available first to physicians who have graduated from U.S. medical schools.

These basic ideas are not especially new. In 1995, two groups, the Council on Graduate Medical Education and the Pew Health Professions Commission advanced similar ideas, as did the Prospective Payment Assessment Commission, and very recent proposals set out by the current U.S. Congress also connect GME payments to citizenship.

The nation's current mechanisms for underwriting GME costs have some perverse effects because the link between payments for service and GME creates incentives for hospitals to establish more and more residency programs and to fill them with IMGs (once the output of domestic schools has been used up). Because the country's present approach—open-ended GME support to hospitals for their residency positions—offers no easy means of implementing the committee's recommendation to lower the total number of residencies or of controlling the entry of IMGs into practice in this country (see below), the committee concluded that the connection between patient care and residency training through these mechanisms ought to be severed.

One way to accomplish this is to tie GME support to medical graduates directly rather than to send it solely to hospitals. A commonly advanced tactic for doing this is through the use of vouchers, at least for the direct medical education portion of GME, conferred specifically on USMGs; additional vouchers might be made available to IMGs who come to the United States solely for training and then return to their countries of origin or otherwise depart the

United States. Several knotty questions—for example, the pros and cons of using a voucher system to accomplish these goals—would have to be answered before any program to direct part or all of federal GME support to physicians in training rather than to hospitals (or other settings or institutions) could be implemented. Expanded data collection and research will be needed to provide information on such a significant change in the health care sector.

Controlling IMG Numbers through GME

The committee had strong concerns about the mismatch of physician supply and requirements and about the negative consequences of open-ended immigration of physicians and physicians-to-be from other countries for both the United States and donor nations. Two issues were of paramount interest: the long-term career opportunities for U.S.-schooled physicians and the use of federal tax revenues to underwrite the costs of training foreign physicians here. Changes in general immigration law did not seem to be the best (or even a reasonably feasible) route by which to address these concerns. Rather, the most practical means of creating and enforcing limits on the use of IMGs and federal funds in their training appeared to be through constraints on graduate medical training, which is the final common pathway to practice and employment for physicians.

Training institutions in the United States (and the nation as a whole) have an interest in continuing to provide graduate training experiences for foreign medical graduates. Such training brings individuals of many cultures and backgrounds together in ways that can have major beneficial effects on international understanding, communication, and cooperation (although the committee notes that the residency training that IMGs now receive here can be inappropriate preparation for the kinds of health care challenges they may face upon returning home). The sticking point for the committee was that such foreign graduates, upon completion of their training here, ought not to remain in the United States to practice, for two main reasons: (1) their skills and professional contributions are doubtless more valuable to their own countries than to this nation, and (2) their presence in the practicing community here aggravates the mismatch between domestic physician supply and requirements.

Replacement Funding for IMG-Dependent Hospitals

For purposes of implementing its second recommendation above, the committee believed that payments for GME should be decoupled from those related to the demand for health care services. The committee was very aware, however, that for a small number of hospitals, severe reductions in IMGs in residency slots may constitute a hardship, because those hospitals depend on such

trainees for provision of significant amounts of care to the poor, particularly in the nation's inner cities.

The committee believed that policymakers and the professions cannot ignore these service responsibilities. Thus, it urges that new or different *replacement* funding and care delivery mechanisms be found to provide these services to these populations and that the impact of its other suggestions and recommendations on these hospitals should be phased in over time. Therefore, **the committee recommends that the federal and state governments take immediate steps to develop a mechanism for replacement funding for IMG-dependent hospitals that provide substantial amounts of care to the poor and disadvantaged.**

The committee underscores the concept "*replacement* funding," believing that short-term "transition funding" (the idea usually put forward in proposals to deal with the IMG-dependent hospitals that provide major amounts of care to the poor) was not a sensible idea. In the near future, those hospitals would not likely be able successfully to implement a transition to a more secure financial base while continuing to deliver such high levels of uncompensated care to the uninsured and disadvantaged, inner-city populations. Therefore, committee members preferred a concept of replacement funding for those parts of GME funding that now go to underwrite service delivery, understanding that such subsidies might be needed for a considerable number of years in the present competitive market environment for health care. The committee did not, however, see this as a permanent solution to the problem of serving the needs of poor and disadvantaged populations that may today turn to such institutions for their care.

Several options are available for implementing a replacement funding strategy, although the committee could not explore them in depth. Rather, the committee wished to go on record as favoring limitations in the use of IMGs in graduate training as a means of solving service-delivery problems and, at the same time, as urging policymakers and health professionals to take responsible steps to ensure that poor and other populations now served chiefly by IMG-dependent hospitals are not harmed. In regard to this later point, the committee acknowledged the broader issues of access to health care for all and took note of the view of an earlier IOM committee, which had identified making basic health care coverage universal as a fundamental goal of health care reform.

Data Collection and Information Dissemination

The kinds of steps recommended up to this point could have unanticipated consequences for solving the physician supply problem; moreover, the U.S. physician supply is a moving target, and additional steps may be needed. Rather than simply standing aside and assuming that the problems will be solved, the

committee judged that a less hands-off approach was appropriate—namely, one that would call for the government or the professions, or both, to monitor the situation actively and closely. It also recognized that information gathering and reporting, essentially in a vacuum, would not accomplish the changes and reforms necessary to correct, or prevent, problems of an oversupply of physicians in this country. To reflect these positions, the committee offered a pair of recommendations on data collection and research.

The importance of getting accurate market information to prospective and current medical students was heavily underscored in committee deliberations, especially because of the rising numbers of applications to medical school at a time when a surplus of physicians either exists or at least can be expected in the near future. Young adults ought to be able to plan careers on the basis of reasonably accurate data about employment prospects. Moreover, an efficient, well-functioning market must have good information available to all. The equivocal findings on whether an oversupply of physicians has positive, negative, or neutral effects on costs, quality, access, use of human resources, and academic health centers is evidence enough of the dearth of reliable and valid information on these matters. Hence:

The committee recommends that the Department of Health and Human Services, chiefly through the Health Resources and Services Administration, regularly make information on physician supply and requirements and the status of career opportunities in medicine available to policymakers, educators, professional associations, and the public. The committee further recommends that the American Medical Association, the American Association of American Medical Colleges, the American Osteopathic Association, the American Association of Colleges of Osteopathic Medicine, and other professional associations cooperate with the federal government in widely disseminating such information to students indicating an interest in careers in medicine. Needed are data on:

- the current size and composition of the physician workforce and future projections of supply and requirements;
- specialty and practice location choices;
- other parts of the workforce, particularly training and employment of personnel that are likely to be substituted for physicians in managed care organizations or hospitals; and
- the complex interactions of physician supply with health care costs, access, and quality.

The committee recognized that the Department of Health and Human Services, chiefly through its Bureau of Health Professions in the Health Resources and Services Administration, already acquires substantial amounts of

such information. In addition, the Council on Graduate Medical Education (COGME) can and does generate topics for data collection, propose workforce policies, and further publicize information generated by the data collection and analysis efforts of federal agencies. So, too, do the major physician associations and specialty societies, including the American Medical Association and the American Osteopathic Association. The committee encourages all these entities to work together in designing or carrying out surveys and other steps in the data collection and analysis enterprise.

The committee calls explicitly for such information to be made widely public in a timely manner—to the professions, to health education institutions, to health care delivery systems and facilities, to university and possibly even high school students (particularly first-year college students), and to the public at large. It fully supports the current efforts of these agencies and organizations and wishes to state its sense that they should continue to be pursued and provided with adequate financial backing, recognizing that different audiences will need different types of reports and information.

These activities lie more in the area of routine, regular data collection, analysis, and reporting. More than that is needed to provide policymakers and the public with an adequate picture of health workforce issues, especially those involving as sensitive and complex a matter as the supply of physicians in the country. Therefore:

The committee recommends that the Department of Health and Human Services provide the resources for research on physician supply and requirements; it specifically recommends that relationships between supply and health care expenditures, access to care, quality of care, specialty and geographic maldistribution, inclusion of women and people of color, and other key elements of the health care system be studied in detail.

Responsibility for these kinds of complex studies would fall within the purview of at least three different federal agencies: the Health Resources and Services Administration (and COGME); the Agency for Health Care Policy and Research, the main source of funding for health service research in this nation; and the Health Care Financing Administration, which oversees the Medicare program (and its GME funding activities) and the federal aspect of the Medicaid program. The nation's major health foundations also can support the types of physician workforce research envisioned above, particularly those with long interest in issues related to the health professions, for example, the Pew Charitable Trusts, the Robert Wood Johnson Foundation, and the Josiah Macy, Jr., Foundation.

CONCLUDING STATEMENT

At the very least, the United States has an abundance of physicians, and many observers have concluded that it either now has or soon will have a surplus. The size of that surplus will depend on several unpredictable factors: the extent to which managed care dominates fee-for-service arrangements as the basic organizing and financing structure for the U.S. health care system; technological breakthroughs and the shifting balance between halfway technologies and the definitive interventions that will prevent or cure disease; the changes that may occur in the production of U.S. medical graduates; changes in the financing for graduate medical education; shifts in the rate of immigration and entry into practice of foreign medical graduates; and developments in the use of nonphysician health personnel. The committee concluded that the probability of an appreciable surplus of physicians was high enough that some steps need to be taken now to ensure that the nation produces the best physicians it can in appropriate, but not excessive, numbers.

The committee's strategies reflected an orientation toward a "constrained" market, and focused on five areas:

1. production of U.S. medical graduates;
2. changes in the financing of graduate training to target it to U.S. medical graduates and to break the link between service and education reimbursements;
3. limitations on the training and entry into practice of international medical graduates;
4. replacement funding for IMG-dependent hospitals to permit them to continue to discharge their service responsibilities to poor and disadvantaged populations; and
5. collection and broad dissemination of information related to physician supply and requirements, market forces, and relationships to costs, quality, access, and similar concerns.

These issues are extremely complex—more so because of the rapid and unpredictable transformation of the health care system that the nation is now experiencing. Moreover, the practical steps outlined in this report may have some unforeseen consequences, and further elaboration, discussion, and analysis over time are warranted. Nevertheless, the committee believes that its report reflects a prudent examination of strategies for dealing with major elements of physician supply issues and will permit readers to pursue a knowledgeable debate about these serious policy questions. Although not all audiences may find all the committee's conclusions and recommendations compelling, constructive critique of the report might well be healthy if it prompts a deeper examination and fuller understanding of the problems and likely consequences of proposed solutions.

In the meantime, the report points the way to decisive actions that all interested parties in both the public and private sectors can usefully take now to forestall even more significant difficulties in the future.

RECOMMENDATIONS

The Institute of Medicine committee recommends that

- no new schools of allopathic or osteopathic medicine be opened, that class sizes in existing schools not be increased, and that public funds not be made available to open new schools or expand class size;
- the federal government reform policies relating to the funding of graduate medical education, with the aim of bringing support for the total number of first-year residency slots much closer to the current number of graduates of U.S. medical schools;
- the federal and state governments take immediate steps to develop a mechanism for replacement funding for IMG-dependent hospitals that provide substantial amounts of care to the poor and disadvantaged;
- the Department of Health and Human Services, chiefly through the Health Resources and Services Administration, regularly make information on physician supply and requirements and the status of career opportunities in medicine available to policymakers, educators, professional associations, and the public; the committee further recommends that the American Medical Association, the Association of American Medical Colleges, the American Osteopathic Association, the American Association of Colleges of Osteopathic Medicine, and other professional associations cooperate with the federal government in widely disseminating such information to students indicating an interest in careers in medicine; and
- the Department of Health and Human Services provide the resources for research on physician supply and requirements and specifically that relationships between supply and health care expenditures, access to care, quality of care, specialty and geographic maldistribution, inclusion of women and people of color, and other key elements of the health care system be studied in detail.

1

Introduction

The size and composition of the physician workforce has been an intermittent policy issue in the United States. A century ago, the policy debate focused on the proliferating graduates of proprietary medical schools with dubious staff, facilities, and curricula. Experts of the time concluded that the nation had too many poorly trained practitioners. Following the publication of the Flexner report (1910), many schools closed and the quality of the remaining institutions improved. Thirty years ago, resources for health care were expanding as private health insurance continued to grow and the government extended access to the elderly and the poor through Medicare and Medicaid. The nation faced a potential physician shortage, and policymakers took steps to increase the physician supply.

As the twenty-first century draws near, physician supply once again has begun to trouble policymakers. The context, however, is quite different. The health care sector of this nation is undergoing radical, rapid, and unpredictable transformation. With the collapse of efforts between 1992 and 1994 to enact comprehensive health care reform, much of this restructuring is taking place through changes in the private sector, with as-yet-unforeseen consequences. What can be anticipated is a continued debate over how many and what mix of health care personnel the nation needs and judges affordable. More generally, the goals and means of expanding (or protecting) access to health services and improving (or maintaining) health and well-being will, as never before, be scrutinized through the lens of cost control.

In the drive to control health care costs, the role of physicians is a central focus because they have traditionally been viewed as the decisionmakers who

directly or indirectly account for most health care spending. Thus, a central strategy of the managed care plans and integrated health care systems that increasingly dominate health services in the United States is to limit the number of physicians available to health plan members and to manage patient access to physicians, especially specialists. As government officials and employers intensify their efforts to direct members of their respective health insurance programs into so-called managed care plans, questions about the appropriate supply and mix of physicians and other professionals have become increasingly acute for government policymakers, educators, professional organizations, and the public.

Clearly, these questions are complex and deserve careful, rigorous study. Notwithstanding the desirability of a more detailed and prolonged examination, the Institute of Medicine (IOM) concluded that a brief review of data on physician supply and requirements and an examination of options for dealing with the physician workforce would be a valuable—and timely—contribution in the current policy environment. (In this report, the term physician refers to both allopathic and osteopathic physicians.) The intention is to spark informed debate among all interested parties, with a view to encouraging appropriate regulatory or market-oriented steps (or both) to bring about a closer match between physician supply and the requirement for physician services. In so doing, the committee was mindful of the outlook stated by Pritchett (1910, p. xv) in the introduction to the Flexner report:

> In the preparation of this report the [Carnegie] Foundation has kept steadily in view the interests of two classes, which in the over-multiplication of medical schools has been forgotten-first, the youths who are to study medicine and to become the future practitioners, and, secondly, the general public, which is to live and die under their ministrations.

That is, this committee, like that of nearly a century ago, sought to be sensitive to the best interests of the nation's young people and cognizant of the public need for expert health care.

THE PHYSICIAN WORKFORCE

The active physician workforce, which numbered 226,000 after World War II (Rivo and Satcher, 1993) and 628,000 in 1992 (Kindig, 1994), has been the subject of intensive, systematic study and debate for nearly 50 years, principally in terms of the match between the expected supply of physicians and the estimated need or demand for physicians (or physician services). Various commissions and other groups have issued a number of reports, often conflicting: some forecast shortfalls between supply and demand; others predict excess

supply. During the past two decades, however, attention to questions of the match or mismatch between the supply of and demand for physician services has escalated dramatically. Some of this notice was prompted by the appreciable growth in the numbers of allopathic and osteopathic schools and their graduating classes beginning in the 1960s—phenomena themselves motivated by concerns that the nation would have a deficit in physician supply overall or in certain geographic areas (outside metropolitan areas or in isolated, rural and inner-city locales) if production were not increased. More recently, the focus on physician supply was intensified by attempts (now ended) to enact health care reform proposals that were intended, among other things, to extend access to health care.

Physician supply is a complex mix of the existing pool of physicians, current and projected enrollments of medical students, current and projected numbers of residents in hospitals, the flow of international medical graduates (IMGs), losses from the profession owing to deaths and retirements, and other factors. Residency training figures prominently in this equation. For instance, although the number of U.S. medical school graduates has remained constant in recent years, the number of physicians in residency training continues to increase. This results largely from the growth in the numbers of IMGs, most of whom are not U.S. born and most of whom remain in the United States to practice after completing their residency training. In the context of more general debate over U.S. immigration policy, the growth of IMGs is particularly controversial.

Other determinants of the supply-demand equation are also important. As a case in point: new schools of osteopathic medicine are in the planning stage, and one has just opened. Moreover, the potential surplus caused by an increased supply could well be magnified by a decreased demand for physician services as a result of the startling growth of managed care plans of various sorts. Ample evidence demonstrates that managed care plans use fewer physicians per unit of population served than the traditional fee-for-service system, although physician-population ratios vary considerably by type of managed care system.

Many other questions have been raised in recent years about the U.S. physician workforce. As a case in point: the geographic location and dispersion patterns of both primary care practitioners and specialists demand considerable attention. Similarly, a perceived deficit of primary care physicians (e.g., those in family practice, general internal medicine, and general pediatrics) has been roundly decried.

THE MATCH—OR MISMATCH—BETWEEN SUPPLY AND REQUIREMENTS

Especially in the past few years, the belief has grown that the United States has now, or shortly will have, a surplus of physicians. For example, for the past two decades the supply of "active" physicians (those in patient care, teaching,

research, and administration) in the United States has grown one and one-half times as fast as the population at large. In 1970, active physicians numbered 151 per 100,000 persons; by 1992 the figure was 245. Of those engaged in direct patient care, the rates per 100,000 population were 109 in 1970 and 180 in 1992.

Several recent government and private sector studies have marshaled evidence to suggest that nothing but physician surpluses lie in the future. Increasing marketplace evidence also supports the conclusion of a physician surplus. Anecdotal information and informal surveys, for instance, report empty office calendars, early physician retirements, decreasing physician incomes, and even physician bankruptcies.

Numbers alone do not make the case that a surplus of physicians is undesirable. The question of whether a significant excess of physicians would have a positive or negative impact has been controversial.

Proponents of measures to restrict the U.S. physician supply have characterized a surplus as being wasteful of both human and financial resources. They stress the problems that young physicians who have devoted many years of their lives to medical education and training will face if they are unable to practice their profession—particularly if they have incurred significant debts in the process (and most do). Such advocates also believe that the billions of dollars the federal government now spends to support physician residency training—through payments from Medicare, Medicaid, and Title VII of the Health Professions Act—are ill-directed if that funding induces an even greater physician surplus; this is especially so at a time when the Medicare and Medicaid budgets for providing health care to vulnerable populations are under severe pressure. They also are convinced that a surplus could lead to a physician population that is less experienced and less competent because its members have less work to do in the areas in which they were trained. Others argue that large and growing numbers of physicians will increase health care expenditures overall and will not solve some of the nation's most pressing problems of access to care and geographic maldistribution of health care resources and services.

On the other side are those who argue that the physician supply should be controlled by the marketplace alone. These experts contend that a so-called physician surplus could lower health care costs via competition and that specialists might diffuse into areas in which they are now in short supply as a function of decreased demand in areas where they abound. They also see potential for improved quality of care, because managed care plans are able to take on only the best practitioners. Yet others take a longer-range view that the marketplace generally will tend toward equilibrium as regards the supply of newly trained physicians.

Much of this information converged in the mid-1990s to a view that some steps were needed to constrain overall supply, to redress the balance between primary and subspecialty care, and to consider the intended and unintended consequences of existing financial support for residency training. Thus, some

proposals for health care reform took these issues into consideration. Indeed, many believed that comprehensive health care reform would bring forth mechanisms by which the nation as a whole could address these questions in a systematic way.

In view of the failure of comprehensive federal health care reform, however, it appears likely that no coordinated nationwide mechanism is available with which to even examine these issues thoroughly, let alone take steps to remedy problems that are identified. Moreover, the number of physicians in residency training is increasing each year, and little evidence is at hand to suggest that the domestic production of physicians will drop any time soon. Many experts take the position that the physician supply will continue to increase at a rate faster than growth of the general population—with unknown but potentially negative repercussions for individual health professionals, the health care system, and the nation as a whole—unless new steps are taken by the public sector, the private sector, or both.

ORIGINS AND ORGANIZATION OF THE STUDY

Charge to the Committee and Project Activities

Concerned about the lack of a clear locus for informed debate ALDJL and decisionmaking, the IOM, through its Board on Health Care Services, decided to initiate a short but substantive review of existing data about the U.S. physician supply, to identify positive and negative implications of the possible mismatch between supply and requirements in coming years, and to lay out possible options for addressing any perceived problems. In May and June 1995, an expert committee co-chaired by Don E. Detmer, M.D., of the University of Virginia and Neal A. Vanselow, M.D., of Tulane University reviewed key publications, information, and analyses. It met in July 1995 to discuss and formulate its report, which was then submitted for review in accordance with IOM and National Research Council report review policies. The document was revised again based on that external review, and this monograph constitutes the committee's final report.

The primary audiences for this work are public and private sector policymakers. They include leaders of societies and associations representing both physicians and other health care professionals; medical educators at the undergraduate, graduate, and postgraduate levels; administrators and directors of all types of health care organizations; officials in the federal and state governments; and the public at large.

Related Issues

Cutting across the demand and supply questions are issues relating to the distribution of physicians, both by geography or practice location (e.g., rural or urban areas) and by specialty (e.g., primary or generalist care or subspecialty care). Although questions of distribution by specialty and locale are very significant, the committee had neither the time nor the resources to explore those matters adequately; thus, this report makes no attempt to do so. In addition, the committee recognizes that significant issues remain about the representation of minorities in the U.S. physician community, but it calls attention to another recent IOM report on this matter (*Balancing the Scales of Opportunity: Ensuring Racial and Ethnic Diversity in the Health Professions*, 1994) in preference to addressing the matter itself. The IOM is at present conducting a large-scale study on the future of primary care; it has begun a project on the applications of telemedicine; and a study on managed care and rural communities is planned. All of these projects can be expected to shed light on some of the topics not addressed in this report.

Principles Underlying Committee Conclusions and Recommendations

A fundamental tenet of this committee was that the nation can never achieve a perfect, steady-state match of physician supply and requirements, because different levels of supply will have different implications depending on the underlying structure of the U.S. health care system. For that reason, the committee accepted the proposition that a modest "oversupply" of physicians is not a bad thing per se; it concluded that if the nation has inevitably to err in matching supply and requirements, it would do better to err on the side of a surplus. In addition, the committee concluded that the characteristics of the overall system of health care organization, financing, and delivery are very important in determining both supply and requirements; thus, it judged that considerable attention must be directed at developing data and policymaking tools that will facilitate good analysis, flexibility, and timely actions in the future.

The committee ended its deliberations in agreement with three important principles. First, the nation should not tie national workforce policy or graduate medical education to the service delivery needs of selected parts of the health care system. Second, long-term physician workforce policy should be driven by aggregate requirements nationally, and meeting those requirements should be cued more to the output of U.S. allopathic and osteopathic schools than it is today. Third, opportunities in the United States for careers in the healing arts, such as medicine, should be reserved first for graduates of U.S. medical schools.

ORGANIZATION OF THIS REPORT

Chapter 2 of this report provides a brief overview of data about the supply of and requirements for physicians in the United States today. Although oriented chiefly to very recent publications (whose data are current up to about 1992), some information about trends since the 1950s (and especially since the 1970s) is presented. Chapter 2 also notes the complexities of analyzing the need or demand for physician services, as measured against the supply of those services, when intervening variables such as physician productivity are taken into account. The chapter generally concludes, in keeping with much of the contemporary literature, that the nation does have a substantial abundance of physicians now and will for the foreseeable future.

Chapter 3 asks and attempts to answer two questions: (1) What is the likely impact of the current or projected levels of physician supply? (2) Is a possible physician oversupply in the public interest? It explores these topics in terms of the costs of health care, access to that care, and the quality of that care. It also considers questions relating to the efficient use of human resources, trade-offs between opportunities in the medical profession for graduates of U.S. schools as set against opportunities for those coming from foreign schools, and the pressures on the nation's academic health centers.

Chapter 4 lays out the committee's judgments about the strategic options that might be considered for exploiting the possible benefits of very large numbers of physicians in this country and for overcoming the possible harms that may ensure from such an oversupply. It outlines practical steps that might be taken by the private or the public sector, or both, to align better the future physician supply with anticipated requirements, and it presents the committee's five major recommendations.

2

U.S. Physician Supply and Requirements: Match or Mismatch?

Discussion of today's issues relating to the supply of and requirements for physicians in this nation requires some appreciation of policies and events affecting the physician workforce that date to World War II. This chapter briefly reviews those developments and then turns to a more detailed description of the current stock of physicians and expected trends in physician supply. Because any analysis of the match or mismatch between supply and requirements calls for complex forecasts of numbers, the chapter also briefly describes common approaches to estimating the present and future supply of physicians and the need or demand for physician services.[1] That discussion is followed by a section on factors that will affect the future requirements for physicians. A short section provides some illustrative comparisons of physician-to-population ratios for the United States and selected other nations. The chapter ends with discussion of conclusions that can be drawn from research, the marketplace, and other evidence.

PHYSICIAN WORKFORCE ISSUES SINCE WORLD WAR II

General Issues

The aggregate supply, geographic distribution, and specialty mix of physicians in the United States have been topics of major national interest since the end of World War II because of the impact of the physician workforce on the cost, accessibility, and quality of health care. With respect to costs, although

direct outlays for physician services constitute only 20 percent of health care expenditures, some experts have estimated that decisions made by physicians are directly or indirectly responsible for 70 to 90 percent of all health care expenditures (Feil et al., 1993; Mullan et al., 1995). An inadequate physician supply or a maldistribution of physicians geographically or by specialty (or both) is widely believed to impair access to health care. With respect to quality of care, a physician shortage might make medical care unavailable, but a physician surplus might produce underemployed practitioners with poor technical skills or create incentives to recommend unnecessary diagnostic and therapeutic procedures.

Pre-1980s Era

Concerns about a physician shortage dominated national physician workforce policy during the 1950s, 1960s, and early 1970s. As given in government statistics of the time, the number of active nonfederal M.D. physicians per 100,000 population in 1950, for example, was 126.6; the figure rose to 127.4 in 1960 and 137.4 in 1970 (DHHS, 1993). At those levels, the consensus was that the United States needed more physicians to provide medical care to a growing population, to expand access to care in rural and inner-city areas, and to meet the increased demand for care that would result from the passage of Medicare and Medicaid legislation.

The response to these perceived needs was complex. Federal and state governments took steps to increase the domestic production of physicians and to enable more graduates of foreign medical schools—that is, international medical graduates, or IMGs—to train and practice in the United States. Federal initiatives included capitation and construction grants to medical schools; direct support for education and training in family medicine, general internal medicine, and pediatrics; and payments to hospitals through Medicare and some state Medicaid programs for the costs associated with residency training programs. Federal funding was also made available to support the education and training of nurse practitioners and physician assistants. Several service-linked programs were developed, including the National Health Service Corps and financial support for community health centers and area health education centers (Kindig et al., 1993; Schroeder, 1994a; Desmarais, 1995; Mullan, 1995). A variety of state initiatives—such as the opening of new medical schools, increases in medical school class size, and the development of loan and scholarship programs for medical students—supplemented the federal effort.

These efforts to increase the U.S. physician supply were spectacularly successful (Figure 2-1). Between 1970-1971 and 1991-1992 the annual number of graduates from allopathic medical schools (M.D.s) in this country increased from approximately 9,000 to more than 15,000;[2] the analogous rise for graduates

of osteopathic medical schools (D.O.s) was from 500 to more than 1,500. As a result of these increases and federal policies that allowed more IMGs to practice in the United States, the number of physicians per 100,000 population increased dramatically.[3] A rise in the ratio of active nonfederal M.D.s to population of 60 percent occurred in the 20-year period between 1970 and 1990: the increase was from 137.4 per 100,000 population in 1970 to 173.4 in 1980 and then to 219.5 in 1991. An even greater percentage increase (104 percent, but on a considerably smaller base) was posted in the ratio of active osteopathic physicians per 100,000 population: from 5.7 in 1970 to 7.5 in 1980 and then to 11.6 in 1991. In short,

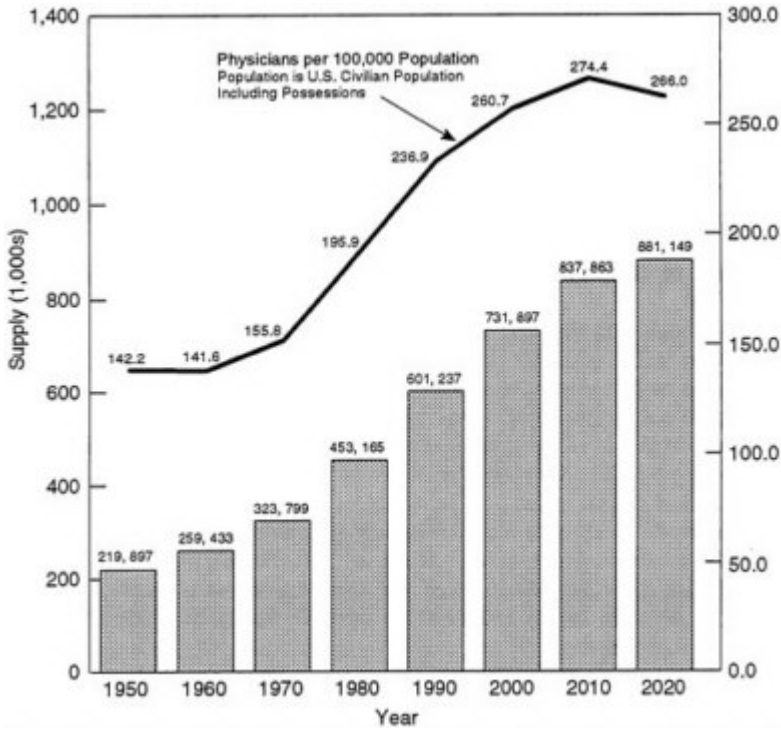

FIGURE 2-1. Basic format of figure adapted from Rivo and Satcher (1993, p. 1077).

SOURCE: Unpublished data from the Bureau of Health Professions (BHP) provided November 1, 1995. 1950 through 1990 data adjusted by BHP from American Medical Association Physician Masterfile and unpublished American Osteopathic Association data. Projections for 2000, 2010, and 2020 are from the BHP physician supply model.

by the mid-1970s the nation had 1 active physician for every 584 persons in the country (DHEW, 1977) and, by the early 1990s, 1 for every 398 persons.

A major change in thinking about the adequacy of the U.S. physician workforce came in 1980 with submission of the report of the Graduate Medical Education National Advisory Committee (GMENAC, 1981). GMENAC supply forecasts were for 536,000 professionally active physicians in 1990 and nearly 643,000 in 2000—for physician-to-population ratios of 220 and 247 per 100,000 persons, respectively. Based on an adjusted need-based forecast of the requirement for physicians (see below), GMENAC concluded that the nation could expect to have a surplus of physicians in the future (not a shortage) and that the surplus would grow from 70,000 physicians in 1990 to 145,000 by the year 2000.

Although controversial, the GMENAC report signaled the beginning of a change in federal physician workforce policy. It catalyzed the development of a widespread (but not universal) consensus that the nation either had or soon would have a physician supply that exceeded its requirements.[4] This view, as well as pressure to reduce federal spending and the emphasis on a competitive market approach to health care that began with the election of President Reagan in 1980, had several effects. In particular, it caused the federal government to reduce greatly its effort to increase the aggregate physician supply and to focus more of its attention on problems associated with the geographic and specialty maldistribution of physicians. Even with these changes in emphasis, however, the U.S. physician supply could be characterized, from then to the present, as very large and growing.

Current Status

By no means did the numbers of physicians in this country stop rising in the 1980s. Using data from the masterfiles of the American Medical Association (AMA) and the American Osteopathic Association (AOA), Kindig (1994) estimated that, in 1992, the nation had more than 628,000 active allopathic and osteopathic physicians, or 245.0 physicians per 100,000 population. Of these, slightly more than 461,000 (74 percent) were engaged in patient care, yielding a rate of 180.1 per 100,000 population. An additional 99,000 physicians were providing some patient care as residents or fellows (38.7 per 100,000 population).

Table 2-1 presents the breakdown of all physician supply in more detail. Although these are 1992 data, 1994 figures would be higher in terms of both absolute numbers of physicians and population ratios. The instructive point is that the numbers for all active physicians exceed those that GMENAC forecast for 1990 and in fact approach the levels estimated for 2000.

Although the committee is not dealing directly with issues of specialty or geographic maldistribution, these matters remain significant to the broader questions of restructuring the health care system in this country. Of relevance to the specialty debate are the data that Kindig (1994) presents showing that, in 1992, slightly more than 182,000 active patient care physicians (not including residents and fellows) were in the primary care disciplines of family practice, general practice, general internal medicine, and general pediatrics. This translates into approximately 71 practitioners per 100,000 population, or about 39 percent of the patient care physicians not in training. Left to debate is whether this proportion of the physician workforce ostensibly involved in primary care is adequate or still reflects a small to moderate shortage in primary care.

Another controversial point about the U.S. physician supply concerns the country of origin of those clinicians. According to Mullan et al. (1995), in 1992 approximately 23 percent of M.D.s active in the United States (139,086 of 605,685) were graduates of foreign medical schools.[5] Of these, just over 19,000 (14 percent) were native U.S. citizens (USIMGs); most received their undergraduate medical education in the Dominican Republic, Grenada, Mexico, or Montserrat. The remaining nearly 120,000 IMGs practicing in the United States that year were foreign born (FNIMGs). Since 1975, approximately 25 percent of IMGs have come from India, and considerable numbers have also come from Pakistan, the Philippines, the United Arab Republic, Israel, Italy, and the United Kingdom.

Physician Workforce Trends

Overall Trends in Supply

Numbers at any point in time do not tell the entire story about the nation's current or anticipated supply of physicians; trend lines are also important. For the past two decades the U.S. physician supply has been growing at one and one-half times the rate of growth of the general population (COGME, 1994). In 1970, depending on who is included, there were between 151 (see Table 2-1) and 157 active physicians (Schroeder, 1994b) per 100,000 population. As noted previously, by 1992 the active-physician-to-population ratio had grown to 245 per 100,000. The federal Council on Graduate Medical Education (COGME) has estimated that if current trends continue there will be 298 active U.S. physicians per 100,000 by the year 2020,[6] after which the physician-to-population ratio is expected to remain constant or decline slightly. This projected "bulge" in the U.S. physician supply in the early part of the twenty-first century is considered inevitable inasmuch as most physicians who contribute to it are already in training or in practice (Cooper, 1994).

TABLE 2-1. Supply of Physicians in the United States, 1970, 1980, 1992, by Type of Activity

	No. of Physicians[a]			No. of Physicians per 100,000 Population[a]		
Type of Activity	1970	1980	1992	1970	1980	1992
Total	328,020	462,276	685,291	160.9	203.5	267.5
Total Active Physicians[b]	308,487	436,667	627,723	151.4	192.2	245.0
Total active physicians in patient care[c]	222,657	310,533	461,405	109.2	136.7	180.1
Total active physicians in other professional activity	31,582	38,009	39,816	15.5	16.7	15.5
Teaching	NA	NA	8,293	NA	NA	3.2
Research	NA	NA	16,398	NA	NA	6.4
Administration	NA	NA	15,125	NA	NA	5.9
Total physicians in training providing patient care[d]	50,687	61,450	99,138	24.9	27.1	38.7
Not classified[e]	3,561	26,675	27,364	1.7	11.7	10.7
Total Inactive Physicians	19,533	25,609	57,568	9.6	11.3	22.5

NOTE: NA = not available.

[a] Data for 1970 and 1980 are for allopathic physicians (M.D.s) only; data for 1992 include both allopathic and osteopathic physicians.

[b] Includes all physicians and physicians in training except those specifically identified as "inactive."

[c] Although physicians in training clearly provide considerable patient care, they are not included in this total; see their separate line item, below.

[d] "Physicians in training" is defined for 1970 and 1980 as "interns and residents, all years"; for 1992 the term is defined as "residents and fellows."

[e] "Not classified" includes, for 1970 and 1980, those physicians for whom an address is not known.

SOURCES: Data for 1970 and 1980 adapted from National Center for Health Statistics (NCHS, 1983, Tables 1 and 55). Data for 1992 adapted from Kindig (1994, Table 1 and text).

The increase in enrollment in the 126 U.S. allopathic and 16 osteopathic medical schools during the 1960s and 1970s contributed considerably to increases in the nation's physician supply. Since the 1980s, however, the number of M.D. and D.O. graduates from domestic schools has remained quite constant—about 17,500 per year. Nonetheless, the number could begin to rise in the years ahead if the four schools of osteopathic medicine now under development successfully put their plans into effect (Arnstein, 1995).

Trends in Graduate Medical Education

Despite this relative stability in the number of U.S. medical school graduates, the number of physicians in graduate medical education (GME) programs has been increasing steadily: about 4 percent per year. According to Shine (1995), more than 104,000 physicians were in GME training in 1993–1994 as compared to fewer than 85,000 in 1988–1989. This represents an increase of about 24 percent in just five years.

The rise in these GME figures is explained by three factors. One is the fact that physicians in residency training are a source of financial support for hospitals through the current incentives and mechanisms of GME payments from the federal government. A second is that, on average, residents remain in training longer than they once did.

Third, in large part the increasing numbers of residency positions are occupied by growing numbers of IMGs. Mullan et al. (1995), for example, provided data to show that the number of U.S. medical graduates (USMGs) in GME training has remained stable since the early 1980s but that, between 1988 and 1993, the number of IMGs in residency or fellowship training increased 80 percent (from 12,433 to 22,706). The number of IMGs in first-year residency positions grew by more than 3,200 between 1988 and 1993, whereas the number of USMGs declined by nearly 230 individuals (Fitzhugh Mullan, Director of the Bureau of Health Professions, data presented to the committee, July 19, 1995). In 1993–1994, more than one-quarter of first-year residency positions were filled by IMGs.

Green (1995) provided data from major academic medical centers in New York State showing that 24 percent of the residency positions were held by IMGs (slightly more than 6 percent USIMGs and 17 percent FNIMGs [respectively, U.S.-born and foreign-born]); the percentages by specialty ranged from 100 percent IMGs (pediatric nephrology) to 0 percent (allergy and immunology; radiation oncology). Whitcomb and Miller (1995) reported that of more than 20,000 first-year residents in six specialties (family practice, internal medicine, obstetrics/gynecology [OB/GYN], pediatrics, psychiatry, and surgery), nearly 32 percent were IMGs (ranging from about 7 percent in OB/GYN to 44 percent in psychiatry).

The increase in IMGs in GME programs is attributable directly to an increase in FNIMGs, not USIMGs (Mullan et al., 1995; Fitzhugh Mullan, Director of the Bureau of Health Professions, presentation to the committee, July 19, 1995). In fact, the latter have decreased in number, reflecting the lower number of U.S. students studying medicine outside the United States in the mid- to late-1980s. In 1993, for example, of the 22,706 IMG residents, 35 percent were in the United States on exchange visitor (J) visas; 31 percent were permanent U.S. residents; 12 percent were naturalized U.S. citizens, and 12 percent were in various other immigration categories (such as refugees); only 10 percent were native U.S. citizens.

The distribution across immigration categories is important, because it suggests that using immigration law, and particularly changing the J or exchange visa category, will not enable the United States to deal effectively with the large and growing pool of IMGs. For example, the large proportion of permanent U.S. residents represents those physicians who "have a green card" (often through family preference in the form of having a first-degree relative who is a U.S. citizen) and who are on their way to becoming naturalized citizens here. Although in the past the exchange visa was assumed to be a major policy instrument in this area, it has recently been liberalized and, in any case, has traditionally been exploited or circumvented. Thus, stiffening requirements in this visa category will still control only at best about one-third of IMG residents in terms of their movement into practice in this country.

At first glance, the relevance of the presence of IMGs, particularly FNIMGs, to the overall question of physician supply in this nation may be questioned. However, various experts have estimated that as many as 75 percent of the FNIMGs who take their residency training in the United States will remain in this country to practice (Mullan et al., 1995); in 1993 alone, about 60 percent of IMGs were in immigration categories that imply a high probability the individuals would remain permanently in the United States. Thus, the issue of the long-term match between the supply of physicians in this country and the expected requirements for physician services cannot, ultimately, be addressed without consideration of the role of and policies toward IMGs.

METHODS OF ESTIMATING PHYSICIAN SUPPLY, PRODUCTIVITY, AND REQUIREMENTS

Physician Supply

Most analyses of the U.S. physician supply utilize the databases compiled by the AMA and the AOA; some also rely on information from the American Board of Medical Specialties. Beginning with the current physician population, such analyses attempt to predict the future rate of entrance to and exit from the

profession. Entrants include graduates of U.S. allopathic and osteopathic medical schools and IMGs admitted to practice in the various states. Losses from the profession include those due to factors such as death, retirement, or change of career. Although this aspect of predicting the future physician supply is rather straightforward, Feil et al. (1993) have emphasized that apparently minor disagreements about entrance and exit rates can lead to large discrepancies in supply forecasts over time.

Physician Productivity

In considering the match between the supply of and requirements for physicians (or their services), assumptions about productivity can play a significant role in the calculations. In plain language, *physician productivity* is the total number of physician services produced in a year divided by the total number of active physicians in that year.[7] The need or demand for physician services—or, more precisely, the number of the "full-time-equivalent" (FTE) physicians required to yield that number of physician services—is the product of the total population and the per capita use of physician services in a year divided by physician productivity.

The idea is captured in the following illustrative equation (adapted from Reinhardt, 1991):

$$\text{Number of FTE Physicians Required} = \left(\frac{\text{Total Number of Physician Services/Year}}{\text{Population}} \right) \div \left(\frac{\text{Total Number of Physician Services Produced/Year}}{\text{Number of Physicians}} \right) \times \text{Population}$$

Future productivity is, however, notoriously difficult to forecast. The growth of salaried compensation for physicians as a result of the growth of managed care and similar arrangements, the increasing number of women in medicine and osteopathy, the aging of the physician workforce, the uncertain but perhaps rising rates of retirement of older physicians, and the desire of some younger physicians to limit their work hours in order to spend more time with their families or to pursue other activities have led several experts to predict that the productivity of U.S. physicians will decrease in the years ahead (Kletke et al., 1990; Cooper, 1994). Reinhardt (1991) called attention in particular to the point that the average productivity of physicians at any given time is a significant factor in producing (estimated) physician surpluses or shortages; other relevant

factors are the state of medical technology at the time and the willingness of physicians to delegate tasks to nonphysician personnel.

Furthermore, an important distinction between "hourly productivity" and "total productivity" should be maintained. The former is essentially the number of physician services produced per physician-hour, and it may increase over time in some managed care arrangements (e.g., through delegation of tasks). The latter is the product of hourly productivity and the numbers of hours worked per year per physician; this figure might well decrease over time, owing to some of the factors noted above.

Physician Requirements

The term "requirement" is generally used as an umbrella term to encompasses all attempts to measure the need or the demand for physician services. Determining the requirement for physicians or their services involves more judgment and assumptions than does predicting the future physician supply. Not surprisingly, therefore, no single approach to forecasting physician requirements is universally accepted (Feil et al., 1993). Four methods of estimating the future requirement for physicians have been used in recent years: (1) demand-based forecasting, (2) need-based forecasting, (3) adjusted need-based forecasting, and (4) the extrapolation method.

Demand-based forecasts of physician requirements determine the number of physicians needed in the future based on current patterns of health service utilization and projected changes in those patterns over time. Demand-based forecasting measures what is likely to be rather than what should be. It forms the basis of the forecasts developed by the Bureau of Health Professions (BHP, of the Health Resources and Services Administration [HRSA], Department of Health and Human Services [DHHS]) and the AMA. Demand-based forecasts are seen as more pragmatic than those using a need-based approach, and they have been criticized for their tendency to carry current inequities into the future and for their failure to anticipate future trends (Schroeder, 1994a).

Pure need-based forecasts of physician requirements attempt to estimate the actual burden (incidence and prevalence) of illness and injury in the entire population and provide for an ideal level of medical care for that burden. They assume that all illness will be not only identified but also treated, and thus these models are based on what should be rather than what is or what will be. They are not widely used because they tend to inflate the amount of illness that will actually be seen by physicians and are based on the provision of care that would require amounts of resources well beyond those that are currently available or likely to be so in the future (Schroeder, 1994a).

The impractical nature of pure need-based forecasts of physician requirements has led to the development of an adjusted need-based approach.

GMENAC (1981), for example, made a downward adjustment in its need-based forecasts to recognize the reality that a certain amount of illness does not require the services of a physician and that only a fraction of illness within the population can realistically be expected to be identified and managed by health care providers. Although the adjusted need-based model is more realistic than the pure need-based variety, it too has been criticized as being logistically unwieldy and open to bias because it requires panels of experts to make judgments about the type and amount of health care needed (Schroeder, 1994a).

A variant of the demand-based forecasting model is the extrapolation method recently used by Weiner (1994) in a study commissioned for COGME. In this approach, current patterns of staffing within managed care plans are extrapolated to a reshaped health care system of the future. The extrapolation method (which has also been used by Schwartz et al., 1988, and Mulhausen and McGee, 1989) has many of the same strengths and weaknesses of other demand-based studies. It also has been criticized for assuming that the populations currently enrolled in managed care plans and their levels of utilization are representative of the population as a whole (Feil et al., 1993). Weiner (1993) has cautioned that "adopting HMO staffing levels as ideals may lead to an underestimate of the 'true need' within a general population" (p. 435).

In summary, no single method of predicting either the supply of or the requirements for physicians (or physician services) is widely accepted as best or completely accurate.[8] All methods in current use require assumptions about the future that may or may not be correct, and relatively small variations in assumptions can lead to large discrepancies in forecasting that are magnified the farther into the future one attempts to extend the prediction. In view of this inherent weakness in any forecasting methodology, the fact that most studies of the physician workforce in the past 15 years have reached similar conclusions about the adequacy of the U.S. physician supply is perhaps surprising, but it lends credence to the basic judgment about existing and future oversupply.

THE FUTURE REQUIREMENT FOR PHYSICIANS

Factors That Could Increase Requirements

Several factors could result in an increased need or demand for physician services in the years ahead. Most important of these would be enactment of legislation to provide universal access to health care services for the estimated 40 million Americans who now lack health insurance. In view of both the failure of the Clinton administration to obtain passage of the Health Security Act and the more recent efforts to reduce federal spending by dramatic levels, the goal of universal access is very unlikely to be attained in the foreseeable future.

Other factors that could increase the demand for physician services include the emergence of new diseases such as acquired immunodeficiency syndrome (AIDS) or the reemergence of "old" diseases such as tuberculosis (IOM, 1992), the development of new health technologies to treat diseases for which no adequate treatment currently exists, and the again of the U.S. population. Yet other phenomena, such as changes in health care organization and in financing and reimbursement mechanisms, might dampen the demand for physician services while increasing the demand for related health care services.

For example, the growth in the number of elderly persons in this country (and the aging of that cohort) could increase the demand for long-term-care facilities, geriatric nurse practitioners, and other nursing personnel more than the demand for physician services. Furthermore, nearly a half century of biomedical research has yielded much knowledge now ready for clinical evaluation and perhaps application; this may prompt a greater use of physicians as clinical investigators as well as higher employment of physicians in the pharmaceutical and biotechnology industries, although the proportion of physicians in research or employment by such firms is tiny in comparison to the proportion in patient care. Putting a quantitative figure on the impact of all these factors on physician requirements is extremely difficult (Weiner, 1993).

Factors That Could Decrease Requirements

Managed Care

Most knowledgeable observers believe that in the absence of legislation to guarantee universal access to health care, future requirements for physician services will drop. A major factor in this assessment is the growth of managed care (see the appendix to this chapter). According to the Physician Payment Review Commission (PPRC, 1995), enrollment in health maintenance organizations (HMOs) in the United States more than doubled between 1985 and 1994, increasing to 17 percent in 1994; when a broader definition of managed care is used, data on insured persons in large firms suggest that as many as 65 percent are in some form of managed care. COGME (1994) has estimated that by the year 2000, two-thirds of the U.S. population will be enrolled in some type of managed care arrangement with strong utilization controls. The Prospective Payment Assessment Commission (ProPAC, 1995) has also cited figures indicating that only about one-third of insured people are in indemnity plans, and about two-thirds are in HMOs, preferred provider organizations (PPOs), or point-of-service (POS) arrangements; Davis et al. (1995) puts the figures at "more than half" of the employed, insured population in "forms of managed care that limit

enrollees' choice to a restricted network of physicians, hospitals, and other providers" (p. 100).

The net effect of managed care on requirements for physician services is driven by several factors, however. One is the proportion of the population actually in managed care organizations, which is large, as just noted, but unpredictable for the longer run. Another is the demographics of persons enrolled in such plans. Factors likely to reduce the effective demand for physician services (examples from Davis et al., 1995) include age (being younger), ethnic background (being of minority status), and income and education levels (being of lower income and less education).

A third variable is the ratio of physicians to population in those organizations. In general, managed care uses fewer physicians per unit of population served than does the traditional fee-for-service (FFS) sector. One report put the use by staff-and group-model HMOs at about 130 FTE patient care physicians per 100,000 enrollees, a use rate 28 percent below the current U.S. patient care physician supply of 180 per 100,000 (Kindig et al., 1993); Gamliel et al. (1995) cited current ratios in HMOs of 120 to 138 (as contrasted with prevailing ratios overall of 225 and 104 per 100,000 populations in metropolitan and nonmetropolitan areas, respectively). Other information, however, suggests that the ratio of patient care physicians to enrollees in "mature HMOs" comes closer to the FFS levels; Dial et al. (1995) put the figure at perhaps as high as 140 per 100,000 members.

These ratios also vary considerably by type of plan, region of the country, and other factors. For example, in one survey of HMOs belonging to the Group Health Association of America (GHAA), the interquartile range of full-time physicians per 100,000 members varied from 85 to 168 (Dial et al., 1995, citing Palsbo et al., 1993). Dial et al. (1995) reported the median ratio of 136 FTE physicians per 100,000 enrollees (weighted by various characteristics of the HMOs' enrollment) in a group of GHAA member HMOs. More detailed figures were 109 for staff-model HMOs and 142 for group-model HMOs; 284 for smaller HMOs (enrollments below 80,000) and 125 for larger HMOs. The authors note, however, that these figures can be low for managed care organizations overall because the sample excluded independent practice association (IPA) and network-type plans and because the data omit counts of hospital-based physicians.

Finally, data from a study conducted by the University Hospital Consortium (UHC) (Neal Vanselow, Tulane University, personal communication, 1995) show an HMO average of 137 physicians per 100,000 population but a range across five different HMOs of about 99 to 178 physicians. The UHC data suggest that managed care entities use 62 percent fewer physicians per capita, although the average masks the pattern of greater use of primary care physicians and lower use of specialists in the HMOs.

To be more specific, the UHC data indicate that the number of FTE physicians in cardiology in the nation as a whole is 4.5 per 100,000 persons but only 2.6 per 100,000 enrollees in five large HMOs. Large discrepancies exist in other medical specialties (e.g., gastroenterology, 3 and 1.6 per 100,000 persons; neurology, 3.7 and 1.6) and in some surgical specialties (OB/GYN, 13.5 and 9.1; ophthalmology, 6.5 and 2.5; orthopedics, 7.7 and 4.2; but interestingly, not in general surgery). The managed care world is moving to "carve out" mental health care, and some health care experts raise significant concerns about adequate access to the full range of mental health professionals as this phenomenon gains momentum. Thus, the committee found the UHC figures for psychiatry of interest. The U.S. average is now 14.1 psychiatrists per 100,000 population; the HMO average in the HUC data was 6.5 (with a range of 3.5 to 11.1 across the HMOs analyzed).

Managed care enrollees often represent a selected segment of the population that utilizes health care services less intensely than do persons with FFS insurance coverage, those eligible for Medicare and Medicaid, and uninsured populations. To correct for this phenomenon, COGME (1994) estimates have assumed that (1) the two-thirds of the population enrolled in managed care in the year 2000 will require 171 patient care physicians per 100,000 and (2) the one-third of the population remaining in the FFS sector will require a physician-to-population ratio of 174 per 100,000. Both of these figures are below the current U.S. patient care physician supply of 180 per 100,000.

In generalizing from all these data, it may not be unreasonable to conclude that physician-to-population ratios in a fairly tightly controlled managed care organization may be 40 physicians per 100,000 persons lower than the prevailing overall average in the nation today (i.e., 140 as contrasted with 180). This figure does not adequately take into account any large movement of Medicare or Medicaid beneficiaries into such HMOs in the future, nor does it consider the effect of increasing use of nonphysician primary care personnel (see below); these trends, however, may be offsetting in their effects on the demand for physician services and physicians.

Use of Nonphysician Personnel

Another important factor that is likely to decrease the requirement for physician services is the increase in numbers of midlevel personnel, such as advanced practice nurses (APNs) and physician assistants (PAs), who now perform many of the services that were previously the exclusive domain of physicians. There are now approximately 100,000 APNs in the United States; half are nurse practitioners or nurse-midwives; half, clinical nurse specialists (Mundinger, 1994). The number of nurse practitioners is expected to grow considerably in the years ahead as a result of the establishment of new education

and training programs (Cooper, 1994). Moreover, the supply of PAs practicing in this country in 1993 exceeded 23,300, and it will increase to between 36,000 and 40,000 by the turn of the century, depending on the assumptions made about support for PA educational programs and other factors (Advisory Group on Physician Assistants and the Workforce, 1994). Other work indicates that PAs and nurse practitioners are increasingly being substituted for medical and surgical residents in the nation's teaching hospitals (Riportella-Muller et al., 1995), although the cost-savings potential, if any, is debatable. For example, one analysis for New York City hospitals calculates that the cost of replacing physicians in residency positions with such mid-level personnel would be quite high (Green and Johnson, 1995).

The use of APNs and PAs in HMOs is considerable; about 65 percent of the GHAA HMOs surveyed by Dial et al. (1995) reported having APNs on staff, and a similar proportion also used PAs. The vast majority of the tasks of such personnel involve primary care, and they clearly substitute for primary care physicians in these plans; by and large, the higher the ratio of nonphysician personnel to primary care physicians, the lower is the ratio of primary care physicians to total membership (Dial et al., 1995).

During a site visit to Minneapolis/St. Paul and Rochester, Minnesota, in the fall of 1994, the Institute of Medicine (IOM) Committee on the Future of Primary Care observed another development that could have the effect of decreasing the requirement for physician services. Several managed care organizations in Minnesota are experimenting with a process known as "substitution" or "offloading." In an effort to increase efficiency and reduce health care costs, they are allowing health care personnel with lesser amounts of education or training to perform tasks and assume responsibilities traditionally reserved for physicians and other health professionals with longer periods of formal preparation. Registered nurses (RNs), for example, use protocols to monitor anticoagulant therapy in ambulatory patients and to manage by telephone a large percentage of uncomplicated urinary tract infections in women. Licensed practical nurses (LPNs) perform tasks previously reserved for RNs, and office assistants assume responsibilities that were previously the domain of the RN or the LPN. That IOM committee was also told that the role of physicians has changed considerably as a result of these experiments. For example, primary care physicians have more time to see patients with complex problems, thus reducing the need for referrals to specialists.

In a commentary on the restructuring and redeployment of America's health care workforce, Schwartz (1994) cautioned that the marketplace is rapidly implementing new forms of health care delivery involving broad workforce substitution without formal or rigorous evaluation of the safety or effectiveness of such interventions. He emphasized the need for studies that would delineate the specific circumstances under which one type of provider could be substituted for another and the ways in which such changes would affect patient outcomes

and costs. Should the type of substitution seen in Minnesota become the norm, however, it could markedly reduce the demand for physician services.

INTERNATIONAL COMPARISONS

Several studies have assessed the adequacy of the U.S. physician supply by comparing various measures, such as physicians per population, to the physician workforce in other countries. Comparisons must be made with caution, however, because the definitions of physician (e.g., active in patient care or not) may differ somewhat across countries and studies and because the structure and organization of health care systems may differ markedly as well. Whitcomb (1994), for example, raises "serious questions" about using the experience of England, France, or Germany as guidance for physician workforce planning in this country.

Schroeder (1984) documented that in 1980, the U.S. supply of physicians per population was smaller than in Belgium and West Germany, about the same as in the Netherlands, and larger than in the United Kingdom. Both Belgium and the Netherlands had officially recognized a physician oversupply (evidence cited included falling physician incomes, physician underemployment or even unemployment, and low morale of those in training) and had taken steps to reduce medical school enrollment or restrict specialty training, or both. Schroeder also noted that the United States had a much higher ratio of specialists to generalists than any comparison country, and he concluded that the European experience indicated that the most pressing health manpower problem in the United States was an oversupply of specialists.

An analysis by Schieber et al. (1993) of the health care delivery systems of the late 1980s and early 1990s in the 24 industrialized countries that constituted the membership of the Organization for Economic Cooperation and Development (OECD) revealed a physician supply ranging from 90 per 100,000 population (Turkey) to 380 (Spain). The U.S. supply was 230 per 100,000 persons at that time, a figure close to the OECD average of 240. Again, the United States was found to have a much higher specialist-to-generalist ratio than the other OECD nations. The authors concluded that these differences in specialty mix tempered the utility of the comparisons.

In a study done for BHP/HRSA, Whitcomb (1994) found that the 1993 physician workforces in several western democracies (including the United States) ranged between 230 and 280 physicians per 100,000 persons. At 140, the United Kingdom had a recognized physician shortage. Data from France suggested both physician oversupply and physician unemployment.

BHP/HRSA concluded that a physician oversupply has been recognized in France, Germany, Belgium, the Netherlands, and Spain. For example, physician unemployment in Spain was said to have reached 20 percent in 1990, and both

unemployment and underemployment of physicians were recognized in several of the other nations. In Germany, for instance, an estimated 5,000 to 8,000 doctors are unemployed, mostly new graduates and women (George Sheldon, University of North Carolina, personal communication, 1995). All five countries are taking steps to control the physician supply.

Drawing firm conclusions about the appropriateness of the U.S. physician supply based on international comparisons is severely constrained by major differences among health care systems. In many of the countries used for comparison purposes, health care delivery is based on the principles of managed care. Often, these nations offer universal access to health care, and many may engage in extensive governmental regulation of the delivery system. Medical education and training programs differ from those in the United States as well, and the resultant distribution by specialty is quite different from the more than 2:1 specialist-to-generalist ratio found in this country. Even with these caveats, however, the notion that the United States has a very generous supply of physicians, especially of subspecialists, relative to the supply in other major Western democracies seems generally to be a defensible one.

MATCH OR MISMATCH?

Conclusions of Physician Workforce Studies

Most of the physician workforce studies appearing since 1980 have concluded that the U.S. physician supply will exceed requirements and will continue to get even further out of balance if nothing occurs to change these trends. As already noted, for instance, the seminal GMENAC study (1981) predicted that the aggregate U.S. physician supply would overshoot requirements by 70,000 in 1990 and by 145,000 in the year 2000. Its findings derived from an adjusted need-based approach for determining the requirement for physician services.

A decade later, PPRC (1992) reached a similar view. Although PPRC did not conduct an independent study of the adequacy of the U.S. physician workforce, its 1992 annual report to Congress concluded from available data that "the number of physicians exceeds, or soon will exceed, that required to meet national health care needs" (p. 284).

Feil et al. (1993) reviewed eight major forecasts of physician supply and requirements published between 1980 and 1990; they concluded that, with one exception, all suggested a physician surplus in the year 2000. The size of the predicted oversupply varied from fewer than 50,000 (Jacobsen and Rimm, 1987) to more than 300,000 (Mulhausen and McGee, 1989).

The exception to the studies reviewed by Feil and her coauthors was a study done by Schwartz et al. (1988), which predicted a near balance between

physician supply and demand by the turn of the century. The authors also concluded that if a slight surplus should occur it was likely to be largely erased by increased involvement of physicians in administrative activities and a variety of nontraditional clinical activities that currently occupied little of a physician's time.

Some of the assumptions in the Schwartz et al. study have been questioned, however. For example, the authors assumed that less than one-half (specifically, 44 percent) of the U.S. population would be enrolled in "competitive medical plans" by the year 2000, but more recent predictions are that perhaps two-thirds of the population will be enrolled in some form of managed care with tight utilization controls by that date (COGME, 1994). Perhaps more important was another assumption concerning GME—specifically, that the number of residents in training would remain constant at the 1983 level of 73,000. In fact, the number of resident physicians has increased each year since 1983; numbers between 104,000 (Shine, 1995) and 108,000 (COGME, 1995) have been cited for 1993–1994 (the differences stemming from data sources and which types of trainees are counted). Finally, the Schwartz study did not appear to take into account either the role played by increasing numbers of PAs and APNs or the effect of substitution on the need for physician services.

Using an extrapolation method and assuming that 40 to 65 percent of Americans would receive their health care from integrated managed care networks in the near future and that all citizens would be covered by some form of health insurance, Weiner (1994) predicted that, in the year 2000, the overall surplus of patient care physicians would reach 165,000, a figure representing about 30 percent of all physicians in the patient care category. He further estimated that in 2000 the supply of specialists would exceed requirements by 61 to 67 percent (depending on the assumptions used) and that the supply of primary care physicians would be in approximate balance with requirements.

In its fourth report to Congress and DHHS, COGME (1994) predicted an overall surplus of 80,000 patient care physicians in the year 2000, consisting of a shortage of 35,000 generalist physicians and a surplus of 115,000 specialists. Taking a longer view, it also predicted a net physician surplus of 120,000 by 2020, with a projected shortage of 80,000 generalists and a surplus of 200,000 specialists. COGME's projections resulted from a demand-based study that assumed no changes in the current training pipeline and a health care system dominated by managed care arrangements. In 1995, COGME revised the figures upwards to "a year 2000 surplus of 125,000 specialists and a modest shortage of 20,000 generalist physicians …" (p. 1), for a net oversupply of 105,000. By implication, the estimated overall surpluses in coming years are growing rapidly.

In yet another recent analysis, Gamliel et al. (1995) applied an extrapolation model similar to that of Weiner. With some different assumptions and the supposition that current trends would apply, these authors arrived at the following predictions: (1) an overall surplus of 73,000 patient care physicians

in 2000 (comprising a surplus of 111,000 specialists and a deficit of 38,000 generalists) and (2) a surplus of 111,000 physicians in 2020 (about 196,000 more specialists than needed and about 85,000 fewer generalists).

Evidence from the Marketplace

Physician Incomes

One market indicator of the adequacy of the physician supply might be changes in physician income. Other factors being equal in a reasonably perfect market (which health care is not), a physician shortage would be expected to result in increased incomes, whereas a surplus would have the opposite effect. Several surveys of U.S. physician income reported during the past two years give conflicting results.

Some reports appear to support the idea of balance (or at least no obvious surplus or shortage). Mitka (1994b), describing data from an AMA survey, showed that median physician income rose 5.4 percent in 1993, with larger increases for the primary care specialties and no changes for many nonprimary care specialties. Two surveys of physicians in group practice by the Medical Group Management Association (MGMA) showed that overall physician income rose 2.3 percent in 1993 and 2.2 percent in 1994 (Mitka, 1995b). In 1993, this involved an appreciable increase in the income of primary care physicians and a decline or, at best, only a small growth in the income of most specialists (Mitka, 1994a). Academic physicians responding to an MGMA survey indicated that faculty pay for primary care physicians increased 4.6 percent in 1994 and specialist pay decreased 1.8 percent; overall, academic physician pay increased 2.3 percent in 1994 compared with 4.2 percent in 1993 (Mitka, 1995a).

Two other surveys show an overall decrease in physician incomes, which might be thought to be more consistent with an oversupply. First, a survey by *Medical Economics* of the 1993 median net income of office-based physicians in private practice yielded information pointing to an overall drop of 8.3 percent (Goldberg, 1994). Incomes rose in family practice and internal medicine and declined for most other specialties. Second, William M. Mercer Inc. surveyed 191 organizations and developed data to indicate that, in 1994, the average total cash compensation of physicians employed by group practices, hospitals, and HMOs decreased by 2.3 percent (Borzo, 1995). This survey also demonstrated a rise in cash compensation for family practitioners, internists, and pediatricians.

A decade ago, Sloan and Schwartz (1983) indicated that physician supply and outlays for physician services grew in the 1970s; in addition, gross income of individual physicians increased about 1 percent annually, but real net income for physicians rose only about 1.7 percent over the entire period. Changes in

physician-to-population ratios (i.e., supply) explained only about one-fifth of the rise in expenditures. More important explanatory variables included growing population, aging of the population, and expanding insurance coverage; specialty mix had little impact then on spending. The authors noted that "some four fifths of the observed increase in expenditures would have taken place even if the physicians supply had not increased faster than the population" (p. 768). They predicted similar patterns of expenditures and physician incomes for the 1980s and, in particular, argued that the "contribution of an increased physician supply to the rise in expenditures will be relatively small" (p. 768) and that net income (in constant dollars) might stay about the same or even decline slightly because of factors such as practice expenses (e.g., malpractice insurance or medical equipment costs). Thus, information about physician supply and physician income does not lead to straightforward interpretations, and more systematic data on this point will be necessary to establish whether the growing number of physicians in the aggregate is leading to lower incomes across the board.

The impact of physician supply on physician income is more complex than just implied, however, because some experts believe that as physician supply increases, one may see a segmentation, or split, in the effect on incomes. Such a pattern would complicate any inferences to be drawn about the supply-income relationship. For the FFS sector, Frenk et al. (1991) offered the following illustration from Mexico: One group of physicians, who are older, established, and more specialized, continues to experience rising (or certainly stable) incomes; the growing number of less expert, younger, and/or less well established physicians, by contrast, finds it more difficult to maintain sufficient workloads, skills, and thus steady incomes. Conversely, however, younger physicians (certainly those coming from U.S. schools) might be thought to be trained in the latest techniques, cost-effective practice patterns, and willingness to innovate; thus, they may be able to attract appropriate patient loads, sustain existing or acquire new skills, and maintain incomes.

In the managed care sector, all of these issues are less clear. In some (but not all) arrangements, physicians may be employees of a capitated health care plan; when this is so, their personal incomes will be less directly connected to the size of their own patient load than would be true in the FFS arena. Another complicating factor is the effect that managed care's emphasis on generalist care might have on the ability of specialists and subspecialists to maintain their skills. A final unknown is whether older, more expert specialists would or would not be more attractive to managed care systems and what effects the employment or contracting practices of these networks would have on physician incomes.

In the end analysis, whether trends in physician income can tell us anything useful about the supply of physicians in generalist or specialist practices and about physician preferences for FFS or managed care practice remains unclear. The committee cautions against placing too much reliance on such information.

Other Evidence

Other market factors that might provide insights about the adequacy of the physician supply are changes in the number of unemployed physicians, the interest of college students in pursuing medical careers, and the number of physicians taking early retirement or relocating. PPRC (1995) concluded that none of these indicators has as yet produced evidence of a physician surplus. In its most recent annual report to Congress, PPRC (1995), stated that there is "little evidence, either anecdotal or more systematic, of physicians unable to secure work" (p. 312). In addition, it noted both the record number of applications to medical school in 1994 and the record levels of interest on the part of college freshmen in a career in medicine. Finally, the PPRC was unable to find good data sources by which to track the number of physicians relocating or taking early retirement. The 1995 PPRC report concluded that although some changes have occurred in the labor market for physicians, it is still too early to know whether they signal a departure from previous trends.

Information available to this IOM committee differs from that just summarized above. Committee members have received numerous anecdotal reports of early physician retirements, physician relocations, empty office calendars, and even physician bankruptcies. Most of these come from markets such as Minnesota and southern California in which the growth of managed care has been particularly rapid, and they involve mainly nonprimary care specialists. At least one recently published report confirms these trends (Page, 1994).

CONCLUSION

Most studies of the adequacy of the physician workforce for the past 15 years have concluded that the United States has an oversupply of physicians, generally characterized as a large surplus of most nonprimary care specialists and either a shortage or a relative balance in the supply of primary care physicians. Marketplace evidence supporting these findings is at present inconclusive.

The committee was not unanimous in labeling the current number or stock of physicians as an absolute oversupply or excess, for two reasons. First, on theoretical grounds, the need or demand for physicians is better understood as requirements for physician *services.* Second, the idea that a surplus exists (or does not) is best settled in the context of explicit assumptions about the goals and characteristics of the health care system now (and in the future) and about different ways in which those goals might be met.

Rather, the committee concluded that the nation clearly has at present an abundant supply of physicians—which some members of the committee were prepared to label a surplus—and that judgments about the implications of those

numbers must be made in the context of the overall U.S. health care system and the components of that system that are of greatest concern (e.g., the quality and costs of health care and access to services). It was certainly of the view that the growth in physicians training and entering practice each year is sufficient to cause concern that supply in the future will be excessive, regardless of the assumptions made about the structure of the health care system. Finally, the committee concluded that the steady rise in numbers of physicians coming into practice is attributable primarily to ever-increasing numbers of IMGs, about which it is very concerned.

Two major sets of questions remain, however. Will the current or anticipated numbers of physicians have, on balance, positive or negative consequences for costs, accessibility, and quality of health care in the nation? Will that supply have beneficial or harmful effects on such matters as the efficient use of human resources and the long-term future of the nation's academic health centers? Furthermore, will those judgments differ depending on where on a "tightly managed care" to "fully fee-for-service" spectrum the U.S. health care system settles? These topics are taken up in the next chapter.

NOTES

1. Figures for the supply of physicians in this country can diverge dramatically, depending on whether the data refer to all physicians, all active physicians, all active nonfederal physicians, patient care physicians, or some other grouping. By most accounts, active physicians are those who are neither retired nor working fewer than 20 hours per week. Different sources will use different classifications, so comparisons across sources may be invalid or at least require further examination. The committee has tried to be explicit about the groupings used in the text and in Table 2-1.

2. By convention, allopathic schools are distinguished from osteopathic schools. Allopathic schools produce physicians with a "doctor of medicine" (M.D.) degree; osteopathic institutions graduate those with a "doctor of osteopathy" (D.O.) degree. The former greatly outnumber the latter, today by about 126 to 16 schools.

3. Reporting of the number of physicians differs somewhat across the period 1970–1992. Sources include DHEW (1977), NCHS (1983), and DHHS (1993).

4. Some observers (e.g., Sheldon, 1991; Jonasson et al., 1995) believe that, for some physician categories such as general surgery, the GMENAC (1981) report estimates were off the mark because it projected the training of more surgical residents than actually have been trained. COGME (1994) also comments on shortages in several specialties, including general surgery, psychiatry, preventive medicine, and geriatrics. Consequently, the question of a significant excess of surgeons (or at least general surgeons) may be more debatable than it is for certain other subspecialties. Apart from the issue of numbers, however, lies the question of whether existing methods for predicting supply or requirements are equally appropriate across all types of physician specialties (or, indeed, across all types of health care personnel).

5. Physicians in the United States can be classified in two basic ways: as USMGs (i.e., those graduating from U.S. schools accredited by the Liaison Committee on Medical Education or the American Osteopathic Association, virtually all of whom are U.S. born, or from similarly accredited Canadian medical schools), or as IMGs. Within the latter group, such graduates may be U.S.-born individuals (sometimes denoted USIMGs, who constitute a small proportion of all IMGs) or foreign born (sometimes denoted FNIMGs, and including non-U.S. citizens, naturalized U.S. citizens, and those of unknown citizenship).

6. Recent projections from the Bureau of Health Professions indicate a physician-to-population estimate of about 269 per 100,000 population for 2020, because of recent changes by the Bureau of the Census in population projections for that year (which increased the estimated size of the U.S. population by about 30 million). Overall, however, all projections for the last part of the twentieth century and the early part of the twenty-first century must be regarded as conservative, because they make no adjustments for the growth in the numbers of physicians in training (Fitzhugh Mullan, Director of the Bureau of Health Professions, presentation to the committee, July 19, 1995).

7. Clearly, the term physician productivity is an oversimplification, because it does not define physician services in clear terms, nor does it account for differences in the quality of those services.

8. Skepticism about the reliability and utility of forecasting models, especially for demand for health or other professionals, has mounted in recent years. For example, the Institute of Medicine (IOM) committee examining the future of dental education arrived at essentially this same conclusion in its recent report Dental Education at the Crossroads: Challenges and Change (IOM, 1995a), noting that common models projecting the supply, demand, and need for dentists tend to show similar patterns but to differ in actual numerical forecasts. That committee comments, however, that "[a]lthough forecasting models cannot provide firm bases for many important policy decisions, they are still useful monitoring and analysis tools" (pp. 269–270). Recent reports from the National Research Council also expressed concerns about methods for predicting long-term demand for researchers, citing their subjectivity, vulnerability to a changing environment, inability to account for behavioral responses, and data limitations (NRC, 1994; COSEPUP, 1995). IOM committee reviewing workforce and training issues for health service research (a much less easily defined field and discipline than medicine, dentistry, or biomedical research) has also identified many challenges to counting, describing, or forecasting demand and supply of health service researchers (IOM, 1995b). Finally, an IOM committee examining issues in nurse staffing patterns for hospitals and nursing homes has encountered considerable obstacles in determining reliable numbers of different types of nurses, particularly those with advanced practice training and those in a wide array of nurse aide/assistant and other ancillary nursing personnel categories (IOM, 1996, forthcoming). Clearly, if current supply cannot be described or enumerated in dependable ways, forecasting future supply and the match or mismatch between supply and requirements is certain to be open to question.

APPENDIX

A Brief Note on Managed Care

The IOM committee was not charged to examine issues relating to managed care. However, the transformation of the U.S. health care system and the rapid movement toward managed care structures are of signal importance in understanding the impact of physician supply in the future and in considering the impact of managed care on physician requirements. Thus, the committee was motivated to comment on the phenomenon, and this appendix provides a very brief overview of the factors the committee tried to take into account.

Experts disagree on the definition and inclusiveness of managed care. At its broadest, managed care plans might be considered to involve some or all of the following features: complex organizational arrangements (e.g., among institutions and clinicians); more explicit financial incentives for both providers and members or enrollees than is typical in a fee-for-service (FFS) arrangement; coordination and integration of services; defined access to the physician panel and/or services; strong controls on utilization, especially of specialists; and accountability for an enrolled population and for quality of care. One useful description is that of Iglehart (1994, p. 1393): managed care plans "… integrate the financing and delivery of medical care through contracts with selected physicians and hospitals that provide comprehensive health care services to enrolled members for a fixed predetermined fee."

In most people's minds, managed care can include traditional staff-and group-model HOMs, IPAs, and PPOs (which may involve tightly bound arrangements that render them exclusive provider organizations [EPOs]). Managed care also comprises a variety of so-called point-of-service (POS) plans, which offer incentives for patients to use the panel of physicians belonging to the plan but cover some fraction of the costs of use of out-of-plan physicians.

Whether physicians are salaried employees of the plans, or have capitated contractual arrangements with plans, or are reimbursed on a FFS basis, complicates the task of cleanly defining managed care. For example, HMOs and similar managed care entities might be classified into (at least) five levels of capitation, involving hospital care, primary care, hospital-based specialties (such as anesthesia or laboratory medicine), medical specialties, and surgical specialties. HMOs may capitate most frequently for the first two categories and then contract out, in a wide array of patterns, for the other types of specialty services, often on a volume-based adjusted FFS basis. Thus, in the words of one committee member: "If you have seen one HMO, you have seen one HMO."

Generally, the growth in managed care arrangements today appears to be in PPO- and POS-type networks. Reporting on findings from the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey (which covered

more than 20,000 employers in 10 states), Cantor et al. (1995) indicated that, among all employees of these firms, 54 percent were offered indemnity plans, 48 percent a PPO plan, and 45 percent an HMO. With respect to the firms themselves, the figures for types of plan offered were, respectively, 55, 38, and 25 percent across the states studied. Gabel (1995) indicated that in 1994, 25 percent of people insured were in HMOs, 25 percent in PPOs, 15 percent in POS plans, and only 35 percent in traditional indemnity plans; he also stated that among employed individuals who have a choice between managed care and traditional FFS insurance, the proportion choosing PPOs and POS plans increased between the mid-1980s and 1994.

Because cost constraints in PPOs and POS arrangements may be weaker than those in traditional HMOs and EPOs (i.e., they may more closely resemble those operating in the FFS sector), the otherwise expected effects of managed care on utilization and expenditures may be dampened. This factor complicates any analysis of the relationships between physician supply and costs of care in an increasingly managed care world. (For further discussions of these issues, readers are referred also to PPRC, 1995, and ProPAC, 1995.)

3

Relationship of Physician Supply to Key Elements of the Health Care System

Americans might be said to want sufficient numbers of physicians to enable them and their loved ones to have reasonable access to quality health care services at an affordable cost. Obviously, our nation's record is far from achieving these objectives. The tendency has been to believe that simply adding more and more physicians to the country's present stock will go a long way toward meeting these goals and that doing so would have few, if any, serious negative ramifications.

Chapter 2 presents solid evidence that the United States has succeeded dramatically in increasing its supply of physicians—to a level that some, but not all, on the committee characterized as a surplus—and that if an oversupply does not now exist, it will at some future date given current trends in training and utilization. The significance of this phenomenon, in terms of its impact on many other aspects of the nation's health care system, remains controversial, and the issues have been widely argued in the literature and within health policy and professional circles.[1]

To consider further the impact of a possible mismatch between physician supply and requirements, this chapter examines the nature of the effect of these high numbers on the nation's health care system. The committee examines this

issue from five perspectives: the costs of health care, access to care, quality of care, efficient use of human resources, and the future of academic health centers.

The essential questions are the following: Do we know now what effect very high numbers of physicians might have? Will we be able to project the effects with a satisfactory level of precision, especially as the system itself is evolving unpredictably? Do the answers differ depending on what assumptions are made about the degree of penetration of managed care and the size of the residual fee-for-service (FFS) sector?

As noted in Chapter 2, forecasts of supply and, especially, requirements are fraught with many uncertainties and difficulties. A small mismatch of supply and requirements in one direction or the other probably should not be taken as evidence of a true or meaningful difference. In this discussion, therefore, the committee considers the above-mentioned issues on the assumption that substantial numbers of physicians are currently available, large numbers are continuing to be produced, and even higher numbers—indeed, a surfeit in most experts' views—can be forecast for the near future.

HEALTH CARE EXPENDITURES

Using standard models of microeconomic theory, one might expect that a significant increase in the number of physicians would increase competition, produce lower incomes for physicians, and reduce health care costs. Theory, however, is not entirely or consistently borne out in practice.

Competition

Few data document whether "competition" in the classic sense—among physicians per se—has increased, although the fact of discounts, sometimes sharp, in physician fees and hospital charges suggests that competitive forces have been at work in recent years. Clearly, the nation's health care system is moving in a rapid and unstructured way to far greater levels of competition than it has ever known. This phenomenon appears mainly to involve competition among health care plans, integrated delivery systems, and hospitals.

As the country moves to larger, but fewer, networks and systems and downsizes in certain areas such as hospital beds, physicians will increasingly find themselves attached to or employed by such plans; in principle, competition among them—even if not overt—might increase. Nonetheless, that scenario is somewhat afield of traditional ideas of direct competition among individuals or groups (in the form, for instance, of price wars or limitation of staff privileges). In sum, no clear evidence exists about the nature of the relationship between a

purported oversupply of physicians and competition among them, at least in a managed care environment.

Physician Incomes

The link between supply of physicians and their incomes (see Chapter 2) is tenuous at best, especially in a health care environment undergoing the many changes in organization and specialty distribution occurring in this nation. No clear evidence exists that an excess of physicians is driving their net incomes down to any significant degree; even if an oversupply did have a dampening effect on incomes, this might not translate into direct, significant dollar savings in the nation's overall health care spending. In any case, the committee has no considered view on the inherent desirability of maintaining current levels of physician income.

Health Care Costs

It is in the area of aggregate health care costs that theory and practice appear to diverge most dramatically. Especially during the 1970s and 1980s (when FFS reimbursement was more dominant than today), both physician supply and aggregate health care expenditures rose dramatically.[2]

The very high level of and continuing increases in health care expenditures in this country are matters of significant debate, punctuated by disagreements about the major reasons for the unabated rise in outlays (such as growth in the population, aging of the population, technology advances, general inflation, increasing use of services in the FFS world, and the like). One major factor (as noted in Chapter 2) appears to be that physicians account directly for about 20 percent of health care expenditures in this country and indirectly for 70 to 90 percent of all expenditures—essentially generating outlays every time a patient is seen, a diagnostic test ordered, or a hospitalization advised. As many have noted, under FFS the financial incentive is for physicians and other providers to do more. One can conclude that in a health care world dominated by FFS arrangements and traditional indemnity insurance, a surplus of physicians will be associated with poor controls on costs or expenditures and with overall increases in outlays.

As this country moves to managed care, the net (or combined) effect of managed care and a very high level of physician supply is difficult to predict. This is especially so because certain other factors, such as a growing and aging population and ever-improving technology, will continue to have appreciable influence. Moreover, within managed care systems, physicians will remain responsible for most of the decisions that generate the costs involved in delivering care, even if, on balance, managed care can be expected to control

those costs to a much greater extent. By contrast with FFS, however, the incentives in managed care are to do less, including having fewer physicians engaged in patient care. In general, one can conclude that a health care system heavily dominated by a small number of large managed care entities will, all other things equal, not be affected by a physician surplus in the way a FFS-oriented system is.

In fact, an oversupply of physicians in a world dominated by managed care catalyzes the cost-constraining effects of managed care, quite apart from the number of services that physicians order or provide. Some argue that the fact of a surplus of physicians has fostered the growth of managed care (and, in so doing, possibly moderated cost increases). Large numbers of physicians permit managed care and integrated delivery systems to engage in efficient business practices. In effect, a surplus enables competition to work on behalf of these plans: for example, managed care organizations can hire (or contract with) new physicians at lower salaries, dismiss or end contracts with older or higher-paid physicians, substitute nonphysician primary care personnel for physicians, and institute significant "gatekeeper" and "referral" controls on the use of specialist physicians. These steps in turn drive costs down, although whether they result in equal or higher quality is not known.

Hence, the net impact of a possible physician surplus on health care use and aggregate expenditures will depend in large part on what proportion of the physician workforce continues to function under FFS and what proportion in capitated systems. For example, the proportion of physicians with any managed care contracts rose from 61 percent in 1988 to 75 percent in 1993, but as noted, managed care can cover a wide array of tightly controlled or quite loosely managed plans. Physician impact on utilization and outlays will also depend on other factors such as how much, in the future, FFS plans incorporate elements of utilization management and how much outpatient care is substituted for hospital care (PPRC, 1995). For instance, managed care "norms" may well have a cost-conserving influence on the behaviors of physicians remaining in the FFS sector.

In a simple analysis, the committee would conclude that a physician surplus would aggravate costs and expenditures in a FFS-dominated system and would mitigate them in a managed-care-dominated world. Certainly any strong tendency toward induced demand that some see in the FFS system would not likely arise in a managed care world. On balance, however, the committee could not dismiss the contention that a substantial part of the U.S. system will remain oriented to FFS and governed by its incentives for some years to come: managed care approaches may not be viable in some parts of the country or for some population groups, and others will be willing to pay for out-of-plan use themselves. To the extent that this is true, a physician surplus can be expected to be positively, not negatively, correlated with national health care spending.

ACCESS TO CARE

Access to care ranks as the second-highest priority issue for health care policy in this country, after expenditures. Considered as "the timely use of personal health services to achieve the best possible health outcomes" (IOM, 1993a, p. 4), access has easily been the longest-running of the three major health issue in this country (i.e., costs, access, and quality). Concerns about access to adequate health care for certain groups (e.g., the elderly, the poor, residents of rural areas) well antedate the dramatic rise in expenditures of the 1970s and thereafter, the appreciable rise in physician supply over the past two decades, and the contemporary focus on quality of care.

Two to five decades ago, access problems were seen to be closely related to the perceived undersupply of physicians in the country. Solving the physician supply problem was regarded as a major step in addressing access issues. It appears, however, that the nation "oversolved" its physician supply deficit and yet did little, in the aggregate, to overcome access problems (with the obvious exception of the elderly through the Medicare program) (Politzer et al., 1991).

The advent of managed care today muddies analysis of the effect of a physician surplus on access to care, whether the access problem relates to insurance, physician availability in a geographic area, or utilization controls. Some observers foresee that a wholesale movement to tightly managed systems might, in the short run, aggravate an ostensible oversupply problem.

Managed care organizations have the mission of tightly controlling access to services, as already noted. Furthermore, health maintenance organizations (HMOs) typically staff at physician-enrollee ratios far below the physician-population ratios now prevalent in the United States. HMOs and other managed care entities vary considerably in their staffing patterns, however. For example, information from the University Hospital Consortium suggests that across five large HMOs, the average number of physicians per 100,000 population was about 138 (in contrast to the figure of 180 cited in Chapter 2 for the nation as a whole).[3] Exactly what these figures imply about access to "in-plan" physician services among the populations enrolled in such plans remains to be seen. Overall, however, the express limitation on direct access to physicians (or at least specialists) in managed care entities is not clearly consistent with expanding access to care across all groups in the country.

Physician supply and access issues are often examined in terms of two areas of "distribution"—geography and specialty. These topics are discussed only briefly here because the committee was not charged with considering the complex questions of geographic maldistribution or the generalist-specialist imbalance that persists in this country. They do serve to illuminate the complexities of the relationships between access and physician supply, especially when large numbers of people in the country have inadequate access to care and

when the relative balance of FFS and managed care approaches to organization and financing is still uncertain.

Geographic Distribution

The nation has created a very large physician workforce but has not solved the problem of geographic maldistribution of physicians (or health care services and facilities generally) (Kohler, 1994). This is true for both specialists and generalists. The dramatic increase in the ratio of physicians to population—coming as a result of a national policy that expanded domestic production of physicians and opened the doors wide for international medical graduates (IMGs)—did not ultimately mean that physicians diffused more evenly across the nation or settled in even adequate numbers in places severely short of an appropriate range of physician specialties. More than a decade ago, researchers at the RAND Corporation documented an increased diffusion of specialists into areas having a lower supply (Schwartz et al., 1980; Williams et al., 1981; Newhouse et al., 1982a, 1982b). Despite this movement, few would deny that, today, both rural areas and inner cities continue to face access problems. Indeed, the most recent data from the Council on Graduate Medical Education (COGME, 1995) show that the geographic maldistribution (e.g., for counties of fewer than 50,000 residents) is worsening, not improving.

Various efforts have been made over the years to respond to perceived shortages of physicians in rural and poor areas (Desmarais, 1995; Mullan, 1995). For example, state and federal (Title VII) funding of family practice residencies has been considered one useful approach, inasmuch as family practice physicians are more likely than other specialists or generalists to practice in rural areas. This alone, however, is not likely to solve the maldistribution problem for rural populations.

Another such program is the National Health Service Corps, which places physicians in so-called Health Professional Shortage Areas (HPSAs).[4] HPSAs are identified on the basis of several factors: low physician-population ratios; high rates of poverty, infant mortality, and low birthweight; and poor access as reflected in waiting times, visit rates, or distances to care. As of 1994, nearly 2,740 HPSAs had been designated, of which about 67 percent are rural; this number is more than double that for 1978 (1,242 HPSAs, of which 72 percent were rural) (BPHC, 1995). Altogether, today they represent a need for more than 5,340 primary medical care personnel for a population of not quite 48 million individuals.[5] In principle, a large surplus ought to enrich the pool of physicians from which National Health Service Corps and similar programs can draw (at least if fewer attractive loan programs were available). The constraints on solving some access problems in this way, however, lie in the number of such

positions that can be supported through federal appropriations for those programs and in the structure of the financial incentives, not the size of the physician pool.

Some observers have conjectured that greater numbers of foreign-trained physicians might help alleviate some of the geographic maldistribution problems in this country. That, too, has not been borne out. By and large, IMGs go to nonmetropolitan areas only as frequently as domestic doctors (Mullan et al., 1995). No solid data indicate whether IMGs are or are not more likely than their U.S. medical graduate (USMG) counterparts to be found in the nation's inner cities. The consensus view appears to be that the geographic distribution of IMGs parallels that of USMGs or is, if anything, slightly skewed toward the largest metropolitan counties in the nation (Mullan et al., 1995).[6]

In short, the presence of more and more physicians in this country has not solved problems of access to care. Although a greater supply of physicians has helped improve access to specialists in smaller communities, it has not completely solved the problem or corrected perceived imbalances in supply across geographic regions. However, access difficulties probably never were, and never will be, wholly amenable to resolution through increased "supply" when significant financial and nonfinancial barriers to seeking care continue to exist. Furthermore, if the nation's health care system becomes heavily dominated by managed care, arguably some access problems may well be exacerbated if such organizations do not find it economically attractive to establish networks in presently underserved, frontier, or similar areas.

Of course, eventually a *huge* oversupply of physicians might well induce movement into underserved areas; for instance, anecdotal evidence is coming in of physicians' leaving California to practice in Wyoming, Montana, and similar rural states (where, arguably, FFS medicine still predominates). In the committee's view, however, attempting to solve the access problem simply by creating an oversupply sufficient to induce such behavior is an extremely inefficient way to proceed. The nation requires specific strategies and policies to address its continuing access problems that do not depend on the numbers of physicians it has.

Specialty Distribution

Although experts have recognized for many years that the country has a shortage of generalist physicians, most experts now believe that it is relatively modest in size, and some even hold that the generalist supply is in balance with or slightly in excess of requirements. Certainly when other types of health care professionals (e.g., advanced practice nurses, nurse practitioners [NPs], physician assistants [PAs]) engaged in primary care are added to the equation, most authorities would take the position that no shortage exists in personnel capable

of delivering primary care services, although they may still disagree about whether the numbers are at present at, or slightly above, desirable levels.[7] There does seem to be widespread agreement about an oversupply in many of the nonprimary care specialties and subspecialties. To the extent that too few physicians today are in primary care and too many in specialty and subspecialty practice, this specialty maldistribution will persist for some time (COGME, 1994, 1995).

Whether these imbalances will be exacerbated or ameliorated by broader developments in the health care arena is a matter for some debate. If data from some mature managed care markets are any indication (see Chapter 2), the oversupply of specialists is quite apparent, simply because managed care organizations use many fewer specialists than are practicing in the present FFS world (Weiner, 1993; Bruce Sams, Belvedere, California, personal communication, 1995).

Such information suggests that an aggregate oversupply of physicians will not solve the problem of maldistribution by specialty *and* that the problem of too many specialists and too few generalists might worsen if managed care entities proliferate. As with geographic maldistribution, the infusion of large numbers of IMGs did not, and in the future will not, help resolve specialty imbalances because IMGs subspecialize as frequently as USMGs; only about one-third of both USMGs and IMGs in patient care elect primary care specialties of general or family practice, pediatrics, and internal medicine (Mullan et al., 1995). The complicating factor is that the "pipeline" of physicians in these fields—that is, the numbers entering into or presently in training—is quite long.

These patterns imply that an oversupply of physicians, particularly of specialists, will lead to large numbers of IMGs' and domestically trained doctors' competing for positions in urban areas in preference to rural and poor communities and for sufficient work to maintain their skills. The committee did not foresee large-scale movement of either IMG or USMG specialists into underserved areas as a means of meeting either the primary care or the specialty care needs of those populations, given the lack of a viable FFS infrastructure (e.g., appropriate hospitals) in many of those locales and the likely low use of specialists by any managed care organizations that might enter those areas.

Furthermore, the factors that induce or ameliorate specialty maldistribution may be more complex than those affecting geographic maldistribution. Among the changes that might affect specialty maldistribution are choices that physicians already in practice (or about to enter practice) make about what they call themselves and what they do. For example, some physicians with mixed practices (e.g., those certified in both internal medicine and one of its subspecialties) may increase their care of general problems; other specialists may seek to retrain in a generalist discipline via short courses and thereafter market themselves as generalists. Whether these practitioners will then be as expert or

interested in their subspecialty practices as their colleagues who devote full time to their subspecialty practice is a matter of conjecture. One additional point underscores this uncertainty: generalists who have completed full residencies in generalist programs are more likely to disparage "retraining" as a poor substitute for their own training.

Finally, many managed care programs are explicitly built to distinguish primary care gatekeepers from subspecialists and to keep them clearly separated. Their formal generalist-specialist policies may be very important in determining how these changes eventually play out.

In short, the nation has a serious disproportion of specialist to generalist practitioners even with its very large numbers of physicians. Increasing the supply even further (which some would characterize as perpetuating a surplus) will not likely correct this imbalance. A continued mismatch of specialty supply to requirements, however, especially if stringent managed care operations begin to dominate U.S. health care, may risk a number of unforeseen consequences.[8] Furthermore, the workforce issues for specialty and primary care medicine differ. Global solutions that ignore the primary-subspecialty issues should be avoided, so that they do not do harm to the developing primary care base of our health care system.

Summary Comment About Access to Care

What seems clear is that (1) the present large supply of physicians has not resolved long-standing problems of geographic or specialty maldistribution; and (2) ever-greater numbers of physicians per se has not yet alleviated the problem of access to basic, decent health care for growing numbers of people in this country.[9] Eisenberg (1994) sums up the issue as succinctly as any: "trickle-down" approaches to solving access problems through increased supply have not worked. As managed care approaches to the organization and financing of health care diffuse across the country, the possibility of an even greater surplus of physicians cannot be dismissed, and the existence of many more physicians than appear to be required may do little to redress serious problems of access to care in the nation as a whole.

QUALITY OF CARE

According to a 1990 Institute of Medicine (IOM) report, quality of care is "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (IOM, 1990, p. 21). That report goes on to document ways in which health care quality may be called into question: (1) use of unnecessary or

inappropriate care; (2) underuse of needed, effective, and appropriate care; and (3) poor performance in the technical or interpersonal aspects of care.

As can readily be appreciated, an oversupply of physicians (either specialists, generalists, or both) would have different implications for different elements of questionable quality of care. Few reliable data are available to clarify what the net effects might be of the numbers of physicians the nation now has. The picture becomes murkier when the rapidly changing environment of physician practice—especially the accelerating growth of managed care systems—is taken into consideration.

High Numbers of Physicians Overall

General Effects

Data to answer the question of whether large numbers of physicians will have a beneficial, a harmful, or no net effect on quality of care are exceedingly scarce. As implied in the discussion of expenditures, a significant physician oversupply would pose potential harms to patients from unnecessary care (Perrin and Valvona, 1986), especially in the FFS sector. These harms can range from simple inconvenience and the financial burdens of uncalled-for out-of-pocket costs to severe iatrogenic complications. Conversely, excess numbers of physicians might, in accordance with economic theory, drive out poorer performers, leaving only very good physicians who could be expected to render high-quality care.

The interactions of physician supply with a FFS or a managed care orientation to health care delivery, in terms of quality of care, are complex. Evidence suggests that the quality of care in traditional HMOs is in general equivalent to that in nonmanaged care (e.g., FFS) arrangements, at least for average populations, although this may not hold for persons who are both poor and sick (Newhouse and the Insurance Experiment Group, 1993). According to Safran et al. (1994), results from the Medical Outcomes Study on core dimensions of primary care (IOM, 1978) indicated that HMO patients had better financial access and coordination, but poorer organizational access, continuity, comprehensiveness, and judgments about provider accountability (technical skill and interpersonal manner). These studies, however, are based more on traditional types of prepaid, capitated systems, not on the emerging hybrid or for-profit models.

The existence of large numbers of practitioners might well mean that managed care organizations could take advantage of physician competition and hire or contract with only the "best" physicians (e.g., those who are well trained and experienced); equally plausible is that they might employ the youngest, least experienced, or cheapest physicians, who might or might not be the best. To the

extent that tightly managed systems (or plans with very high out-of-plan cost sharing) succeed in discouraging enrollees from seeking care from physicians not in the network or plan, the possibility that persons would have to settle for potentially poorer care from network physicians cannot be dismissed out of hand.

Volume and Quality

Higher volume of services rendered (e.g., operative procedures) has long been regarded as directly related to higher quality of care (OTA, 1988, Chapter 8). Data are especially persuasive about open heart surgery. No definitive volume requirements or norms for different types of surgery or other health care services have ever been promulgated, however.

Poorer surgical outcomes are more likely to occur where surgeons have small workloads that preclude their performing the volume of procedures necessary to maintain efficiency and technical skills (Luft et al., 1990). Problems of quality can arise if physicians practice outside their usual areas of competence, for whatever reasons (as noted in the discussion about specialty distribution), or if their skills erode with little practice. Physicians who are "finding things to do" to compensate for being less than fully occupied may cause iatrogenic illnesses as well as waste scarce resources.

The volume-quality relationship is tempered to the extent that unnecessary and inappropriate interventions are given—for instance, to persons who could be equally well served by "watchful waiting." Consequently, in the FFS system, too many physicians may indeed be associated with higher volumes of care but not necessarily with better patient outcomes or overall higher levels of quality. This particular side effect of FFS incentives might not operate in a managed care environment, where a different picture emerges for managed care plans with tight controls on utilization of medical or surgical services. In these circumstances, volumes may well decline for individual practitioners, with possible deleterious consequences for quality.

In general, the committee agrees with the notion that higher volume is related to higher quality of care. However, because of the uncertain balance between managed care and FFS arrangements in coming years—and the very different effects those approaches have on volume of services—the net impact of a physician surplus on volume of services, and hence on quality of care, cannot be foretold with any certainty.

Provider and Consumer Satisfaction

Another, less-well-appreciated potential effect involves physician and public attitudes, but the net impact of large numbers of physicians is not simple to

predict. A physician oversupply may well lower *physicians'* satisfaction with their profession and with their practice or job circumstances. Perceived or real threats of underemployment (or unemployment) may seriously erode morale and have adverse effects on physician-patient relationships and communication. Some of these effects have been reported outside the United States for nations (such as Mexico) having already experienced significant surpluses of physicians (Frenk et al., 1991).

Conversely, more physicians may improve practitioner satisfaction. For example, a larger supply of doctors might enable them to spend more time with patients, arrange more easily for weekend or evening coverage, develop innovative team approaches to practice (e.g., as two 50-percent doctors for one full-time-equivalent position), or in other ways enhance their practice circumstances.

Some evidence suggests that *patient* satisfaction suffers when physicians, nurses, and other health care workers are demoralized and unhappy with their own work circumstances. It is difficult to perform demanding service functions when one is convinced that one has been treated poorly, whether this is a legitimate complaint or not. As Tarlov (1983) concluded, demoralization of a profession will benefit no one.

By contrast, greater choice of physicians ought to improve consumers' satisfaction. Greater choice might emerge in a FFS-oriented health care system, but it would not be likely in a system dominated by managed care because it is antithetical to the idea of closely managed plans. Overall, however, if an "excess" of physicians were to increase physician satisfaction, then logic suggests that customer satisfaction would rise as well.

Specialist-Generalist Issues

The question of specialist-generalist balance in the supply of physicians in this country may be especially pertinent to quality-of-care issues (Schwartz, 1994).[10] For high-quality care overall, experts appear to agree that an appropriate physician workforce needs both generalist physicians managing routine health care needs (either alone or coordinated with NPs or PAs) and a balanced supply of specialists to deal with illnesses requiring expertise in addition to that of the generalist (Greer et al., 1994). Although some observers have reservations, substantial discussion in the literature suggests that the balance between specialists and generalists in practice should be close to 1:1 (ACP, 1994; COGME, 1994), and not as imbalanced as the current U.S. distribution, said to be 4:1 in 1980 (Schroeder, 1984) and 2.3:1 in 1990 (Kindig et al., 1993; Greer et al., 1994).

Generalists and specialists alike may stretch the borders of their professional competence as a result of underutilization in their selected or preferred area of concentration. Generalist physicians performing tasks of subspecialists are thought to be less likely to do them as well or as appropriately, as demonstrated by Detmer et al. (1981) for one simple surgical procedure (appendectomy for acute appendicitis). More recently, evidence has been cited of the superior care for patients with asthma from practitioners in specialty clinics or practice rather than general medical practice (Weinberger, 1995), and Ayanian and colleagues (1994) reported that generalists (internists and family practitioners) appeared to be less well informed about, or less likely to act on information about, advances in treatment of myocardial infarction than cardiologists. That generalists are often less informed about specialty mental health care has been documented in a number of studies in psychiatry; for example, problems arise with inaccurate diagnostic assessments, wrong medications, and too little medications (Wilson et al., 1983; Shapiro et al., 1984; Bridges and Goldberg, 1985; Ormel et al., 1990; Sherbourne et al., 1994). Clearly, these are matters of concern as the U.S. health care system turns from a free-choice, FFS orientation to predominantly managed care arrangements (Evans, 1986).

Conversely, underutilized specialists may take on primary care tasks, with or without some retraining, but this may also prove questionable in a quality-of-care context. Schroeder (1984) noted this problem in his analysis of the response in certain Western countries other than the United States to physician oversupply problems, and Cooper (1994) cited work arriving at this same conclusion. Not all the literature supports the contention that specialists do not deliver high-quality primary care (see Franks et al., 1993), however, so this issue may still be open for debate.

The underlying question for this committee, is whether a surplus of physicians in and of itself would have a positive, negative, or no effect on specialist-generalist ratios. Absent external market, regulatory, or professional forces that would drive the ratios of physicians in practice or physicians in training toward primary care fields and away from specialties, it is difficult to see how numbers per se would influence such changes. To the degree that this is true, a physician surplus has no easily predicted influence on the specialty-primary care patterns in this country and, thus, no easily anticipated effect on this element of quality of care.

Education and Training

Other quality-of-care issues concern physician training and education. These topics loop back to questions of oversupply insofar as they are driven by present policies that reward hospital-based residency training and reimbursement. For example, according to COGME (1994), neither IMGs nor domestic residency

trainees are adequately prepared to practice within managed care environments at present.[11] They are reported to lack sufficient competencies in preventive, cost-effective, community-oriented, managed care (Moore, 1994; ACP, 1995). As another case in point, current federal policy too strongly encourages hospital settings for education. This is likely to result in poorer training for maintaining patient health through preventive care or for providing services to patients in an array of non-inpatient settings such as homes and assisted living arrangements.

This committee has no considered opinion on how much of residency training ought to take place outside the hospital environment, and any in-depth examination of these matters lies outside its charge. It does, however, take note of the growing view of other observers that graduate medical education (GME) must be broadened considerably (Pew Health Professions Commission, 1995a). Workforce reports such as those from COGME argue for this wider experience in residency training, and the phenomenon of managed care systems establishing their own residency programs reinforces the point. Thus, in the committee's view, reforms will be needed in federal policy to allow for physician education more suited to meet national health care objectives and the requirements of a rapidly changing marketplace. These issues must be taken into account in any debate about decoupling Medicare or other payments for service and patient care from those for advanced education and training for physicians.

Issues Relating to IMGs

Data about the numbers and countries of training for IMGs are given in Chapter 2. As noted, large numbers of IMGs here received their undergraduate medical schooling in India, Pakistan, the Philippines, the United Arab Republic, Israel, Italy, and the United Kingdom; others come in smaller numbers from many other nations around the world. Medical education in most of these nations is not considered equal to that in the United States.

Indirect evidence of this is the performance of IMGs, compared to that of domestic (and Canadian) graduates, on standard examinations required for medical licensure in this country (Williams and Brook, 1975). With respect to the three "steps" of the United States Medical Licensing Examination (USMLE), for example, the percentages of individuals passing the Step 3 part of the USMLE in 1994 differed markedly between U.S. (and Canadian) medical school graduates and foreign graduates (NBME, 1995): overall, 91 percent of the former and 61 percent of the latter passed (among those taking the test for the first time, the figures were 95 percent and 78 percent, respectively).[12] Language issues constitute another problematic area (Mullan et al., 1995), particularly for quality of care and adequate patient-physician communication; similarly, cultural differences can make communication with patients and understanding of their and their families' concerns more difficult. Much of the worry about quality of care

and increasing use of IMGs stems, however, less from direct measurements of quality of care than from inferences drawn from information on these related topics.

Clearly, many outstanding IMGs practice in this nation. Moreover, the committee acknowledges that any number of gifted IMGs have made contributions to American medicine. Nevertheless, several issues persist.

First, in general, IMGs have a lower-quality experience in their basic medical school education. Second, on average, they take less desirable residency positions. Third, cultural and language differences raise major concerns about communication and other interpersonal aspects of the physician-patient relationship that lie at the core of high-quality care—a matter that continues to deserve attention quite independent of the IMG question (see discussion below).

Costs, Quality, and Physician Supply

Finally, one might ask what relationship exists among physician supply, national outlays on health care, and patient outcomes. Compared with some other nations, the United States occupies an "average" ranking with respect to physician supply per capita and ranks first in national health care expenditures. As already mentioned, physicians are responsible for anywhere from 70 to 90 percent of the decisions leading to those expenditures.

Regrettably, for most crude indicators of outcomes—that is, manifestations of the value of that spending—this nation does not rank anywhere near the top of the list. One exception is remaining life expectancy for persons who have survived into older age groups (IOM, 1990)—in which the Medicare program may have played a pivotal role. Nevertheless, it is difficult to assess what, if any, additional benefits accrue to Americans as a result of their far higher spending levels and rates of increase in physician supply (Schieber et al., 1993). Furthermore, certain other indicators, such as infant mortality and teenage pregnancy rates, may be related more to social ills than to poor or inaccessible health care, and "more" health care directed at these problems may be of comparatively marginal value.

Summary Comment

In the end, this committee viewed the likely effect of a physician surplus on quality of health care as indeterminate on average, although data cited earlier with respect to certain specialties and volume-outcome relationships clearly point to problems that might arise with excess numbers of physicians. The consequences of "too many" physicians in this area may be governed in large measure by a variety of factors that the committee cannot predict with

confidence—among them the extent of managed care and how tightly such systems control access to physicians, the choices that doctors in training as well as those in practice make about primary or specialty practice, and the underlying proportion of physicians in the country who are schooled in foreign institutions. In the end, it seemed as if overall levels of quality of care will be driven by traditional professional attitudes, consumer expectations, and effective quality improvement programs more than by sheer numbers of practitioners today or tomorrow, but the committee nonetheless notes that the pipeline for producing physicians is a very long one, so lack of action today may have real and undesirable consequences for tomorrow.

OTHER ISSUES IN PRODUCTION AND UTILIZATION OF THE PHYSICIAN WORKFORCE

Human Resources Considerations

Opportunities for Medical Careers

Physicians in the United States come from what are arguably the nation's brightest young adults. A major concern is that these aspiring and talented youth will invest time, energy, and financial resources to become physicians, only to find themselves incapable of earning a living or practicing to the standards to which they were educated. This is a clear waste of talent and human capital investment.

Prospective medical students are not turning away from such careers on the basis of information available to them today. For example, applications to medical schools are at an historic high; for the 1994-1995 academic year the ratio of applicants to accepted students was 2.6 to 1 (Barzansky et al., 1995), up from 2.5 the year before (Jonas et al., 1994) and 2.1 and 1.9 for the two years before that. Not since the 1974-1975 applicant class has the applicant acceptance ratio approached the current level (Barzansky et al., 1995). The policy question is whether the investments that they, their families, and the nation will make in such education will pay off for them and for society as a whole.

Unlike a graduate degree in law or business administration, medical education is not of great use as a "foundational" degree. Doctorates in medicine are nearly uniquely helpful to those who intend to dedicate their lives to the healing arts. That is not to say that some fields, such as literature, have not benefited from the insights of individuals who come to them with medical training, and the occasional individual may deliberately shift his or her medical career into another pathway. Apart from some physicians who engage in basic or applied scientific or health services research, however, full training through

a residency may well be unnecessary, inappropriate, and excessively costly in human and financial terms if the individual does not then pursue a medical career.

In addition, over the longer run, the possibility exists that very talented young Americans will decide not to pursue a career in medicine. This could be especially true if information and market signals suggest that they may be underutilized, be unable to practice in the locale or specialty of their choice, or have to compete with IMGs who might well accept lower stipends, fees, or salaries simply to stay in the United States. Although market signals should indicate clearly the prospects of potential students, one would not wish them to be so pessimistic as to turn away the best candidates. However, whether alternatives to medicine will be attractive career choices for such students is uncertain and likely to vary over time as economic and other factors in different professions and sectors vary.

The issue involving IMGs presents a particularly knotty dilemma as their numbers in this country rise (quite irrespective of quality-of-care differences). The two major concerns are as follows. First, IMGs will continue to come to the United States as full-fledged physicians or for training and then remain to practice—especially in the numbers experienced to date. Second, through these mechanisms, IMGs will contribute to a real oversupply of physicians and, indirectly, to the market signals to prospective USMGs. These factors could have the unintended effect of denying the youth of this country the opportunity for a medical career.[13]

The interplay between undergraduate and graduate medical education complicates the picture. One option sometimes suggested for trimming the output of physicians in this country is to reduce the number of individuals in undergraduate training, either by closing medical schools or by reducing class sizes. However, the demand for graduates to fill residency slots remains high, and as noted in Chapter 2, the excess demand is filled with IMGs—currently about 7,000 or more residency positions a year because the production of M.D.s and D.O.s (about 17,500 per year) falls that short of the number of residency slots. It is most unlikely that allopathic and osteopathic schools in the United States could be persuaded unilaterally to shut down or dramatically to reduce their class sizes when such an enormous call for their graduates exists.

Furthermore, if U.S. medical schools closed or reduced their class sizes, the net result in the current environment would simply be to increase the numbers of IMGs in residency training—arguably, thereby, substituting IMGs who have, on average, less adequate undergraduate or graduate training for generally better-trained USMGs in the overall pool of physicians in this country. As discussed in Chapter 4, the committee would not subscribe to such a solution to a potential oversupply of physicians in this country.

In sum, opportunities to practice medicine will be limited if current trends in physician supply (and managed care) continue. To the extent that this is true,

the potential displacement of U.S.-educated physicians by foreign-trained physicians is regarded with dismay by this committee.[14] As noted in Chapter 1, the committee adopts the principle that in the constrained professional environment that may be coming, opportunities for advanced medical training ought to be reserved to graduates of U.S. schools (virtually all of whom will be U.S.-born individuals), even though the committee recognizes the legitimate role of graduate training for those IMGs who return to their own countries of origin.

U.S. Policy and the World Output of Physicians

The world is producing more physicians than the United States can or would be willing to assimilate. Many graduates in other countries, like their U.S. counterparts, are not motivated to practice in areas of medical need in their own nations (Yang and Huh, 1989). Thus, as in the United States, production of physicians in other nations is leading to oversupply there, with various effects. One notable consequence is a significant "brain drain," as trained or prospective physicians from abroad come to the United States in numbers equivalent to the entire graduating classes of 50 medical schools around the world.

Although some nations are establishing a balance between production of physicians and expected requirements, most are not. The list of countries that are setting or have already set restrictions on the number of physicians they are educating and allowing to specialize includes Belgium, Canada, France, Germany, the Netherlands, and Spain (Schroeder, 1984; Foley, 1994), largely owing to the conviction of some experts that nothing is more central to cost control of health care expenditures than the aggregate supply of physicians (Schroeder, 1984). Most countries, however, are not taking such steps, and these include the donor nations for most of the IMGs coming to the United States. A U.S. policy with respect to IMGs as open as the current policy provides little reason for those nations to bring their educational output into better balance.

Future of Academic Health Centers

General Issues

Threats to academic health centers. In its July 1995 meeting, the committee discussed at some length the concerns of several of its members about the future of academic health centers (AHCs) in this country. (For in-depth discussions of these issues, see Iglehart, 1994, 1995a, 1995b; UHC, 1995.) Such academic institutions, numbering more than 100, are a valuable national resource. AHCs carry out the bulk of academically based biomedical, clinical, and health services

research in the United States; train essentially all types of health professionals and midlevel and technical personnel at the undergraduate or graduate level; and deliver most of the very high-technology emergency and tertiary care available here as well as considerable amounts of primary care for certain populations. AHCs provide approximately 50 percent of the revenue supporting medical education in the United States through their clinical practice plans, and they provide about 44 percent of all charity care in this nation. In short, they are a linchpin for the nation's health care system, and they provide a high percentage of the world's collective scholarly effort in biomedical and health technology research and development.

Some AHCs are under extreme financial stress for several reasons. Their unique missions add to their intrinsic costs, and decreasing revenues from the delivery of medical services (e.g, by the faculties of such academic institutions) will no longer help to underwrite education and research programs (Iglehart, 1994; Van Etten, 1995). Moreover, they tend to have disproportionately more indigent patients and more complex illnesses to treat than most other hospitals. In a managed care world, they become particularly ill-suited to compete in any bottom-dollar way with other institutions without these characteristics, especially in competition with for-profit managed care plans when the "medical loss ratio" (the cost of medical services as a percentage of the revenue from premiums) is an important market criterion for purchasers of health care (Iglehart, 1994). Finally, proposals to lower or reduce indirect or direct medical education payments (or both) add another fiscal pressure.

Other developments in the health care sector aggravate the problems that AHCs face. For example, some members of the committee see an increasing antagonism of private practice physicians toward AHCs—sufficiently so that referrals to such centers are dropping. Should such attitudes prevail, decreasing revenues from such referrals would further undermine the support for education (of all health professionals, not just physicians). Others believe that the country already has an oversupply of physicians and that it will worsen, meaning that public policies will tend to favor decreased production of physicians at the undergraduate level (let alone the graduate level). It is not clear how such downsizing might take place, but some see a rising pressure to close (or at least merge) some centers.

The effects on AHCs of FFS or managed care approaches to organizing and financing health care are very complex. A significant FFS presence might foster the current configuration of AHCs, whereas a predominant managed care orientation might well undermine it, especially to the extent that managed care enterprises opt to create their own residency or graduate training programs to suit their particular norms and ways of organizing health care delivery.

Although the committee did not have time to explore these issues in any depth, it did choose to go on record as concerned about this vital element of the nation's health care system.[15] The challenge is to balance the size and

investment in such centers with the nation's (and indeed the world's) requirements for research, education, and health services. This committee would be especially concerned if uninformed debate about a physician oversupply were to feed the notion that AHCs are dispensable. Continued support for AHCs must rest on more than their role in the development of the health care workforce—in particular, their vast contribution to biomedical and clinical research must be understood and sustained.

Financial support for education. One important factor in physician education is its public financial support. No other group in the workforce receives direct financial subsidies of the size and scope of those directed at physicians. For example, the federal GME subsidy in fiscal year 1994 was nearly $6 billion (Pew Health Professions Commission, 1995a).

Good public policy reasons exist for this assistance. As a case in point, the education of physicians is the longest, most intensive, and most expensive of any educational program of professionals. Moreover, the costs of education are such that the nation would not have a physician workforce even roughly representative of the general citizenry without such subsidies. That is, only the children of the wealthy could reasonably aspire to become physicians without the substantial levels of public and/or private financial support now available. Federal support for GME also provides compensation to AHCs with respect to the severity of illness of their patients and the scope of services they render.

Even if, however, one adopts the view that helping to defray some of the costs of physician education is prudent, one can still ask whether the nation is spending more, in aggregate terms, than necessary to meet national requirements for physicians. This question is particularly germane for two reasons. First, the nation is training more physicians than it needs. Second, national budget deficits, which are driven in large measure by health care spending in the public sector, are at unsustainably high levels and are expected to continue to rise.

Thus, many observers believe that in terms of national fiscal responsibility, investing in the production of physicians beyond levels needed to meet prudent estimates of requirements is inappropriate, if not foolish, because it wastes both personal and public human capital investments. Whether market-driven or regulatory steps (or some combination) are called for to achieve a good balance is a matter for further debate (see Chapter 4).

The Service-Training Link and IMG-Dependent Institutions

An additional complexity is the long-standing federal policy that connects payments for graduate medical education—that is, residency training—to service and patient care. These payments, through Medicare reimbursements for direct

medical education and indirect medical education, provide ample incentive for hospitals (including AHCs) to keep the number of residency slots high and, when necessary, to fill them with IMGs. Some in the health field argue that this level of service from residents, whether U.S. or foreign trained, is essential to the provision of inpatient care in underserved areas or for vulnerable populations such as those in inner cities or rural communities. Some also argue that without IMGs in these residency programs, the hospitals could not provide even basic levels of care to their patients.

The vast majority of the nation's hospitals, however, are not dependent on IMG residents in this way. Whitcomb and Miller (1995) provided data suggesting that of the nearly 6,000 hospitals in this country, only 77 can be regarded as (a) having substantial residency programs (especially in primary care and major specialties); (b) being heavily involved in providing care to the poor (i.e., among the so-called disproportionate share hospitals); and (c) being IMG dependent.[16] To the extent that solving the broader issues of physician oversupply involve direct actions regarding the influx of IMGs to this country, special or targeted efforts can be made to help this small number of hospitals find other solutions to their difficulties of staffing and service delivery. The committee returns to this point in Chapter 4.

CONCLUSION

If the nation had to choose between too many physicians and too few, it would prefer an excess to a dearth. Obviously, the profession of medicine wants to have the nation adequately supplied with physicians, but it sees little to be gained from a huge imbalance between supply and requirements, especially if circumstances adverse to cost, quality, or access were to result. The committee agrees with this assessment—recognizing that an accurate balance between physician supply and societal requirements is an unachievable goal and generally favoring too many rather than too few physicians.

The committee has concluded, however, that the weight of the evidence presented in this chapter and Chapter 2 supports the position that the present oversupply of physicians in this country poses, if anything, more problems than solutions to the nation's health care issues. Among the points to be emphasized are the following:

- No firm evidence can be marshaled to show a beneficial effect of a physician oversupply on costs, access, or quality. Specifically, it is difficult to see that an oversupply will have much effect on problems of access to care in this country, and an abundance of physicians will not solve the problems of maldistribution by geographic area or specialty. Furthermore, the evidence is mixed about the impact of a substantial oversupply on either

the quality or the costs of care, in part because the effects of health care restructuring toward much greater penetration of managed care are unpredictable. Generally, it is not possible to demonstrate that too many physicians will improve the quality of patient care; indeed, if the surplus is made up largely of IMGs, it may dilute quality. In addition, a surplus will contribute to higher aggregate health care costs at least as long as the nation has a significant FFS sector.

- Having far more physicians than is needed to meet the nation's requirements is a waste of the federal resources currently spent on physician graduate education, and it may also result in a poor personal investment on the part of prospective medical students. When individuals pursue a medical career in the face of a significant oversupply of physicians, their underemployment or underutilization is a tremendous waste of human resources for the nation.
- Use of large numbers of IMGs here deprives other nations of their own talent and decreases opportunities for able young persons from the United States to enter the medical profession.

Thus, the committee believes that however a better balance is to be achieved, it is in the national interest to avoid a serious oversupply of physicians. The options for doing so are taken up in the next chapter.

NOTES

1. The committee opted, for this short statement, not to develop a lengthy critical review. Relevant, albeit selected, articles on various aspects of these issues for the past 15 years or so (i.e., dating to the landmark GMENAC report), other than those already cited in this report, include Ginzberg et al., 1981; Tarlov, 1983; Harris, 1986; Ginzberg, 1989, 1992; Schwartz et al., 1989; Dranove and White, 1994; Moore, 1994; Epstein, 1995.

2. Evidence supporting this link comes from Canada (Barer et al., 1989). Recently, Canada has moved to a rigidly controlled system of aggregate supply as an explicit strategy to reduce the growth of health system expenditures. This approach involves monitoring the numbers of medical school and graduate training slots, and it proscribes international medical graduates from settling in that nation. These policies are quite recent, so it remains to be seen how effective they will be, but clearly Canada has concluded that only by intensive regulation of physician supply can it achieve national health policy objectives with respect to costs. In view of the fact that Canada has little managed care and is basically a FFS system, however, it may offer less of a direct lesson for the United States today than might have been true a decade or so ago.

3. Unpublished information being compiled for the IOM study on the future of primary care also reflects great variation across managed care organizations; it suggests that some large HMOs may be staffing at levels not that far removed from the national

national average (i.e., 180 per 100,000 population), although still below the national average for metropolitan areas (i.e., about 200 per 100,000).

4. Health Professional Shortage Areas (HPSAs) were formerly known as Health Manpower Shortage Areas until passage of the National Health Service Corps Revitalization Amendments in 1990; they superseded Critical Health Manpower Shortage Areas that had been in effect since 1972. HPSAs are divided into the types (primary medical, dental, and psychiatric or mental health) depending on the type of shortage. Similar approaches to designating federal shortage and underservice areas are used by different programs and include Medically Underserved Areas/ Populations, Nurse Shortage Areas, and High Migrant Impact Areas. For a history of federal approaches to shortage area designation and criteria, see Lee (1991).

5. In some urban areas, large academic health centers operate community health centers, school clinics, and the like through various types of ambulatory care networks aimed at the poor sections of metropolitan areas. One such system is operated by the Montefiore Medical Center, whose president reports that it is becoming increasingly easier to attract young U.S. medical graduates to the network for reasons that include good practice sites, competitive salaries, hospital privileges, and the growing scarcity of professional opportunities in more affluent communities.

6. Mullan et al. (1995) note that hospital-based IMGs are slightly more likely than USMGs to be in "noncore counties of metropolitan areas … and in select categories of nonmetropolitan counties," presumably in residency and staff positions in smaller communities; the authors speculate that when IMGs are "free" to establish office practices upon completion of graduate training, they opt for the same urban settings as their U.S.-schooled counterparts (p. 1525).

7. Observers also disagree about the net effects of managed care on the use of primary care physicians or nonphysician personnel, noting that shortages of the latter or convergence in incomes may play a considerable role in how managed care plans and integrated health delivery systems configure their primary care teams.

8. Experiences in Canada, Mexico, Germany, and Israel may also give some insight into what could develop in this nation as a result of substantial subspecialist oversupply (Barer et al., 1989). For example, the United States may well witness a sharp division between hospital-based and ambulatory-setting-based physicians, as is the pattern in most other postindustrial economies. In this country, specialists are not without power, and they may be able to move generalists from the hospital setting by reducing and eventually closing off their hospital privileges. In other nations, this cleavage within the medical profession has served to increase retesting and create a hierarchy of status that works against integration and continuity of patient care (Frenk et al., 1991). Some reports from other countries also suggest that with an overabundance of specialists, special prices begin to appear that may give certain patients access to more—and better—attention within the health care system.

9. Access to and demand for health care services may become more problematic in the near future because of the rapidly growing numbers of people in the United States who are now uninsured, underinsured, or losing their health insurance. According to Biles (1995), today upward of 40 million people in this country lack any health insurance. When those who have only sporadic coverage are included, then more than 60 million persons may be uninsured at any one time. Furthermore, approximately

100,000 persons a month are losing coverage. Certainly a rising number of physicians will not be a solution to these structural problems of shrinking insurance coverage, and the probable lack of effective demand for services might well exacerbate the perception that the nation has a significant oversupply of physicians.

10. Every state now requires at least one year of postgraduate training for licensure purposes. Many, although not all, physicians in the United States seek training sufficient to enable them to become certified by a specialty board in a particular field (including both generalist fields such as internal medicine or family practice and very high technology subspecialty fields). Intuitively, board certification suggests that such physicians would provide higher-quality care. According to one committee member, 85 percent of the practitioners working for managed care organizations are board certified, as contrasted with 62 percent of the general physician community (George Sheldon, University of North Carolina, personal communication, September 12, 1995). In 1988, however, an OTA review of this topic concluded that such certification will not reliably predict which physicians will render high-quality care, and which will not, within a given specialty, and the simple fact of being board certified would likely be an even less reliable indicator of quality across specialties.

11. Evidence from the site visits and public hearing held by IOM committee for the large-scale study on primary care (which is exploring training and education for generalists in some depth) also supports this contention; its report will be available in early 1996. In addition, a different IOM committee is studying the adequacy of nurse staffing (both numbers and skill mix) in hospitals and nursing homes; here, too, preparation of nurses for providing services in both institutional and ambulatory settings is an issue (IOM, 1996, forthcoming).

12. Physicians taking Step 3 of the USMLE have successfully passed Steps 1 and 2. The percentages of USMGs and IMGs successfully passing Step 1 in 1994, on their initial try, were 91 and 51 percent, respectively. For those taking Step 2 examinations in 1993-1994 (which are given at three different times), percentages were—again for those attempting the test for the first time—92 and 47, respectively. For more detail, see NBME (1995) and equivalent issues of this bulletin in past years.

13. A more complicated argument about the deterrent effect of large numbers of IMGs on the U.S. physician supply was raised in committee discussions. It stemmed from two propositions: (1) that foreign-trained physicians who practice here may earn salaries far in excess of what they could command overseas, and (2) that this "subsidy" to the incomes of foreign graduates, which is not effectively available to U.S. graduates, might drive down existing or prospective salaries of USMGs. This phenomenon in turn could send a quite unintended market signal to prospective U.S. medical students.

14. The committee debated with some vigor two additional questions: (1) whether the essential characteristics of an "American" physician are forged in residency training or in college and undergraduate medical education (if not earlier), and (2) whether examinations and similar steps fully capture the range of dimensions and commitment to this nation's social ethic that Americans regard as important in their physicians. If the answer to such matters is that the entire educational process in the United States is unique (with respect to producing physicians) and is something that Americans value, then this may be a sufficient rationale for being concerned about the influx of IMGs.

If, however, such a rationale cannot be sustained, then the issue of IMGs in the physician workforce of this nation should perhaps be examined on international trade policy grounds. Many people in this country subscribe to some version of a free-trade invisible market hand) that services, commodities, and the people who produce them are as inexpensive, convenient, and of high quality as possible. This would imply that the (relatively expensive) production and use of USMGs could rationally be reduced in favor of the (relatively inexpensive) importation and use of IMGs. because this economic decision would (in theory) benefit consumers of health care most. This argument has three weaknesses: (1) it places a great deal of weight on benefits to consumers and less on the interests of other parties who may have different perspectives on the matter; (2) clearly flies in the face of the political reality that Americans value the opportunities for their children to enter pretigious professions.

In the end, the committee had neither the time nor the resources to explore these issues thoroughly. It returned to a position of what good policy for the United States, based on the twin arguments that medical careers ought to be appropriately available to persons graduating from U.S. schools and that the education provided in those schools does convey objective and subjective experiences that matter in this country and are not likely to be conveyed in foreign schools.

15. In 1994, the Institute of Medicine organized a Roundtable on Academic Health Centers, which explored these issues in considerable detail over several meetings. A summary of that effort is due in late 1995. One major concern of roundtable members was that the "playing field" for AHCs had to be leveled. That is, such centers cannot easily demonstrate that they are cost-competitive (controlling for quality of care as well as their research and education missions); thus, they would not be able to compete successfully with other health care systems and managed care entities in the community. Some innovative arrangements are emerging that would integrate AHCs into health plans in ways that link them to community-based providers, but gathering further information on these was beyond this committee's resources and charge.

16. The Whitcomb and Miller (1995) analysis was confined to hospitals with residency programs in six specialties and to those that are potentially dependent on resident IMG physicians to provide basic medical care services to the poor. Under these restrictions, the analysis reduced to 688 of the nation's hospitals; 77 of these met all of the authors' conditions for being IMG dependent and providing care to a significant proportion of poor patients. These hospitals are mainly in the nation's metropolitan areas (26 in New York State alone) and serve some of the most vulnerable people in this country.

4

Strategies for Addressing Physician Supply Issues

In the previous chapters, the committee presents data substantiating the view that the United States has, or at least soon will have, a surplus of physicians. The evidence is especially strong concerning personnel in most subspecialty areas; it is mixed with respect to clinicians in primary care. The committee examined the likely effects of such high numbers in five areas: health care costs and expenditures, access to care, quality of care, appropriate use of human resources, and the future of academic health centers.

The committee drew no *firm* conclusions about the net effects of these levels of physician supply, for two reasons. First, the interactions of the underlying forces that shape the U.S. health care system are complex and evolving; in particular, the influence that the managed care revolution will exert is uncertain. Second, good data on patterns of production and employment of the entire health care workforce, as they relate to these systemwide changes, are sparse.

Nevertheless, the committee believes that, on balance, the large and rising numbers of physicians in this nation can have some negative consequences—that is, predicaments that will be far more difficult to address and resolve in the future than they are today. For that reason, the committee advocates action on several fronts to moderate current growth in the U.S. physician supply and forestall the potentially deleterious effects of unfettered increases.

This chapter lays out the committee's view of strategies that might be considered for coping with the abundance of physicians today and the more worrisome saturation point projected for the future. Although the committee does not examine each option in detail, it does underscore two points: (1) some concrete steps need to be taken, and (2) they need to be taken soon.

Strategic choices are discussed in three main categories. One set of options reflects an extreme laissez-faire approach; it would essentially leave the problem for the health care market to sort out and eschew all but the most innocuous data collection or regulatory steps. Another takes a severe regulatory approach; it would involve the public sector or the professions, or both, in stringent steps to monitor and control the production of physicians in this country. The third set of options might be characterized generically as those belonging to a regulated or planned market; it would permit the market to work where this is perceived to be both desirable and effective and would invoke government intervention where that seemed necessary or more constructive.

As shown later, the committee en toto did not embrace the two extreme positions (all market, all regulatory), although some committee members voiced strong arguments in favor of a free market approach and others distinctly favored regulatory tactics. Rather, for pragmatic and philosophical reasons, the committee here examines several "constrained market" steps and highlights those it believes most appealing and workable in today's environment. From this analysis, the committee reaches the five policy recommendations discussed in the remainder of the chapter.

DO NOTHING: THE FREE OR UNREGULATED MARKET APPROACH

In this strategy, little or no intervention on the part of government would be undertaken. Instead, the nation would rely on various market signals, such as underemployment of physicians, falling incomes, and similar indications to effect the appropriate corrections and to do so in a reasonably timely way. For example, such signs might discourage people from entering the medical profession at all, or they might influence specialty choice or practice location decisions.

A strong belief in the adequacy of markets in the health care arena might even dictate that the physician oversupply issue be set aside, on the grounds that imperfections in the market at the moment will, over time, correct themselves without external intervention. Backers of this view might also argue that an "oversupply" of physicians is to be welcomed because it will help a competitive, managed health care environment to function better and to hold down health care spending. It was the opinion of at least one member of the committee that a physician surplus is a precondition for the penetration of managed care into the medical marketplace and that, over the long run, managed care will have a salutary effect on the quality and costs of, and access to, medical services. In the absence of evidence to demonstrate that the current or projected surplus has had or will have significant adverse effects on any of these, the appropriate strategy,

according to this view, is *not* to intervene in the production or importation of qualified physicians.

For various reasons, the committee as a whole rejected any "pure" version of this approach. Specifically, members did not subscribe to the notion that a true market exists in health care generally. Therefore, it saw no persuasive reason to believe that such a market would exist for personnel in this sector, at least not in the immediate future.[1] For example, it is not a "free" market because the production of physicians is subsidized so heavily by both states and the federal government. Furthermore, three imperfect markets may actually be operating: one is international and involves a global oversupply of physicians; one is national in scope and based on overall requirements for physician services; and the third is local and based more on hospitals' needs for inexpensive labor.

One specific concern that the committee had about reliance solely on market forces is that this approach might thwart effective controls on the influx of graduates of foreign medical schools (i.e., international medical graduates, or IMGs)—a phenomenon that is of significant concern (see Chapter 3). This undesirable outcome is related to the fact that the market provides incentives to keep the production of physicians high at the residency or graduate medical education (GME) level through the existing Medicare reimbursement scheme for GME; residents, including IMGs, are essentially income generators for hospitals (Shine, 1995).

INSTITUTE CENTRAL FEDERAL REGULATION

General Approaches to Planning and Managing Physician Supply

The United States has a long history of proposals based on central planning of the health workforce, and several have been put forth in recent years. Among them are recommendations from the Physician Payment Review Commission (PPRC) and the Council on Graduate Medical Education (COGME). Ideas set out by the Clinton administration in the *Health Security Act* (1994), which was a highly centralized approach to health care reform, stemmed from proposals such as those in the PPRC reports of 1993 and 1994 (Reinhardt, 1994). For instance, the act called for the creation of a National Workforce Commission and a cap on first-year residencies tied to findings from that commission (and presumably to the production of U.S. medical schools); it did not, however, include any steps to curtail undergraduate education. It also did not recommend any steps to reform the federal (Medicare) payments of direct or indirect medical education (DME, IME) costs for hospitals, leaving in place the link between

graduate training and service. Some other reform proposals in the early 1990s had a variety of similar elements intended to facilitate central management of the supply of physicians in this country.

The fourth COGME report (1994), developed in the midst of the health care reform debate, strongly argued the case about a significant mismatch between physician supply and requirements (see Chapter 2), called for specific physician workforce goals by the year 2000, and laid out several legislative recommendations designed to achieve those goals. Among the specific advice were the following: legislate specific numerical goals for the physician workforce; fund GME by all payers (i.e., not just Medicare); establish a National Physician Workforce Commission; limit total funded residency slots to the number of 1993 U.S. medical school graduates plus 10 percent, and allocate this lower number of GME positions to "medical school coordinated consortia"; provide transition payments to hospitals most affected by the loss of resident physicians (e.g., the small number of IMG-dependent hospitals that deliver a disproportionate amount of care to the poor); and give incentives to individuals and institutions to (a) graduate more minority physicians and more generalists, (b) improve geographic distribution, and (c) build primary care teaching capacity.

More recently, the seventh COGME report (1995) expanded on or reiterated some of the earlier ideas, particularly those relating to transition funding and incentives with respect to minority physicians, generalists, better geographic distribution, and primary care. Among the steps advocated in the seventh report were the following:

- create demonstration projects to foster the growth of consortia to manage medical education policy and financing;
- pay Medicare DME and IME for residents who are graduates of U.S. medical schools (USMGs), but decrease such payments for IMG residents to 25 percent of 1995 levels;
- use DME and IME payments to promote generalist training and more teaching outside hospital settings; thus, funding would follow the resident and not remain with the hospital;
- reweight DME and IME payments in various ways to promote the other goals (such as generalist training);
- separate the Average Adjusted Per Capita Cost (AAPCC) from Medicare capitation rates for the at-risk health maintenance organization contractors and use those funds to support hospital GME; and
- reauthorize the National Health Service Corps and include it in a consolidated group of Title VII Program (Public Health Service Health Professions Education statutes).

Wennberg et al. (1993) laid out numerous other ideas for federal interventions that fall short of the broad scope envisaged by some reform

proposals, although they were within what the authors termed a "public-sector physician work-force plan" (p. 102). For example, they argued that the role of the National Health Service Corps ought to be reshaped and expanded, as a means of meeting the needs of underserved rural and urban areas. They also proposed that a workforce plan include mechanisms by which U.S. physicians might serve in medically underdeveloped countries around the world, seeing this as a "natural humanitarian outlet for our excess capacity" (p. 100). Programs such as these are probably best viewed as being largely a federal responsibility, although they are not precisely regulatory in intent or operation. They may well warrant further consideration quite independent of their likely effect (which might be small) on the basic issues of physician oversupply.

Other examples of the regulatory or central planning steps that might be considered can be drawn from Canadian experience (Barer et al., 1989). Across the country, the provinces control both undergraduate medical education slots and specialty and generalist graduate training slots. All stringently restrict the entry of foreign-trained medical graduates.[2] In effect, Canada has determined that its first responsibility "is to the sons and daughters of people who pay the medical education bill" (Harvey Barkun, Executive Director, Association of Canadian Medical Colleges, personal communication, September 1995). In addition, some provinces control specialist residency slots or limit the number of physicians eligible to be paid "full tariff" through the public health insurance plan, meaning that physicians cannot settle or practice any place they choose and still be reimbursed fully through usual government insurance procedures.

Committee Views

In general, the committee elected not to endorse these kinds of intensive, *comprehensive* regulatory steps on the part of the public sector to control the U.S. physician supply. The reasons are pragmatic; in today's environment the committee simply regarded them as infeasible. Furthermore, in the short run, it may not be clear what the federal government could do to have any positive impact on physician supply.

The U.S. public has rejected broad involvement on the part of the central government in the intricate workings of the nation's health care system. Under those circumstances, the committee saw little reason to believe that intense involvement of federal agencies in just one aspect of that system—namely, workforce issues, particularly those related to physicians—would be any more acceptable. Moreover, in a time of federal restructuring and downsizing, the committee saw little room for creation of a new bureaucratic arrangement to carry out the myriad tasks that would be required for effective planning and oversight. The transaction costs of such planning—in terms of the political and

economic trade-offs that might have to be made across categories of health personnel, physician specialties, geographic areas, and other components of the health care system—could be prohibitively high. Again to quote Reinhardt (1994), "an *explicit, highly visible, political* algorithm that artificially limits access to a coveted lifestyle is apt to trigger fierce rivalry for the prize among different, politically organized groups …" (p. 252, emphasis in the original).

Two other arguments against major federal intervention are more abstract. For one, no persuasive case has been made for significant public intervention or quotas to correct perceived or real problems in the production and use of the members of one profession—medicine—while leaving untouched and unregulated other, presumably equally distinguished, professions facing perhaps equally troubling issues. For another (Reinhardt, 1994), the U.S. public might forgive the market for failure to deal with physician workforce issues, but it will not forgive the public sector. Undertaking significant steps in this area, fraught as they are with political costs and unavoidable miscalculation, risks further harm to the federal government's image, and this is not in the nation's best interests.

A CONSTRAINED MARKET APPROACH

Taken individually, many recommendations from expert bodies studying the U.S. physician workforce in recent years can be considered as elements of a planned or regulated market approach. This section reiterates some of these ideas, where they can be considered singly, and raises additional suggestions. The potential steps include admitting fewer medical students (i.e., taking action at the undergraduate education level), restricting GME in various ways, curtailing immigration of foreign-trained physicians, and undertaking other social and health policy steps that provide incentives for a better-functioning marketplace.

Antitrust Considerations

Many of the ideas advanced below, if pursued *solely* by the health care community, risk violating the Sherman Antitrust Act, which prohibits actions by private parties that might restrain trade. In this context, private parties might include residency review committees (RRCs), specialty boards, and similar entities.

Lerner (1995) reviewed the considerable obstacles that antitrust laws pose to many suggested solutions to physician workforce and supply issues. Problems arise, for example, in the following ways: (1) if members of a profession restrict entry into their field (beyond the steps professions now take, in any case), such as capping numbers of approved residencies in a particular speciality; (2) if

competitors collude or agree to restrict output or production. Generally, actions on the part of the federal or state governments—for instance, to change Medicare or Medicaid reimbursement (including payments for residency training)—are not subject to antitrust scrutiny. Similarly, actions on the part of private entities, such as consortia of academic health centers, that are called for by federal legislation also do not violate antitrust laws, but unilateral action in the absence of federal statutes would not be so protected. In short, as Page (1995) reported, private entities, such as specialty societies or RRCs, that want clear protection from antitrust violations may have to accept more regulation (e.g., federal or state law) than they might otherwise deem desirable. Exploring possible changes in antitrust laws was well beyond the committee's purview,[3] but the committee would urge appropriate entities to examine the matter fully, because some modifications might enable certain groups, such as the Accreditation Council on Graduate Medical Education, to take actions to reduce residency programs on the basis of the quality of those programs.

Production of Physicians from U.S. Medical Schools

The number of medical students in U.S. schools is central to long-term strategies for dealing with the supply of physicians in this country. Two questions can be posed: (1) Should the number of medical students remain essentially unchanged (or increased) but other parts of the training spectrum, such as graduate medical education, be rethought? Or, (2) should fewer students be admitted to U.S. medical schools?

The committee concluded that *increases* in the number of medical students would be unwise public policy; the nation clearly graduates a sufficient number of physicians today. Thus, it opted for a steady-state approach to undergraduate medical education. Specifically, **the committee recommends that no new schools of allopathic or osteopathic medicine be opened, that class sizes in existing schools not be increased, and that public funds not be made available to open new schools or expand class size.** Maintaining, but not increasing, current numbers of medical graduates, especially if more minorities are brought into the student bodies,[4] was judged to be the most appealing shortrun strategy for undergraduate medical education.

Explicit steps to *cut* production of allopathic and osteopathic students include decreasing the number of U.S. medical schools (while holding enrollment at remaining schools constant) or reducing the class size at existing schools. Such steps might be taken voluntarily by schools or by accrediting bodies, or they might be done through regulatory means or financial incentives by states or the federal government. Although in the course of events such downsizing might

occur, the committee has not advised specific action in this direction, for various reasons.

First, in the 1960s and 1970s, public policy and government programs led to an overexpansion of U.S. schools and class sizes, and this contributed to a significant increase in physicians who remain in practice today. However, the number of physicians graduating from U.S. schools has now stabilized at a level that seems consistent with likely requirements and the nation's ability to absorb them.

Second, recent increases in the number of residents in training are due almost exclusively to increases in IMG trainees. Because 75 percent or more of IMG residents remain in the United States to practice, these increases will result in continued growth in the nation's physician supply. No persuasive rationale can be put forward for leaving the incentives and openings in place for IMGs to practice in the United States while curtailing the opportunities for the nation's own youth to enter a distinguished profession. As Schroeder (1994a) asked (p. 271): "After all, how can we ask U.S. medical schools to cut back the size of their programs if we do not restrict the flow of IMGs into the country?"

Third, closing medical schools or reducing class sizes might well undermine efforts to bring more minorities into the profession. It would fly in the face of the "3,000 by 2000" efforts of the Association of American Medical Colleges and of the recommendations of the Institute of Medicine (IOM) Committee on Increasing Minority Participation in the Health Professions (IOM, 1994), some of which are being implemented by the Josiah Macy, Jr., Foundation. In the main, therefore, the committee could not accept the view that decreasing opportunities for young people of this country, while leaving open those same opportunities for those from abroad, is acceptable social or health care policy.

The committee recognized that some areas of the country have a high density of allopathic or osteopathic schools and produce large numbers of graduates. It endorsed the idea that public and private policymakers and other interested parties in those areas might wish to study further the question of production of medical students, with the aim of determining whether any mergers, downsizing, or other steps to rationalize the production of such graduates might be warranted. Some on the committee also observed that market forces are already at work to reduce the number of medical schools or class enrollments. These would be purely local matters, however. The committee's basic position is that, *overall,* the numbers of U.S. medical schools and their graduates should be at levels no higher than those that obtain today and not be reduced solely because of aggregate supply issues. Obviously, this question warrants revisiting in the future.

Revamp Graduate Medical Training

Reduce GME Positions Without Changing GME Funding

Physician residency positions in any one year now number about 145 percent of the total number of M.D. and D.O. graduates from U.S. schools. (In 1993–1994, the total number of residents and other types of trainees or fellows exceeded 108,000; of these, about 22 percent were IMGs, up from 17 percent of 95,000 residents in 1990–1991 [COGME, 1995].) As already noted, some experts advocate severe reductions in the number of residency slots while keeping the present hospital-and Medicare-based approach to GME funding intact. Among the better-known suggestions has been that the number be reduced to a specific target—namely, 110 percent of domestic output of medical students. Some believe, however, that over time, this might push the production pendulum too far toward a possible shortage of physicians. Other, softer targets, such as 115 to 120 percent, might also be considered.

One less radical step, proposed by Shine (1995), is to freeze the present physician residency training slots that are subsidized by Medicare for a five-year period. (Residency slots might be reallocated among specialties within this ceiling; additional slots would have to be financed by other means.) This type of action would permit some time for further data collection and consideration of private or public policy moves; it would also likely decrease the rate of growth (albeit perhaps not the absolute number) of IMGs coming to this country.

In the end, the committee concluded that the numbers of residency slots ought to be reduced substantially and that this should be effected through changes in GME funding. Its recommended strategy is discussed below.

Reduce First-Year Residency Positions and Change The Approach to GME Funding

The present system of Medicare reimbursement for residencies through DME and IME payments is a major incentive for teaching institutions to keep their numbers of residency positions high and expanding.[5] Thus, one part of the solution to potential oversupply problems in the future is to revamp the ways in which federal programs support graduate training, particularly first-year residency slots. In keeping with the committee's principles as stated in Chapter 1 and its concerns about the growing number and proportion of IMGs in the nation's physician supply, **the committee recommends that the federal government reform policies relating to the funding of graduate medical education, with the aim of bringing support for the total number of first-year residency slots much closer to the current number of graduates of U.S. medical schools.** Specifically, the committee believes that GME positions supported through the

Medicare program should be available essentially to physicians who have graduated from U.S. medical schools, the vast majority of whom are U.S. nativeborn individuals. Eliminating tax dollar support for training of IMGs seems reasonably consistent with the rules on training grants supported by the National Institutes of Health.[6]

These basic ideas are not especially new. As cited above, for example, the seventh COGME report advocated that GME payments for residents who are graduates of foreign medical schools be much lower than for those who are graduates of U.S. medical schools. In addition, in this context the Pew Health Professions Commission (1995a) advocated the following steps:

- tightening existing U.S. immigration laws to ensure that IMGs return home once training is completed;
- discontinuing the federal subsidy for training IMGs and replacing such support with funding from either the parent country or from local hospital revenues; and
- limiting the number of first-year graduate training positions supported by federal dollars to the number of graduates of U.S. medical schools plus 10 percent.

As this IOM report was being put into final form, the Pew Health Professions Commission (1995b) issued another report concerning what it characterizes, for American medicine, as a "dislocation of crisis proportions" (p. 42). To address the oversupply problems, the commissioners called for action on three fronts (pp. 44-45): "First, the number of residency training positions must be reduced to a level of no more than the needs now known necessary in well-established, stable managed care plans.… Second, … it will be essential to give preference for these prestigious and lucrative positions to American citizens, [and] the nation's immigration laws must be tightened to ensure that those who seek training here return to their native countries for practice unless their skills are needed here.… [Third, the] Commission recommends that coincident with the reduction in residency programs, the number of first year medical school positions be reduced by 20 to 25 percent over the next ten years."

In a somewhat different tactic, as this report was being prepared the proposed Medicare Preservation Act of 1995 (H.R. 2425) effectively tied reductions in GME payments to citizenship (not just school of graduation). It specifically proposed the following: "beginning in FY [fiscal year] 1996, the FTE [full-time equivalent] amount paid for medical residents who are not citizens or nationals of the United States (or citizens of Canada) would be reduced and ultimately eliminated by lowering the FTE weight that a hospital would be allowed to count for GME payments to: 0.75 in FY1996; 0.50 in FY1997; 0.25 in FY1998; and for cost reporting periods beginning during

FY1999 or any subsequent fiscal year, zero" (Committee on Ways and Means, 1995, p. 190).

Disconnect Funding of Service Delivery From Physician Training

No one has reservations about the contributions that physicians in residency training make to patient care in this nation today. Therefore, the value of appropriate levels of funding for young physicians at this stage of their training is not in doubt.

Nevertheless, the committee believes that the nation's current mechanisms for underwriting these costs have some perverse effects. The link between payments for service and GME, particularly Medicare program outlays for DME and IME, creates incentives for hospitals to establish more and more residency programs and fill them with IMGs (once the output of domestic schools is used up). The committee was critical of those incentives and, therefore, of the link. Hence, because the country's present approach—open-ended GME support to hospitals for their residency positions—offers no easy means of implementing the committee's recommendation to lower the total number of residencies or of controlling the entry of IMGs into practice in this country (discussed later), the committee concluded that the connection between patient care and residency training through these mechanisms ought to be severed.

One way to accomplish this is to tie GME support to medical graduates directly rather than to send it solely to hospitals; put another way, current federal support for the graduate training of physicians could be uncoupled from payments that relate more to service demands on hospitals. Changes such as these would have the twin effects of making residency training slots less attractive financially to hospitals and, thereby, curbing the numbers of such positions. This in turn would likely act as a check on the ever-rising numbers of IMGs who use the graduate training route as a means of eventually entering into practice in this country.

One commonly advanced tactic involves the use of vouchers (at least for the DME portion of GME) conferred specifically on USMGs, with perhaps some additional vouchers made available to IMGs who would come to the United States solely for training and then return to their countries of origin or otherwise depart the United States. With vouchers, some or all of the salary and other expenses of residents (i.e., the traditional DME portion of GME) accompany the actual individuals; they do not go directly to hospitals or other institutions offering advanced training and are not bound to complex formulas based on the number of residents in teaching institutions.[7]

IME payments cover costs associated with the presence of GME *programs,* such as extra demands on hospital staff, greater severity of illness of patients, and additional tests or procedures that residents may order; they are not direct GME costs (such as resident stipends). IME reimbursements would not necessarily be affected by the committee's recommendations about decoupling education support from service payments in hospitals, except to the degree that any change in a hospital's residency teaching program would change these factors and thus lower (or raise) the related IME payment. As this report was being prepared, more direct changes in IME were being suggested through proposals to overhaul the Medicare program (Committee on Ways and Means, 1995).

Given its time and resource constraints, the committee could not reach a considered opinion on the best way to effect its recommendation concerning reforms in GME funding. Rather, it believed that significant and immediate exploration of such a change (e.g., a voucher program and other options) is warranted and that longer-run determinations should be informed by expanded data collection and research (see below). It noted also that significant attention need to be given to IME issues quite independent of questions related to DME and advised that considerations be given to expanding IME funding to nonhospital teaching settings.

Specific Controls on Immigration

Central Government Regulation

That the committee eschewed central planning of the U.S. physician supply, particularly domestic production of physicians, does not imply that it also would refrain from advising control of the inflow of IMGs. Clearly, it recognized that some brake on the ability of IMGs to enter practice in this country was a critical element in dealing with looming oversupply issues.

One strategy that could be pursued only by the federal government involves major revisions of immigration policy.[8] In particular, the Immigration and Naturalization Service (INS) could be called on to develop options for limiting entry of physicians, or prospective physicians, into the United States. Where the INS could not act on its own initiative, the U.S. Congress might enact legislation that sets limits on the entry of some or all types of IMGs or erects barriers to practice in this country. In addition, Congress might enact or amend statutes to give the INS broader authority to act on its own in these matters.

Several direct steps, which are not mutually exclusive, might be considered. First, the visa categories used by IMGs who come for training (i.e., exchange [J] visas) might be eliminated or the numbers admitted under such visas severely cut. Second, the INS could more vigorously enforce the "return home"

provisions of exchange visas, which would decrease the numbers of IMGs going into practice in this country, while not reducing the numbers who receive the benefits of U.S. graduate medical training and who provide needed services while doing so.

The strengths of such a strategy are that they can be accomplished centrally and directly, and the results (once such steps are taken) would be immediate. The downsides, however, are considerable. The main one is feasibility—that is, the difficulty of simply enacting such legislation at all. (The apparently positive reception to the recent Commission on Immigration Reform [CIR] statement and fact sheet may ameliorate this factor, however.) In addition, although immigration (both legal and illegal) is clearly of major concern to the U.S. public, drastic limitations send an unfortunate, potentially xenophobic message to the rest of the world. Such limits or quotas could also have sad consequences for those immigrant families that still have close family members abroad. Moreover, how the recent CIR recommendations might in practice come to affect IMGs is not clear. Finally, as discussed in Chapter 2, directing attention solely at exchange program (J visa) physicians would involve at most only about one-third of IMGs in training. Therefore, the ways in which any changes in immigration policy and law designed to affect physicians (or health professionals generally) might be tied to broader immigration reforms were very uncertain as this report was being prepared, and the committee did not pursue them further.

Controlling IMG Numbers Through GME

The committee had strong concerns about the mismatch of physician supply and requirements and about the negative consequences of open-ended immigration of physicians and physicians-to-be from other countries for both the United States and donor nations. Two issues were of paramount interest: the long-term career opportunities for U.S.-schooled physicians and the use of federal tax revenues to underwrite the costs of training foreign physicians here. It did not believe that changes in general immigration law would be the best (or even a reasonably feasible) route by which to address these concerns. Rather, the most practical means of creating and enforcing limits on the use of IMGs and federal funds in their training appeared to be through constraints on graduate medical training, which is the final common pathway to practice and employment for physicians. The precise steps are discussed above in the context of changes in GME funding.

Training institutions in the United States (and the nation as a whole) do have an interest in continuing to provide graduate training experiences for foreign medical graduates. Such training brings individuals of many cultures and backgrounds together in ways that can have major beneficial effects on international understanding, communication, and cooperation. Unfortunately, the

residency training that IMGs now receive in U.S. programs is often inappropriate preparation for the problems that they will encounter when they return home; programs that combined typical clinical training with expanded attention to traditional public health interventions might serve their interests better. In any case, however, the committee felt strongly that such foreign graduates, upon completion of their training here, ought not to remain in the United States to practice, for two main reasons: (1) their skills and professional contributions are doubtless more valuable to their own countries than to this nation, and (2) their presence in the practicing community here aggravates the mismatch between domestic physician supply and requirements.

Of course, confining much of GME funding to USMGs, as recommended above, does not prevent teaching institutions from using IMG residents to any extent they choose. It does mean that public (e.g., Medicare) funds would not be used in these subsidies and that those hospitals would need to bear the salary and other costs of such personnel some other way. This fact has different implications for different types of hospitals and teaching facilities in this country today, matters that were beyond the committee's purview.

Replacement Funding for IMG-Dependent Hospitals

For purposes of implementing the previous recommendations, the committee believes that the parts of GME payments related to reimbursement for health care services should be separated from those related to education. The committee is very aware, however, that for a small number of hospitals, severe reductions in IMGs in residency slots may constitute a hardship because those hospitals depend on such trainees for provision of significant amounts of care to the poor, particularly in the nation's inner cities.

The committee further believes that policymakers and the professions cannot ignore these service responsibilities. Thus, it urges that new or different *replacement* funding and care delivery mechanisms be found to provide such services to these populations. It is also of the view that the impact of its other suggestions and recommendations on these hospitals should be phased in over time. Therefore, **the committee recommends that the federal and state governments take immediate steps to develop a mechanism for replacement funding for IMG-dependent hospitals that provide substantial amounts of care to the poor and disadvantaged**.

The committee wished to draw attention to the concept "*replacement* funding." It did not agree that short-term "transition funding," which is the idea usually put forward in proposals to deal with the IMG-dependent hospitals that provide major amounts of care to the poor, was precisely the appropriate one. The reason is that, in the near future, those hospitals would not likely be able to

implement successfully a transition to a more secure financial base while continuing to deliver such high levels of uncompensated care to the uninsured and to disadvantaged, inner-city populations. Therefore, committee members preferred a concept of replacement funds for those parts of GME funding that now go to underwrite service delivery, understanding that such subsidies might be needed for a considerable number of years in the present competitive market environment for health care. The committee did not, however, see this as a permanent solution to the problem of serving the needs of poor and disadvantaged populations that may today turn to such institutions for their care. Other options, such as expansion of the National Health Service Corps (see Chapter 3) or other creative solutions, can and should be sought.

Among the options for replacement funds that might be considered are those that would

- permit hospitals to hire nonphysician substitutes for IMG residents, such as physician assistants and advanced practice nurses;[9]
- allow hospitals to hire or reimburse physicians in private practice to render some of the services now provided by IMG residents;
- facilitate the development of better and more extensive ambulatory care networks as a means of delivering outpatient care at sites other than large, inner-city hospitals; and
- increase opportunities for using physicians in the National Health Services Corps in this capacity.

The committee did not examine these options in depth; neither did it explore alternative sources of such replacement funding, because that would have exceeded both its time and other resources and its basic charge. Rather, the committee wished to go on record as (1) favoring limitations in the use of IMGs in graduate training as a means of solving service-delivery problems; (2) endorsing the separation of education from meeting service needs; and, (3) at the same time, urging that policymakers and health professionals take responsible steps to ensure that the poor and other populations now served chiefly by IMG-dependent hospitals are not harmed.

Although the committee did not explicitly endorse proposals about universal access per se, it did acknowledge the broader issues of access to health care for all. Further, consistent with the overall mission of the IOM, it took note of the view of an earlier IOM committee, which identified making basic health care coverage universal as a fundamental goal of health care reform and stated that "all or virtually all persons—whether employed or not, whether ill or well, whether old or young—must participate in a health benefits plan" (IOM, 1993b, p. 7).

Data Collection and Information Dissemination

The committee has to this point offered three recommendations that it believes will be, collectively, a useful first step toward addressing the nation's physician supply problems. Nonetheless, physician supply is a moving target, and additional steps may be needed. Rather than simply standing aside and assuming that the problems will be solved, the committee believed a less hands-off approach was appropriate—namely, one that would call for the government or the professions, or both, to monitor the situation actively and closely.

The committee endorsed the utility of data collection and dissemination efforts and, in the context of other steps outlined later, advocated that they be undertaken. On the whole, however, the committee did not believe that information gathering and reporting, essentially in a vacuum, will accomplish the necessary changes and reforms that would correct, or prevent, problems of an oversupply of physicians in this country. Thus, it offers the two recommendations below only as part and parcel of action on the recommendations already given.

For any approach to dealing with a significant mismatch between physician supply and requirements, more, higher quality, and more timely information is critical. The importance of getting accurate market information to prospective and current medical students was heavily underscored in committee deliberations, especially because of the rising numbers of applications to medical school at a time when a surplus of physicians either exists or at least can be expected in the near future. The committee believes firmly that young adults ought to be able to plan careers on the basis of reasonably accurate data about employment prospects. Moreover, an efficient well-functioning market must have good information available to all. The equivocal findings discussed in Chapter 3 (on whether an oversupply of physicians has positive, negative, or neutral effects on costs, quality, access, use of human resources, and academic health centers) are evidence enough of the dearth of reliable and valid information on these matters

To address these problems, the committee came to consensus on a pair of recommendations related to data collection and information dissemination. Specifically, **the committee recommends that the Department of Health and Human Services, chiefly through the Health Resources and Services Administration, regularly make information on physician supply and requirements and the status of career opportunities in medicine available to policymakers, educators, professional associations, and the public. The committee further recommends that the American Medical Association, the Association of American Medical Colleges, the American Osteopathic Association, the American Association of Colleges of Osteopathic Medicine, and other professional associations cooperate with the federal government in widely disseminating such information to students indicating an interest in careers in medicine**.

Data are needed on the current size and composition of the physician workforce and future projections of supply and requirements. Other important information involves specialty and practice location choices. Data on other parts of the workforce, particularly on the training and employment of personnel that are likely to be substituted for physicians in managed care organizations or hospitals, should be collected. Finally, substantial information about the complex interactions of physician supply with health care costs, access, and quality is also needed.

The committee recognized that the Department of Health and Human Services, chiefly through its Bureau of Health Professions in the Health Resources and Services Administration (BHP/HRSA), already acquires substantial amounts of such information. In addition, COGME provides an important focus for generating topics for data collection, proposing workforce policies, and further publicizing information generated by the data collection and analysis efforts of BHP/HRSA. So, too, do the major physician associations and specialty societies; the committee, in taking specific note of the data collection efforts of the American Medical Association and the American Osteopathic Association, does not mean to imply that federal efforts ought to compete with, supersede, or replace these programs. This committee encourages all these entities to work together in designing or carrying out surveys and other steps in data collection and analysis.

Data collection without analysis, publication, and dissemination is not an especially productive enterprise, however. Therefore, the committee calls explicitly for such information to be made widely available in a timely manner —to the professions, to health education institutions, to health care delivery systems and facilities, to university students (particularly to first-year college students) and possibly even high school students, and to the public at large. The committee fully supports the current efforts of the above-mentioned agencies and organizations and wishes to state its sense that such efforts should continue to be pursued and provided with adequate financial backing, recognizing that different audiences will need different types of reports and information.

The activities envisioned above lie more in the area of routine, regular data collection, analysis, and reporting. The issues threaded throughout this report, however, make clear that more than that is needed to provide policymakers and the public with an adequate picture of health workforce issues, especially those involving as sensitive and complex a matter as the supply of physicians in the country. Therefore: **The committee recommends that the Department of Health and Human Services provide the resources for research on physician supply and requirements; it specifically recommends that relationships between supply and health care expenditures, access to care, quality of care, specialty and geographic maldistribution, inclusion of women and people of color, and other key elements of the health care system be studied in detail**.

The committee believes that responsibility for these kinds of complex studies would fall within the purview of at least three different federal agencies. The most obvious is BHP/HRSA. For this agency, the committee would advocate continued support of COGME in its monitoring and policy analytic work.

In addition, the Agency for Health Care Policy and Research (AHCPR) has long-standing interests in workforce issues. Because it is the main source of funding for health services research on health personnel issues, the committee believes that AHCPR could usefully sponsor significant studies of the multivariate relationships noted above and could serve as the federal government's focal point for research on the impact of physician supply on costs, quality, and access. Finally, the Health Care Financing Administration (HCFA) is responsible for the Medicare program and for federal oversight of the Medicaid program; therefore, HCFA could be called on for analysis of the interrelationships between changes in GME funding and the Medicare program budget. In addition, both AHCPR and HCFA could examine the impact of replacement funding on care for the nation's poor and disadvantaged populations and on the financial stability of those institutions now providing very large portions of health care to these groups. All of these agencies could also give some attention to the questions posed earlier about implementation of a voucher system for GME funding.

Apart from government activity, the committee believes that the nation's major health foundations also can support the types of physician workforce research envisioned above. Several foundations have long traditions of interest in issues related to the health professions, including, for example, the Pew Charitable Trusts, the Robert Wood Johnson Foundation, and the Josiah Macy, Jr., Foundation. In recommending federal action in this arena, the committee in no way wishes to detract from the significant contributions that the private sector can make as well.

Certainly the provision of such information would strengthen the workings of an otherwise imperfect health care market. Reinhardt (1994), for example, claimed that a health care system restructured along market-driven, managed care lines might best be left to "work," while the government is used "mainly to help transmit to the nation's youngsters the economic signals emitted by the new market" (p. 261). He went on to argue for a "*sustained* monitoring system (not merely sporadic research) on the emerging markets" and for clear communication of that information to "students at all levels of higher education" (p. 262).

CONCLUDING STATEMENT

At the very least, the United States has an abundance of physicians, and many observers have concluded that it either now has or soon will have a

surplus. The size of that surplus will depend on several factors: the extent to which managed care dominates fee-for-service arrangements as the basic organizing and financing structure for the U.S. health care system; technological breakthroughs and the shifting balance between halfway technologies and the definitive interventions that will prevent or cure disease; the changes that may occur in the production of U.S. medical graduates; changes in the financing for graduate medical education; shifts in the rate of immigration and entry into practice of foreign medical graduates; and developments in the use of nonphysician health personnel. Although these factors cannot be predicted with certainty, the committee concluded that the probability of an appreciable surplus of physicians was high enough that some steps need to be taken now to ensure that the nation produces the best physicians it can in appropriate, but not excessive, numbers.

In considering those steps, the committee acknowledged that the nation can never achieve an absolute match of physician supply and requirements, because different levels of supply will have different implications depending on the underlying structure of the U.S. health care system. Nonetheless, it proceeded with three principles—(1) that the nation should not tie national workforce policy or graduate medical education to the service delivery needs of selected parts of the health care system; (2) that long-term physician workforce policy should be driven by aggregate requirements nationally, and meeting those requirements should be cued more to the output of U.S. allopathic and osteopathic schools than it is today; and (3) that opportunities in the United States for careers in the healing arts, such as medicine, should be reserved first for graduates of U.S. medical schools.

The committee elected to explore strategies for the production of physicians within the context of a planned or constrained market; it dismissed the absolute extremes of a completely laissez-faire market approach or centralized regulation and administration and opted for a pragmatic approach that involves some laissez-faire elements and some governmental steps. The focus is on five areas:

1. production of U.S. medical graduates;
2. changes in the financing of graduate training to target it to U.S. medical graduates and to break the link between service and education reimbursements;
3. limitations on the training and entry into practice of international medical graduates;
4. replacement funding for IMG-dependent hospitals to permit them to continue to discharge their service responsibilities to poor and disadvantaged populations; and
5. collection and broad dissemination of information related to physician supply and requirements, market forces, and their relationships to cost, quality, access, and similar concerns.

The committee is aware that these issues are extremely complex—more so because of the rapid and unpredictable transformation of the health care system that the nation is now experiencing. It also recognizes that the practical steps it has recommended may have some unforeseen consequences, so further elaboration, discussion, and analysis over time is warranted. Nevertheless, the committee believes that its report reflects a prudent examination of strategies for dealing with major elements of physician supply issues and will permit readers to pursue a knowledgeable debate about these serious policy issues. Although not all audiences may find all the committee's conclusions and recommendations compelling, constructive critique of the report might well be healthy if it prompts a deeper examination and fuller understanding of the problems and likely consequences of proposed solutions. In the meantime, the report points the way to decisive actions that all interested parties in both the public and private sectors can usefully take now to forestall even more significant difficulties in the future.

NOTES

1. The committee's view about physician supply overall is not unlike that of the Council on Graduate Medical Education (COGME), which in its fourth report (1994) stated (p. v): "In the long run, COGME believes that market forces created by a changing health care system will change the specialty and geographic distribution of the workforce. However, the Council does not believe that these market forces alone will produce the needed physician workforce in a timely or predictable manner" (emphasis added).

2. According to Harvey Barkun (Executive Director, Association of Canadian Medical Schools, personal communication, September 1995), the Canadian residency matching program deals nearly exclusively with graduates of LCME-accredited schools (i.e., those accredited by the Liaison Committee on Medical Education) and is run in two iterations, with only the residual second round open to graduates from non-LCME-accredited schools; perhaps no more than 3 percent of all residents in Canada are foreign medical graduates. A small number of physicians come to train on contracts paid by their home countries (e.g., Kuwait, Saudi Arabia), but they return home at the end of that training.

3. The complexities of antitrust issues should not be underestimated. According to Havighurst and Brody (1994), professionals are free to advocate their views but not to enforce them by collective action. Thus, they may publish standards, practice guidelines, and the like, and they may certify individuals or accredit institutions that comply with such standards or guidelines, but they cannot boycott or otherwise impose coercive sanctions against unaccredited institutions or uncertified individuals. It has recently been suggested, however, that some otherwise permissible credentialing and accrediting joint ventures between independent professional organizations may be challengeable on antitrust grounds for suppressing competition, not in markets for professional services but rather in credentialing or accrediting itself. However, the Medicare Preservation Act of 1995 (Committee on Ways and Means, 1995) proposes some exceptions from antitrust laws for activities of what it terms "medical self-regulatory entities," including activities relating

to standard setting or enforcement activities intended to foster improved quality of care. Furthermore, a different part of the act lays out some limited circumstances in which provider service networks (i.e., joint ventures) are not violations of federal antitrust statutes. Blumstein (1994) reviewed antitrust matters from a broader medical marketplace perspective and argued that preservation of the antitrust laws' support of a procompetitive environment is, all in all, the preferred direction for the nation. His discussion did not focus directly on antitrust as it affects physicians, but the basic legal and philosophical arguments might be generalizable.

4. Readers will appreciate that permitting large numbers of IMGs to practice in the United States is not precisely equivalent to bringing more minorities into the medical profession, in part because of the countries from which IMGs typically come; it is certainly not a solution to the problem of opening up more professional opportunities for U.S.-born members of minority ethnic groups as called for by another Institute of Medicine committee (IOM, 1994).

5. The Prospective Payment Assessment Commission (ProPAC, 1995) has advanced some proposals for reducing Medicare's GME adjustments in the next few years, particularly the IME portion. The commissioners also called for further evaluation of DME payments and of the service–training payment relationships. These changes are directed more at Medicare policy issues, however, than at physician supply or IMG matters, but their fiscal effect would likely be in the directions contemplated by this committee.

6. With few exceptions, potential candidates for training grant awards must be citizens or noncitizen nationals of the United States or must have been lawfully admitted for permanent residence at the time they actually apply for the grant. Applicants cannot be a citizen of another country and living outside the United States at the time they apply and then come here specifically to be supported by a training grant award.

7. Proponents have argued that vouchers might (a) make clearer exactly what costs need to be underwritten, through public or private means, for adequate patient care; (b) enable USMGs to get residency training more suited to their likely practice locales in the future—for instance, in areas that are presently medically underserved, in ambulatory settings, or in managed care systems; (c) go a long way toward addressing the nation's IMG question, particularly if such vouchers were restricted entirely or mainly to USMGs; and (d) help address the looming problems of the Medicare program budgets by eliminating the significant fiscal incentives that teaching institutions now have to increase their use of residents. Several questions would have to be addressed should the nation (or the Medicare program) elect to pursue a voucher system for residency training. Chief among them is the ceiling on the total number of vouchers that might be made available (e.g., above and beyond the expected number of graduates of U.S. allopathic and osteopathic schools). Another issue is the timing of the introduction and full implementation of such a program. A third is the value of such vouchers and whether, or by how much, that figure might differ depending on whether the resident was a graduate of a U.S. or a foreign school. A fourth question is how the limited number of vouchers for IMGs might be awarded. Apart from having these design features clearly spelled out, any voucher approach ought to include a rigorous evaluation that would track the effects on USMGs, on IMGs, and on the health care system generally.

8. Early in this project, a congressional commission chaired by Barbara Jordan (Commission on Immigration Reform, or CIR) issued a report on broad immigration policies (CIR, 1995; Jordan, 1995). Briefly, it called for reducing the overall numbers of immigrants to this country (from 830,000 to 550,000 per year, and an additional 150,000 for certain children) and for changing the priorities given to various categories of immigrants (chiefly relating to immediate versus distant family relationships). It also appeared to give preference to "skilled" as contrasted with "nonskilled" immigrants, based on a labor market test concerning no displacement of similarly qualified U.S. workers; preference tests would almost certainly be applied to physicians. It also called for some financial disincentives for employing foreign workers. Thus, the proposals considered by this committee are not without recent precedent, but the impact of the CIR recommendations with respect to the inflow of physicians might be mixed.

9. The IOM is presently conducting two major studies of the health care workforce. In the project on the future of primary care, analyses show that the issue of substitution of physician assistants (PAs) and nurse practitioners (NPs) for physicians in health maintenance organizations and other delivery systems and settings is extremely complex and can be influenced by local circumstances. Among the relevant factors are the relative productivity and costs of these different types of personnel and the availability of PAs and NPs in a given market. These considerations would certainly affect, in complex and highly localized ways, whether and how PAs or NPs might be used to substitute for hospital house staff. The primary care committee report is due out in early 1996. In the study of nurse staffing in hospitals and nursing homes, the IOM committee (IOM, 1996, forthcoming) has looked into hospitals' use of different types of nursing staff, including advanced practice nurses, and discussed the types of leadership, management, and other training such personnel should receive to improve patient care and to reduce the incidence of workplace injury and stress. These issues clearly intersect with those of replacing physicians in training (or hospital-based physicians) with advanced nonphysician staff.

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APPENDIX

Biographies of Committee Members

CAROL A. ASCHENBRENER, M.D., has served as Chancellor of the University of Nebraska Medical Center since 1992, where she oversees nine academic and clinical units. Dr. Aschenbrener is a member of the Executive Committee of the National Board of Medical Examiners, the American Medical Association's Council on Medical Education, and the Accreditation Committee for Graduate Medical Education. She also serves on the Department of Health and Human Services' Commission on Research Integrity, the National Cancer Institute Committee on Comprehensive Status of Cancer Centers, and the National Institutes of Health Advisory Committee on Research on Women's Health. She currently serves on numerous local and state boards concerned with health, medical education, and similar matters.

HOWARD L. BAILIT, D.M.D., Ph.D., was until late 1995 Senior Vice President for Health Services Research at Ætna Health Plans. From 1967 to 1983, Dr. Bailit was on the faculty of the University of Connecticut Health Center, where he served as Associate Dean and Professor and Head of the Department of Behavioral Sciences and Community Health. From 1983 to 1986 he was head of the Division of Health Administration at the School of Public Health, Columbia University. Dr. Bailit was a consultant to the RAND Corporation Health Insurance Experiment, and he has served on many professional and governmental committees, including for the Agency for Health

Care Policy and Research. He has been a member of the Institute of Medicine (IOM) since 1984.

DON E. DETMER, M.D., was on research leave in 1995 at the National Library of Medicine. He is Senior Vice President at the University of Virginia where he also holds faculty appointments as University Professor of Health Policy and Surgery. In 1965 he received his M.D. at the University of Kansas after prior studies there and at the University of Durham in England. His residency training was in surgery at the Johns Hopkins Hospital and at Duke University; he continues to practice vascular surgery. Dr. Detmer is a trustee of the China Medical Board and a member of the Special Medical Advisory Group of the Veterans Administration. He is past chair of the Board of Regents of the National Library of Medicine, the American Hospital Association Council on Hospital Medical Staffs, and the 1991 IOM study on the computer-based patient record. He is a member of the Institute of Medicine and is the current chair of its Board on Health Care Services.

SPENCER FOREMAN, M.D., is President of Montefiore Medical Center, the university hospital for the Albert Einstein College of Medicine located in the Bronx, New York. An internist and pulmonary specialist, Dr. Foreman has pursued a career as a physician executive for 25 years serving as Director of the U.S. Public Health Service Hospital and President of Sinai Hospital (both in Baltimore, Maryland) before joining Montefiore in 1986. He is also a Professor in the Departments of Medicine and Epidemiology and Social Medicine at the Albert Einstein College of Medicine. Dr. Foreman has served as chairman of the Association of American Medical Colleges (AAMC) of the Administrative Board of the AAMC Council of Teaching Hospitals, and as a member of the Liaison Committee on Medical Education and the Accreditation Council on Graduate Medical Education. Currently a member of the boards of the American Hospital Association and the Hospital Association of New York State, he is a past chairman and board member of the Greater New York Hospital Association and the current chairman of the League of Voluntary Hospitals. He is a member of the Institute of Medicine and has served on various IOM study committees.

KAY KNIGHT HANLEY, M.D., received her medical schooling from the Medical College of Georgia and completed her residency in pediatrics at Tulane Medical School, Charity Hospital, in 1966. Dr. Hanley has been on the American Board of Pediatrics since 1970; she has been a Fellow at the American Academy of Pediatrics since 1968 and a member of the American Medical Association since 1978; she was a member of the National Association of Counsel for Children from 1989 to 1991. Dr. Hanley was President of the Florida Medical Association from 1989 to 1990 and twice had an appointment to the Florida Medical Association's Board of Governors, from 1983 to 1987 and

again from 1991 to 1993. She presently serves on the Institute of Medicine's Board on Health Care Services.

M. ALFRED HAYNES, M.D., M.P.H., is a graduate of the State University of New York (Downstate Medical Center, 1954) and of the Harvard School of Public Health. He was President and Dean of the Drew Postgraduate Medical School from 1979 to 1986 and was Director of the Drew-Meharry-Morehouse Consortium Cancer Center from 1986 until 1990 when he retired. Dr. Haynes has served as a member or consultant on a number of local and national government committees and agencies including the National Center for Health Statistics, the Agency for International Development, and the President's Committee on Health Education. He is a member of the Institute of Medicine and recently chaired an IOM study on minorities in the health professions.

ROBERT M. KRUGHOFF, J.D., is Founder and President of the Center for the Study of Services in Washington, D.C., which publishes two local *Consumer Reports*-like magazines entitled *Washington Consumers' Checkbook* and *Bay Area Consumers' Checkbook*. Prior to that position, he was the Director of the Office of Research and Evaluation Planning in the Office of the Secretary of the Department of Health and Human Services. Mr. Krughoff received his B.A. from Amherst College and his J.D. from the University of Chicago Law School. Mr. Krughoff was a member of the Advisory Panel for the Study of Medical Technology Under Competitive Proposals for the Office of Technology Assessment, and he has served on two previous Institute of Medicine study committees, one on Professional Standards Review Organization disclosure policy (1980–1981) and the other on health database organizations and the use, disclosure, and privacy of health data (1992–1994).

EDWARD B. PERRIN, Ph.D., a biostatistician, is Professor and former Chair of the Department of Health Services at the University of Washington. He is a former Director of the National Center for Health Statistics, Department of Health and Human Services. Dr. Perrin is the immediate Past President of the Association for Health Services Research and also serves as the Chair of the Scientific Advisory Committee of the Medical Outcomes Trust. He is a member of the Institute of Medicine and has been a member of the Board of Health Care Services (and chair of its Subcommittee on Clinical Evaluation); he also serves on the Committee on National Statistics of the National Academy of Sciences and on the National Advisory Council of the Agency for Health Care Policy and Research.

UWE E. REINHARDT, Ph.D., is James Madison Professor of Political Economy and Professor of Economics and Public Policy in the Woodrow Wilson School of Public and International Affairs at Princeton University. A native of Germany, he has taught at Princeton University since 1968, rising through the ranks from Assistant Professor to his current position. He has taught courses in both micro-and macroeconomic theory and policy; accounting for commercial,

private nonprofit, and governmental enterprises; financial management for commercial and nonprofit enterprises; and health economics and policy. Professor Reinhardt has served three three-year appointments to the Physician Payment Review Commission and has been active in the Association for Health Services Research. He is a member of the Institute of Medicine and has served on a number of its study panels.

MARY LEE SEIBERT, Ed.D., is Associate Provost and Dean of Graduate Studies for Ithaca College in Upstate New York. Before going to Ithaca in 1990, she served for nine years as Dean of the College of Allied Health Professions at Temple University in Philadelphia. She completed her bachelor's degree in medical technology, and she is certified and has practiced in that area. Her master's and doctorate degrees are in education and educational administration. She has developed and administered allied health and nursing programs in vocational-technical and university-level undergraduate and graduate programs. She is an active consultant to colleges and universities on the development of allied health programs and serves as a site surveyor for accreditation for the American Physical Therapy Association, Middle States Association of Colleges and Schools, and until recently, the American Medical Association. Dr. Seibert served on the Board of Directors of the Association of Schools of Allied Health Professions and chaired the Association's Research Committee, Manpower Advisory Committee, Forum on Allied Health Data, and the Allied Health Data Advisory Committee. In addition, she provided leadership to the allied health data collaborative effort between the Association of Schools of Allied Health Professions and the Bureau of Health Professions in the Department of Health and Human Services. She presently serves on the Institute of Medicine's Board on Health Care Services.

GEORGE F. SHELDON, M.D., is a graduate of the University of Kansas medical school and trained in Internal Medicine at the Mayo Clinic and in Surgery at the University of California, San Francisco. After a research fellowship at Harvard Medical School, he joined the faculty of the University of California, San Francisco, becoming Professor of Surgery there; in 1984, he became Professor and Chairman of the Department of Surgery at the University of North Carolina at Chapel Hill. Dr. Sheldon has served on many committees and boards concerned with medical education, including the National Board of Medical Examiners Test Committee, the American Board of Surgery, the Accreditation Council on Graduate Medical Education Residency Review Committee, the Merit Review Board for Surgery of the Department of Veterans Affairs, the American Surgical Association, the American Association for the Surgery of Trauma, and various committees of the Association of American Medical Colleges. He has been a Regent of the American College of Surgeons and a member of the American Institute of Biologic Sciences Study Section; he was a charter member of the Council on Graduate Medical Education.

NEAL A. VANSELOW, M.D., was a Scholar-in-Residence at the Institute of Medicine in 1995 after serving as Chancellor of Tulane University Medical Center since 1989. He is an allergist who received his training in internal medicine and allergy/immunology at the University of Michigan. He has served as Chairman of the Department of Postgraduate Medicine and Health Professions Education at the University of Michigan, Dean of the University of Arizona College of Medicine, Chancellor of the University of Nebraska Medical Center, and Vice President for Health Sciences at the University of Minnesota. Dr. Vanselow was chairperson of the Council on Graduate Medical Education, Department of Health and Human Services; chairperson of the Board of Directors, Association of Academic Health Centers; and a member of the Pew Health Professions Commission. He has been a member of the Institute of Medicine since 1989 and currently chairs the IOM Committee on the Future of Primary Care