Physicians and Rural America

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RURAL PROVIDER SHORTAGES IN RURAL AMERICA

Large numbers of rural Americans have limited access to health care. This problem stems from two defining and interrelated characteristics of the health care system: the large number of Americans without health care insurance and the tendency of health care professionals to locate and practice in relatively affluent urban and suburban areas. Although the problem of health insurance exists in both urban and rural areas, the problem of inadequate number of health professionals is concentrated in rural areas.

The relative shortage of health professionals in rural areas of the United States is one of the few constants in any description of the U.S. medical system. About 20% of the U.S. population—over 50 million people—live in rural areas, but only 9% of the nation's physicians practice in rural communities (Bureau of Health Professions, 1992). Severe rural physician shortages were the primary stimulus behind the development of many of the federal health care workforce programs described in Chapter 5, Federal Programs and Rural Health, and the persistence of the rural-urban disparity continues to prompt federal and state educational and service efforts designed to address the residual inequities.

Historically, perceptions of physician shortages date back to the late eighteenth century (Council on Graduate Medical Education [COGME], 1992). The first national effort to remedy these shortages was the rapid increase in the number and size of medical schools in the United States starting in the late 1960s. As a result, the absolute number of physicians in rural areas has increased, as has the physician-to-population ratio, although the relative differences between rural and urban areas has changed little.

It is critical to make a distinction between the adequacy of health professional supply in rural areas and the disparity between the supply in rural and urban areas. Crude comparisons of the physician-to-population ratio in rural versus urban areas can be extremely misleading and provide almost no information about whether shortages or surpluses exist in either location (Center for the Evaluative Clinical Sciences, 1996). In 1996—the latest year for which data are available—gaps existed between the supply of active physicians in counties of different size (Fig. 3.1). As can be seen in this figure, major differences persist between the aggregate supply in urban and rural areas, with the larger counties having many more physicians per 100,000 population. But this information is the fact that the physician supply has grown in rural areas over the past 20 years, although the growth has not been uniform. The supply of rural physicians has increased modestly in the past few decades, with most of the increase in the larger rural communities adjacent to metropolitan areas (Fig. 3.2).

Rural supply lags far behind the current urban supply of physicians, but the urban supply of physicians is, in the opinion of many experts, excessive. It is likely that some of the larger rural areas are now approaching optimal physician-to-population ratios, but as a result of the expansion of the overall physician supply and because of the educational interventions that have increased the number of physicians with the willingness and ability to practice in rural areas.

Given the expansion of the rural physician supply, it is important to distinguish between rural areas that have definite shortages of critical health professionals and those that have fewer health professionals relative to oversupplied urban areas. Historically, the government has designated areas as seriously underserved based on the physician-to-population ratio within a specific health service area. Populations with too few physicians have been categorized as health professional shortage ar-
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In order to remove the designation, a number of physicians would have to be deployed into rural health profession shortage areas (Fig. 3.4). As the figure shows, the number of rural HPSAs and the number of primary care physicians needed to remedy the designated shortages have increased in recent years. The process of designating HPSAs has long been a contentious process and the General Accounting Office, in 1995, issued a report that suggested that the current method of designating underserved areas was neither precise nor accurate (GAO, 1995). The Health Resources and Services Administration and the Bureau of Primary Health Care responded to that criticism and a prior call from a congressional committee by issuing proposed regulations to combine the HPSA designation process with the Medically Underserved Area process and use a new system of Medically Underserved Populations (MUPs) as the basis for identifying areas with health professional shortages (Federal Register, 1998). The original measure of shortage, called the Health Professional Shortage Area (HPSA), may have been a function of an increase in the rate at which designations have been requested—possibly because of declining rates of health insurance rather than because of a deterioration in physician supply in rural areas. The revitalization of the National Health Services Corps (NHSC) and the Medicare bonus payment program that give rural organizations and communities an incentive to apply for designation, may also have influenced the number of designations more than changes in the relative supply of health professionals.

The Effect of Specialty Choice and Distribution

Nothing affects the location decision of physicians more than specialty. The more highly specialized the physician, the less likely he or she will settle in a rural area. As a consequence, the growth of specialization is a major contributor to the geographic misdistribution of physicians. Many of the shortages in communities with fewer than 10,000 residents could have been reduced or eliminated if even a small fraction of subspecialists produced over the past 15 years had chosen to become primary care physicians in rural or underserved areas (Konzal, 1997).

The decision of specialists to settle in cities is neither random nor capricious: specialists require a large population base, sophisticated hospitals and laboratories, and specialty colleagues to be able to pursue their expertise. The average family physician may serve 2,000 people; the typical neurosurgeon requires a population base of 100,000; and some physicians have economic and philosophical differences that cause specialty imbalances to be translated into geographic misdistribution. Family physicians—the quintessential generalists—are the only specialty group as likely to locate in a small rural as in a large urban area (Bureau of Health Professions, 1992). Part of the reason is that specialists have incentives to avoid the more difficult conditions that internists and pediatricians have in covering each other’s practices or the practices of family physicians—internists and pediatricians are unlikely to settle in communities where they will be the only member of their discipline. In practice groups with fewer than five physicians, it becomes very difficult to incorporate internists and pediatricians into the call schedule. Once the catchment area is large enough to support five or more physicians, it becomes more feasible to add internists and pediatricians. This phenomenon is reflected in the patterns seen in Figure 3.6.

Obstetrician-gynecologists work on the borderline between specialty and primary care, and the discipline is increasing its emphasis on primary care. The provision of high-quality local obstetric care is a critical component of the scope of services of rural communities; less of local services imposes significant economic and travel burdens on rural residents and may have an impact on perinatal outcomes, as discussed in Chapter 12, Rural Maternal and Perinatal Health. Although family physicians can provide excellent-quality obstetric care in rural areas, they require the ready availability of obstetric consultation and the ability to refer their patients expeditiously to their consulting physicians.
Obstetricians are heavily concentrated in urban areas and almost nonexistent in the smaller rural communities. In rural counties whose largest city has fewer than 10,000 people, there are fewer than three obstetrician-gynecologists per 100,000 residents. Given these patterns, it is likely that smaller rural communities will need to continue to depend on family physicians for basic obstetric and gynecologic care, with defined links with obstetric specialists providing referral and consultation.

General surgeons represent a special case because at one time they were a very important source of care for rural areas. There has been a modest but steady decline in the number and proportion of general surgeons in smaller rural communities (Fig. 3.7). Part of this is caused by the evolution of surgery as a discipline. As surgery has become more and more specialized, the domain of the general surgeon has shrank and the number of general surgeons being trained has decreased. The result is that there are fewer general surgeons produced, and those who do finish the arduous residency have a more narrow breadth of practice and feel less comfortable practicing alone in smaller rural areas.

The rapid changes in technology make it difficult to set a standard or target for the supply of general surgeons in rural communities. Circuit-riding and itinerant surgery by surgeons based in larger rural or nearby metropolitan areas is common and may be increasing. Improving telecommunications and the advent of telemedicine make it possible for those itinerant surgeons to better manage surgical patients at a distance, with the help of local rural family physicians and general internists. The evolution of vertically organized networks increases the contact and interdependence of physicians living in different locations, with regionally based organizations employing physicians who are located centrally and who back up family physicians practicing in more remote rural areas.

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Despite organizational and telecommunication innovations, there are still important benefits to having broadly trained general surgeons available to rural communities. It is certainly worth exploring whether residency programs can be designed that will train competent rural general surgeons who are willing to settle in smaller areas and work collaboratively with local generalists. This may be an area where educational experimentation is possible. Rural fellowships have been very successful within the context of family medicine; they might be replicated in surgical programs as well (Norris and Acosta, 1997).

Historically, rural medical care was almost exclusively male. Until very recently, medicine was a largely male profession. Starting a decade ago, the proportion of women attending medical school increased rapidly. The number of allopathic women physicians in the United States more than quadrupled between 1970 and 1991 and has continued to rise (COGME, 1995).
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The Role of International Medical Graduates in Rural Areas

The role of international medical graduates (IMGs) in the American workforce is highly controversial. At one time, most IMGs who came to the United States to obtain specialized training subsequently returned to their home countries to practice. The original intent of the federal Physician Exchange Visitor Program was to strengthen international relations and further mutual understanding through educational and cultural exchange; the program was not intended to add physicians to the U.S. physician workforce.

This is no longer the case. Today a large proportion of exchange visitor IMGs eventually settle permanently in the United States. IMGs are drawn to the United States by multiple training opportunities, relatively high salaries, and the opportunity to establish themselves in practice here. Training opportunities for IMGs have expanded rapidly since 1988. The number of foreign-born IMGs currently working as allopathic residents in the United States has increased from 7,227 in 1988-89 to 22,565 in 1995-96, an increase of 321% in 7 years (Fig. 3.8). Foreign-born IMGs now constitute 21.6% of all residents in training in the United States (COGME, 1997).

One of the major reasons for the significant expansion in the number of exchange visitor physicians has been physician maldistribution. IMGs go where the jobs are, and more jobs are available in areas where U.S. graduates do not locate. In selected urban areas, large metropolitan hospitals have become extremely dependent on the services rendered by IMGs and on the substantial subsidies received from Medicare for both direct (DME) and indirect medical education (IME). In addition, interested government agencies have had wide latitude in requesting visa waivers: the J-1 Visa Waiver Program is one vehicle enabling IMGs to work in underserved rural areas. Nationally the number of J-1 visas processed has increased from 70 in 1990 to 4,374 in 1995 (GAO, 1996a). Although it has been proposed to limit the J-1 waiver to officially designated areas, the process of designation is currently so malleable that most rural areas with programs that service the underserved can secure designation. This creates another powerful lobby to continue the extremely permissive programs for attracting IMGs.

There is no question that individual IMGs have established themselves as key providers in selected underserved rural areas and in so doing have provided critical services to needy populations (White, 1993; Verghese, 1994). However, IMGs have been less likely than U.S. medical graduates (USMGs) to end up in nonmetropolitan areas, and most settle in large cities. For certain areas of the United States, including rural counties with high infant mortality and low physician-to-population ratios, IMGS do represent a disproportionate percentage of the rural physicians (Mick and Satnick, 1996; Mick and Lee, 1997). But it is important to note that restricting the future entry of IMGs into this country will have no impact on the current cohort of practicing rural physicians.

The problem with using IMGs to address geographic maldistribution is that it significantly exacerbates the impending physician oversupply in the United States and deprives other countries of talented clinicians (GAO, 1997a). The Council on Graduate Medical Education (COGME) recommended that the size of the physician residency pool be reduced from 140% of the supply of the U.S. medical graduates in 1993 to 110%. As part of this process, COGME has also recommended the elimination of Medicare DME and IME payments for new exchange visitor residents.
The Influence of Managed Care

Managed care is a major emerging influence on the delivery of rural health care, as discussed in Chapter 10, Rural Managed Care. Although managed care has become dominant in many urban areas of the United States, its impact in rural areas is just beginning to be felt. The more rural the area, the less the penetration of managed care. But this is changing rapidly, and over 90% of all rural counties were in the service area of at least one health maintenance organization (HMO) by the end of 1995. Managed care is not a creature of the private sector only; nationally, about one tenth of rural Medicaid recipients are enrolled in Medicaid HM0s and prepaid plans, and the number is increasing rapidly.

Managed care is a two-edged sword, with regard to both geographic redistribution and rural medical under-service. Managed care networks have the potential to provide organizational vehicles for hiring and deploying physicians in areas that could not support independent physicians on their own. By emphasizing primary care services over specialty care, and providing on-call coverage, continuing medical education, andlocum tenens service—they can markedly improve the conditions of employment for isolated physicians and the economic viability of marginal groups.

The potentially negative impacts of managed care systems on rural health derive from two factors: the loss of local control of health care systems and the reliance on private managed care systems to provide care to the uninsured. Most managed care systems are sponsored by large metropolitan organizations, and these organizations may have little understanding of or empathy for isolated rural areas. In the past, many rural health care systems—particularly those that received federal assistance—have been sponsored by nonprofit community groups. As physicians are absorbed into health care systems managed care systems also exist in a brutally competitive marketplace and are unlikely to provide much uncompensated care for those who cannot afford to pay. The presence of physicians hired through vertically integrated systems may mean that the community has health professionals, but they may be of little use to the working poor who have neither Medicaid nor conventional health insurance. Again, the remoteness physical and cultural—of the managed system from the distant rural scene may make it much more difficult for the rural provider to offer subsidized or sliding-scale services to the needy in the community.

The managed care industry is in rapid flux, and it is difficult to predict the extent to which managed care will ultimately dominate rural areas as it has dominated some urban ones. The extent to which Medicare and Medicaid make managed care more or less attractive in rural areas will have an immense impact on its expansion into these areas. Whatever decisions are made, it is critical that there be some sensitivity to the impact on rural areas. Most rural places are too small to have more than one clinic offering care. The plurality and choices that exist in urban areas are often simply unavailable in rural areas, and individual rural areas are at risk for losing what little autonomy and local control they currently enjoy.

Chronic Shortage Areas

One of the reasons that shortage areas persist in rural medicine is the loss of primary care physicians to these areas. When the community has physicians but did not, in and of itself, do much to remedy geographic shortages. The most far-reaching federal intervention was support for the creation of generalist specialists: family medicine, emergency medicine, and medical pediatrics. Graduate medical education in these specialties—unlike intellectual specialties—has translated into a major change in the preference of medical students for primary care careers. Among the factors that may have influenced this change have been: (1) a sparse population, (2) a lack of conventional physical and cultural amenities, (3) extreme and persistent poverty, and (4) a population containing some of the nation's most dispersed or racial minorities. Often these factors exist simultaneously: African Americans in the rural South, Hispanics in the Southwest, and American Indians in the Plains often live in areas that are neither rural nor urban. There have been few sources of employment for the graduates of medical schools who go to work in these systems. Life in these places is hard, and it is difficult to attract and retain professionals of any kind, including physicians and other health professionals.

The sources of persistent rural poverty are numerous and are bound up in the history of this country, racial and ethnic polarities, and the economic disadvantages of remote isolated places. Health care is just one of the human services that are needed to allow these places to advance, along with improved education and economic development. Until these places join the economic mainstream, it is highly unlikely that they will ever attract an adequate retinue of health professionals without the direct intervention of programs such as the NHSC, the CHS, or the Indian Health Service that support the direct provision of services. And it should be recognized that long-term practice in these areas by physicians, no matter how altruistic, is a rare event.

As the Physician Payment Review Commission (PPRC) pointed out in its 1994 Annual Report to Congress, rural poverty may be a better marker of effective physician shortage than the HPSA designation (PPRC, 1994). Even the development of universal health insurance, in and of itself, might not translate into the migration of sufficient physicians to some areas perceived as unattractive. In these cases, government will continue to be the provider of the last resort under almost every possible scenario, an entirely proper role given the importance of health care as a basic human need.

POTENTIAL SOLUTIONS TO THE PERSISTENT PROBLEM OF RURAL GEOGRAPHIC MALDISTRIBUTION

The vast expansion in the number and size of medical schools in the 1960s and 1970s was to a large extent a direct response to widespread physician shortages. During the 1970s it became apparent that the shortages were more due to specialty and geographic maldistribution. Expansion of medical student class sizes has not been a magic bullet. The advantage of this approach is that instead of requiring the establishment of federal or state delivery system initiatives that may be controversial and the loss of supply of generalists but did not, in and of itself, do much to remedy geographic shortages. The most far-reaching federal intervention was support for the creation of generalist specialists: family medicine, emergency medicine, and medical pediatrics. Graduates of medical schools who go to work in these systems—unlike intellectual specialties—has translated into a major change in the preference of medical students for primary care careers. Among the factors that may have influenced this change have been: (1) a sparse population, (2) a lack of conventional physical and cultural amenities, (3) extreme and persistent poverty, and (4) a population containing some of the nation's most dispersed or racial minorities. Often these factors exist simultaneously: African Americans in the rural South, Hispanics in the Southwest, and American Indians in the Plains often live in areas that are neither rural nor urban. There have been few sources of employment for the graduates of medical schools who go to work in these systems. Life in these places is hard, and it is difficult to attract and retain professionals of any kind, including physicians and other health professionals.

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Publicly owned medical schools in rural states—particularly those that see their mission as training future family physicians—have very high proportions of their graduating classes ultimately practicing in rural areas. By contrast, research-intensive private schools in metropolitan areas with no commitment to family medicine have virtually no rural graduates (Rosenblatt et al., 1992). The current system of incentive interventions is limited only by the creativity of those designing the courses, but a few themes have been repeated with success in a variety of settings. The key seems to be the creation of a pipeline that reaches out to rural communities to encourage the selection and success of rural students, gives these students opportunities throughout medical school and residency to work in rural settings, and supports them in practice after they settle in rural areas. This, coupled with a medical school and residency training environment that values generalism, community-responsive practice, and rural life, is a recipe for improving the flow of medical practitioners to underserved rural areas. Federal and state investments in these areas have been very effective, a fact reflected in the popularity and ubiquity of these programs.

**Changes in Reimbursement Strategies of Medicare and Medicaid**

The Balanced Budget Act (BBA) of 1997 contains a set of provisions that will affect those who train and employ health care providers, the organizations that treat patients, and the people and institutions that provide medical care. The provisions are so multifaceted and complex that changes in reimbursement strategies for the Medicare and Medicaid programs and how they interact with the educational and provider institutions that train and deploy the health care workforce are discussed here. The previous sections concerned with the costs of medical care and the financial arrangements that have developed to offset these costs are the basis for understanding the changes in reimbursement systems. Effective January 1997, Medicare greatly reduced the number of payment localities by consolidating of areas including rural and urban areas in a manner to help establish and support rural areas. The Medicare payment system now reimburses payment differentials that led to lower relatively lower payments for rural providers, thus serving as a disincentive for rural providers to practice or remain in underserved areas. A significant economic incentive was the establishment in 1989 of Medicare bonus payments to physicians providing services in underserved areas. Beginning in 1989 as a 5% bonus payment—also known as the Medical Incentive Payments (MIPs)—the amount was raised to 10% in 1991, the level at which it remains. It is clear that these incentives are an important incentive for at least some physicians who locate in rural areas. What constitutes adequate service is relative, and what constitutes adequate service is highly dependent on specific factors. From a pragmatic standpoint, the NHSC, CHCs, and related direct-service programs exist to plug the largest cracks in a system that has not been able to address the shortage. Individual physicians will always be a more precise incentive than establishing a clinic for an underserved population. Yet we trust the physician to be a model of care in need. But in the absence of universal health insurance, there is no really other recourse. Given the realities of the present system, future efforts should concentrate on improving the fit between need and services, enhanced coordination—and reduced duplication—of services provided, better identification of students to train and deploy the health care workforce in underserved areas, and, at times, even illegality. Although a full discussion of the issues surrounding telemedicine are well beyond the scope of this chapter, there are certain issues that should be addressed in order to ensure that the services provided are effective and appropriately used.

**Changes in Existing Direct Federal and State Programs**

When educational interventions and economic incentives fail to remedy geographic maldistribution, the major recourse is the creation of programs that provide direct services to underserved areas. There are numerous examples of such programs, the largest of which are the community health centers and the NHSC, these programs are discussed in detail elsewhere in this volume. There is no question that these three remain the preeminent safety net programs for rural America; studies by the Rural Health Research Centers in Chapel Hill, North Carolina, and Seattle, Washington, demonstrate that about one in four of new primary care physicians entering an HPSA in the 1980s was placed there under NHSC auspices (Konrad, 1994) and that one in five physicians practicing independently in many of the nation's smallest rural communities was initially brought to those areas through service in the NHSC (Cullen et al., 1997). CHCs provided care to 3.9 million rural people in 1996. The optimal size of the CHC and NHSC programs in rural areas is difficult to determine. There are numerous significant obstacles exist that make the current efforts uncoordinated, expensive, inaccessible, and, at times, even illegality. Although a full discussion of the issues surrounding telemedicine are well beyond the scope of this chapter, there are certain issues that should be addressed in order to ensure that the services provided are effective and appropriately used. The current state of telemedicine could be characterized as a network of public and private sector projects experimenting simultaneously. Some applications—such as reading electrocardiograms at a distance—have become commonplace. Others—such as dermatology consults or teleradiology—are being performed in many different places but without standard protocols for transmission, interaction, evaluation, or charging. And others—such as doing an appendectomy at a distance—remain in the realm of science fiction, if not barely. Telemedicine can perform atomic spectroscopy on rocks on Mars, there are no conceptual barriers to devising complex interventions at a medical facility 100 miles removed from the base station.

The next stage in the process of telemedicine is to codify, standardize, and evaluate the experimental and practice.
tical applications that exist. The major issues have been raised in the report cited and by the Government Accounting Office (GAO, 1997b). From the standpoint of geographic maldistribution, several topics rise to the fore. First, some resolution of the professional licensure regulations is needed so that physicians in metropolitan areas can make their expertise available to remote rural areas, even if state lines are crossed. Second, clear procedures for unified technological infrastructure are needed, both to reduce costs and to allow rural providers to have the option of communicating with multiple providers of those distant services without being captives of any single information provider. And finally, third-party payers need to resolve reasonable standards for reimbursing those who provide medical services at a distance.

SUMMARY AND CONCLUSION

Geographic maldistribution of health providers is one of the most deep-seated characteristics of the American health care system. Even though the 1990s were marked by rapid expansion in the absolute and relative number of practicing physicians, significant rural shortages have persisted. Many rural communities still struggle to attract an adequate number of health professionals to provide high-quality care to local people. As vertically integrated health care systems providing managed care to defined populations rapidly become the norm for the majority of the American population, it is not clear what will happen to rural populations. To the extent that these systems of care penetrate into isolated rural areas, it is possible that they will provide vehicles through which to make health care more available to historically underserved areas. On the other hand, if managed care systems restrict themselves to areas with ample health insurance and large aggregations of population, it is entirely possible that disadvantaged rural communities will be left further behind.

The situation is further complicated by the wide variety of federal, state, and private programs that have been developed to address—either directly or indirectly—problems associated with rural health professional shortages. Starting with the establishment of community and migrant health centers and the NHSC over 25 years ago, the federal government has invested billions of dollars to remedy some of the effects of geographic maldistribution. These programs have been supplemented by major changes in the education of physicians, with an overall attention to the production of primary care providers. Although major forces have improved the supply of health professionals in some rural areas, there is no question that the safety net will be critical in rural America until the nation more directly tackles the persistent problem of health insurance. Even then, rural areas will have structural barriers that will require special programs to assist in the training, deployment, and support of health professionals.

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