Issues in Rural Health: Access, Hospitals, and Reform

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This overview discusses articles published in this issue of the Health Care Financing Review, *entitled "Access to Health Care Services in Rural Areas: Delivery and Financing Issues." These articles focus on the following topics: rural hospitals (including closures, the impact of Federal grants, network development, and costs), managed care in rural areas, telemedicine, and the delivery of mental health services to rural Medicaid beneficiaries.*

INTRODUCTION

Rural communities have long struggled to maintain access to quality health care services. An extensive body of literature has documented the problems faced by rural hospitals and other providers and found that rural Americans often lack access to basic health care services (Ermann, 1990; National Rural Health Association, 1994; Office of Technology Assessment, 1990; Prospective Payment Assessment Commission, 1991; Rosenblatt and Moscovice, 1982; Rural Policy Research Institute, 1994). A variety of elements contribute to these problems in rural areas, including a declining population, economic stagnation, shortages of physicians and other health care professionals, a disproportionate number of elderly, poor, and underinsured residents, and high rates of chronic illness.

RURAL HOSPITALS

The plight of rural hospitals has garnered particular attention from legislators, policymakers, and researchers in recent years. The problems previously cited, combined with other factors such as the ongoing shift of patient care from the inpatient to the outpatient setting—particularly for those cases most commonly treated in rural hospitals (Codman Research Group, Inc., 1990)—have led to declining occupancy and lagging revenues, especially in the smallest rural hospitals. Competition from larger and better financed urban providers, both for patients and primary-care physicians, has also contributed to the decline of the rural health care delivery system. Small hospitals must continuously expend resources for medical staff recruitment while contending with unfavorable economies of scale that make it difficult to staff efficiently and contribute to a relatively high proportion of fixed costs. These factors have contributed to a level of instability that has resulted in the closure of hundreds of rural hospitals over the past decade (Office of the Inspector General, 1993; U.S. General Accounting Office, 1991).

Despite the large number of hospital closures and a body of literature on the general impact of closures on access to care (Bindman, Keane, and Lurie, 1990; Office of the Inspector General, 1990; Reardon et al., 1991), little is known about the specific impact of rural hospital closures on the populations previously served by the facilities. In this issue of the *Review*, Rosenbach and Dayhoff address the effects of rural hospital closure on utilization and expenditures for health care services in areas that relied upon a hospital prior to its closure. The authors use data from six States that experienced rural hospital closures in 1986 and

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1987 to determine the site of care for Medicare beneficiaries before and after the closures, evaluate the effects of the closures on inpatient utilization rates, and examine the relationship between the utilization of physician services and changes in the availability of hospital services. Comparisons were made between areas that experienced a hospital closure, areas that did not experience a closure, and areas in which there were no hospitals during the study period. This work expands upon previous research on this topic by using both hospital and physician data to examine changes in health service delivery subsequent to the closure of a rural hospital.

Rosenbach and Dayhoff's research finds that hospital closure has significant impacts on several measures of utilization and expenditures. The population of the areas in which a hospital closed experienced a significant decline in medical admissions relative to the population of the comparison areas. Reductions were also observed for specific case types. Somewhat unexpectedly, discharge rates for ambulatory-care sensitive conditions fell more rapidly in the study group than in the two comparison areas.[1] This was surprising because the researchers anticipated an increase in ambulatory-care sensitive discharges in distant hospitals due to a lack of support services and local outpatient treatment in the closure areas. The authors hypothesize that prior to hospital closure, physicians in the study areas may have had a lower threshold for admitting patients to the hospital than after the closure. In addition, patients may have been reluctant to travel out of the area for hospital services following closure. Medical-local discharges also showed more significant reductions in the closure areas, reflecting either the discretionary nature of some of the admissions or the lack of availability of local hospital services.[2] Largely as a result of these reductions in admissions, per capita inpatient expenditures exhibited slower growth in the closure areas than the comparison areas.

Interestingly, despite these reductions in admissions from the closure areas, baseline inpatient utilization rates remained higher than in the comparison areas (i.e., although the gap in utilization between the study and comparison areas significantly narrowed following hospital closure, closure areas still had a higher rate of inpatient utilization). It is unclear whether the higher baseline utilization rates in closure areas are a result of overutilization prior to closure or a sicker population.

The authors also found significant shifts in the patterns of inpatient utilization by residents of the closure areas. These areas experienced a 28-percent increase in admissions to urban hospitals, far exceeding the experience of the comparison areas. There were also substantial increases in admissions to teaching hospitals and rural referral centers. These findings may have significant cost implications, as urban hospitals, teaching hospitals, and rural referral centers generally receive higher Medicare reimbursement than rural community hospitals.

Rosenbach and Dayhoff also examine outpatient utilization data to determine whether physician services substituted for inpatient services following a hospital closure. Rather than observing such a substitution, however, they found a consistent pattern of lower growth in per capita Part B expenditures in the closure areas than in the comparison areas. Hospital closure thus had the impact of depressing both inpatient and outpatient utilization.

[1] Ambulatory-care sensitive conditions are those cases for which medical management on an outpatient basis may reduce or avoid the need for hospitalization.

[2] Medical-local discharges are those cases which account for the majority of admissions to local rural hospitals.

The authors note that this study is based on the Medicare population, a well-insured group that typically enjoys considerable access to health care services. In this sense, the findings may represent a "best-case scenario" and the impact of hospital closures on more vulnerable rural populations, such as Medicaid beneficiaries and the uninsured, may be more profound.

In addition to the possibility of diminishing access to services, closure of a hospital limits physician income and practice opportunities and thus affects physician recruitment and retention and jeopardizes the delivery of other health services in the community (Taggert and Mullner, 1989). Hospital closure has also been shown to have a negative impact on employment and local economic development in rural communities (Christianson and Faulkner, 1981). In response to these broad impacts, HCFA has implemented a number of programs to assist in stabilizing the viability of rural hospitals. These efforts include the Montana Medical Assistance Facility demonstration and the Essential Access Community Hospital/Rural Primary Care Hospital (EACH/RPCH) program, which support the development of limited service hospitals, and the Rural Health Care Transition (RHCT) Grant program, which provides grant funds to small rural hospitals to strengthen their financial and managerial capabilities. The article by Wooldridge, Cheh, Thompson, Moreno, and Holden presents their findings on the impact of the RHCT Grant program on the 211 rural hospitals that made up the second yearly cohort of participants.

Wooldridge and colleagues report that hospitals receiving grants used the funds for a wide variety of projects, including development or upgrade of outpatient services (e.g., rural health clinics, outpatient surgery programs, and home health/hospice), preventive services (e.g, community education programs), and social services. Strikingly, two-thirds of all participants used grant funds for physician recruitment, pointing to the severity of the physician shortage in these rural communities. The authors identify several factors linked to completion of a grant project, including the presence of a project director responsible for the grant program, coordination with other providers, and careful planning (e.g., accurate financial projections and thorough investigation of applicable regulations). Larger hospitals (those with more than 50 beds), hospitals located in areas that have an above-average median income, and hospitals that did not experience administrative turnover were also more likely to successfully implement a grant project.

The authors found that most projects were self-supporting by the end of the 3-year grant period. However, less than one-half of the social services, adult day care, wellness programs, patient education, and medical transportation projects were self-supporting. Although most of the grantees that implemented these programs indicated that they would attempt to continue them because of their importance to their communities, rural hospitals often have limited ability to cross-subsidize money-losing services because of the precarious financial situation of the institutions as a whole. Needed services which are not well supported by the medical-model-oriented health care financing system, therefore, may remain out of reach for many rural communities, particularly those with the smallest hospitals. The researchers found that the smallest facilities (fewer than 50 beds) were less likely to successfully implement their projects and experienced a much slower rate of growth in outpatient visits than larger grantees and rural hospitals nationwide. This slow growth in outpatient utilization may be attributable, in part, to the lower

success rate of new grant-funded ambulatory services in these small hospitals.

Overall, Wooldridge and colleagues found that grant-funded projects improved local access to care, assisted grantees in transitioning to outpatient care, and helped modestly in physician recruitment. The grants also contributed to improved staff morale and hospital status in their communities. Again, however, the smallest grantees did not tend to experience these positive effects. Most notably, while grantees with 60 beds or more (20 percent of the sample) improved their financial position, exceeding national growth trends for inflation-adjusted inpatient and outpatient revenues, there was no evidence of similar effects on smaller hospitals. The authors conclude that the sizable scale problems of small rural hospitals greatly impede their ability to reach financial stability. The constant loss of physicians has a disproportionate impact on admissions in these small hospitals and hinders recruitment of all types of health care professionals due to lack of collegial interaction and the need to provide continuous off-hour coverage. Coupled with a dearth of resources to purchase and upgrade equipment and limited community amenities, particularly in the smallest and most isolated communities, small rural hospitals continue to face grave threats to their survival that are not substantively improved by the RHCT Grant program. Additional work is clearly needed to determine what types of efforts, both public and private, will be effective in reaching these facilities.

Wooldridge and colleagues also include a Technical Note on the impact of location in a low-income area on the financial viability of RHCT grantees. The facilities included in this study are located in counties with the lowest annual per capita income among the grantees. These counties had an average per capita income of less than $11,000, more than 30 percent below the nationwide average for counties in which small rural hospitals are located. Interestingly, despite serving this poor population and relying more extensively on Medicaid reimbursement than other rural hospitals, the financial status of these facilities was similar to that of other grantees. This finding is attributable in part to the great reliance of these facilities on local support and enhanced financing programs. The authors found that one-half of the study hospitals rely on local tax support for financial viability; close to 60 percent are classified as disproportionate share hospitals and receive increased Medicare payment for serving a large volume of low-income patients. Reductions in disproportionate share payments would have a significant negative impact on the financial viability of these hospitals.

In addition to broadly targeted grant programs such as RHCT Grants, the development of provider networks has evolved as a popular strategy to help address the challenges faced by rural hospitals. The Federal Government, through efforts such as HCFA's EACH/RPCH program and State Rural Health Network Reform Initiative, has invested considerable resources in programs that encourage rural hospitals and other providers to form linkages and collaborate in the delivery of health care and other services. Wooldridge and colleagues report that close to 30 percent of the hospitals they studied used grant funds to implement or expand hospital consortia. In addition, States such as New York have developed formal programs to promote network development among rural providers (Weisgrau and Rosenberg, 1993a; Wellever and Rosenberg, 1993). The private sector has also devoted resources to the development of closer collaborations and new organizational structures among rural providers to better respond to the evolving health care market (VanHook and Rosenberg, 1993; Weisgrau and Rosenberg, 1993b).

The article by Moscovice, Christianson, Johnson, Kralewski, and Manning reports on the increasingly common development of informal alliances between rural hospitals. During the course of their evaluation of the Hospital-Based Rural Health Care Program, a Robert Wood Johnson Foundation (RWJF) initiative to support the formation of rural hospital networks, the authors collected extensive information on the development, operation, and impact of close to 100 networks encompassing more than 400 rural hospitals across the Nation.

Less structured than affiliation with a multihospital system, in which two or more hospitals are owned, leased, or managed by a single entity, these networks encompass voluntary arrangements in which the parties agree to pursue collective action in some areas while maintaining organizational autonomy in others. The networks can provide a framework for developing a wide range of joint programs among member institutions, ranging from relatively modest, low-cost efforts, such as shared education programs, to more complex activities that require extensive cooperation and trust among participants, such as joint clinical programs or sharing of staff. As evidence of the exceptional popularity of network development among rural hospitals, Moscovice and colleagues report that almost one-half of all rural hospitals in the country participated in a network at some point during the period 1985-90. RWJF received 180 applications for the Hospital-Based Rural Health Care Program, representing approximately 1,700 hospitals in 45 States, or about two-thirds of all rural hospitals in the United States.

Moscovice and colleagues found that rural hospitals joined networks for a variety of reasons, the most common of which is a desire to improve their financial status and stability. Rural hospital networks tend to be relatively young entities, with an average age of less than 6 years, and exhibit great variation in size and composition. The most frequent activities pursued by the networks were physician or staff education and shared services; about one-half also jointly pursued legislative or regulatory initiatives and recruitment of medical or professional staff.

Despite great hopes for networks as a positive business strategy for rural hospitals, however, the authors found that these alliances have yet to fulfill expectations. Simply joining a network was not an assurance that substantive collaboration would occur among members. The authors found few examples of networks whose members shared decisionmaking, contributed considerable resources to support of the network, or sacrificed some measure of autonomy to achieve common goals. In addition, the networks were extremely unstable; during the period 1988-91, almost one-third of all rural hospital networks ceased operation and most of the remaining networks either added or deleted members. Probability of network survival was related to the dependence of the members on mutual or shared resources and the presence of a formal network management structure.

Most significantly, the authors found that, on average, hospitals do not realize short-term economic benefits from network participation. Rural hospital administrators cited facilitation of information diffusion and communication, the second most frequently identified reason for joining a network, as the primary benefit of membership. Moscovice and colleagues hypothesize that relatively new organizations, such as networks, may require longer periods of time to develop the type of shared programs that can produce economic benefits. The scale of network activities relative to the overall operations of the members may not yet have been large enough to produce a signif-

icant impact on the members' financial status. In addition, network activities that are focused on quality improvement or enhancing access to services may benefit the community, but do not typically provide short-term financial benefits to the hospital. It is also noted that most rural hospital networks have a large rural or urban hospital member; the substantive economic benefits of network participation may accrue more quickly to these larger facilities, which are able to assume more of the financial risks involved in network participation.

Moscovice and colleagues use the results of their study to discuss the implications of network formation for rural health care reform, noting that several States have adopted a network development strategy as a cornerstone of their rural reform efforts. The authors indicate that the experience of hospital networks to date demonstrates that rural providers can work together cooperatively, but there is little evidence of their ability to assume responsibility for all of the health care services of a community, operate within a limited budget, or guarantee access to needed services, the activities typically expected of vertically integrated networks in a reformed health care environment. The authors anticipate that the health care infrastructure of many rural areas will need to be strengthened to support the development of vertically integrated networks and that establishing rural networks whose members share financial risk will be far more difficult and complex than establishing collaborative alliances that have limited economic impact.

Moscovice and colleagues conclude that the long-term survival of rural hospital networks may depend on their ability to create linkages with non-hospital providers, insurers, and other organizations that can substantially augment non-acute-care services in rural areas. These types of linkages will be necessary if rural hospital networks are to become the foundation for major structural change in rural health care systems.

Other important factors in rural health reform include the costs of providing services and the behavior of hospitals in rural markets. Hospital costs and market behavior have been extensively studied over the past decade. Research on costs has shown that location can contribute to variations in hospital costs and that rural hospitals are typically less costly than urban facilities (Mick and Morlock, 1990). Previous research has also demonstrated that hospitals generally do not behave in a manner predicted by traditional economic theory; i.e., increased competition in the hospital market leads to increased, rather than decreased, costs (Robinson and Luft, 1985). This behavior is often attributed to hospitals competing by purchasing the latest technology and other amenities for their medical staffs.

Little information is available, however, on hospital cost variations by degree of rurality and whether market structure affects competition differently in urban and rural areas. These questions are critical in determining whether a competitive model of health care reform is feasible in rural areas. There has been much skepticism regarding the applicability of such reforms to non-metropolitan areas due to their small population base (Kronick et al., 1993) and shortages of providers, which create minimally competitive markets. In this issue, Vogel and Miller address these issues by presenting an econometric analysis of variations in hospital costs and the impact of location and market concentration.

Vogel and Miller use detailed data on the characteristics and experience of 4,600 hospitals across the Nation and classify these facilities by location according to a scale developed by the U.S. Department of Agriculture. This classification scheme

combines measures of county population and proximity to a metropolitan area to develop four categories of urban areas and six categories of rural areas. These categories range from location in a central county of a metropolitan area of one million population or more (the "most urban" classification), to location in a rural county with fewer than 2,500 urban residents that is not adjacent to a metropolitan area (the "most rural" classification).

The authors find that hospital costs are related to degree of rurality; i.e., the more rural the location, the lower the costs. The authors attribute these findings to hospital size and show that rural hospitals are less service intensive than urban hospitals on all measures. Rural hospitals are smaller, have a higher proportion of primary-care physicians and a lower proportion of board-certified physicians on their medical staffs, have fewer intensive care beds, and are less likely to have contracts with health maintenance organizations (HMOs) and preferred provider organizations (PPOs).

The authors also confirm earlier research and show that hospitals in urban markets continue to exhibit a negative relationship between costs and competition. As metropolitan market concentration decreases (i.e., there are more competitors), costs increase, suggesting that cost-boosting quality and equipment competition is occurring between hospitals. Vogel and Miller found, however, that rural markets exhibit the opposite relationship. Consistent with traditional economic theory, as non-metropolitan market concentration increases (i.e., there are fewer competitors), costs also increase. The authors are skeptical, however, that these results are related to significant price competition between rural hospitals. Instead, the authors hypothesize that lesser rivalry among rural hospitals and differences in organizational culture as compared with urban hospitals are responsible for this finding. In particular, Vogel and Miller indicate that rural hospitals may focus more on their communities, while urban hospitals focus on their competitors, leading to the cost-increasing technological rivalry observed in metropolitan markets. In addition, the existence of a large number of sole community hospitals in rural areas may reduce the incidence of rivalry and contribute to organizational cultures that do not champion competitive behavior.

Despite the findings of the study, Vogel and Miller indicate that concerns about the lack of a critical competitive mass of providers in rural areas are still valid and do not draw conclusions about the implications of their work on rural health reform efforts. They suggest additional research into the causes of the differences in the cost-concentration relationships between rural and urban markets.

MANAGED CARE

Another important consideration for rural health reform, particularly under a competitive model, is the viability and penetration of HMOs and other managed-care entities in rural areas. Although some of the earliest experiments in prepaid health care were based in rural areas (Ross, 1975), the recent explosive growth of managed care has been thought to be primarily an urban phenomenon. As previously discussed, relatively low population density and provider shortages have contributed to skepticism about the ability of a highly competitive health care market to take hold in rural areas. In addition, despite the popularity of hospital-based rural network development discussed by Moscovice and colleagues, some highly publicized rural managed-care failures, antitrust concerns, and other factors have been thought to contribute to a "chilling" effect on the

establishment of the type of vertically integrated networks necessary for a comprehensive managed-care-based delivery system (Christianson and Moscovice, 1993; Nycz et al., 1987; Rosenberg and Associates, 1995).

This issue of the *Review* contains two articles on the penetration of managed-care plans in rural areas. In the first, Serrato, Brown, and Bergeron present the results of their study of Medicare risk plans and discuss the reasons that few of these plans provide services in rural areas. In the second, Ricketts, Slifkin, and Johnson-Webb expand on Seratto, Brown, and Bergeron's analysis and examine trends in penetration of all HMOs in rural areas. Ricketts and colleagues examine patterns of HMO service to determine how rural penetration differs across HMO model types and discuss the characteristics of rural counties that are served by HMOs that distinguish them from those that are not.

HMOs have been permitted to enroll Medicare beneficiaries since the mid-1980s. Plans that participate in Medicare risk contracts are paid a predetermined rate for each enrollee in return for supplying all Medicare-covered services needed by the beneficiaries. HMOs may also provide additional benefits (e.g., prescription drugs and preventive services) to enrollees beyond those covered by Medicare and charge a premium for these services. Payment to the plans is set at 95 percent of the adjusted average per capita cost (AAPCC) for the area, an actuarially determined rate that differs by county. About 9 percent of Medicare beneficiaries are enrolled in HMOs under this program.

Serrato, Brown, and Bergeron report on the results of an evaluation of the Medicare risk program completed in 1993. Using data from the Group Health Association of America (GHAA) *National Directory of HMOs,* they find that few HMOs offer Medicare risk plans in rural areas. Of 11 HMOs in the country that serve an exclusively rural population, only one has a Medicare risk plan. In addition, although about one-half of all HMOs serve a mixture of urban and rural counties, only 38 of these (13 percent) have Medicare risk contracts, and less than one-half of these 38 plans include any rural counties in the service area of their Medicare risk plans. Because most of these HMOs include only one or two rural counties in their Medicare service area, the 17 urban/rural HMOs that serve rural beneficiaries drew all of their rural enrollees from only 27 counties. Although rural residents account for about one-quarter of all Medicare beneficiaries, rural enrollees comprise less than 8 percent of the Medicare risk enrollment of these HMOs.

The authors find that rural areas that have access to Medicare risk plans have populations twice as large, a physician supply that is one-third larger, and AAPCCs 13 percent higher, on average, than areas without risk plans. Rural areas with risk plans also have 25 percent more nursing home beds per elderly resident than the rural service areas of HMOs with urban-only Medicare risk plans (i.e., those HMOs that serve rural counties, but do not serve Medicare beneficiaries in these counties). These findings are not surprising. Areas with larger population are more attractive to HMOs, offering a larger base on which to spread costs and risk. Likewise, a greater supply of physicians and nursing home beds offers the HMOs more contracting options and greater bargaining power. Finally, because rural counties generally have much lower AAPCCs than urban counties, HMOs tend to locate in those rural counties in which the AAPCC is comparatively highest.

Serrato, Brown, and Bergeron also find that the projected financial performance of

risk plans influences whether rural areas are included in their Medicare service area. All of the urban/rural HMOs that restricted their Medicare service area to urban locations projected that their Medicare business would yield a lower rate of return than their private business. Only one-half of the HMOs that offer Medicare coverage to rural counties, however, expected a lower Medicare rate of return. Serrato, Brown, and Bergeron conclude that Medicare risk plans that are making money are often willing to include rural counties in their service areas, despite the lower rural AAPCC. HMOs that are unable to generate a normal rate of return on their Medicare plan, however, tend not to expand to rural areas or to drop these less profitable counties from their service areas.

Interviews with HMO executives confirmed the statistical findings. The executives cited low and erratic AAPCCs, small populations, and strong physician market power as reasons that they do not serve rural areas. In addition, HMOs are concerned that providing a comprehensive set of benefits to a previously underserved population will stimulate demand and cause adverse selection. The authors also found that urban/rural HMOs were more committed to serving the urban core of their service areas than the rural counties adjacent to the urban cores. In contrast, exclusively rural HMOs, including the one rural HMO that has a Medicare risk contract, exhibited a strong service commitment to the rural counties in their service areas.

Serrato, Brown, and Bergeron suggest that paying a single AAPCC rate for an urban area and its adjacent rural counties would raise and stabilize rural AAPCCs and increase the penetration of Medicare risk HMOs in these adjacent rural counties. However, due to the wide geographic distribution of rural Medicare beneficiaries and limited numbers of local providers, HMOs are still unlikely to make the considerable investment necessary to move into more isolated rural areas, even under such a payment scheme. The authors suggest that the critical policy issue in these remote rural areas may not be how to promote Medicare risk contracting, which provides incentives for cost containment in high-cost/high-utilization areas, but how to encourage the development of more HMOs in general. Development of HMOs and other alternative delivery and financing mechanisms may actually increase costs in some of these remote areas. The authors contend that this is appropriate because rural areas are typically underserved and not a source of high Medicare costs.

As in Serrato, Brown, and Bergeron's article, Ricketts, Slifkin, and Johnson-Webb use the GHAA *National Directory of HMOs* to examine HMO penetration in rural areas. Ricketts and colleagues, however, focus on all HMOs, not just those that maintain risk contracts to serve the Medicare population. In addition to studying HMO presence in rural areas, Ricketts and colleagues examine differences in the rural areas served by HMOs. For this purpose, they utilize the U.S. Department of Agriculture classification system used in the previously discussed study by Vogel and Miller.

The authors compiled an inventory of 544 HMOs, of which 218 (40 percent) are located in metropolitan counties and do not serve rural areas, 321 (59 percent) serve both urban and rural counties, and only 5 (less than 1 percent) are solely rural.[3] There is a fairly broad penetration of independent practice association (IPA)-model HMOs in rural areas (although large areas of the country are not covered at all) and a

[3] Serrato, Brown, and Bergeron found 11 exclusively rural HMOs, using earlier data than Ricketts, Slifkin, and Johnson-Webb. This suggests that more than one-half of these rural HMOs were no longer operating by the time of Ricketts, Slifkin, and Johnson-Webb's study.

more limited presence of group/network and mixed models, which are primarily concentrated in a few States. Staff-model plans, the most complex and resource-dependent type of HMO, are almost exclusively an urban phenomenon. Older HMOs are more likely to include non-metropolitan counties in their service areas than newer organizations, suggesting a time lapse between the establishment of a plan and its expansion into rural areas. The authors also confirm the finding of Serrato, Brown, and Bergeron that adjacency to a metropolitan area is an important factor in determining the likelihood that an HMO provides services to rural Medicare beneficiaries. This factor was also important for plans covering the Medicaid population.

Elements significantly associated with the probability that a rural county is included in an HMO service area include its degree of "urbanicity" (i.e., the more urban the county, the more likely it is to be included in an HMO service area) and population density (i.e., the higher the population density, the more likely that the county is in an HMO service area). The authors also found that the proportion of the county population minority is negatively correlated with inclusion in an HMO service area. Interestingly, except for unemployment, county economic characteristics were not an important predictor of HMO presence. Higher rates of unemployment were significantly associated with the chance of being in the service area of a non-IPA-model HMO. Another unexpected result was that counties that are classified as health professional shortage areas (HPSAs) are more likely to be included in an HMO service area than counties that are not so classified.

Ricketts, Slifkin, and Johnson-Webb conclude that the managed-care industry clearly sees a benefit to serving some rural counties and that predictions that rural areas will not benefit from competitive financing models are not warranted. However, rural communities still face substantial barriers to inclusion in the managed-care marketplace. If IPA models are not considered, there are marked differences in metropolitan versus non-metropolitan HMO penetration. Therefore, while many rural areas have access to managed care, their choice of models is limited. In addition, as also discussed by Serrato, Brown, and Bergeron, the least populous and most remote rural counties are unlikely to be included in HMO markets. There are large areas of the country, particularly in the Midwest, that have limited or no access to managed-care plans. The authors indicate that close to 18 million rural Americans, most of whom reside in the two most rural classes of counties, have no access to HMOs and therefore cannot benefit from any market advantages that HMOs may offer.

The authors also note that the process of selection of rural counties for inclusion in HMO markets is difficult to clarify. While it makes sense that more populous and wealthier areas are more likely to be targeted by HMOs, the greater likelihood of plans to include counties that are classified as HPSAs does not conform with general assumptions of a desirable HMO market. Combined with the negative relationship between HMO penetration and proportion of the population minority, the authors suggest that market inclusion in underserved areas may be selective. HMOs may specifically avoid rural areas with economic and social problems while serving areas where demand for services can be met in nearby counties.

TELEMEDICINE

The use of telecommunications technology to provide health care services to patients who are located at a different site

than the provider has undergone rapid growth in recent years. Both the private sector and the Federal Government have expended considerable resources on the development of telemedicine applications and the installation of telecommunications equipment. Although these efforts are not confined to rural areas, the potential of telemedicine technology to make services available to previously underserved rural areas has stimulated tremendous interest among legislators, policymakers, providers, and others. The article by Grigsby, Kaehny, Sandberg, Schlenker, and Shaughnessy presents a comprehensive analysis of the literature on telemedicine to determine the extent to which issues of costs, effects, and effectiveness have been addressed. The potential benefits of telemedicine to rural communities are also discussed.

Telemedicine technology has been used for a variety of health care services, including cardiology (e.g., transmission of electrocardiograms and remote auscultation), psychiatry, and home health (e.g., patient monitoring). Electronic media have long been used for transmission of radiographic images. Grigsby and colleagues report that there are currently 2-3 dozen active telemedicine programs in the United States, with telemedicine networks under development in at least 40 States. Despite this widespread dissemination, however, use of existing systems has been limited by several factors, including inadequate or underdeveloped technological and organizational infrastructure and the absence of third-party payment policy for telemedicine services. Low patient volumes have prevented researchers from conducting large-scale, cross-cutting evaluations of the effectiveness of telemedicine services; there have been few careful studies of cost effectiveness or acceptance by providers and patients.

The lack of rigorous research on telemedicine leads Grigsby and colleagues chiefly to point out what we don't know about this technology and its uses. Although telemedicine has the potential to enhance access and availability of some health care services in rural areas, especially in the most remote communities, a number of fundamental issues remain to be addressed. The authors suggest that additional research is needed in the areas of efficacy, costs and cost effectiveness, outcomes and standards of practice, utilization and practice guidelines, and payment.

MENTAL HEALTH

As with other health care services, rural residents face substantial barriers to access for mental health services, including a shortage of specialty mental health providers and the stigma associated with mental illness (Office of Technology Assessment, 1990; Wagenfeld et al., 1994). Rural residents may be especially sensitive to this stigma due to the small size and relative intimacy of many rural communities. In the final rural health article in this issue, Lambert and Agger present the results of their study of geographic differences in the use of mental health services among Medicaid beneficiaries in Maine. The authors examine whether rural Medicaid beneficiaries have lower utilization and access to mental health services than urban beneficiaries and to what extent geographic differences in utilization are associated with the supply of mental health providers. These issues are addressed through the use of inpatient and outpatient Medicaid claims data to identify all Maine Medicaid beneficiaries treated for a primary mental health diagnosis, the patient's residence, and the source of care for the period 1988-91. State licensure data and State-specific provider inventories were used to determine the supply of mental health providers.

Lambert and Agger find that rural Medicaid beneficiaries had significantly lower mental health service use rates than urban beneficiaries on all measures (ambulatory care visits, hospitalizations, and post-hospitalization visits). Specialty mental health providers account for most ambulatory care visits by both urban and rural beneficiaries, but these providers are used more frequently by urban residents. Rural beneficiaries rely on primary-care providers for mental health care to a much greater extent than urban residents, but the amount of care they receive is limited, suggesting that some rural primary-care providers attempt to diagnose and refer patients, but may lack the knowledge, skill, and time necessary to provide continuing care. In rural areas that have few specialty mental health providers, the reliance on primary-care practitioners to provide continuing care may have serious potential consequences for the ongoing treatment of mental health patients.

The authors also examine mental health service use rates while controlling for the supply of core mental health providers in rural and urban areas. Much of the difference in rural and urban use rates is reduced when taking provider supply into account. This finding supports the notion that lower provider supply is a barrier to service utilization in rural areas. The data also suggest that other factors, such as the knowledge and willingness of primary-care practitioners to diagnose and treat mental health conditions, the stigma associated with mental illness, and travel distance to services may account, in part, for lower rural utilization rates.

Lambert and Agger point out that policymakers are increasingly relying on primary-care providers to assume a greater responsibility for diagnosis, referral, and treatment of patients with mental health problems. Initiatives that call for such roles for primary-care providers, however, are typically developed without knowledge of either the mental health utilization patterns of low-income rural residents or the behavior of primary-care and specialty practitioners in rural areas. This information may be critical in deciding what can reasonably be expected of rural primary-care practitioners in providing access to mental health services for low-income rural residents.

The authors suggest that the reliance on primary-care practitioners to provide mental health services in rural areas indicates that efforts to increase the supply of primary-care providers trained in the diagnosis and treatment of mental health problems are particularly important. Enhancing reimbursement for these services, expanding the capacity of community mental health centers, and increasing the supply of specialty mental health providers are also critical to the provision of quality mental health services for residents of rural areas.

CONCLUSIONS

The provision of adequate access to health care services in rural America continues to be a critical public policy concern. The articles in this issue describe a rural health infrastructure that remains unstable despite the efforts and resources of communities, providers, government, and others to create viable long-term solutions. Wooldridge and colleagues report that grants assist some hospitals, but not the smallest and most isolated facilities. Moscovice and colleagues indicate that the development of rural hospital networks is a popular strategy, but the economic benefits of these arrangements are yet to be realized. Vogel and Miller find that rural hospital costs decrease when competitors are present in the market, but do not attribute this phenomenon to cost competition. Ricketts and colleagues and Serrato and

colleagues find that while managed-care organizations serve rural areas, they are chiefly limited to those counties that are close to larger metropolitan areas. Clearly, solutions to the problems faced by rural communities, especially the smallest and most isolated, remain elusive.

The rapidly evolving nature of the health care system presents both enhanced opportunities to address rural health problems and new threats to the fragile rural health care system. Continued policy-relevant research and careful evaluation of the changing nature of health care delivery in rural areas will assist HCFA and others in developing new approaches to support rural communities and providers in the delivery of high-quality, cost-effective services to Medicare and Medicaid beneficiaries and other rural residents.

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