Complexity of the healthcare crisis in rural America

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Because osteopathic physicians comprise 15.3% of all physicians in small rural counties, while making up only 5.1% of the nation's physicians, the solutions to the healthcare crisis for rural America are of special interest to them. The authors explore the incredible diversity of rural communities and the difficulty with defining the term "rural." They give the background of efforts to address rural health problems and the reasons accessible healthcare—available, acceptable and affordable—has been so elusive in rural settings. The authors also explain the relative success of the osteopathic medical profession and address the role osteopathic physicians can play in the future. Finally, they explore the exciting new possibilities that telemedicine offers.

(Key words: Rural healthcare, accessibility, rural demographics, rural healthcare reform, telemedicine)

The call for healthcare reform is focusing on curing the ills of the healthcare system across America, but we must be wary of any "one-size-fits-all" solution. Healthcare for rural areas must be affordable, accessible, and appropriate, but achieving all three of these qualities has been difficult. This article presents an overview of rural healthcare in America today. It includes the various definitions of "rural" America, and explores the differences between rural and urban residents, and rural and urban areas. We will emphasize the healthcare needs of the rural populations, and finally, we will consider the special position that osteopathic physicians hold in maintaining healthcare in rural America.

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What is rural America?

To talk about rural America, one must first define the term *rural.* Many formal definitions exist, and each definition manifests a particular view of rural America directed toward different purposes. Several organizations have developed their own classification schemes to suit their own individual needs. Each definition attempts to classify "ruralness" on the basis of population density, distance from urban areas, or population size or any combination thereof. This variation has led to significant confusion in the literature and the practical implementation of programs.

The US Census Bureau arrives at its definition of what constitutes a rural area or population through the backdoor. It first defines an *urban area* as any "urbanized area" consisting of a central city (or cities), and adjacent territory with a combined population of at least 50,000. It also includes as urban any area with 2500 or more residents. As a consequence, all other areas not classified as urban areas are considered rural. According to the US Census Bureau, about 27% of the US population lives in such rural areas.

In more recent times, the Office of Management and Budget (OMB) has redefined *rural* and *urban* on a county basis. Urban areas comprise counties designated as standard metropolitan statistical areas (MSAs). An MSA includes either a city of 50,000 or more or an urbanized area with at least 50,000 people, within a county or counties with at least 100,000 total residents.[1(p35)] Rural areas, or non–metropolitan statistical areas (Non-MSA), are counties that do not have a central city of 50,000, or a countywide population of at least 100,000.

As defined by the Census Bureau, *rural* is not synonymous with *non-MSA*. So, not all rural areas qualify as non-MSAs, and the confusion between the definitions begins. As a result, about 14% of the population living in MSAs qualify as rural and about 38% of the population living in non-MSAs is considered urban. In reality, about 15% of the population lives in areas that fit both the rural and non-MSA definition: They live in a town of less than 2500 and a county of less than 100,000 residents.

The Department of Agriculture (USDA) has developed a third definition of rural which adds to the confusion between the US Census Bureau and the OMB's MSA/non-MSA dichotomy. For the USDA, each county is placed in a 10-stage continuum code ranging from large metropolitan counties to small sparsely populated counties. This definition gauges urban and rural populations with more precision. Counties are classified based on the presence or absence of a metropolitan area, the distance from a metropolitan area, and population concentration. Another related population definition is that of a *frontier* area. This type of area is a county with a population density of less than six people per square mile. These are the most remote areas of the country where even basic healthcare services are difficult to obtain. On average, residents of frontier areas must travel more than 1 hour to receive any healthcare services.[2] The vast majority of frontier counties are in the Western half of the United States, and they have unique healthcare problems and needs as well.

For the purposes of this discussion, the term *rural* will refer to those persons living in non-MSAs. This definition of rural is in keeping with most of the existing literature.

Rural America's diversity

The average American's concept of rural America is inaccurate and overly simplistic. The term *rural* conjures up a national patchwork of small family-run farms. Yet, less than 10% of the rural population lives on a farm. The demographic and economic landscape of rural America is changing, and has been changing since the Industrial Revolution. The proportion of the population living in rural areas has decreased throughout this century. It is important to note, however, that the total number of individuals living in rural America is higher now than at any other time in US history. Currently, approximately 25% of the US population, numbering some 60 million people, live in rural areas.

Rural areas and populations are extremely dissimilar. This diversity can be seen in the demography as well as in the economic, social, and cultural fabric of each rural area. There is no single rural America. Rural Maine is not like rural Iowa, and neither of these is like the rural South. Economic diversity is best seen when we consider the types of rural communities as defined by the USDA.

Economic diversity

The USDA lists seven types of rural counties:

- farming dependent,
- manufacturing dependent,
- mining dependent,
- specialized government,
- persistent poverty,
- federal lands, and
- destination retirement.

These seven classifications account for 85% of all non-MSA counties. Most counties specialize in at least one or possibly a few economic activities. This overspecialization makes individual counties vulnerable to the economic cycles of specific industries and international economics. As interest rates rise, rural banks are less able to lend money. Small rural businesses therefore are less able to outlast the downturns in the economy than larger urban industries. The strength of the American dollar can determine whether a farmer's corn or wheat is marketable at all. The rural population is widely diverse, not by gender or race, but by economic status. This economic diversity is one central problem in providing healthcare to the rural population and in developing a single, uniform solution to the problem of rural healthcare delivery.

Demographic diversity

Although dramatic economic diversity exists between rural areas, many factors are common to most rural populations when we compare them with the urban population. The most obvious is that the population is less dense in rural areas. Rural populations are less ethnically diverse, have a higher percentage of the elderly, are less educated, have a higher total unemployment rate, and are more likely to be poor.[3] Employed rural people are less likely to have health insurance coverage through their employer, and thus are more likely than their urban counterparts to buy individual health insurance coverage. Participation in Medicaid is linked to eligibility for Aid to Families with Dependent Children (AFDC). This linkage limits rural participation because rural families

Table
Demographic Comparison: Rural Versus Urban

Factor	Rural, %	Urban, %
Chronic health conditions	41.0	36.0
Live in poverty	16.7	12.5
Population >65 years	15.0	12.0
Uninsured	17.4	14.7
Poor, covered by Medicaid	6.0	44.0

Adapted from *Rural Health Challenges in the 1990s*. Princeton, NJ, The Robert Wood Johnson Foundation, November 1993.

have a higher percentage of two-parent families below the poverty line. The two-parent factor disqualifies these families for AFDC and Medicaid even if otherwise eligible. These variables are summarized in the *Table*.

Health characteristics

Health characteristics can distinguish rural from urban populations. Rural residents are less likely to smoke, but they are also less likely to wear seatbelts. Rural workers are more likely to die of a work-related injury. Rural residents tend to have higher rates of chronic diseases. Rural residents have higher rates of heart disease, hypertension, and arthritis than urban residents. Although the infant mortality rate is slightly higher in rural areas, the overall mortality rate for the rural population is slightly lower than for urban populations.

The difference in the rates of acute illness between urban and rural populations is negligible. Interestingly, children in rural areas are more often immunized against childhood diseases than urban children.[1(p43)]

The acquired immunodeficiency syndrome (AIDS) is often considered a disease of large metropolitan areas. However, the incidence of AIDS in rural areas is rising rapidly. Although the numbers are still small, the percentage increase of cases from 1991 to 1992 was higher in non-MSAs than in any other areas of residence.[4]

Rural healthcare services

Sweeping changes in the healthcare delivery system in the United States in recent years have affected all aspects of healthcare, and have unique implications for the rural population.

Rural hospitals have high fixed costs and a low census. Faced with prospective payment systems and the economics of cost-containment, many hospitals have closed. From 1980 to 1988, 204 rural hospitals closed in the United States.[5] As Cordes states, "Current Medicare reimbursement policies may be at least as effective in closing rural hospitals as the Hill-Burton Act was in constructing those same hospitals."[3]

Hospital closure produces both medical and economic effects. Closure decreases access to needed services. Counties without hospitals have increased problems recruiting physicians. These counties have higher infant mortality rates and trauma death rates than counties with hospitals.

Closure of a hospital can devastate the economic life of a rural area. Rural hospitals are often primary employers with significant payrolls. The presence of healthcare services (both hospital and physicians) in non-MSAs can be a calling card for business and industry. A new business, especially small manufacturing, may be more readily recruited to an area that has a hospital than one that does not.

Often when the hospital closes, the physicians leave as well. People seeking to relocate are more likely to settle in a community with a physician. Retirees are more likely to move to an area with a physician, because the elderly use healthcare services more than other segments of the population. Retirees can be a boon to an area inasmuch as passive income accounts for 30% of all income in the United States today.[6] When residents enter an area, tax revenues and available services increase.

The presence of a physician can have economic effects on a community. Studies have shown that one rural physician creates a total of 17 additional jobs. A physician usually employes four people directly and, on average, generates 13 nonmedical local jobs.[6]

Barriers to rural healthcare

The barriers to healthcare for rural residents are economic, cultural, and physical. Physical barriers include distance, the lack of public transportation, and the presence of few local providers. People in frontier counties may have to travel farther than 75 miles to a physician. The distances to specialty care are even greater. The economic barriers often outweigh the physical barriers. As previously stated, rural residents have lower income and higher poverty rates. More than half of rural residents have incomes below 150% of

the federal poverty line. Rural people younger than 65 years are less likely to have health insurance and are much less likely to be eligible for Medicaid. Rural residents who work are more likely to be employed in a service industry that does not provide health insurance.

Federal efforts to address problems in rural and underserved areas

Studies in the 1960s and early 1970s showed that the United States was facing a relative shortage of physicians. Federal programs increased resources to medical schools and medical students in an attempt to increase the number of physicians. An assumption, associated with these programs, was that a future projected physician surplus would voluntarily trickle down into rural areas because physicians in more-populated areas would be influenced by increased competition.

Studies conducted by the Graduate Medical Education National Advisory Committee and Rand studies in the early 1980s suggested that the physician deficit had ended. This pronouncement led to dramatic decreases in federal efforts to improve the distribution of healthcare personnel in rural areas.[1(p242)] Funding for the National Health Service Corps was reduced and, although the United States had an increased supply of physicians, new physicians tended to train in specialties other than primary care. Some new physicians did drift away from urban areas; however, they tended to migrate to larger non-MSAs with existing physician coverage. Although most areas benefited from the increased supply of physicians, remote rural areas benefited less than other areas. It is anticipated that future shortages of primary care physicians will likely have a disproportional negative effect on rural areas.[1(p282)]

Rural physicians

In 1988, MSAs had 223 physicians per 100,000 population, while non-MSAs had 96 physicians per 100,000 residents.[7] Additionally, some low-population counties had as few as 48 physicians per 100,000 population. From 1970 to 1988, the total physician supply increased by 68% with only a 20% increase in the number of general/family practitioners. The resultant increase in physician supply was in the specialties of radiology, plastic surgery, gastroenterology, pulmonary medicine, cardiology, and anesthesiology.[7]

Physicians to rural populations are predominantly primary care physicians, specifically general or family practitioners. Primary care generally includes the specialties of family medicine, pediatrics, and general internal medicine. The primary care physician provides for most of the individual patient's healthcare and coordinates needed specialty care. The primary care physician offers continuity of care as well as greater preventive services. It is generally believed that rural areas do not provide a sufficient population base to adequately support and attract most non–primary care specialties. Currently, less than 20% of physicians in larger rural counties are in non–primary care specialties.

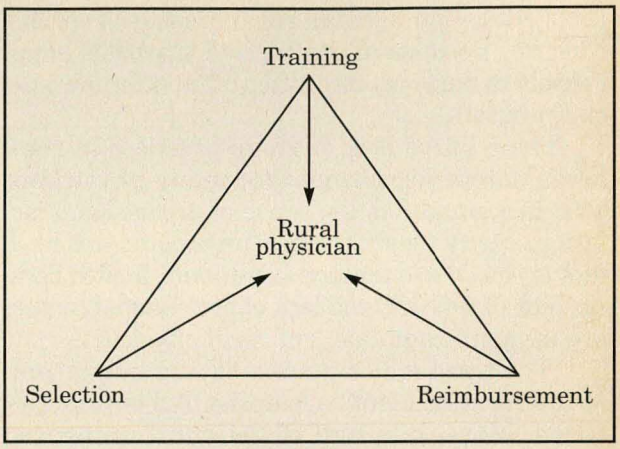

Figure. *Factors contributing to rural physician supply.*

Rural physicians are more likely to be older, and are less likely to be either residency trained or board certified. Recently, however, there has been an increase in the number of physicians younger than 35 years choosing rural practice locations. The long-term significance of this is unclear, but any added manpower in rural settings is a positive step.

Three factors affect the availability of family practice physicians. First, only recently have federal funding and encouragement begun to increase the number of family practice residencies. Second, there are many older general practitioners who practice in rural areas, and their rate of retirement is expected to increase. Third, increasing competition from managed care programs is siphoning family practitioners and other primary care physicians to urban areas in large numbers.[8]

Physician recruitment in rural areas

Physicians considering rural practice settings may be deterred by personal and family concerns over lifestyle, practice issues, and reimbursement.

Lifestyle issues include social and geographic concerns as well as professional and cultural isolation. Social and professional opportunities for spouses are also extremely important to recruiting physicians to rural settings. Finally, the qual-

ity of education in small rural areas is of serious concern. Because of the limited tax base, small schools in rural communities often offer few special programs.

The relative lack of group practices in rural areas deters recruitment for many physicians. This lack amplifies the sense of professional isolation. Many newly trained physicians are hesitant to start a solo practice. Long hours, limited backup, lack of time off, and lack of professional contact are frequent complaints of rural physicians.

The third major concern is reimbursement. Many rural residents are uninsured or underinsured. More than half of the rural uninsured have incomes 150% below the poverty line, and Medicaid is generally not available to many of them.[9] Medicare reimbursement fails to recognize the increased rates of chronic illness and disability in rural areas.[10] Rural community and migrant health centers receive 15% less funding than their urban counterparts.[1(p248)] A "nonmetropolitan" designation can cost a physician Medicare dollars, as Medicare pays a higher rate for a "metropolitan" designation. Along with lower reimbursement rates, a physician must also consider the fixed costs of practicing medicine anywhere. Licensure, dues, and professional liability insurance are all necessary costs of doing business. These costs create a considerable burden for rural physicians as they represent a higher percentage of total costs under a lower reimbursement rate.

Physician retention in rural areas

Many factors make it difficult to retain rural physicians once they are recruited. One study showed that the average rural physician stayed in practice for only 4.5 years.[11] Besides the previously mentioned reimbursement, practice, and lifestyle issues, physicians cite four major reasons for leaving rural practice:

- malpractice costs,
- hospital closure,
- inadequate income, and
- government bureaucracy (regulations and paperwork).[12]

Competitive forces steer physicians toward urban practices. A dramatic increase in the demand for primary care physicians from managed care organizations lures family practitioners into urban practices. These companies offer high salaries and attractive packages of flexible schedules and limited time on call. They offer a balance of professional and personal time that is hard to match in a rural setting. Also, evidence points to an increase in the number of physicians looking for salaried positions, not usually found in rural settings. It is projected that the number of dual physician marriages will increase by the year 2000. This marriage factor could add another parameter to rural physician supply and distribution.

Medical education and rural healthcare

Physician selection, medical training, and reimbursement constitute the three key areas that must be addressed to increase the physician supply to rural America. All three are important and can be considered as the three corners of a triangle (*Figure*).

Selection

Medical schools following a rural selection approach would give preferential admission to those candidates more likely to practice in rural areas. Physicians tend to return to an area that is similar in size to their hometowns. Students from rural areas tend to return to rural areas. Therefore, selection of rural-oriented physicians should begin with the medical school admission committee. However, fewer students from rural areas are being selected for medical school, a 31% decrease between 1978 and 1986.[7]

Training

Medical education, in school and in residency, is also critical in shaping specialty and practice location decisions. Schools that emphasize rural training can influence students' selection of residency or practice areas. Special curriculum programs geared toward rural healthcare have helped to increase the number of rural-oriented graduates. Rural preceptorships and rural role models tend to encourage rural practice. Schools need to increase their ambulatory care training sites and the offering of rural-oriented electives. Rural preceptorships need to begin early in training.[13] Faculty need to be sensitized to rural values and needs.

While medical schools need to exercise a rural emphasis in the selection and schooling of students, residency programs must be developed to train physicians for rural practice. Academic, highly technical, tertiary care centers have few family practice residencies and little rural training or emphasis. Many centers have limited ambulatory training except in in-house clinics. Medical students and residents need to train in facilities where they learn to make a hands-on diagnosis without reliance on high-tech diagnostic equipment. Many family practice specialists shun rural prac-

tice for fear of losing the highly technical skills that they have learned during residency.[7]

Reimbursement

The third part of the triangle is financial reimbursement. Kindig[12] notes, that "without payment reform, educational reform will have marginal impact". Individuals have tended to migrate to highly paid specialties and highly reimbursed procedures. McKay[14] estimates that increasing reimbursement by 1% can increase student preferences for that specialty by 0.5%. By increasing reimbursement to rural primary care providers 20%, we could expect to increase rural practice selection significantly. Physicians often cite poor reimbursement as a reason for leaving rural practice. The Medicare fee schedule, which is based on a resource-based relative value scale emphasizing cognitive services and primary care, may help to address this problem.

Role of telemedicine in rural health

Current technologies in telecommunications and information systems hold promise for the development of nationwide healthcare networks and, most specifically, the enhancement of rural healthcare. These technologies can decrease the isolation felt by many rural healthcare professionals by linking them to colleagues via phone lines and computer screens. This professional interaction alone might promote their retention in and recruitment to rural communities, and even provide a means of creating healthcare professionals specializing in rural healthcare. Healthcare networks have the great potential to improve and maintain the quality of care now available in small rural communities by providing physicians access to the latest biomedical information. Also, this modern technology can keep healthcare dollars in rural communities by broadening the range of actual healthcare services that would be available locally.

The basic equipment needed to access information from healthcare networks include a standard telephone and a desktop computer.

The first component, the telephone, is generally in place everywhere there are people. Universal telephone service has been a public policy goal in the United States for 60 years; therefore, virtually everyone in the country has a telephone. The telephone has become a more flexible tool of business and communication in the past few years and promises future use in the emerging technologies. Telephones and phonelines are currently used for *conferencing* between large numbers of people across diverse geographic areas, *voicemail* applications, *facsimile* transmissions, *computer communications,* and potentially *picture phones.*

The second tool required to jump into this emerging information age is a personal desktop computer. In recent years, computers have become widely affordable and much more user-friendly to the point that they have become almost commonplace in many businesses and industries. As costs continue to fall for basic models, more physicians in rural settings will discover their usefulness in recordkeeping, billing, and scheduling. Two complementary applications for more efficient healthcare include electronic mail and computer conferencing. Electronic mail allows users to address a message to another person or group with an electronic mailbox. The recipient can retrieve text, pictures, charts, or diagrams by simply dialing in and collecting it. Computer conferencing is similar to electronic mail, but it is an on-line communication to which participants need not be present at the same time. Conferences are organized by topic, and colleagues add remarks as they see fit or merely increase their own knowledge through the interaction of associates.

Another component to the system which facilitates education and research is Internet, the largest and most common network for computer communication. Internet is a network of networks connecting government databases, the National Science Foundation's NSFNet, and a growing number of university system networks. Currently, a number of congressional bills are directed at creating a national information infrastructure to connect more areas of the country to a nationwide network.

The implications and applications of this new technology are of great importance to rural physicians and to the improvement of rural health. With computer networking, telemedicine will allow rural physicians to confer with colleagues simultaneously for medical as well as social reasons.[15]

Role of osteopathic physicians in rural healthcare

Osteopathic physicians are important in the healthcare of rural America. They have traditionally entered primary care and have consistently practiced in rural areas. Overall, osteopathic physicians account for 15.3% of all physicians in small rural counties while making up only 5.1% of the nation's physicians.[1(p247)] In 1986, there were 5 DOs per 100,000 in MSAs and 30 DOs per 100,000 in non-MSAs.[16] Recent surveys suggest that 30% of graduating DOs preferred practice locations in

counties with less than 50,000 people as compared with 13.5% of the MDs.[1(p249)] This statistic alone speaks well for osteopathic medicine.

Eighty percent of all DOs are located within 16 states. In Missouri, 74% of the physicians practicing in small rural counties are DOs. Other states are not as fortunate, as no DOs are to be found in some of the small rural counties in Utah or North Carolina.[1(p247)]

As healthcare reform focuses on the unique needs of rural communities, the emphasis on primary care provides great opportunity for osteopathic medical education. To increase the numbers of osteopathic physicians serving rural communities, admissions committees of colleges of osteopathic medicine (COMs) should continue to accept students from rural areas and students who express an interest in locating in rural settings. Many COMs are located in rural areas, and most require rural training rotations that tend to influence rural location choices. Osteopathic medical training sites are more often smaller community hospitals where primary care role models are apparent and thriving, again influencing the choice of rural practice locations. The requirement for an osteopathic general rotating internship also predisposes individuals toward primary care specialties, making rural practice a feasible option.

Comment

Accessible healthcare, defined as "care that is available, acceptable, and affordable," may be hard to achieve in rural areas. No singular solution to the rural healthcare problem exists. For some areas, accessibility is the major problem. Other areas cite cost or physician recruitment as the major problem. No single healthcare model can solve the spectrum of problems that affect rural healthcare.

The health status of underserved populations needs to be directly addressed and improved. The United States has to decide what our public healthcare policy must be and how it must be directed. The current emphasis of healthcare reform is on cost-containment; it does not pay sufficient attention to increasing access for the underserved. The country must decide if rural communities will continue to have healthcare rationed because of location. It is unclear if the United States is willing to subsidize rural care for the public good. Cordes[3] states, "a minimal set of health services should be available to all rural Americans regardless of economic status or economic opportunity...even minimal levels of some public services cannot be provided in many rural areas without an external subsidy. ...the ultimate question is whether or not our society believes rural healthcare, like rural postal delivery, merits such a subsidy?"

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