

Where We Live: Health Care in Rural vs Urban America

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ON THE COVER

Benjamin May,
Indiana University,
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Ruins, oil on canvas,
17.8 × 12.7 cm.

THE ELECTORAL MAP OF 2000—WITH ITS COASTAL BLUE EDGES AND POINTELLIST urban centers set against great swaths of red—told many political and economic stories. Attitudes toward rural life often reveal a complex mixture of affection and disdain, ideas about neighborliness and isolation, simplicity and provincialism. In his recent essay, “One Nation, Slightly Divisible,” David Brooks argues that the differences between rural and urban America may be merely superficial, exemplified in consumer preferences such as Wal-Mart vs Pottery Barn.¹ Although I agree with his assertion that the two locales possess unique “sensibilities,” there are important differences in rural vs urban health care.

While 20% of Americans live in rural areas, only 9% of the nation’s physicians practice there. Poverty—a principal health risk factor in any geographic locale—is more prevalent in rural areas and is often related to increased rates of chronic disease and greater numbers of uninsured citizens.² Rural residents have fewer physicians and nurses per capita and increased transportation barriers; they visit a physician less often and later in the course of their illness than do urban residents.² This issue of MSJAMA explores the question of whether there are two US health care delivery systems, one urban and one rural.

Differences between urban and rural health care exist on a continuum defined by many variables. Susan Blumenthal and Jessica Kagen provide an epidemiologic background in which to consider important differences and markers between rural and urban health. Hilda Heady explores some of the monetary inequities embodied in rural vs urban reimbursement policies. Terry Meden and colleagues describe how distance from a tertiary care center may be related to decisions about mastectomy for rural women with stages I and II breast cancer. Although *Roe vs Wade* made abortion legal in the United States, this right may be moot in many rural settings. Trude Bennett explores some of these barriers to prenatal care, family planning, surgical contraception, and other reproductive health care services in rural areas. To address the chronic geographic maldistribution of physicians, Howard Rabinowitz and Nina Paynter outline the constructs that inform medical students’ decision to become generalists or specialists and correlatively to practice in a rural vs an urban setting.

These inequities in rural vs urban health care delivery are based in structural, economic, and cultural differences. Through increased awareness, research, education, and preventive public health measures, congress, and ultimately communities and the health care providers who serve them, may begin to lessen the degrees of difference.

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The Effects of Socioeconomic Status on Health in Rural and Urban America

Susan J. Blumenthal, MD, MPA, *US Assistant Surgeon General*, and Jessica Kagen, *US Department of Health and Human Services, Washington, DC*

SEVERAL FACTORS CONTRIBUTE TO THE HEALTH OF PEOPLE AND communities including economic resources, level of income and education, access to health care, and environmental quality.¹ In 1999, approximately 80.2% of Americans lived in urban areas as compared to 19.8% in rural communities.² While rural and urban America have unique geographic and quality-of-life characteristics, a recent report found that people who live in the most rural (areas with fewer than 10 000 people) and inner-city areas have several things in common: they are more likely to live in poverty, experience higher mortality rates, and have poorer health status than suburban residents.¹

Poverty, a major risk factor for poor health outcomes, is more prevalent in inner-city and rural areas than suburban areas. In 1999, 14.3% of rural Americans lived in poverty compared to 11.2% of urban Americans.³ Irrespective of where they live, persons with lower incomes and less education are more likely to report unmet health needs, less likely to have health insurance coverage, and less likely to receive preventive health care. When combined, these variables raise the risk of death across all demographic populations.⁴ Many of the ills associated with poverty, including lower total household income and a higher number of uninsured residents, are magnified in rural areas.¹ In addition, rural communities have fewer hospital beds, physicians, nurses, and specialists per capita as compared to urban residents, as well as increased transportation barriers to access health care.¹ The highest death rates for children and young adults are found in the most rural counties, and rural residents see physicians less often and usually later in the course of an illness.¹ People in rural America experience higher rates of chronic disease and the health-damaging behaviors associated with them; they are more likely to smoke, to lose teeth, and to experience limitations from chronic health conditions.¹ While death rates from homicide are greater in urban areas, mortality rates from unintentional injuries and motor vehicle crashes are disproportionately more common in rural America.¹

Health concerns such as violence, mental illness, substance abuse, and environmental issues affect both urban and rural communities, as do serious racial/ethnic health disparities including shorter life expectancy for some population groups. Poor inner-city urban residents often live in overcrowded and inadequate housing, resulting in decreased quality of life and higher rates of respiratory disease, substance abuse, stress, violence, and death from heart disease and cancer.³ While cities have some of the best health care facilities and attract high concentrations of medical professionals, these services are not equally distributed to inner-

city areas and many poor urban residents lack access to them. This is due, in part, to a shortage of primary care physicians and cultural barriers in inner cities, as well as lack of insurance and awareness of available health care services by residents in these areas.

A top priority for the US Department of Health and Human Services (DHHS) is to eliminate health disparities across racial/ethnic groups, sex, age, and geographic location. To achieve this goal, the public health infrastructure must be strengthened. Collaboration between government and private sector agencies is essential to address issues related to health, education, employment, housing, and transportation. Many health programs and initiatives are under way including the establishment of a DHHS Rural Task Force to strengthen existing department programs, enhance state health service delivery systems, and foster telemedicine. The National Health Service Corps increases access to primary care services for people in rural and inner-city communities through the recruitment and retention of community-responsive, culturally competent primary care clinicians. The National Institutes of Health supports research on a broad spectrum of rural and urban health concerns. The US Centers for Disease Control and Prevention recently published an epidemiologic report of urban and rural health statistics providing a framework for building future interventions and policies.¹

The relative scarcity of health resources in rural areas and limited access to them in the poorest parts of large cities is a problem that continues to affect the health of these communities. Efforts to increase access to health care, enhance educational, economic and occupational opportunities, improve housing and transportation, emphasize disease prevention at the individual and community levels, and strengthen social supports should improve health for all Americans in the 21st century irrespective of where they may live.

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A Delicate Balance: The Economics of Rural Health Care Delivery

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RURAL HEALTH CARE DELIVERY SYSTEMS, EMBODIED IN THE SPIRIT of the men and women who still farm and work the rural landscape, are often described by their tenacity and ability to deliver quality in the face of economic uncertainty. Many rural hospitals have closed, restructured, or consolidated in the last 2 decades due to government funding cuts, as well as the Congressional policies set forth in the Medicare Prospective Payment System (PPS) of 1983 and the 1997 Balanced Budget Act.¹ The low population densities in rural areas often result in decreased patient volumes and diseconomies of scale, fixed overhead expenses, high percentages of subsidized and uninsured patients,¹ disproportionately elderly populations,² physician shortages, and decreased access for low-income patients.¹

Congress, the administration, and special interest groups define health care reimbursement policy. Given that 80% of Americans live in nonrural areas, the priorities of urban and suburban populations are often disproportionately represented to Congress through representation and lobbying efforts. Insurance and pharmaceutical companies, health plans, hospitals, and physicians associations have rural constituents; however, these entities rarely advocate for rural interests.¹ In this environment, when faced with demands to control costs, Congress' cost containment policies often result in standardized packages—a “one size fits all” approach.

An example of this methodology is demonstrated in Medicare hospital reimbursement policy. The Medicare PPS pays hospitals a fixed amount per diagnosis related group (DRG) for each Medicare patient. Approximately 70% of the payment rate is modified by an area wage index³ that is intended to reflect differences in hospital wages. The calculation of this index is disadvantageous for some rural providers because there is a single index for all rural counties in a given state. In states such as Texas and Illinois, areas defined as “rural,” are too large and too heterogeneous for the index to be meaningful. A west Texan frontier county, for example, may have markedly different demographics and health care needs compared to a rural population 70 miles from Austin. By contrast, each metropolitan or urban area within a state has its own separate index.

The index also reflects labor costs that are already accounted for in the DRG, which, in effect, pays urban hospitals that treat more complex cases twice for the same service. Because urban hospitals, on average, treat a mix of patients with more highly paying DRGs, they receive double payment for their labor costs. In effect, they have a wage index that is approximately 15% higher than rural hospitals and they have a case mix index that yields approximately 5% to 10% greater payments based on labor intensity. Finally, the

labor market boundaries, as they are currently drawn, allow too much variation in wage scales and therefore oversimplify the demands in rural labor markets.³

Rural physician income is also affected by differences in policy and patient demographics. Rural patients are more likely to be self-employed or to lack health insurance¹ and rural states often have stricter Medicaid eligibility standards and higher proportions of low-income families. Each of these factors has the potential to lower average incomes for rural physicians. While rural physicians have the same costs as urban physicians for salaries, supplies, and transportation, they cannot take advantage of economies of scale that spread those costs over a large number of patients.

Rural emergency medical service (EMS) provides another example of structure affecting function. The purchase and operating costs to run a competent EMS are often the responsibility of a rural hospital system or the local government. Many rural EMSs cannot pay for themselves and rely on private donations, charity events, and even the occasional bake sale. Emergency medical personnel in a rural community are usually all volunteer, and emergency care is their second job.¹ While the majority of rural EMS calls are nonemergent facility-to-facility transports, rural EMS must also provide advanced life support to transport trauma, cardiac, and perinatal patients to tertiary care centers. A rural community with a service district of 500 square miles and 1200 calls per year has nearly twice the cost-per-transport as its urban counterpart.⁴ Although the costs to purchase and operate an ambulance are the same for urban and rural EMS, urban EMS are reimbursed by private payers at a higher rate and Medicare accounts for less of their income.⁴

Inequities in reimbursement policies make it more difficult for rural providers to maintain fragile systems of care for subsidized and uninsured patients. Congress has delayed the implementation of the proposed reimbursement changes called for in BBA97 for home health and other outpatient services. In the past, Congress has had a pattern of passing budget restrictions to reduce cost and then making minor changes to limit harm to rural providers, but this does not provide a comprehensive policy to stabilize rural health care services.

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Relationship Between Travel Distance and Utilization of Breast Cancer Treatment in Rural Northern Michigan

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Introduction

Two equally efficacious treatments are available for patients with stage I or II breast cancer—either modified radical mastectomy (MRM) or breast-conserving therapy (BCT), which generally involves wide excision (lumpectomy) followed by radiation therapy.¹ Utilization rates of the 2 treatments in the United States vary widely, with rates of BCT ranging from 26.7% to 55.6% around a national average of 42%.^{2,3} The choice of BCT vs MRM has been found to be related to a number of variables, including tumor characteristics, physician and hospital attributes, geographic region, insurance, and patients' age, race, socioeconomic status, education, and treatment perceptions.⁴⁻⁷ Rural patients may be especially affected by the amount of travel required for radiation therapy. We studied the association between travel distance to radiation treatment and the utilization of BCT in a rural region of Michigan, where the nearest radiation oncology center may be 150 miles from patients' homes.

Methods

We retrospectively reviewed 81 medical records of patients treated for breast cancer from 1999 to 2000 in 3 community hospitals in northern Michigan. After excluding patients with prior invasive breast cancer or breast cancer other than stage I or II, 66 cases remained for analysis. We then divided the sample into 2 groups who lived either more or less than 45 miles from the nearest radiation oncology facility, and compared the number of patients in each group who were treated with BCT vs MRM. We also compared age, marital status, employment status, and treatment surgeon between the 2 groups. Dichotomous variables were compared with χ^2 test, and the Spearman rank test was used for continuous variables. We also assessed the relationship between travel distance and treatment choice in the entire sample with the Kruskal-Wallis test, and the relationship between age and travel distance with the Pearson rank correlation test. All statistical analyses were performed with Minitab statistical software version 13.30 (Minitab, Inc, State College, Pa).

Results

The mean age was 64.2 years (range, 30-92 years), and mean travel distance was 61.6 miles (range, 0-158 miles). Age and travel distance were not associated in the sample as a whole (Pearson rank correlation $-.205$, $P=.099$). The near and far groups were not significantly different in age ($P=.301$) or marital status ($P=.856$). To test the sensitivity of the 45-mile cutoff, we also recomputed these statistics using cutoffs of 25, 35, and 55 miles and still found no significant differences. The near group, however, was more likely to

be employed (58.3% of near group employed vs 31.0% of the far group; $\chi^2=4.86$, $P=.030$).

BCT was utilized by 24.2% of all patients. In the entire sample, BCT utilization was negatively correlated with travel distance (Kruskal-Wallis test $z=-2.18$, $H=4.77$, $P=.029$, $P=.027$ adjusted for ties). Of the near group 14 patients received MRM (58.3%) and 10 received BCT (41.7%). Of the far group, 36 patients received MRM (85.7%) and 6 received BCT (14.3%) ($\chi^2=6.24$, $P=.013$). Similar results were obtained with distance cut-off values of 25, 35 and 55 miles. Treatment utilization across the 2 groups was not associated with age ($t=1.04$, $P=.310$), marital status ($\chi^2=.021$, $P=.885$), occupational status ($\chi^2=2.06$, $P=.152$) or treatment surgeon ($\chi^2=5.43$, $P=.366$).

Comment

In our sample, patients with stage I or II breast cancer who lived at greater distances from a radiation oncology facility were more likely to undergo mastectomy. The overall rate of BCT of 24.2% in this rural sample is nearly half the US average. Although age, marital status, and employment were not associated with treatment in this sample, it is possible that these variables, as well as other unmeasured clinical or demographic factors, may mediate or explain this relationship.

Travel burdens include, but are not limited to, duration of travel, added travel expenses, and driving during winter months when roads may be hazardous and at times impassable. Physicians in rural counties may wish to discuss travel burden with their patients in the context of treatment decisions for early-stage breast cancer.

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Reproductive Health Care in the Rural United States

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IN ADDITION TO RURAL HEALTH CARE BARRIERS SUCH AS POVERTY and distance, rural women face limited access to reproductive health services.¹ The resulting lack of care can challenge rural women's reproductive autonomy. Their reproductive choices may also be limited by the added impact of rural values, norms, and belief systems regarding sexual health and the patient-physician relationship. Rural women tend to have less education, fewer job opportunities, lower salaries, more children, and greater family caretaking responsibility than their urban counterparts.¹ They are more likely both to marry and to have children at younger ages. The combination of poverty, low population density, and lack of child care and other services in many rural areas reinforces traditional roles for women. They receive less preventive care than women in urban areas and have higher rates of chronic disease.¹

Rural women are more likely to lack private insurance due to the structure of local economies and conditions of employment.² Rural women, especially those of Hispanic ethnicity, are less likely than urban women to obtain adequate prenatal care.³ Rural women's isolation, lack of transportation, and confidentiality concerns, as well as the lack of culturally competent educational materials and staff to meet the needs of immigrant women, pose challenges to quality reproductive health care in rural settings. Rural locales are also challenged by lower than average reimbursement for physicians, chronic physician shortages in general, and a loss of obstetrician-gynecologists in particular.⁴

Hospital closures and mergers further constrain options in the sparse rural landscape. Although acquisitions of non-denominational hospitals by Catholic health care systems have led to a loss of reproductive health care services in both urban and rural areas, rural women may feel the loss of such services more acutely when a Catholic hospital becomes the sole health care facility in their region.⁵ Rural residents may increasingly find that hospitals serving their geographic area no longer provide essential services such as family planning,⁶ HIV/AIDS counseling and testing,⁶ emergency contraception for women who have been raped,⁷ infertility treatments,⁶ or tubal ligation.⁶ Even for routine preventive care, the cost and time involved in reaching a more distant site may create strong disincentives.

Despite the popular stereotype of adolescent pregnancy as an inner-city problem, the rates of adolescent pregnancy are similar in urban and rural areas.⁸ However, adolescent birth rates may be higher in rural vs urban counties due to lower rates of abortion.⁸ In 1996, only 5% of all rural counties in the US had abortion services and only 1% of abortions were reported in rural counties.⁹ Although an increasing number of physicians may be willing to offer medical abortions, those who do so must be qualified to provide surgical abortion, or have referral arrangements with a physi-

cian who performs abortion procedures. Rosenblatt et al¹⁰ found that nearly 50% of rural Idaho physicians would not refer their patients to another provider for abortion procedures. Given the small number of physicians who currently perform abortions in rural locales, medical abortion may not be an option in many rural areas.

Due to the lack of qualitative data regarding fertility decision making among rural women, it is not currently known whether their low abortion rates are due solely to limited physician access. A survey of Washington State's 31 rural family planning clinics found that abortion services were not provided, in part, due to federal funding prohibitions, local community opposition, lack of a trained provider, and steep increases in medical liability insurance.¹¹ There is a need for further studies to examine rural abortion and contraceptive practices as they relate to sexual health education in rural schools, socioeconomic status, degree of religiosity, and prevailing social norms and preferences.

Regionalized perinatal care has provided life-saving technologies for treatment of high-risk women and infants since the 1960s. However, far fewer rural than urban women designated as high-risk delivered their infants in hospitals equipped with advanced levels of technology in 1988 (28% vs 51%).¹² Some observers fear that economic pressures to limit referrals could endanger services to vulnerable pregnant women in rural areas.¹² Evolving US health policy, rationalization of resources, and efforts to achieve universal health care must be attentive to reproductive health care needs, including the special needs of rural women, children, and families.

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The Rural vs Urban Practice Decision

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AMERICANS LIVING IN RURAL AREAS HAVE MORE HEALTH PROBLEMS than their urban peers, yet there are fewer medical services available to them.¹ A major part of the disparity between rural and urban health care is the longstanding shortage of physicians in rural areas. Although 20% of the US population lives in rural areas, only 9% of physicians practice there, and only 3% of recent medical school graduates plan to do so.^{2,3} Thus, it is important to understand why physicians choose to practice in rural vs urban areas.

There are a number of known predictors of choice of rural primary care, including rural background, freshman medical student plans for family practice, and receiving a National Health Service Corps scholarship.⁴ Women are slightly less likely to practice rural medicine than men, although this is not true for women who enter medical school committed to rural family practice.^{3,4} Spousal influence and economic issues also play a role in physicians' decisions about where to practice.^{1,3} During medical school, taking a rural clinical rotation is the strongest predictor of a later decision to practice in a rural setting.^{1,3,4} However, since most medical schools are located in urban areas, the vast majority of students have their clinical training there, while few have clinical experiences in rural areas. Overall, medical schools with special admissions programs and those with extensive rural curricula have been more successful in producing rural physicians, as have residency programs with rural training tracks,^{4,5} although collectively these programs are too small to eliminate the US rural physician shortage.

Physicians' decisions about where to practice are also related to their choice of specialty. Most urban physicians are not generalists, while a higher proportion of rural physicians are generalists.³ Family physicians are the only specialty group that distributes itself proportionally to the population in rural and urban areas.³ Thus, the size of the future rural physician workforce may be threatened by the trend of US medical students to increasingly train in non-generalist specialties and subspecialties,⁶ which persists despite evidence that provision of primary care is related to improved health outcomes.⁷

Physicians also decide on practice locale based on personal issues such as their perceptions of lifestyle, economics, and type of practice. While the characteristics that comprise rural life are viewed as desirable to some, the same variables may dissuade others. Physicians attracted to rural areas often cite their desire to raise a family in a rural setting as crucial to their decision. They may also value par-

ticipation in outdoor activities, lower crime rates, less traffic, and living in a closely knit community. Physicians selecting urban practice may be drawn by the cultural amenities of urban living, the variety of restaurants, entertainment, goods and services, and cultural and ethnic diversity. Although the average income of rural physicians is lower than that of their urban peers, this is due to the greater proportion of generalists in rural areas.⁸ Among family physicians, for example, net income in rural vs urban areas is virtually identical.⁸ Because the cost of housing is substantially lower in most rural areas, this can result in a higher standard of living for many rural physicians. Many physicians in rural areas, however, work more hours than their urban counterparts.⁸

The scope of medical practice in rural areas is frequently more diverse than in urban areas. Rural family physicians, for example, often deliver more infants, have broader hospital privileges, and make house calls. Rural physicians also retain more clinical independence in their practice. On the other hand, some rural physicians may experience professional isolation, with less access to colleagues and medical resources.¹

For medical students contemplating practice location, as with deciding on specialty choice, real world clinical experiences and role models facilitate decision-making and allow students to evaluate their own practice, lifestyle, and financial needs. In order to obtain a broad-based foundation, students should consider obtaining clinical experience in both urban and rural settings.

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