ACCESS TO QUALITY HEALTH SERVICES IN RURAL AREAS—PRIMARY CARE: A LITERATURE REVIEW

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SCOPE OF PROBLEM

- There are fewer physicians, with the exception of family practitioners and general practitioners, in rural areas in all four regions of the nation.[37]
- Health manpower shortages, and recruitment and retention of primary care providers were identified as major rural health concerns among state offices of rural health.[38] Access to quality health services was the most often nominated rural health priority by state and local rural health leaders across the nation.[2, 3]
- Fifteen percent of adults in the United States, according to estimates, do not have a preferred doctor's office, clinic, or any other place in which they receive care.[1]
- Only about 10 percent of physicians in America practice in rural areas despite the fact that one-fourth of the U.S. population lives in these areas.[10]
- As many as 12 percent of all hospitalizations may be avoidable[21] and are disproportionately frequent among the poor and non-white populations.[33-35]

GOALS AND OBJECTIVES

It is estimated that 15 percent of adults in the United States do not have a preferred doctor's office, clinic, or any other place in which they receive care.[8] In light of this disparity, the Healthy People 2010 goal is to improve access to comprehensive, high-quality health care service.[1, 8] Many of the access to primary care issues addressed by Healthy People 2010 are problems experienced in many rural areas of the United States.

This review addresses the following HP2010 objectives:

- 1-4. Have a source of ongoing care.
- 1-5. Have a usual primary care provider (PCP).
- 1-8. Increase the proportion of underrepresented ethnic and racial groups among those awarded degrees in the health professions.
- 1-9. Reduce avoidable hospitalizations associated with three ambulatory-care-sensitive conditions—pediatric asthma, uncontrolled diabetes, and immunization-preventable pneumonia and influenza.[1]

The above objectives having to do with access to ongoing care or primary care provider are addressed, as well, under other focus areas in this report. These areas include oral health; mental health; diabetes; and maternal, infant, and child health. Affecting these objectives in many rural areas are shortages of primary care providers, including primary care physicians and non-physician primary care providers (NPPCPs), such as nurse practitioners (NPs) and physician assistants (PAs); and an under-representation of female and minority PCPs. Progress on these objectives should contribute to effective utilization of preventive services and primary care by all rural population groups to attain reductions in avoidable hospitalizations and to improve overall health status.

Key definitions used in this discussion include:

- *Access* is defined by the Institute of Medicine[39] as "the timely use of personal health services to achieve the best possible health outcomes." Availability, accessibility, affordability, accommodation (relationship between practitioner and patient), and acceptability of care are integral components of the construct of access.[40]
- A *Usual Source of Care* is the regular place where an individual who is sick or needs advice goes to receive medical care. This place is often considered an entry point into the health care

system. It is also believed to contribute to the continuity of care.[6] People with a usual source of ongoing care are more likely to receive a variety of preventive services than people without one.

- *Avoidable Hospitalization* refers here to hospitalizations for ambulatory care sensitive conditions (ACSCs), such as asthma, diabetes, congestive heart failure, and others that can be avoided through utilization of timely and effective primary care and preventive services.
- *Primary Care Providers* are generalist allopathic and osteopathic physicians in family practice, general internal medicine, general pediatrics; and, for women, obstetrics-gynecology providing primary care services,[41] as well as, physician assistants and nurse practitioners, and certified nurse midwives providing primary care services.

IDENTIFIED BY PEOPLE LIVING IN RURAL AREAS AS A HIGH PRIORITY HEALTH ISSUE FOR THEM

According to the Rural Healthy People 2010 survey, access to quality health services (which includes access to primary care) was rated as the top ranking rural health priority. Approximately three-quarters of the respondents named access as a priority.[2] It was the most often selected priority among all four types of state and local rural health respondents in the survey and across all four geographic areas. Nine out of 10 leaders of state health organizations nominated access as a priority, while about two-thirds of the public health agencies, rural health centers and clinics, or hospitals did the same, a statistically significant difference among the groups.[3] No significant differences across regions appeared, as access nominations appeared uniformly high across four geographic regions of the country. Also, in a preliminary survey of state and national rural health experts allowing them to state priorities in an open-ended fashion, three topics related to primary care—access to primary care, access to health workforce, and access to health services—were frequently named as rural priorities.[4] One or more of these three primary care topics was named by nearly two-thirds (65 percent) of those who nominated priorities in this preliminary survey.

According to the Rural Healthy People 2010 survey, access to quality health services (which includes access to primary care) was rated as the top ranking rural health priority.[2]

PREVALENCE AND DISPARITIES IN RURAL AREAS

To address prevalence and disparities in access to primary care in rural areas, this review considers several topics that are of continuing importance to rural health. They include:

- access to usual source of ongoing care,
- access to primary care providers,
- disparities among primary care subspecialties and other specialties,
- female physician representation,
- minority physician representation,
- supply of non-physician providers, and
- avoidable hospitalizations.

Usual Source of Ongoing Care and Usual Primary Care Provider

Rural and urban populations fair relatively equally at 89 percent and 87 percent, respectively, in having a usual source of ongoing care. The same is true with respect to having a usual primary care provider, with 78 percent of rural and 76 percent of urban residents reporting such. Rural residents are less likely, however, to report their usual primary care provider having evening or weekend hours, 29 percent and 39 percent, respectively.[5]

With respect to chronic conditions, one study finds non-significant differences in prevalence of congestive heart failure, diabetes, hypertension, and rheumatoid arthritis among rural and urban Medicare

beneficiaries. Rural counties that are not adjacent to urban counties do reflect a greater prevalence of pulmonary disease than urban counties or rural counties that are adjacent to urban counties.[42] However, possibly reflecting poorer access to primary care in rural areas, utilization of outpatient services by Medicare beneficiaries is significantly higher for all five chronic conditions in urban counties than in either type of rural county, and significantly higher in rural counties adjacent to urban counties than in non-adjacent rural counties. These differences are reflected in either more visits, more claims, or both for all five conditions.[42]

Among racial and ethnic groups, Hispanics are less likely than white and African-American populations to have a usual source of care. And, rural Hispanics are less likely than their urban counterparts to have a usual source of care—72 percent in rural areas and 77 percent in urban areas. From 87 to 90 percent of white populations and African-American populations in rural areas and in urban areas have a usual source of care.[6]

Estimates based on national data suggest that Hispanics and African Americans, respectively, record 20 percent and 33 percent fewer primary care visits per person than white, non-Hispanics. These data reflect visits to physician offices, community health centers, and hospital outpatient departments.[7]

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Access to Primary Care Physicians

The total number of active allopathic physicians serving nonmetropolitan areas increased at a slower rate than did those serving metropolitan areas between 1980 and 2000, resulting in 156 physicians per 100,000 population in nonmetro settings in contrast with 280 per 100,000 in metro counties.[43] The maldistribution of physicians in favor of urban areas is a continuing concern affecting rural access to care. The maldistribution is especially pronounced with respect to specialists and is likely to become an increasing problem with primary health care.[9] This relative undersupply of PCPs and specialists may be of greatest concern for the rural chronically ill, severely mentally ill, and/or disabled.

> The core problems appear to be physician recruitment and retention in rural and underserved areas, with retention being the greater challenge.[6]

The core problems appear to be physician recruitment and retention in rural and underserved areas, with retention being the greater challenge.[6] Americans residing in rural areas often have limited access to health care because physicians tend to settle and practice in urban areas.[44] Only about 10 percent of physicians in America practice in rural areas despite the fact that one-fourth of the U.S. population lives in these areas.[10] More specifically, 8.7 percent of the 675,047 active physicians in the United States and 14 percent of the 308,564 practicing primary care physicians provided services in rural areas in 1998.[11]

Gross data suggest there has been a general increase in the number of physicians in both rural and urban areas over the past decade. Closer analysis of both national productivity data and estimates in two states of those physicians actually practicing, indicates little growth in the effective supply of rural physicians and a decline of 9 percent for family physicians.[12]

The long-standing maldistribution of primary care physicians in rural areas led Congress to pass the Health Professions Educational Assistance Act of 1976, which included provisions for the identification of health professional shortage areas (HPSAs). The purpose of the legislation was to

increase the supply of physicians practicing primary care in such underserved areas.[45] There are currently about 2,157 designated HPSAs in rural and frontier areas of all states and U.S. territories with regard to primary medical care. In contrast, only about 910 HPSAs of the same type exist in urban areas.[46]

At the same time, there is evidence that many rural counties that are relatively more socially and medically disadvantaged are less able to attract physicians trained in the U.S. Such counties are more reliant on physicians classified as International Medical Graduates.[47]

Even in situations where a local physician is available, many rural residents rely on physicians outside of their locality for care. Reasons for bypassing local providers may include such things as high local physicians' fees, inadequacy of local physicians' skills or medical equipment, and inability of local physicians to meet community health needs. One study estimates that well over 40 percent of people living in rural counties travel outside their home county for physician services.[19] A survey of rural Iowans reveals that 30 percent of respondents with a family physician rely upon one outside their own county. The reason most often given is to gain better care.[20]

Disparities among Primary Care Physicians

It is well known that subspecialists are less likely to settle in rural areas than in urban areas. For these and several of the primary care specialties, the necessary patient population base may not be available in the rural setting to support the specialization.[44] Several primary care-related specialties present particular inequalities for rural areas in light of widespread rural needs.

Table 1 illustrates the disparities between rural and urban areas by physician specialty type based on 1995 nationwide data.

General Pediatricians

The total number of general pediatricians represents an increase of 73 percent from 1981 to 1996 (19,739 to 34,100), but the rural pediatrician-to-child-population ratio remains much lower than the urban ratio. Among rural counties, only those with a population over 25,000 had substantial ratio increases.[48] Although rural areas record a 21 percent increase in pediatricians during this 15-year time period, pediatricians practicing in urban areas register an 80 percent increase. Translation of these data means that only 8.1 percent of the pediatricians in the U.S. are available to 20 percent of the nation's children residing in rural areas.[48]

Table 1. Number of Physicians by Specialty per 100,000 People.

	Urban	*Rural*
Family/General Practice	28.1	26.1
Pediatricians	17.5	5.2
General Internists	35.4	11.8
OB/GYN Specialists	13.7	5.1
Other Specialties	134.1	40.1

Adapted from Rosenblatt and Hart, 1999.[44]

Pediatricians, it has been argued, are less likely to practice in rural areas in groups with fewer than five physicians because it is difficult to provide 24-hour care, on-call, and backup coverage without help from other colleagues. They are more likely to settle, then, in rural areas of about 10,000 people or more—areas large enough to support five or more doctors.[44]

General Internists

A similar under-representation of internal medicine generalists is found in rural areas, too, as is shown in Table 1. As is the case for general pediatricians, the limits in the ability of internists to cover for those trained in family practice or pediatrics may account for the small number of internists in smaller rural areas.[44]

General Obstetrician-Gynecologists

The disparity in the rural supply of obstetrician-gynecologists, reflected in Table 1, is becoming more prevelent at the same time that fewer family

physicians are delivering babies.[44, 49] The decrease, nationally, in the number of obstetrician-gynecologists and family physicians who deliver babies is more pronounced in rural areas than urban areas. Rural family physicians offering obstetric care fell from 43 percent in 1988 to only 37 percent in 1992; moreover, only 65 percent offer care for newborns.[50]

This decline may be reflected, as well, in the reduced participation of rural family physicians and rural obstetricians in prenatal care in rural areas over the last two decades. Prenatal visits to rural family physicians during seven selected years between 1980 and 1992 accounted for 17.7 million visits compared to 6.8 million prenatal visits to rural family physicians between 1993-1999. Such visits to rural obstetricians dropped from 25.7 million to 21.4 million between the two time periods. The rural family physician's share of the total number of prenatal visits to rural physicians during the two time periods dropped from 38.7 percent to 23.7 percent, while the rural obstetrician share of the rural total increased.[51]

The rapid rise in costs of malpractice coverage for obstetrical services in the 1980s, an escalation not unlike that occurring in medicine today, may account in part for the decline in prenatal and obstetrical services in rural areas. In a 1987 Government Accounting Office study, 25 percent of all medical malpractice suits involved obstetrics and resulted in the most expensive payments. No other discipline has been affected by malpractice this severely.[52] Spiking medical liability insurance costs among obstetricians, internists, general surgeons, and other specialists over the past several years[53] may have an even more profound impact on rural access, as independent practices and small groups may be less able to withstand these accelerating costs.

Even where family physicians continue to provide high-quality obstetric care, obstetricians are needed for consultation and for emergency situations. Without a local obstetrician-gynecologist, some rural residents may be forced to travel for obstetric care, and perinatal outcomes may be negatively affected.[44]

A study of the impact of the earlier medical liability crisis found that women with high-risk pregnancies are especially affected by this dilemma since between 14 and 49 percent of physicians across the states report having reduced the number of high-risk cases they will take.[49] In North Carolina, 25 percent of rural physicians, in contrast to 13 percent of urban physicians, stopped or decreased care given to high-risk pregnancies.[49]

Disparities among Other Specialties

The rural disparities in physician supply are most evident when one considers all specialties, excluding the generalists. The number of these specialties per 100,000 people are 40.1 and 134.1 in rural and urban areas, respectively.[44] Many rural hospitals are dependent on some of these specialties such as general surgeons, anesthesiologists, and radiologists[54] for continued operation. And, because the rural hospital is an important anchor for retaining primary care physicians in a rural area, the retention of such specialists is all the more important to maintaining access to primary care in such areas.

Female Physician Representation

The increasing number of physicians who are women may further restrict the supply of rural physicians. The number of female physicians, residents, and medical students has increased by 300 percent since 1970.[10] Women account for almost 43 percent of all generalists among the most recent medical graduates[13] and are projected to account for 30 percent of the physician workforce by 2010.[55]

Female physicians are less likely to practice in rural areas than in urban areas (see Table 2).[13] An analysis based on 1996 national data reveals that only 13 percent of rural physicians are women compared to 19.4 percent of physicians in urban locations. The disparities in percentages of female physicians practicing in rural areas are even more pronounced (by 8 to 10 percentage points) with respect to rural family practitioners/general practitioners (FP/GPs) and obstetrician-gynecologists.[13]

Table 2. Female Physician Representation.

	Urban	*Rural*
Total Number Physicians	434,506	51,743
Female Physicians	19.4%	13%
Female Generalists	25.9%	15.7%
Female Family Practioners/ General Practitioners	20.1%	12.4%
Female OB/GYN Practioners	27.4%	17.5%

Adapted from Doescher, et al., 2000.[13]

The increasing proportion of female physicians and their tendency to settle and practice in urban areas may thus contribute to the undersupply of physicians in rural areas.[13] Moreover, the greater tendency of female physicians over their male counterparts to specialize in pediatrics, psychiatry, and obstetrics and gynecology[13] may point to even greater future shortages in these specialty areas in rural areas.

The under-representation of female physicians in rural areas may also have an effect on the health of female residents in rural areas. Female patients usually prefer female doctors and are more likely to receive pap smears and mammograms if done by a female physician, especially if the physician is an internist or family physician.[13] Thus, rural disparities in the numbers of female physicians practicing in rural areas may further limit use of care.

Minority Physician Representation

In 1999, African Americans constituted 2.6 percent and Hispanics 3.5 percent of the physician workforce. These figures are very small considering that each of these two minority groups constitutes 12 percent of the American population. The comparable figures for Native Americans reflect an even greater disparity—0.1 percent of the physician workforce and 0.7 percent of the population.[27] The consequences of these disparities are likely to affect minority population access to care. Minority general physicians are more likely to serve minority populations and larger proportions of the poor and/or uninsured.[14-16] Moreover, there is evidence that minority patients prefer to see physicians who are of the same ethnic/racial group as themselves.[17] Little research was identified relating to minority physicians' relative role in rural settings.

A 1993 national survey of generalist physicians who graduated from medical colleges about 10 years earlier investigates differences in the social background, training, and practice experiences of these physicians.[15] African-American and Hispanic-American physicians are much more likely than white physicians to come from a rural or inner city background and to have graduated with a National Health Service Corp service obligation. These minority physicians also report relatively larger proportions of their patients are poor, reliant on Medicaid, and reflecting the same racial/ethnic background as their own.[15]

A study of 51 California communities in 1993 finds that African-American and Hispanic physicians are more likely to practice in areas with higher concentrations of residents of their own race/ethnicity and to care for higher percentages of these patients. Such communities are also four times as likely as others to have a shortage of physicians. Compared to other physicians, African-American physicians are likely to care for more Medicaid patients, and Hispanic physicians are more likely to care for more uninsured patients, according to the study.[14]

The ratio of Hispanic physicians to Hispanic populations in places such as California with large populations of Hispanics, 1:2893, is well below the overall physician/population ratio among non-Hispanic physicians and the non-Hispanic population, 1:335. Moreover, there are forecasts that the number of Hispanic physicians will not begin to keep up with the growth in the Hispanic population in California, which currently makes up over 30 percent of the state's population.[28]

Non-Physician Primary Care Professionals

Non-physician primary care professionals, such as physician assistants, nurse practitioners, and certified nurse midwives (CNMs), are becoming increasingly more important and common in rural and urban areas. In comparison to rural and urban

physician-to-population ratios, NPPCPs considered here appear to slightly favor rural settings, as shown in Table 3. They are able to provide needed primary care in most cases and, earning less than physicians, are better able to conform to the resource constraints in rural areas than physicians.[18]

Table 3. Number of Non-Physician Primary Care Providers per 100,000 Population, 1996.

	Total Number	*Rural*	*Urban*
Nurse Practitioners	55,730	24.72	20.08
Physician Assistants	31,084	11.91	11.66
Certified Nurse Midwives	5,337	2.47	1.90*

*11.8 percent of Nurse Practitioners and 18.3 percent of Certified Nurse Midwives are not practicing. (Adapted from Baer and Smith, 1999.[18])

Nurse Practitioners

Nurse practitioners are registered nurses with advanced education (most often today at the master's or post-master's level) and clinical training in primary care or another specialty. National estimates indicate that about equal numbers of NPs practice in ambulatory care and hospital settings, 24 and 23 percent, respectively; 19 percent practice in public health, while 12 percent of NPs are not practicing.[18] Another study reports that most NPs are engaged in practice in primary care settings.[56]

Physician Assistants

The physician assistant profession, an extension of the physician profession rather than nursing, originated in the 1960s as a response to primary health care needs of the underserved.[18] The results of a number of studies present a mixed picture about the contribution NPs and PAs are likely to make to providing additional sources of primary care in rural areas.

Physician assistants practicing in rural areas are much more likely than those in urban areas to be engaged in general primary care practice, as opposed to specialty services.[31, 32] Without respect to geography, however, PAs tend to be more closely divided than NPs between primary care and specialty care.[56]

A study of PA retention raises serious concerns about the ability of rural areas to retain PAs in the face of possibly more attractive opportunities in urban settings.[57] Although PAs were intended to provide service in underserved areas, their distribution increasingly resembles the distribution of physicians in favor of urban areas. They may be attracted to the opportunities from urban areas in the form of more competitive wages, a shorter work week, and fewer hours on call.[31]

One study projects that both NPs and PAs are expected to nearly triple their 1995 numbers by the year 2015.[58] Another notes that, although there are far more NPs than PAs, the number of PAs graduating is increasing while the number of NPs graduating has leveled off.[56] It remains to be seen whether NPs and PAs will measurably improve the availability of primary care in rural areas in the coming years or be drawn to specialized practice and urban settings.

Certified Nurse Midwives

Certified nurse midwives specialize in prenatal, perinatal, infant, and gynecological care. They address all stages of pregnancy as well as nutritional counseling, primary care, and mental well being. According to the most recent available data from the National Center for Health Statistics, CNM-attended births in the U.S. account for 9.5 percent of all vaginal births in 2000.[59]

Although built on a long, rich history in rural areas dating back to the 1920s, the number of nurse midwives has not grown as rapidly as NPs and PAs.[18] This is despite studies reporting that CNM-attended births reflect treatment and outcomes comparatively equal to or better than those attended by physicians.[60, 61]

As is shown in Table 3, the ratio of CNMs to population is higher in rural areas than in urban

areas. Of particular importance to vulnerable populations who may lack a usual source of care are research findings that 80 percent of CNMs serve patients who have one or more characteristic of being at risk, and 56 percent of patients served by CNMs are in underserved areas.[62]

IMPACT OF THE CONDITION ON MORTALITY

This review did not identify specific studies linking primary care shortages directly to mortality rates. One might anticipate, however, that delays in diagnosis and treatment for any number of serious conditions such as cancer—delays that might be attributable to poor access to primary care—could result in more mortalities that might have otherwise been prevented.

IMPACT OF THE CONDITION ON MORBIDITY

One consequence of an undersupply and/or underutilization of primary care providers may be increased hospitalizations that might have been prevented with the timely provision of preventive and primary care service. As many as 12 percent of all hospitalizations may be avoidable.[21] Nationally, such hospitalizations have been found to be more prevalent among lower and middle income group African Americans.[21] A 10-state study finds African Americans (especially adults), Hispanics (especially children), and the elderly in both minority groups are more likely than whites to be hospitalized with preventable conditions.[22]

A South Carolina study finds that for adult men, bacterial pneumonia is the second most common ACSC behind congestive heart failure; for adult women, the most common ACSC is bacterial pneumonia, with asthma the second most common. Among pediatric patients, bacterial pneumonia and asthma are, by far, the leading ACSC, with diabetes ranking in eighth place followed by immunization-preventable conditions.[33]

A number of studies identify differences in primary care practices that might contribute to avoidable hospitalizations. A statewide study in Washington of diabetic care among Medicare patients finds that patients in large rural towns remote from metropolitan areas are more likely than patients in smaller towns and urban areas to receive recommended diabetic care during their physician encounters.[63] A study of rural outpatient care reports that many diabetic patients do not receive recommended services,[64] a situation not restricted to rural practice. A more recent case study, however, demonstrates that a rural physician's office can employ a combination of an electronic diabetes monitoring system and cluster group visits to significantly improve glycemic control in diabetic care.[65]

More generally, over 100 community health centers, including a number of rural centers, have participated in disease management-focused collaboratives to improve diabetes care.[66] Also, several large integrated delivery systems focused principally on rural areas have launched successful disease management programs to better manage diabetes, congestive heart failure, and other conditions that are associated with avoidable hospitalizations.[67]

A study of Kentucky Medicaid-covered children identifies a number of treatment-related differences among rural and urban children treated for asthma, but it concludes that rural children are not disadvantaged in treatment in relation to urban children. Among the differences is the greater likelihood of urban children relative to rural children to be treated in an emergency room, while rural children are more likely to have ambulatory care visits. Urban children's asthma-related prescriptions are more likely written by pediatricians, while rural children's prescriptions are more likely to be prescribed by family practice or general practice physicians. Not unrelated to this difference, rural children who receive an anti-inflammatory drug are more likely to receive inhaled steroids, and urban children are more likely to receive cromoglycates;[68] the comparative efficacy of the two drugs is still debated.

A national study of self-reported access among Medicare beneficiaries finds a mixed picture in comparing various types of rural counties with urban

counties. Beneficiaries in most types of rural counties are more likely than those in urban ones to report receiving flu shots and pneumonia vaccinations, but those in rural counties are less likely than those in urban counties to report recent mammographies and pap smears.[69]

Access to such appropriate and timely primary care services is important to avoid aggravation of a condition or progression of disease that results in avoidable hospitalization. A number of the chapters appearing in this volume attest to the potential impact of not having a regular source of care, impacts associated with later stage diagnosis for cancer, lack of prenatal care, diabetes progression, and the like.

Poorer access to care is implicit in the designation of health professional shortage areas. Such shortages are far more prevalent in rural and frontier areas of all states and U.S. territories than in urban areas.[46] A study of adults in Kentucky concludes that HPSAs are associated with poorer health status, especially in older individuals.[45]

BARRIERS

An Oklahoma statewide study identifies a number of factors that are associated with a lower likelihood of adults' use of primary care-based preventive services. Among those less likely to use such services are residents from rural areas, those lacking access to a usual source of care, those at greater risk for avoidable illness, and the poor lacking health insurance.[23] In contrast, Comer and Mueller[40] find that Nebraska rural residents are more likely than urban ones to report having a personal physician who they normally see for care, more physician visits, and more hospitalizations. The authors suggest that the reasons for these findings that are contrary to national studies may be that there are no significant differences between Nebraska urban and rural residents in income, health insurance, or health status.[40]

Geographic barriers may impact access to primary care. Rural residents more commonly cite the lack of local resources and travel time as a reason for not having a usual source of care.[6] A weak or nonexistent public transportation system can compound travel distance concerns, especially for the rural elderly and poor who may need assistance in reaching a provider.[40]

The average travel time to their source of care is quite similar for urban and rural residents—17 minutes versus 19 minutes, respectively.[6] Differences in travel distances, however, can be more pronounced as only 7 percent of urban dwellers travel 13 to 50 miles to their source of care, while 24 percent of rural residents travel this distance. The distance to receive emergency care is similar to the distance to doctors.[70]

Geographic distribution of medical resources appears to combine with minority status in limiting access to health care. Minorities living in rural areas with larger proportions of minority populations may experience greater geographic barriers to care. In a study of geographic access to physicians and hospitals of African Americans in nine Southern states and of Hispanics in six Western states, such barriers are noted. Pathman and colleagues focus on physician-population ratios and distance to hospital measures in rural town-areas in these states. They find that town-areas in the West with higher Hispanic concentrations have relative lower access to physicians and to hospitals. They find, too, that African Americans in the South in town-areas with higher African-American concentrations have lower access to hospitals.[70]

While one study of African Americans in the South attributes lack of receipt of preventive services to low incomes,[72] another study identifies a number of barriers to preventive health services for low-income African Americans in the South: inability to pay, perception of need, service availability, accessibility of services, and the perception of racism.[73] (See the Access to Insurance chapter for further information on this topic.)

Minority physicians are more likely than others to serve minority populations, and African Americans and Hispanics may tend to seek care from physicians of their race/ethnicity because of personal preference

and language.[17] This may not translate, however, into a minority physician preference to practice in rural areas. The National Health Service Corps (NHSC) awards scholarships to underrepresented minorities to increase the numbers of minority physicians in certain areas. One study reveals that NHSC physicians are well matched by race to their practice sites, and minority physicians practice in areas with a larger minority population. Minority physicians in rural areas, however, are usually not from rural areas and prefer to practice in urban locations once their National Health Services Corps obligations to serve in an underserved area are fulfilled.[74]

Although studies find that minority health professionals are more likely to serve areas with relatively larger proportions of racial and ethnic minority groups, this may not translate into minority patients making more frequent use of physicians representing the same minority group. A national study finds that African Americans reflect lower continuity of care if their regular physician is an African American or Hispanic American rather than white. The same study finds that Hispanic Americans record lower continuity of care if their regular physician is Hispanic American instead of white or African American.[75]

Finally, lack of health insurance coverage contributes to underutilization of health services. Uninsured people under the age of 65 are 2.6 times less likely to have a usual source of care than people who have public or private insurance.[8] In 1996, 23 percent of rural residents under the age of 65 were uninsured compared to only 18 percent in urban areas.[6] Lack of insurance or underinsurance are problems facing many rural residents. (See the Access to Insurance chapter for more information regarding access to insurance.)

KNOWN CAUSES OF THE CONDITION OR PROBLEM SO EFFECTIVE INTERVENTIONS OR SOLUTIONS CAN BE IDENTIFIED

Recruitment and Retention of Primary Care Physicians

Projections of the future supply of family physicians suggest that with factors such as the decline in medical student interest in primary care residencies and the increased percentage of graduates in such residencies who are women, a decline in primary care physicians in rural areas and nationwide can be anticipated after 2010.[76] The national resident placement program in 2001 reflects four straight years of decline in the number of family practice residency positions, in the number of such residency positions filled, and greater decline in the number of such positions filled by U.S. medical school graduates.[77] More modest declines in residency placement are noted in several other primary care-related residency programs.[77]

Reviews of numerous studies reveal that primary care physicians who were raised in rural areas are more likely to practice in rural areas.[24, 79]

Reviews of numerous studies reveal that primary care physicians who were raised in rural areas are more likely to practice in rural areas.[24, 78] One study finds that greater than 50 percent of rural female physicians were raised in a town with less than 25,000 people.[10] Several recruitment factors, especially family lifestyle factors, serve to differentiate between female and male physicians in their rural practice location choice. Among over 100 generalist physician respondents who were recruited to towns of 10,000 or less in six states in the Northwest, recruitment conditions such as flexible scheduling, spouse opportunities, availability of child care, and family leave opportunities were significantly more likely to be rated as very important by female physicians.[25]

A recent analysis of several studies concludes that rural curricula and rural rotations in the medical school experience appear to contribute to physician choice of rural practice.[78] One study of rural primary care practice and retention over a 15 year time period from 1978-1993 finds that participation of Thomas Jefferson Medical College (Philadelphia) graduates in that College's Physician Shortage Area Program (PSAP), receipt of a National Health Service Corps scholarship, male gender, and participating in an elective senior family practice rural preceptorship are predictive factors for rural primary care practice. Participation in PSAP demonstrates the strongest predictive power. For those not participating in PSAP, growing up in rural areas and having freshman plans for family practice, were important predictors of graduates to become rural primary care physicians and to remain in such practice.[79]

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Retention of rural physicians is arguably a greater challenge than recruitment.[6] Relief coverage and sociocultural integration are the two most important factors in rural physician retention, according to an eastern Kentucky survey. Sociocultural integration includes acceptance by the community, recreational opportunities, spouse's happiness, family ties to the area, and a religious support system. Other factors include quality of local schools, availability of quality housing, and availability of practice partners.[80]

The development of rural community-focused attitudes and activities by physicians, too, are recognized as important elements in retention of rural physicians.[81-83] Although medical school curricula can be modified to better address a number of these issues, such things as rural residencies and rural interdisciplinary training programs can involve medical students and residents in community-focused activities early in their professional work.[84]

Female and Minority Representation

There are a number of reasons, too, why female physicians do not choose to practice in rural areas. Reasons associated with family and social issues include rural-magnified challenges such as balancing work and family, maternity leave, and job opportunity for spouse or partner. Professional reasons include such matters as work overload, lack of female colleagues, fewer opportunities for advanced training, and acceptance by the community.[10]

The low supply of minority physicians in rural areas is no doubt related, in part, to the relatively smaller number of underrepresented minorities (URMs) who are enrolled in medical colleges and who are applicants to American medical colleges. The number of URMs enrolled in American medical colleges peaked in 1994, remained steady in 1995, and decreased by 5 percent in 1996. The enrollment of URMs has declined steadily from 1996 through 2001.[26, 27] The decline is attributed in large part to reductions occurring at public medical schools and in states directly affected by 1996 court and referenda decisions on affirmative action.[26-28]

URMs among the applicant pool have leveled off, as well. From 1974 to 1988, the number of URMs increased from 7 percent to 10.5 percent of the total applicant pool, but then increased only to 10.9 percent of the pool in 1999. Asian/Pacific Islanders are the major force in the expansion of the applicant pool increasing from 12 percent in 1988 to 20 percent in 1999. White applicants dropped from 71 percent of the pool in 1988 to 61 percent in 1999. Moreover, women constitute two-thirds of all African-American applicants, while all women constitute 45 percent of the total applicant pool in 1999.[85]

Non-Physician Primary Care Providers

Access to non-physician primary care providers is limited in some instances by scope of practice

regulations that vary from state to state, some national and state-specific reimbursement constraints, and by competition from urban areas for limited numbers of providers.[29] NPPCPs practicing in rural, or in more remote rural settings, experience more autonomy or independence than those in other settings. Apart from their reliance upon regular supervision by physicians, rural PAs tend to have more independence from physicians than their urban counterparts as demonstrated, for example, by being located in a separate facility than their supervising physician and serving as the principal provider for larger proportions of their patients than is true for urban PAs.[30-32] Although such conditions may be attractive to some NPPCPs, it is possible that it may be offset by greater monetary benefits and professional support found in larger, urban facilities.[29]

Causes of ACSCs Success or Failure in Rural Areas

Several state studies examine factors that appear to be associated with ambulatory care sensitive conditions. There is unanimity in finding low income to be strongly associated with ACSCs, moderate support for greater prevalence of ACSCs among non-whites, and mixed support regarding the impact of access to primary care physicians upon ACSCs. In South Carolina, avoidable hospitalizations associated with ACSCs are more frequent among rural residents, nonwhites, low-income residents, those without a primary care physician, and those without insurance or with public insurance instead of private insurance.[33] In Utah, ACSC hospitalization rates were higher in rural regions as compared to urban and were positively associated with county level poverty rates.[34] Finally, a New York study relies on separate analyses for three groups of counties: downstate metropolitan, upstate metropolitan, and relatively more rural counties. Within all three groups, poverty is the strongest predictor of ACSC hospitalizations; lower population density and, surprisingly, number of physicians per 1,000 population are associated with prevalence of ACSC hospitalizations. County percentage of African Americans is associated with ACSCs in two metropolitan county groups but not in the more rural group of counties.[35]

PROPOSED SOLUTIONS OR INTERVENTIONS THAT ARE FEASIBLE IN RURAL COMMUNITIES

In addition to the following information, a number of more detailed treatments of rural physician training, recruitment, and retention issues and programs are available elsewhere.[36, 86-88]

- Important to many rural areas is Title VII of the Public Health Services Act (1963) that aims to provide generalist physicians to serve in medically underserved areas. The Act provides incentives for new medical graduates to practice in Health Professional Shortage Areas for a period of years. A study of Title VII funded programs concludes that these new medical graduates are vital to the elimination of health professional shortage areas.[89]
- The J-1 Visa Waiver Program allows international medical graduates (IMGs) to remain in the United States if they practice in certain rural or underserved areas. The number of J-1 visas increased from 70 in 1990 to 1,374 in 1995. IMGs are expected to help with the physician maldistribution problem by taking the physician jobs that Americans do not want, such as in some rural and underserved areas. There have been disagreements about the extent to which this program is addressing the primary care needs of rural areas.[44] At the same time, however, the fact that this program does not restrict waiver recipients to primary care practice enables J-1 waiver physician recruitment into specialties that are necessary to rural hospitals but often in short supply—specialties such as general surgery, radiology, and anesthesiology.[54]
- Loan repayment programs assist in repaying the loans of graduates who return to certain rural and underserved areas. They are similar to the National Health Service Corps scholarships since they provide an incentive for physicians to locate in rural areas, but they are different from NHSC programs since loan repayment programs require

a commitment only upon completion of residency training rather than admission to medical school. Nearly one-half of medical students in a recent survey indicate that they are more likely to return to their home states if a loan repayment program is in place for service in certain rural or underserved areas. Studies also suggest that a relationship exists between training in a rural area and returning to similar practice sites.[90] States are placing greater emphasis on developing more desirable practice environments for health professionals in rural underserved areas and have begun examining their scholarship and loan programs, as well. The scholarships and loans have been restructured to be more responsive to the needs of the underserved areas. In addition, stronger penalties are being enforced for non-compliance in several states, but greater stress is currently being placed on enhancing incentives for practice in undersupplied areas rather than on creation of penalties.[5]

- Tennessee's Health Access Incentive Fund and its Health Access Community Initiative are examples of some creative avenues a few states are taking to increase the supply of physicians in rural and underserved areas. The former provides practice incentive grants to qualified providers, and the latter, a new program, provides funds for local underserved areas to initiate physician recruitment efforts.[91, 92] The Tennessee Department of Health and its Office of Rural Health help identify the needs of communities in the state; a recruitment and retention committee helps identify practitioners who can meet the primary care needs of underserved communities. Financial incentives for primary care physicians can be as much as $75,000. By January 1, 1996, 124 primary care physicians and 32 mid-level practitioners had been granted support from the incentive program, and 69 counties have been helped by the services of 156 providers since 1989.[91]
- Accredited family practice rural training tracks, established in 29 of the nation's 474 family medicine residency programs, are successful in placing graduates in rural settings. According to a 1999 survey of these programs, they have experienced a 76 percent rural placement rate overall and an 88 percent rate in programs implemented during the 10-year period preceding the survey.[93] Interdisciplinary rural health training programs are employed both to meet local health needs of minority and disadvantaged rural populations and to promote rural recruitment of physicians and other health professionals. Such interdisciplinary training programs can involve medical students and residents in rural community-focused activities early in their professional work[84] in ways that contribute to physicians' attitudinal and behavioral connections to rural communities.
- Community Health Centers have been successful in meeting a number of rural health needs, serving large numbers of poor and minority patients, and offering a number of preventive and primary care services that can reduce avoidable hospitalizations. The centers demonstrate higher rates of cancer screening and lower rates of preventable hospitalizations among Medicaid patients they treat in comparison to those treated elsewhere.[94] Also, the centers meet or exceed most standards for treatment of diabetes, asthma, and other conditions via their chronic disease management efforts.[94, 95]
- Disease management initiatives are reaching a number of rural settings. Over 200 Community Health Centers, including a number from rural areas, have participated in the Bureau of Primary Health Care-sponsored Health Disparity Collaboratives for asthma, cardiovascular disease, depression, and/or diabetes to better manage these diseases to avoid, delay, or decrease the complications.[66] Similarly, the Center for Medicare and Medicaid Services is currently supporting an evaluation in 15 health systems, including several rural systems, of the use of care coordination approaches to better manage a number of diseases such as diabetes, asthma, and congestive heart failure that are associated with avoidable hospitalizations.[96]

COMMUNITY MODELS KNOWN TO WORK

See the Models for Practice section in Volume 1 for a catalog of models.

SUMMARY AND CONCLUSIONS

Access to primary care is vital to the achievement of Healthy People 2010's goal of improving access to high quality health services. The objective of maintaining a regular source of care is exceptionally difficult to achieve in rural America given the shortage of not only primary care physicians but also non-physician primary care providers, specialists, female physicians, and minority physicians. Given the higher proportion of elderly and poor in rural areas—two populations often requiring more health care—the consequences of provider shortages are significant.

Practice conditions and personal considerations may lead some physicians away from practice in rural areas. At the same time, there is evidence that those who are from rural areas and/or who have trained in rural areas are more likely than others to pursue rural practice. Although physician assistants and nurse practitioners are somewhat more likely than physicians to pursue positions in rural areas, the opportunities in rural practice, e.g., greater practice autonomy, may be offset by more attractive practice opportunities and salaries in urban settings.

Despite these challenges, viable solutions may exist through training programs with a rural focus for health provider students, loan repayment programs, recruitment of rural students—especially underrepresented minorities for medical school, and continued recruitment and retention efforts directed toward non-physician providers. The desirability of larger numbers of women enrolled in medical schools and in the medical profession needs to be followed by greater efforts to recruit medical students from rural areas and to recruit and retain more female and minority physicians in rural practice.

Finally, increased efforts are needed to reduce avoidable hospitalizations in rural areas and especially among poor and minority groups. Increasing the number of rural providers and their adoption of best practices in addressing ambulatory care sensitive conditions such as diabetes and asthma are important factors in reducing avoidable hospitalizations and improving the health status of the rural population.

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