and nationwide. Large rural hospitals saw their occupancy rates decrease by nearly 20 percent between 1980 and 1985; the average mid-size rural hospital's rate decreased by 27.3 percent; and the average rural hospital with fewer than 50 beds experienced a 33.4 percent drop in its occupancy rate. Nationally, between 1984 and 1988, rural hospital occupancy rates declined at nearly twice the rate of urban hospitals, to a low of 55 percent occupancy; small rural hospitals in North Carolina had an occupancy rate of around 45 percent in 1989, while large rural hospitals' occupancy rates averaged 70 percent. All North Carolina hospitals did experience a general improvement in occupancy rates during the latter part of the 1980s, but not enough to overcome the large declines earlier in the decade (see Table 1, columns 6 and 7).

These occupancy rates fail to meet state-set targets for hospitals. The Department of Human Resources' Division of Facility Services says small hospitals should have at least a 70 percent occupancy rate for *licensed* beds; mid-sized hospitals should have at least a 75 percent occupancy rate; and large hospitals should have at least an 80 percent occupancy rate.[12]

■ **Days of Care.** Days of care is a count of the total days of inpatient care provided by a hospital. It is comparable to discharges as a measure of utilization, but reflects the amount of care delivered in terms of time and not just people. One

A Dearth of Doctors in North Carolina—Urban and Rural

by Gibbie Harris

By nearly everyone's measure, there simply aren't enough doctors in North Carolina—and prospects for getting more are not all that great. In March 1991, the North Carolina Academy of Family Physicians reported a shortage of between 476 and 542 family physicians for North Carolina, including hundreds of general physicians in rural parts of the state.[1]

And in July 1991, researchers at UNC–Chapel Hill reported that the state's corps of medical doctors, primary care physicians, and dentists continued to be well below the national averages, particularly in rural areas, although the number of registered nurses was above the national average.[2] The report said one physician was available to provide care for every 623 N.C. residents in 1990—well below the U.S. average of one physician for every 545 residents in 1989, the most recent year for which statistics were available.

Lise Fondren, the UNC report's coordinator, said that while the number of health professionals is below the national average in almost every specialty, rural areas are particularly hard hit. "Rural areas of the state—particularly in the east—continue to experience health personnel distribution problems," she said. "In some parts of the state, for example, doctors must send patients two hours away to receive certain treatments while at least four counties didn't even have a full-time practicing dentist in 1990."[3]

The shortage of such care-givers has grown because fewer medical students are interested in going into general medical practices aimed at serving families. Physician-patient ratios deteriorated in 60 counties between 1983 and 1988, and 37 counties experienced a net loss of family-care physicians in the same time period. Only about 12 percent of medical school graduates are choosing to pursue family medicine.[4]

Rural communities are dependent on these primary care specialties and this shortage constitutes a significant barrier to health care for rural residents in our state. Elinor Ezzell, director of the federally funded Goshen Medical Clinic in Faison

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hospital may have high volume and low length of stay, another low volume and high length of stay; thus, both indicators are necessary to present an accurate picture of utilization.

All North Carolina hospitals have experienced decreases in the number of days of patient care provided. The days of care at rural hospitals in North Carolina decreased by 17.6 percent from 1980 to 1989—four times the decrease (3.7 percent) experienced by the state's urban hospitals. This decrease was especially pronounced for the small rural hospitals, which delivered one-third fewer days of care in 1989 than in 1980.

■ **Total Patient Discharges.** A hospital's total number of patient discharges is a more direct measure of volume than an occupancy rate. The number of discharges can give a sense of the hospital's productivity and viability. High volume will mean a greater base over which fixed costs can be spread.

Across all categories of hospitals, North Carolina hospital discharges declined from 1980 to 1989. The smallest rural hospitals had the greatest decline: there were 29.9 percent fewer discharges in 1989 than in 1980, from an average of 1,464 to 1,026 discharges per year. All other hospitals saw approximately 17.5 percent fewer discharges in 1989 compared to 1980. As with the occupancy rate trends, the number of discharges fell more

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in Duplin County, says the need for health professionals is constantly growing. "I need two more doctors," she says. "I need them today. We've just been overrun [with patients] this summer."

A number of factors encourage or discourage physicians from practicing in rural areas. Economic incentives are widely believed to be particularly influential. The patient market for physicians, especially specialists, is more lucrative in urban and suburban areas. And the health care reimbursement system encourages physicians to specialize and to locate in the more populated areas through higher payments for specialty services in urban settings. Concurrently, increased specialization within the medical profession demands a broad population base for those providing services other than primary care.

The high cost of medical education deters many rural youths from entering the profession. Those who can afford it frequently choose the higher-paying urban practices. Also, medical education focuses on the use of technology which promotes a dependency on the equipment and facilities more commonly found in large, urban health care institutions than in rural settings. These factors, when added to the increased specialization and the pull of the urban market, contribute to a critical manpower shortage in rural health care.

In considering where to locate, a physician may weigh mostly economic conditions such as projected income, amount of debt already incurred while in medical school, and projected practice costs. Once in a rural community, however, other circumstances which affect the day-to-day lives of these physicians become important considerations in physician retention. The rural physician often practices solo or with one or two colleagues. That dictates large workloads with few opportunities for relief and back-up and can lead to a sense of professional isolation. The relative lack of cultural, educational, and economic opportunities in rural communities also affects the members of the physician's family.[5]

Government recruiting programs and federally financed clinics have helped alleviate shortages of personnel, but sometimes the doctors recruited to fulfill a scholarship obligation don't stay in the rural community for very long. "Sometimes they are an asset and sometimes a liability," says Richard Harrell, president and CEO of Duplin General Hospital in Kenansville. "We really need physicians who come and put down roots in Duplin County and develop a caseload."

Most states and the federal government have taken various actions to alleviate this situation. Common strategies include: 1) selecting medical students from rural areas because they are most likely to return to a rural community to practice; 2) paying physicians to practice in rural, underserved areas either through direct subsidies or through differences in insurance reimbursement; 3) supporting rural physician practices through increased access to technology and continuing education;

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and 4) providing scholarship and loan programs to medical students willing to practice in rural areas.[6]

Current Programs Affecting North Carolina

1. ***Federal Initiatives.*** The National Health Service Corps recruits physicians for underserved areas through loan forgiveness and scholarships. In 1985, the corps had 1,600 health professionals available for service in underserved areas. Less than 135 are anticipated in 1991. According to the N.C. Office of Rural Health and Resource Development, the corps supplied 54 physicians to North Carolina in 1984–1985. The number of placements declined in ensuing years, to just five in 1989–1990. This drastic decline is a direct result of funding cuts over the past several years in the national program. In 1980, for example, the National Health Service Corps had its peak appropriation of more than $153 million for field programs and scholarships for health professionals. But funding declined every year following until it bottomed out in 1988 with $39.6 million. In 1989, appropriations had risen to $42.8 million, to $50.7 million in 1990, and to $91.2 million in the current year.[7]

"When people talk about the rural health crisis, they tend to talk about the lack of physicians, and that's the glaring thing," says Tom Ricketts, director of the N.C. Rural Health Research Program at UNC–Chapel Hill. Doctors simply "are not being placed" in rural areas.

Another important federal initiative is the Omnibus Budget Reconciliation Act of 1989, which mandates the reform of Medicare payments to physicians. This reform includes 1) increased payments for evaluation and management of patients; 2) increased payments for most rural practices; and 3) incorporation of high practice costs into payment for services. Medicare has also implemented a 5 percent incentive payment for all services provided in a rural Health Professional Shortage Area.[8] One intent of these reforms is to remove the financial disincentive attached to rural primary practice.

2. ***State Initiatives.*** There are two types of state initiatives in North Carolina—public initiatives and private ones. In the public arena, the *Office of Rural Health and Resource Development,* formed in 1973, is a state agency that has been involved in recruitment and retention of primary care providers. A branch of the N.C. Department of Human Resources, it supports the development of community health centers in rural areas staffed by physicians or mid-level providers. The office offers technical assistance in office management, reimbursement, and quality assurance to rural practitioners in the centers as well as in private practice.

The first such state office in the nation, the agency began with $437,000 in state funds in 1973 and in 1991 had an appropriation of $2.8 million. "Since 1973, the office has helped to establish 50 rural health centers, has recruited more than 900 physicians to underserved communities in the state, and has provided technical assistance to 17 community hospitals," says Jim Bernstein, director of the office.

This agency is also administering a new federal/state loan repayment program targeted towards physicians willing to practice in underserved areas. Incentives for physicians, instituted in January 1991, include: 1) a signing bonus; 2) a bonus program for locating in a high needs service area; 3) an honorarium for North Carolina medical residents who complete part of their training in a rural site; and 4) incentives to extend group practices in rural areas.

North Carolina also has a strong Area Health Education Center system (AHEC), which is administered by the University of North Carolina at Chapel Hill. These 10 regional centers have medical faculties and support staff, are based in large community hospitals, and are affiliated with the four medical schools in the state. They provide rotations for medical students, residency programs for a number of specialties (including primary care disciplines), and continuing education opportunities for health professionals. These strategies have been employed in an attempt to increase the numbers of students choosing a primary care specialty and to decrease the professional isolation experienced by the rural physician.

All four medical schools in North Carolina—Duke in Durham, UNC–Chapel Hill, Bowman Gray in Winston-Salem, and East Carolina in Greenville—are involved to varying degrees in attempts to alleviate the rural health manpower shortage. The UNC School of Medicine is making

curriculum changes to encourage more interest in primary care disciplines, which include family medicine, pediatrics, internal medicine, and obstetrics. The new curriculum provides opportunities for one-month, ambulatory care rotations in non-traditional sites. The Duke Medical Center also places students in rural areas, East Carolina University has a network of rural family practices, and Bowman Gray School of Medicine is involved in a multi-disciplinary training program. Duke and Bowman Gray, of course, are private schools, but cooperate in a variety of training programs and placement services with the state.

In 1988, the North Carolina General Assembly passed the Rural Obstetrical Care Incentive Act.[9] In an attempt to improve access to obstetrical services in rural areas, this legislation compensates family physicians and obstetricians for a portion of their medical malpractice insurance costs.[10]

The most significant private initiative specifically targeted to address the problems of rural health professionals is the Kate B. Reynolds Community Practitioner Program operated through the N.C. Medical Society Foundation. Activities include consultation with community individuals and groups regarding their health care needs, repayment of loans, and negotiation with area practices to establish satellite offices in rural areas. The Medical Society has the flexibility to provide financial support and technical expertise to rural practices that otherwise would not be available. Other activities of the program include efforts to provide support for rural physicians through professional networks and the provision of temporary manpower relief.

Although North Carolina has been relatively aggressive in responding to the health manpower shortages in rural areas, the problem continues. From 1974 to 1990, the Office of Rural Health and Resource Development says, 917 physicians were placed in rural areas, but since then, the numbers have steadily declined. As of February 1991, there were 131 recruitment sites (Health Professional Shortage Areas) in the state with 322 primary care openings and 117 specialty openings.

Are rural health problems a sign of recent demographic and economic changes? Consider this finding:

> "When one comes to view the total picture of rural health and medical care, the shortage of essential health personnel stands out as probably the most striking deficiency. Today's crisis—for it is hardly less—reflects the steady trend of urbanization which has left rural communities relatively disadvantaged economically and culturally. It is intensified by the constantly expanding technology of modern medical science, demanding for its application increasingly complex equipment and facilities. Clearly, many factors are at play, but beneath all of them lies the handicap of rural poverty."[11]

It applies to 1991, but it was written in 1948.

FOOTNOTES

[1] Thomas L. Speros, "Who Will Take Care of Our People?" N.C. Academy of Family Physicians' Health Care Manpower Task Force, March 1991, p. 5.

[2] "North Carolina Health Manpower Data Book," Cecil G. Sheps Center for Health Services Research, UNC–Chapel Hill, October 1990, pages 7, 9, and 13.

[3] Fondren interview with Mike McFarland, UNC News Services, as reported in "Is there a doctor in the house?" *The Herald-Sun* of Durham, July 31, 1991, p. A1.

[4] Speros, p. 5.

[5] For more on these considerations, see B. Gibbens and D. Olsen, *Rural Health Professional Shortages: Legislative Strategies,* University of North Dakota Rural Health Research Center, May 1990.

[6] For a thorough discussion of techniques and approaches to recruit physicians, see L.A. Crandall, J.W. Dwyer, and R.P. Duncan, "Recruitment and Retention of Rural Physicians: Issues for the 1990s," *Journal of Rural Health,* January 1990, pp. 19–38.

[7] Figures were supplied from unpublished data by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance. See also the U.S. General Accounting Office, *National Health Service Corps: Program Unable to Meet the Need for Physicians in Underserved Areas,* report number GAO/HRD-90-128, August 1990.

[8] P.L. 89-97. For more about the impact on North Carolina, see N.C. Academy of Family Physicians, "Incentive Payments to Physicians for Services Rendered in a Health Manpower Shortage Area," NCAFP News Brief, July 10, 1989.

[9] Chapter 1100 (SB 257) of the 1987 Session Laws (Second Session 1988).

[10] D.H. Taylor, T.C. Ricketts, J.L. Berman, and R. Langholz, *A Response to the Professional Liability Crisis: The First Three Years of North Carolina's Rural Obstetrical Care Incentive Program,* Cecil G. Sheps Center for Health Services Research, UNC–Chapel Hill, September 1991.

[11] F.D. Mott & M.I. Roemer, *Rural Health and Medical Care,* McGraw-Hill, 1948, p. 212.