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**The Integrity of Rural Health Care Systems:
The Role of the Rural Hospital**

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Small rural communities in the United States are experiencing a crisis in the delivery of health services (Davis and Marshall, 1977). Major changes in the patterns of health care over the last several decades have had a disproportionately adverse effect on the access of rural dwellers to medical care.

Many forces have impinged on rural health care systems--forces often outside the control of rural residents. A general scarcity of trained health manpower has been accentuated in rural areas by maldistribution and specialization, depleting the availability of physicians and other health professionals. The regulatory burden on the health industry has increased without regard for the differences between large and small communities (Kinzer, 1977), thus compounding the diseconomies of scale characteristic of rural medical care systems.

There has been recent widespread recognition that a solution to the problem of rural health service delivery will require coordinated external intervention. A number of categorical federal programs have been designed to increase the number of rural health care providers and have made available grant funds to underserved rural communities. Private foundations have also played a significant role in attempting to restructure rural health delivery systems. The major focus of these programs has been to recruit physicians and new health practitioners into group practices in these areas and to provide the new recruits with adequate outpatient facilities.

Such efforts have tended to overlook one important aspect of the rural health system--the rural hospital (Geyman, 1978). Physicians expect access to hospitals for professional and economic reasons. Early evidence seems to support the contention that physician retention and successful practice are associated with the presence of a functioning rural hospital (Rosenblatt, 1978). Rural communities have repeatedly demonstrated the tenacity with which they will cling to even substandard local hospitals.

Potent forces, however, have impaired the economic and professional viability of rural hospitals (Spitzer, 1978). The emphasis on cost containment by government and industry has focused attention on the hospital as the major source of health care expenses and has attempted to limit rising costs by constraining hospital use. The Hill-Burton program, which stimulated the construction of numerous small rural hospitals, contained no provision for replacement or maintenance of aging hospital facilities.

Inadequate financing of rural hospitals has led to undercapitalization in an era when technological changes in the provision of inpatient services have accelerated. The new federal planning law (93-641) and the certificate-of-need programs have limited the freedom of rural hospitals to replace outmoded plants (Holloway, Restuccia, and Sonik, 1977). The regulatory burden imposed by governmental and reimbursement agencies has also accelerated, and compliance is beginning to absorb significant proportions of the hospital operating budget (Medical World News, 1978). Because regulations do not distinguish among institutions on the basis of size, there is a tendency for the regulations to be less relevant and more costly for the smaller institution.

The rural hospital thus finds itself experiencing falling occupancy rates, gradual technological obsolescence, increasing governmental scrutiny, and limited administrative freedom. In addition, studies have shown that there is significant variability in the quality of services provided by hospitals of different sizes (Grimes and Moseley, 1976; Stanford Center for Health Care Research, 1976). The data suggest that smaller institutions are less capable than larger institutions of providing adequate surgical services (Roemer, 1959). Yet, at the same time, rural dwellers require access to inpatient services, and rural physicians are unlikely to be attracted to or retained in areas without hospitals.

THE RURAL HOSPITAL IN A NATIONAL PERSPECTIVE

Rural hospitals comprise a significant proportion of all United States hospitals. Table 1 illustrates the relative importance of the rural hospital in the national health care system. Half of all hospitals are outside of standard metropolitan statistical areas (SMSAs). These hospitals have certain characteristics that distinguish them from their urban counterparts. They are, on the average, one third as big as urban hospitals, have predictably lower occupancy rates, and provide roughly one quarter of the major classes of inpatient service: obstetrics, surgery, and general medical services.

Rural hospitals are considerably less capitalized than are urban hospitals, both for the institutions as a whole and when computed on a per-bed basis. By the same token, rural hospitals are less costly to operate, with the cost per bed 58 percent of that prevailing in urban areas.

Table 1
Selected Characteristics of Hospitals
by Standard Metropolitan Statistical Area, 1977

Characteristic	Nonmetropolitan	Percent of U.S. total	Metropolitan	Percent of U.S. total
Number of hospitals	2,912	50	2,969	50
Number of beds	249,096	26	720,009	74
Average size (in beds)	86		242	
Adjusted patient days	68,912,644	23		77
Occupancy rate		71.4		79.4
Surgical operations	3,413,665	20	13,730,782	80
Births	784,445	25	2,333,305	75
Total assets/hospital	3,840,547		16,736,752	
Total assets/bed	44,657		69,160	
Total expenses/bed	34,799		59,752	

Source: American Hospital Association, 1978, p. 152.

Tables 2 through 4 provide some additional insight into the characteristics of rural hospitals. Although these data are classified by hospital size rather than location, the majority of hospitals of less than 100 beds are in rural areas, and the smaller the hospital, the more likely it is to be in a rural community. Thus examining the characteristics of hospitals as a function of their size allows us to glean additional information about smaller and rural hospitals.

Table 2 reveals that hospitals of fewer than 100 beds comprise approximately half of all hospitals in the United States--essentially the same relative proportion of hospitals located in nonmetropolitan areas. However, the match is not perfect. Small hospitals, when considered as a class, assume less importance than do rural hospitals when examined as a part of the total amount of health services produced. Where rural hospitals account for a quarter of the

beds and almost a quarter of the various hospital services, small hospitals as a class have only about 15 percent of the total beds and an even smaller proportion of the total services. One must conclude that although most rural hospitals are small and most small hospitals are rural, there are exceptions to both of these rules.

Table 3 shows that small hospitals differ from larger institutions in their ownership patterns. Where the predominant mode of ownership in the country at large is that of the nongovernmental nonprofit hospital, a disproportionately large percentage of rural hospitals are owned by local governments. This is a reflection of the role that rural hospitals play as a part of community life; they are seen as an extension of the public responsibilities of local and county government--a necessary service akin to schools or police. This also stems from the somewhat more unstable financial characteristics of rural hospitals, such that creation of a public entity with taxing and bonding authority is the only way many rural hospitals maintain their solvency.

Table 4 provides some sobering insight into the relative health of small and rural hospitals. In the decade from 1967 to 1977, although the number of hospitals in the country changed less than 1 percent, there was a profound shift in their distribution by size. Hospitals of fewer than 100 beds became a much smaller proportion of the total hospital scene, while larger hospitals became more prevalent. While exact data are lacking, undoubtedly the changes are due to two separate but complementary causes: hospitals tended to add beds during this period across the entire spectrum; and many small hospitals closed. Since the smallest hospitals are those most likely to be in rural areas and since they suffered the most profound attrition in their numbers, it is likely that many rural communities are today without the hospitals that they had a decade ago.

During the period from 1972 through 1978, 140 nonmetropolitan community hospitals which were registered with the American Hospital Association closed their doors permanently. The most vulnerable hospitals are those with the fewest beds, and financial insolvency is the major cause of closure.

The sudden disappearance of a rural hospital is a cataclysmic community event which undermines the entire health care delivery system. The stock of rural hospitals is diminishing, and the majority of evidence suggests that this trend will, if anything, accelerate (Mullner, Byre, and Kubal, 1980).

Table 2

Characteristics of Small General Hospitals, United States, 1977

Hospital size	Number of hospitals	Percent of total	Number of beds	Percent of total	Number of surgical operations	Percent of total	Number of births	Percent of total
6-24 beds	321	5	6,097	0.6	47,324	0.3	14,827	0.5
25-49 beds	1,188	19	42,858	4.1	408,231	2.3	114,771	3.6
50-99 beds	<u>1,465</u>	<u>24</u>	<u>105,275</u>	<u>10.1</u>	<u>1,359,731</u>	<u>7.6</u>	<u>293,070</u>	<u>9.2</u>
Total	2,974	49	154,230	14.8	1,815,286	10.2	422,668	13.3

Source: American Hospital Association, 1978, pp. 8-9.

Table 3

Control Characteristics of Small General Hospitals, United States, 1977

Hospital Size	Nongovernmental (not for profit)		Investor-owned (for profit)		Local government		State government		Federal government		Total number
	Number	Percent of all hospitals of this size	Number	Percent of all hospitals of this size	Number	Percent of all hospitals of this size	Number	Percent of all hospitals of this size	Number	Percent of all hospitals of this size	
6-24 beds	98	31	42	13	128	40	13	4	40	12	321
25-49 beds	415	35	147	12	578	44	40	3.3	68	5.7	1,188
50-99 beds	648	44	199	14	552	38	20	1.3	45	3.1	1,464
All hospitals	3,286	53	716	12	1,688	27	144	2.3	333	5.4	6,167

Source: American Hospital Association, 1978, pp. 8-9.

Table 4

Distribution of Community Hospitals
by Size Category,
1967 and 1977

Number of beds	Number of hospitals		Percent change
	1967	1977	
6-24	505	283	-44.0
25-49	1,450	1,108	-23.6
50-99	1,487	1,442	-3.0
100-199	1,107	1,401	+20.1
200-299	571	713	+24.1
300-399	315	380	+20.6
400-499	167	243	+45.5
500 or more	<u>188</u>	<u>311</u>	+65.4
Total	5,850	5,881	

Source: American Hospital Association, 1978, pp. 8-9.

ALTERNATIVES FOR THE FUTURE

Several approaches have been suggested and attempted to improve the quality and economic viability of rural hospitals. The principle underlying these efforts has been that through institutional affiliations, small rural hospitals can realize the economies of scale which larger hospitals enjoy and at the same time improve the quality of medical care delivery (Wegmiller, 1978; O'Leary and Nye, 1977). These arrangements are not uniformly successful, but the concept that small hospitals can benefit from formal collaboration with other institutions has both logic and promise (Howe and Warren, 1977; Healy and Freidrich, 1975). To allay the fear that the rural hospital will be devoured or depleted by the larger institution, a mechanism is needed by which responsibilities and obligations for patient care and supporting services are explicitly partitioned between the cooperating institutions, ensuring a substantive role for the rural institution.

Rural communities have predictable levels of demand for medical services. If one defines medical service areas on the basis of travel time--a conceptually attractive approach and one officially recognized in the National Health Planning Guidelines--it is possible to project the number of inpatient services that will be required by a given rural population over time. The role of the rural hospital serving that population should be logically defined by determining what proportion of the total inpatient services it can deliver at reasonable cost and with reasonable quality.

The actual package of services which rural hospitals offer is more often a product of historical accident rather than rational design. It would be preferable to determine for each potential hospital service whether a given hospital is able to provide that service safely without incurring unreasonable costs.

Fortunately, recent research into the relationship between the volume of care and the outcome in terms of survival has given us a tool by which to make rational decisions about which services to retain in rural settings. The most important determinant of the outcome of care for selected surgical procedures is the amount of experience that a given hospital can garner in their provision. For most procedures, there is a discrete threshold volume below which the mortality rate for that procedure rises sharply. Conversely, if a given institution accumulates a sufficient volume of a given procedure, its mortality experience is comparable to much larger hospitals (Luft, Bunker, and Enthoven, 1979). Preliminary evidence suggests that similar patterns pertain with relation to medical diagnoses treated in hospitals (Stross et al., 1976). If these relationships persist, it should be possible to construct for various-sized rural communities ideal service configurations for the hospitals which serve them.

In addition to considerations of quality, it is important to examine the issues of cost. Despite a bewildering array of research on the economics of the hospital industry, there is no compelling evidence that economies of scale have a pronounced effect on the cost of hospital services. Although very large and very small hospitals both seem to be somewhat more costly than medium-sized institutions, the addition of indirect costs such as travel tends to eliminate any economic advantage to the centralization of hospital care. In an era of rapidly escalating energy costs and with rural areas disproportionately gaining population after decades of demographic

decline, it makes little economic sense to close rural hospitals. However, it is important to realize that there are also volume effects with regard to given hospital services. Some diagnostic and therapeutic procedures require expensive capital equipment or specialized professional and ancillary staff; it may be uneconomic to provide these procedures in areas where they will be used so infrequently that the unit cost is prohibitive. Thus each service or procedure should be screened for the relationship between volume and cost, just as it is for quality.

Although the above process gives us a mechanism for rationally determining the scope and role of rural hospitals, we must not ignore the powerful regulatory and licensure constraints that operate on the rural hospital. If we are to restructure the rural hospital so as to enhance its viability, we must convince third-party payers and regulatory agencies that the public health and the public purse are served by retaining logically structured rural hospitals. At this writing we are in the process of trying to mount a demonstration project in the states of Washington, Alaska, Montana, and Idaho that will bring together rural hospitals, planners, rural community members, and the regulators in an attempt to approach the problem of rural health care systems in a coordinated fashion.

DISCUSSION

The experiments of the last decade in rural health care convince us that the solutions to rural health care problems require an integrated approach that is cognizant of the symbiotic relationships among all components of the rural health care system. The Hill-Burton program, which invested more than a billion dollars in rural communities between 1947 and 1966, concentrated on increasing the supply of hospital beds (Clark et al., 1980). The National Health Service Corps and the related Rural Health Initiative and Health Underserved Rural Areas Programs of the 1970s have concentrated their energies on increasing the supply of health manpower in underserved areas and increasing the comprehensiveness of ambulatory services available in those areas. The major investment of the federal government in the training of increasing numbers of physicians and the renaissance of the family practitioner has created a cadre of health care providers who have both the skills and the temperament to practice in rural areas. At the same time, however, an increasing emphasis on regulatory rigidity and cost restraint has had a deleterious impact on rural health care systems.

The challenge of the next decade is to bring together these different elements, realizing that rural health care systems are both fragile and inter-linked. Healthy rural hospitals are necessary for the social and economic stability of rural communities and are usually the core around which the rest of the health care services are oriented. It may well be time to fashion a new Hill-Burton program that looks not at the augmentation of hospital beds in underserved areas but at the establishment of rational health care systems in underserved areas that incorporate all types and levels of care--from ambulatory, to inpatient, to long term, to emergency care.

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