The Demographic Dimensions of Health Manpower Policy

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THE IMMINENT EXPIRATION of the Health Professions Educational Assistance Act of 1976 (Public Law 94–484) has refocused discussion among Federal officials upon the direction that health manpower policy should now take. As affected parties, State Governments and health professions schools are assessing their priorities and formulating positions on the issues that will be debated. Although items for the immediate agenda relate to the short-term continuation or modification of existing programs, there is an awareness that the health service needs of the future may require policies designed to increase the present scale of health manpower activities, to reduce these activities, or to pursue very different directions. Since the characteristics of the population are the major determinant of the scale and scope of health service needs, the first logical question is, What are the implications of current demographic trends for health manpower policy?

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Projected Demographic Changes

Recent research by Morrison of the Rand Corporation calls attention to three forthcoming changes: the changing age structure, the increasing concentration of the poor in metropolitan centers, and the dispersion of population to smaller communities (*1*).

The changing age structure. The population aged 65 and older will increase from its present level of 11 percent to between 18 and 23 percent by the year 2035, and people in their late 70s and 80s will constitute a larger proportion of this elderly population. The full force of these shifts will be felt after 2010.

Increasing concentration of the poor in metropolitan centers. The poor, particularly minorities and illegal aliens, will be increasingly concentrated in metropolitan centers, which are experiencing a population decline. At present, blacks constitute 28 percent of the inhabitants of large central cities, as opposed to 12 percent of the total U.S. population, and Hispanics constitute 11 percent of the metropolitan population, as against 5 percent of the total U.S. population. A disproportionate number of inner city dwellers have incomes below the poverty level, 17 percent versus 12 percent of the total U.S. population.

Dispersion of population to smaller communities. The dispersion of the population from larger to smaller communities encompasses a shift to extensions of suburbs, to smaller urban areas beyond the reach of big cities, and to very small towns.

Health Manpower Projections

Although projections of these demographic trends extend well into the 21st century, most official health manpower projections extend only to 1990. The reason is simple. Health manpower is directly subject to government policy—it has been a major Federal concern since the early 1960s—and other factors determining manpower production and utilization are also priority items on the agenda in a period of great flux in health care policy. These many sources of variability broaden the range of projections beyond the point of utility in a relatively short period.

However, a good deal of work has been done in forecasting what the contours of the health profession will be within the coming decade. This paper will focus upon the medical profession, since it is the physicians who are primarily responsible for determining the kinds and amounts of services provided. In view of the potential of changing roles and substitutability in the provision of health services, reference is also made to nurses and physician extenders, physician assistants (PAs), and nurse practitioners (NPs) whenever required by the analysis of prospective shifts in manpower demand.

The most salient figures about the supply of physician manpower, which now includes osteopaths (DOs), are widely known (table 1). For our purposes, these figures point dramatically to the fact that the aggregate physician supply in the years ahead will expand to an extent and at a rate unprecedented in our history. The increase in the physician-to-population ratio for the single decade 1980–90 (23 percent) will equal that achieved for the entire quarter century 1950–75. This projection is based on the assumption that there will be a continued entrance rate of foreign medical graduates (FMGs) equal to that of 1976 and an average annual growth rate of U.S. medical graduates of 3 percent.

The recent and anticipated growth of the nursing supply is no less impressive, especially in the registered nurse (RN) category (table 2). The ratio of RNs to population, which rose by 37 percent from 1966 to 1976, is likely to experience a similar percentage increase by 1990. Licensed practical nurses (LPNs) number approximately half the RNs, and their rate of increase in the coming decade is expected to decline

Table 1. Physician supply (MD and DO), 1950–90

Year	Total (In thousands)	Physicians per 100,000 population	
		Number	Percent Increase
1950	219.9	144.4	..
1975	378.6	177.3	23
1980 (projected	444.0	198.0	12
1980 (projected)	594.0	243.9	23
1975–1990			38

SOURCE: A report to the President and Congress on the status of health professions personnel in the United States. DHEW Publication No. (HRA) 78–93. Manpower Analysis Branch, Bureau of Health Manpower, Hyattsville, Md., August 1978.

to somewhere between 16 and 31 percent from its peak of 67 percent for 1967–76. Nevertheless the LPN growth will outpace population growth.

The new category of physician extender (PAs and NPs) still constitutes so small a fraction of the total health professions personnel and is so unevenly distributed that practitioner-to-population ratios are meaningless (table 3). However, as their numbers are expected to rise rapidly, by 1990—depending upon the patterns of utilizations and distribution—these practitioners may have a significant, if highly selective, role in health care delivery.

These professional groups are supplemented by a great variety of allied health occupations. Table 4 illustrates the growth pattern of selected personal health care occupations in the context of the health industry as a whole, which currently preempts almost 7 percent of the nation's work force, as opposed to 5 percent in 1979 (2).

Matching Manpower to Demographic Shifts

How well will these manpower trends correspond to the service needs that are implicit in the shifting age and distribution patterns of the population? Answers to this question range from optimistic reliance on the self-correcting force of the market to the need for continuing stimulation and control of the health manpower production process.

In thinking about the matching of manpower to demographic shifts, we need to be aware of some general constraints upon the potential of any intervention in manpower production:

- The projection of manpower needs is never easy. Although service utilization models, either drawn from historical experience or calculated by the application of professional judgment to epidemiologic data, are commonly used, these models fail to include such factors as changes in technology and productivity or in practice modes and content. Our conceptualization of what a unit of manpower encompasses changes over time in relation to the service needs of the population and the practice patterns of professionals.

- Manpower numbers, both the active supply and those in the pipeline, represent political realities. People's expectations of employment and of income in the occupations in which they have been trained cannot readily be deflected. This statement applies to the educational apparatus involved in the production of manpower no less than to the output itself. Moreover, numbers in the pipeline represent a locked-in supply that cannot be turned on or off.

- A democracy imposes severe limits on the degree of regulation that can be exercised with respect to professional manpower. Once professionals have obtained the proper credentials, they have traditionally operated with considerable freedom in the selection of their area of practice, its location, and the conduct of patient care. Although the effects of this level of freedom have not been beyond criticism, this characteristic has undoubtedly enhanced the attractiveness of the medical profession to highly intelligent, motivated students. To encroach radically upon it in pursuit of defined social objectives might lead to serious erosion of manpower quality.

Table 2. Nurse supply, 1966–90

Year	Total (In thousands)	Full-time equivalent (FTE) (In thousands)	FTE per 100,000 population	
			Number	Percent Increase
Registered nurses				
1966	621	544	279	.....
1976	961	822	381–383	37
1980 (projected)	1,088–1,168	931–1,022	416–457	9–19
1990 (projected)	1,459–1,541	1,248–1,371	507–557	22
1976–90 (projected)				33–45
Practical nurses				
1967	270	238	120	.....
1976	489	430	200	67
1980 (projected)	564–566	496–509	222–228	11–14
1990 (projected)	647–697	569–641	231–261	4–15
1976–90 (projected)				16–31

SOURCE: Nursing education and training: alternative Federal approaches. Congressional Budget Office, U.S. Congress, Washington, D.C., May 1978.

Table 3. Physician extender supply, 1975–90

Year	Physician assistants		Nurse practitioners	
	Number	Percent increase	Number	Percent increase
1975	2,540	...	5,100	...
1980 (projected)	7,410	192	11,430	124
1990 (projected)	18,520	150	23,030	101

SOURCE: A report to the President and Congress on the status of health professions personnel in the United States. DHEW Publicatlin No. (HRA) 78–93. Manpower Analysis Branch, Bureau of Health Manpower, Hyattsville, Md., August 1978.

• The final, and perhaps the most important, point is that to think of manpower independently of programs and financing is an exercise in futility; one cannot conscionably train personnel for work in nonexistent or temporary structures for which there is no reasonably reliable source of support.

With these considerations in mind, how should one approach a policy stance directed to the specific changes that we have noted—the aging of the population, the increasing concentration of the poor in central cities, and the dispersion of the population at large?

Aging of the population. The aging of the U.S. population and the consequent burst in the incidence of chronic disease and disability already represent an urgent problem to a system which is primarily oriented to acute illness and which has generated excessive costs for what has been criticized as largely inappropriate care. For the aged, cure is decreasingly an objective of care. In a general sense, it has been replaced by a goal of optimal functioning for the individual as he undergoes changing levels of health. Achievement of such a goal depends upon a continuum of services, including acute care, rehabilitation in a variety of settings, home health care, and nursing home care—services whose mobilization requires effective coordination under institutional leadership.

Table 4. Estimated number of employees in selected health occupations, 1968 and 1976

Occupation	Number of employees	
	1968	1976
Administration of health services	[1] 42,000	48,200
Clinical laboratory services	108,000	216,850
Dietetic and nutritional services	36,000	77,000
Nursing aides, orderlies and attendants	786,000	1,000,000
Home health aides	14,000	39,600
Occupational therapy	[1] 11,700	[1] 17,500
Optometry and optical services	28,000	[1] 31,400
Pharmacy	130,100	121,500
Physical therapy	[1] 20,500	32,100
Podiatry	8,000	7,100
Radiologic technology	[1] 81,500	100,000
Social work	24,200	47,300
Specialized rehabilitation services	[1] 9,500	13,700
Total employment in all health fields (includes physicians, nurses, and physician extenders)	3.7 million	5.1 million

[1] Number represents midpoint of a range.

SOURCES: Health resources statistics. 1969 ed., DHEW Publication No. (PHS) 69–1509, and 1976–77 ed., DHEW Publication No. (PHS) 79–1509. National Center for Health Statistics, Hyattsville, Md.

Essential to any programmatic response to demographic change is an understanding of the comprehensive needs of specific populations and how these can be fitted into the ongoing service delivery structure. Only within such a framework can there be realistic planning to fill specific gaps as these are identified. The policy problem facing the Federal Government is how to devise incentives that will encourage community institutions to assume the leadership in this emerging priority area. Moreover, because health care for the elderly is intimately bound up with other social programs, such as housing and income maintenance, it becomes of necessity an intergovernmental problem.

With respect to manpower, the chief consideration is that health care for the aged is compounded by a variety of psychosocial elements and involves a broad spectrum of workers, including both conventional categories such as physicians, nurses, nursing aides, rehabilitation therapists, and social workers and an extended array of nonprofessionals, such as home health aides, housekeeping aides, transportation personnel, and recreational aides. In principle, a high proportion of nonmedical, as compared with medical, personnel are employed in care for the aged, and this ratio holds for the average, rather than the exceptional, case. Since the kinds and amounts of care to be provided are issues yet to be resolved, it is impossible to quantify manpower needs.

Although the need for a vast increase in facilities for the elderly is anticipated, estimation of its man-

power correlates by extrapolation from current utilization patterns, which involve almost exclusively hospitals and nursing homes, may not be justified (*4*). At best one can suggest how current supply trends relate to gross service requirements:

• The aggregate supply of physicians will have the capability of providing an increased number of acute care services providing there is no radical reduction in productivity, financing is adequate, and programs are in place to link the individual patient to an acute care facility or center. Under those circumstances, it is not unreasonable to anticipate an increase in the proportion of physicians providing geriatric care, particularly as a larger physician pool competes for a smaller number of patients in the younger age brackets.

• The projected supply of nurses, like that of physicians, will also increase well beyond present population ratios. Moreover, the new field of nurse practitioner is likely to become numerically significant by 1990. In addition to providing traditional patient care, nurses could assume responsibility for a broad range of professional geriatric services in institutional and noninstitutional settings, from those of the nurse practitioner to those of administration and supervision. Moreover, if one assumes a stabilization, if not an actual reduction, in capacity of the acute care hospital plant—which has historically been the predominant employer of nurses—large numbers of nurses will be available to meet the chronic needs of the elderly.

• As for the need for significant proportions of lesser skilled personnel, since the training of this group requires relatively short lead time, the supply can be expected to respond to the needs of specific programs, given satisfactory funding.

Greater concentration of the poor in urban areas. The increased concentration of the poor in central cities, in contrast to the deconcentration of the population at large, appears to be a continuation and intensification of a process that has operated since World War II.

At present, the poor of the inner city have access to highly specialized hospital-based medicine, but there is a dearth of private practitioners providing primary care and increasingly, a loss of secondary care institutions. A pattern of institution-based primary care has emerged along with a parallel system of freestanding community health centers. Utilization statistics suggest that availability of services is no longer the major problem, since the traditional differential between the poor and the nonpoor has been narrowed significantly (*5*). Rather, what is lacking is institutional coordination and adequate financing. Unsponsored patients, that is, the near poor and illegal aliens who are not Medicaid recipients, place a burden on specific localities; financing of their care should be a State or Federal priority. Moreover, reimbursement mechanisms, which are currently geared to hospital care, require adjustment so that they can approximate the reasonable costs of providing ambulatory care under these newer community-based delivery forms.

Essentially, the growing number of disadvantaged groups and their concentration in inner cities raise two issues: (*a*) Do we need new kinds of manpower to meet the special needs of new subpopulations in the inner city? (*b*) Do we need new mechanisms to draw existing manpower into the inner city?

Programs for the development of health manpower for the inner city have been complicated by the coexistence of multiple goals, among them the perpetuation of training institutions, employment for the poor, and political power. The result has been that the health care system, which can absorb almost limitless numbers of manpower, is under multiple pressures—not exclusively related to health services, at least not in the traditional sense—to do so.

National experience in the past with the preparation of new personnel to facilitate and improve the use of needed health services by ghetto subpopulations has created serious problems of productivity and efficiency. In an environment of general budgetary constraint and health-care cost-containment in particular, and with the specific fiscal problems confronting cities, one should exercise caution in treading this path (*6*).

As for new mechanisms to redistribute existing manpower, the past failure of increases in manpower supply and broadened entitlement programs to reverse the outflow of private practitioners does not mean that professionals will not respond to reasonably financed and professionally attractive institutional programs. Much depends on the specific conditions of the job. Recent experience has shown that medical-center-affiliated programs that carry with them a teaching hospital appointment have no difficulty in filling slots. As major urban medical centers experience growing competition from the suburbs in filling beds, they are likely to sponsor or affiliate with such programs as a source of inpatient referrals (*7*).

Deconcentration of the general population. Population deconcentration represents movement into three distinct kinds of nonmetropolitan sites: suburbs of suburbs, areas beyond the reach of big cities, and very small towns. Much more must be known about the

differential rates of growth and settlement and the economic characteristics of these new population centers than can now be projected in order to anticipate their major impacts upon health manpower supply and demand. But there is much that is suggestive in our experience with suburbanization and in recent State-Federal efforts to redistribute health resources to remote sites.

With respect to new population centers adjacent to older suburbs, one can anticipate an extension of the suburbanization process. As a community grows, attracts an affluent populace, and develops a broad range of amenities, health care catches up, stimulating the establishment of physician practices and the construction of facilities. The problem ultimately becomes one of unlimited growth and the spreading of resources, although in the deepening mood of facility-containment, this tendency may meet resistance. In terms of physician manpower, what has occurred has been a mismatch between the expansion of physical resources in the suburbs and the concentration of specialized tertiary manpower at the medical center in the central city (*8*). As the population spreads out, economies of scale become more difficult. These are problems calling for organizational efforts in the form of medical center affiliations and regionalization, both of which are difficult to achieve but which are of increasing importance.

The strategies devised by several States to bring services to remote sites involve the location of new university campuses and remote-site clinical centers in these areas. Creation of a prestigious professional environment is a mechanism for attracting physicians and retaining medical and other health professions students in the area once they have graduated.

For the small rural town, the delivery of medical care requires area-specific strategies principally involving transportation. There is a widespread perception that government is no more obligated to provide local physician services than to provide legal services or any of the other amenities that also are lacking in many small rural towns.

Conclusion

We have tried to present an approach to thinking about the health manpower dimensions of ongoing demographic shifts rather than to make projections of specific needs or prescriptions to meet them. With respect to the increasing proportion and number of the aged, priority should be given to efforts to develop integrated programs at the institutional level that will meet the multiple needs of defined elderly populations. The emphasis should be on the coordination of existing services rather than the proliferation of extravagent new facilities, new kinds of manpower, and new layers of bureaucracy.

Similarly, for the increasing poor populations in the inner city, the challenge is to link individuals into a reasonable system of health and social services, a task that cannot be accomplished by reliance on health manpower policy alone. A central consideration is the adjustment of the financing mechanism so that the burden of localities and institutions in providing care for the uncovered patient is relieved.

The progressive deconcentration of the general population from metropolitan areas to smaller communities is unlikely to impose much additional strain on the health care system. That system has already proved its adaptability during the suburbanization process of the postwar decades. The current challenge is essentially one of effective regionalization, something, however, that is admittedly difficult to implement.

In its efforts to anticipate future service needs, manpower policy should not overlook the recent and impending substantial increase in the supply of health professionals. To attempt to tailor precisely personnel to future jobs runs the risk of serious overproduction. Instead, emphasis should be placed on realizing the potential of substitutability within the available supply through improved program planning at those institutions willing to address the needs generated by the demographic changes that have been discussed. The challenge for government will be to design incentives attractive to providers and at the same time structured to discourage inefficiency and to reach the targeted populations.

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