Improving Access to Health Care Among the Poor— The Neighborhood Health Center Experience

ROGER A. REYNOLDS

Utilization, cost, and productivity patterns at neighborhood health centers (NHCs) are examined on the basis of data from 82 centers. Minority groups and residents of the South and rural areas are found to have achieved levels of care and benefits closer to equality with other groups at NHCs than has been their health care experience generally. Continuity and comprehensiveness of care and the use of paramedical personnel are shown to be important contributory factors to utilization of NHCs. The impact of alternative cost-saving devices at NHCs is considered. It appears unlikely that professional productivity can be markedly improved. Increasing third-party payments is the most likely means of reducing dependence on operating grants without deleterious effects on utilization. The problem NHCs have had in maintaining stable professional staffs is shown to be a problem which needs further attention if the program is to expand.

Neighborhood health centers have received considerable attention in the last decade as a means of providing ambulatory care in low-income areas where services are otherwise unavailable or inadequate. Their main distinction from other approaches to improving access to care is their attempt to treat simultaneously a variety of causes for the deficient standard of medical services common in areas with a concentration of poverty. Not only does the neighborhood health center provide a place in which care is financially and physically accessible to all members of the community, but it offers a design for the delivery of services which is intended to be attractive and sensitive to the special difficulties the poor have in attaining better health. In implementing these goals centers have resorted to an array of innovative features in an effort to ensure local residents of their purpose of providing personal and continuous care for a broad range of needs. These features have most often included outreach efforts, a team approach to providing care, community participation in the governance and operation of centers, and combining the provision of health-related and allied social services under the same roof.

Since 1965 the federal government has funded the development and operation of over 130 neighborhood health centers across the country. While these centers now serve an estimated 1.3 million

persons, this falls far short of an optimistic proposal made in a 1967 planning study by the U.S. Department of Health, Education, and Welfare (1967) for extending comprehensive health services projects to serve 25 million persons by 1973. The failure of the program to grow more rapidly reflects uncertainty that has mounted over the scope of demand and the need for such an ambitious approach to meeting the health needs of the poor at a time when Medicaid has grown to such unforeseen proportions and there is increasing concern over the efficiency with which medical care is produced.

Federal support for neighborhood health centers (NHCs) began under the Office of Economic Opportunity (OEO) as a demonstration project in the war on poverty. The first eight centers were funded by the Community Action Program of OEO in 1965 under its research and development authority. In 1966 specific legislative authority for the NHC program was given in amendments to the Economic Opportunity Act.

The quick acceptance of NHCs was largely based on the intuitive appeal of this approach to dealing with the health problems of the poor. Health was recognized as a basic contributing cause of poverty and frequently the conditions responsible for poverty and poor health coincided. The problem was seen not solely as one of income and employment—but also one of the adequacy of local services, housing conditions, family structures, nutrition, transiency of the low-income population, the incidence of crime, and other interrelated factors.

At the time OEO was considering its own role in providing health care for the poor, Medicare and Medicaid were being instituted. The promised effect of these programs was, however, limited to removing the financial barrier to access to health care among the elderly and the poor where sources of care were available. In OEO's view there was a broad range of barriers which the poor faced in obtaining access to care which financing programs alone could not overcome, especially in communities where a large proportion of the population was poor.

Household surveys of baseline areas, neighborhoods in which NHCs were subsequently established, revealed the extent of the deficit in health and health care these persons faced. In eight urban baseline areas surveyed, children were 55 percent more likely to be limited in their activity by chronic conditions than the average for

TABLE 1

Comparison of Health Care Utilization in Poverty Baseline Areas and the United States, by Age and Residence

Health care item	Urban			Rural		
	United States	*Baseline areas*	*Ratio*	*United States*	*Baseline areas*	*Ratio*
Physician visits per person per year						
Under 15[a]	4.0	2.7	1.48	3.3	2.1	1.57
15-44[b]	4.5	3.9	1.15	4.1	2.2	1.86
45-64	5.1	5.0	1.02	4.6	3.0	1.53
65 and over	6.3	6.3	1.00	6.0	3.6	1.67
Dental visits per person per year						
Under 15[a]	1.6	0.8	2.00	1.1	0.9	1.22
15-44[b]	1.8	1.3	1.38	1.4	1.1	1.27
45-64	1.8	0.9	2.00	1.1	0.8	1.38
65 and over	1.2	0.6	2.00	0.8	0.4	2.00
Hospital admission per 1,000 persons per year						
Under 15[a]	68	50	1.36	66	67	0.99
15-44[b]	148	143	1.03	165	100	1.65
45-64	142	137	1.04	159	168	0.95
65 and over	217	168	1.27	275	289	0.95

Sources: Baseline area data, SSI (1973); other data, HEW (1974).
[a] Under 17 for United States averages
[b] 17-44 for United States averages

children living in urban areas in the United States (Systems Sciences, Inc., 1973). In the Roxbury section of Boston and the Bedford-Stuyvesant section of Brooklyn 30 percent of the population with family incomes under $3,000, adjusted for age, suffer from chronic conditions, compared with the national average of 20 percent (Sparer and Okada, 1974: Table 4).

Table 1 shows the extent to which persons in the baseline areas receive less medical attention. The average number of physician visits for rural residents in the United States is more than 50 percent greater in all age groups than for residents of rural baseline areas.

For persons between ages 15 and 44 it is 85 percent greater. This age group is also markedly more deprived of inpatient care than rural residents nationally. In urban baseline areas the disparities are most apparent among children. Children in metropolitan areas nationally have 50 percent more physician visits and 35 percent more hospital admissions than those in urban poverty areas surveyed.

Dental care is particularly deficient in both urban and rural baseline areas, lagging at least 25 percent behind national levels in all cases, and 100 percent behind for the elderly, urban children, and urban adults between ages 45 and 64. In addition, it was found that an average 20 percent of the poor residents of baseline areas had never received any dental treatment, with the level reaching as high as 35 percent in a low-income neighborhood in Charleston, South Carolina (SSI, 1973).

This distressing evidence cannot be accounted for totally by the lack of financial access to care. Three other factors have an important influence on health and health care patterns in low-income neighborhoods: the availability of health personnel, relationships between providers and consumers, and social and environmental conditions. The extent and role of these problems have been voluminously documented. (For example, see Dorsey, 1969; Romm, 1971; University of Chicago, 1972; Davis and Reynolds, 1976; Andersen and Morgan, 1973; U.S. Congress, 1969.)

Most projects have taken the form of free-standing clinics. Consistent with the demonstration nature of the program other modes have been tried including use of existing outpatient departments, group practices, and prepayment plans. A wide variety of sponsors were attracted to the NHC program. Initially, most centers had the backing of hospitals, medical schools, or local health departments which already had managerial capabilities. Centers funded later have more often been sponsored by new community organizations established for the purpose of operation of the center (Zwick, 1972).

NHCs survived the demise of the war on poverty. Beginning in 1970, jurisdiction over OEO centers was shifted to HEW. Some centers, similar in design to OEO centers, had been started independently by HEW under Section 314 (e) of the Partnership for Health Act, passed in 1967, which committed that department to the concept of providing comprehensive health services to the poor. To allay the fears of some over the future of NHCs under HEW, an

TABLE 2

Neighborhood Health Center Registrants and Federal Project Grants, Fiscal Years, 1968-74

Fiscal Year	Number of projects	Registrants (thousands)		Federal project grants	
		Per project	Total	Per Registrant	Total (millions)
1968	51	2.6	135	$275	$ 37.1
1969	67	4.6	305	203	62.0
1970	89	6.5	576	174	100.0
1971	112	8.7	975	169	165.0
1972	110	11.6	1,281	139	174.9
1973	106	12.0	1,270	131	166.9
1974 (est.)	104	13.5	1,400	141	198.0

Sources: 1968-71 data, U.S. Office of Management and Budget (1971-73); other years, OEO (1972), HEW (1973), U.S. Comptroller General (1970), Merton and Nothman (1972).

agreement was signed by the Director of OEO and Secretary of HEW guaranteeing the future of existing projects transferred to HEW from OEO.

The spirit of that agreement has not held. As shown in Table 2, the NHC program has stagnated. After a period of rapid growth, the number of projects has declined since 1971. One reason for the stagnation of the program has been the general discontent developing against programs associated with the war on poverty. Their multidisciplinary approach with concomitantly ambitious goals have been largely discredited. Like many community-based programs of OEO, neighborhood health centers became the focus of local political controversies. As a result, functions of NHCs beyond the provision of health and health-related services have been de-emphasized.

At the same time, there has been a shifting emphasis to efficiency in operations. More technical assistance is being given to help centers improve their management capabilities. Third parties, especially Medicaid, are being looked to for defraying the cost of care. Much interest has also focused on the use of capitation payments at centers as the capacity for collecting from third parties improves.

While registration at existing NHCs has continued to grow, federal operating grants per registrant have declined. It is unclear

whether this decline is attributable to the growing maturity of centers, economies of scale, poor record keeping on registration figures, direct efforts to improve efficiency, or cutbacks on available services. This question reflects the lack of evaluation that has arisen out of the NHC experience. Though many studies have discussed the findings of individual or small groups of centers (Hollister and Bellin, 1974) no effort has been made to assess NHCs together in terms of the common set of characteristics and goals encompassed in them.

In the following sections this study will turn to the questions of whom centers have served, how well centers have served them, and why people use centers. For this purpose a large amount of data was collected from quarterly reports of NHCs published in summary form by OEO (Fourth Quarter Report, 1972) and the Bureau of Community Health Services of HEW (HEW, 1973-1974). The time period encompassed is a four-quarter period beginning in October 1972. Data from 32 centers were used, each center having reported relatively complete data for at least two quarters. Hereafter, data compiled from this source will be referenced as from the "NHC file." The quality of data reported by NHCs has often been questioned. While this may be a problem for analyses using smaller samples, the sample size and level of aggregation used result in sufficiently clear trends that it appears that spurious variations due to reporting errors are not significant.

Performance in Providing Care

The early guidelines for NHCs to qualify for federal assistance required that applicants demonstrate the need for a center in terms of the concentration of poverty among the local population and the availability of alternative sources of ambulatory services. Federal support was to be a "last dollar" source of funding, reserved for those who could prove that without such support many in the community would be deprived of adequate medical care.

There have always been many more neighborhoods able to meet these criteria than could be supported from NHC program funding. To fulfill the demonstration purposes of the program, priority was given to supporting projects in communities reflecting a wide variety in the composition of the population by sociodemographic characteristics. Three-quarters of NHCs are

located in urban areas, some more densely populated than others, and the other quarter is located in rural areas. All regions are well represented among the centers funded. Most of the communities in which centers are located are predominated by one ethnic group, most often blacks. A special effort was made, however, to include ethnic minorities other than blacks. A center in King City, California, serves a population about evenly divided between low-income permanent residents and migrant farm workers (JAMA, 1970). In Red Lake, Minnesota, a center was established to supplement an existing Public Health Service hospital to provide comprehensive coverage for the Chippewa Indian reservation (OEO, 1968b:47).

The assumption in the planning stages by OEO was that 80 percent of the population in communities served would be below the poverty level. However, in the process of locating centers in a manner which would test the validity of the NHC approach in different settings, centers, in practice, were located in communities with widely varying degrees of poverty. Upon comparing the number of registrants at NHCs with the population of census tracts with greater than 20 percent of the population living under the poverty level, large variations among cities in the proportion of the population of low-income areas registered at centers are found. While overall the equivalent of only 10 percent of the population of such communities is enrolled at centers, or less than half the poverty population, in Denver more than the total population of low-income areas in the city is served. A similar situation applies for rural centers. Counties with rural centers range in the proportion of the population below the poverty level from only 8 percent at the Wilkes-Barre, Pennsylvania, center to 67 percent for the Medger Evers center in Mississippi (NHC file).

Primarily as a result of such disparities combined with economic limitations, the initial concept of the NHC as a community-wide service point has been abandoned. A regulation was promulgated, and later abandoned as unfeasible, permitting no more than 20 percent of the families enrolled to be above the poverty level. Direct or third-party payments are now required of non-poverty patients, although partial payment schedules have been established for the near poor. Actual figures show that the primary billing source for 78 percent of all registrants is either public assistance medical programs or center funds. Another 10 percent is

covered by partial payment schedules (NHC file).[1] This suggests that almost 90 percent of those registered at NHCs are among the poor and near poor.

Evidence from the NHC file also shows that center registrants are more concentrated than the populations of communities served by NHCs among the young, minorities, and, at rural centers, among the elderly. These are groups who have been shown above to be most likely to be deprived of adequate care. For most individual centers, the concentrations of registrants by age and ethnic group also approximately parallel the characteristics of the poverty population in the communities served. A household interview survey of 21 OEO center target areas completed in 1972 confirms that within their target populations, users of NHCs are generally those who have been in most need of care. In proportion to the eligible population, users had lower per capita incomes and were members of larger families than non-users. Users also tended to be younger and include more blacks. There were no significant differences by education or length of residence in the community. With respect to health status, users were more likely to have been confined to bed by an illness in the 12 months prior to the survey (Langston et al., 1971). In summary, although NHCs have not been placed in areas with consistently high concentrations of poverty, which has been largely responsible for a loss of emphasis on community-wide participation by the program, NHCs have succeeded in reaching those in most need of care in terms of income, sociodemographic characteristics, and health status within the communities they serve.

The most important policy question unanswered about NHCs is whether they have made care more accessible among groups that have been traditionally deprived of care. If centers are to be considered a successful means of meeting the health needs of the poor, it must be shown that they have served all persons on a more equal basis than has been achieved without them. The diversity of sociodemographic characteristics of centers, indeed, encourages such an analysis.

The majority of NHCs offer a full range of basic ambulatory services. A financial audit of a sample of 60 centers in 1973 showed

[1] In addition, 4 percent make full direct payments for their care. The remainder have private insurance or "other" listed as their primary payment source. These persons are likely to fall among the more affluent registrants.

TABLE 3

Services per Person per Year at NHCs
by Selected Center Characteristics

	Medical care	*X-rays*	*Laboratory tests*	*Prescription*	*Dental care*
All centers	2.6	0.30	1.8	2.5	0.59
Residence					
Urban	2.6	0.32	1.9	2.5	0.59
Rural	2.4	0.24	1.5	2.2	0.57
Ratio, urban to rural	1.09	1.32	1.28	1.17	1.03
Region					
Northeast	3.1	0.25	1.7	1.8	0.68
North Central	2.3	0.28	1.9	2.4	0.44
South	2.8	0.32	2.0	3.3	0.70
West	2.2	0.36	1.7	2.4	0.51
Ratio, West to South	0.80	1.11	0.84	0.72	0.72
Ethnic group [a]					
White	3.2	0.26	1.5	1.9	0.63
Black and other	2.7	0.30	1.9	2.8	0.64
Ratio, white to black and other	1.19	0.74	0.79	0.68	0.98

Source: NHC file

[a] Represents ethnic group of majority of registrants at NHCs. Some centers where no group predominates are not included in this categorization. Centers with predominantly Spanish-speaking registrants are included with blacks and others.

that all centers offered medical care and laboratory services, 96 percent provided dental care, 90 percent had X-ray facilities, and 94 percent had pharmacies (U.S. Congress, 1974:60). The combined average cost of these services per registrant per year is $99 or 70 percent of cost of all center services per registrant per year.

Table 3 shows the levels at which these services have been utilized per registrant. The average registrant has 2.6 medical visits and 0.6 dental visits per year, as well as 0.3 X-rays, 1.8 laboratory tests and 2.5 prescriptions filled. The utilization levels in the South, which among regions has the lowest levels of medical and dental care, are striking—for all services they exceed the average for all NHCs. The largest difference by region occurs for the number of medical and dental visits between the Northeast and West, the two regions where use of these services is ordinarily the highest. The use of ancillary services does not appear related to the level of medical care and no pattern emerges among regions.

The breakdowns by residence and race reveal that in some

cases common disparities by these characteristics occur at NHCs. Urban residents have 9 percent more medical encounters than rural residents registered at NHCs. The differences are even greater for ancillary services, though minimal for dental visits. Persons served by centers in which the majority of registrants are white have 3.2 medical visits per year compared with 2.7 medical visits per registrant at centers where minority groups predominate. Larger amounts of all other services, however, are provided at "minority centers" than "white centers."

Although blacks and rural registrants lag behind whites and urban enrollees in their use of medical resources at centers, Table 4 shows that gains have been made by these persons by using neighborhood health centers. There is only a small difference in the likelihood of using an NHC per quarter between registrants at urban and rural centers. Furthermore, while persons living in urban areas average 29 percent more physician visits than rural residents nationally, the difference is only 23 percent at NHCs. When care at NHCs by other medical providers, such as nurse practitioners, is taken into account, the difference diminishes even further.

The relative position of registrants of NHCs in the South has also been improved by the use of paramedical personnel. Unfortunately, no comparable national data are available with which to compare the utilization of paramedical personnel. It is significant, however, that NHCs have demonstrated that the provision of medical care can be improved markedly in locations where the supply of physicians is scarce by supplementing them with professional assistants. The lack of physician availability has otherwise restricted needed treatment in these places to relatively low levels.

Although they show overall lower utilization of medical services than whites, blacks and other minority group members are more likely to have made use of the NHC in a given quarter year. They are also more likely to receive care from a physician than whites: 21 percent of registrants at minority centers and 19 percent of white center registrants per quarter are physician users.

The lower utilization at rural and black centers is not due to unequal access to centers. Rather it is largely attributable to differences in the proportion of visits that are for preventive purposes. At rural centers only 58 percent of medical visits are for diagnosis

and treatment of particular health problems contrasted with 72 percent in non-rural centers. The proportion of visits for diagnosis and treatment is 76 and 69 percent for white and minority centers, respectively. Since visits for a checkup, if done on a regular basis, are less likely to result in return visits than a visit by a person already cognizant of some illness, it is appropriate that utilization is lower for blacks and rural residents.

The overall level of medical visits per registrant at centers is only 60 percent of the average number of physician visits per person per year in the United States. While this may seem contrary to the goal of NHCs of providing a continuity of care, it is not necessarily inconsistent with that goal. The goal of continuity has as its complement the goal of efficiency. If registrants are conditioned to the habit of seeking preventive attention on a regular basis, illness and disease may be detected at an earlier stage and be more easily treated. Five percent more medical visits at NHCs than the average in the United States are for preventive care. The proportion of diagnostic and treatment medical encounters appears in Table 4 to be roughly correlated with the total number of medical encounters. Together these findings suggest that continuity and efficiency are being simultaneously achieved.

Further evidence supporting this contention is given in Table 5. As the enrollment at centers increases, the average number of medical encounters per registrant decreases. The larger centers have also been in operation longer. They have therefore had the opportunity to treat the same persons for longer periods of time, thereby enabling them to effectuate a lower average utilization rate per registrant. As the size of an NHC increases, the probability that a registrant will use the center in a three-month period drops dramatically. Several reasons are responsible for this. First, registration records may not be kept current. It is plausible that the degree to which that is the case is systematically related to the size and age of the center. Second, some of the larger centers may have achieved a status no different in the minds of its registrants from other sources of care which are impersonal in their atmosphere, discouraging registrants from seeking care more regularly than at the onset of illness. Third, persons using the smaller and newer NHCs are more likely to be new registrants who are undergoing the required complete health assessment and follow-up. Strauss and Sparer (1971) have shown that medical utilization rates decline at

TABLE 4

Medical Care Utilization per Person Served and per Person, Neighborhood Center and the United States

Center characteristic	Medical encounters per registrant per year, NHCs		*Physician visits per year, United States*	Percent medical visits for diagnosis and treatment		Physician visits per person with physician visits	
	By physicians	*Total*		*NHCs*	*United States*	*Per quarter, NHCs*	*Per year, United States*
All centers	1.8	2.6	4.3	70	75	2.3	6.2
Residence							
Urban	1.9	2.6	4.4	72	75	2.3	6.2
Rural	1.5	2.4	3.4	58	75	2.3	5.1
Ratio, urban to rural	1.23	1.09	1.29	1.24	0.99	0.98	1.22
Region							
Northeast	2.2	3.1	4.4	71	77	2.5	6.2
North Central	1.7	2.3	4.0	63	74	2.3	5.9
South	1.8	2.8	4.1	76	74	2.3	6.0
West	1.7	2.2	4.6	67	74	2.2	6.5
Ratio, West to South	0.94	0.80	1.12	0.88	1.00	.97	1.08
Ethnic group[a]							
White	2.2	3.2	4.4	76	75	2.9	6.3
Black and other	1.9	2.7	3.5	69	79	2.2	5.6
Ratio, white to black & other	1.16	1.19	1.26	1.10	0.95	1.31	1.12

Source: NHC file, HEW (1972a).

[a] See note a, Table 3.

TABLE 5

Characteristics of Medical Care Utilization per Registrant and per User, per Quarter by Number of Registrants per Center

Registrants per center	*Average years in operation*	*Users per registrant*	Medical encounters		*% medical encounters for preventive reason*
			Per registrant	*Per user*	
All centers	4.7	0.28	0.7	2.3	30
Less than 5,000	3.7	0.55	1.4	2.6	40
5,000-9,999	4.3	0.38	0.9	2.4	34
10,000-19,999	5.2	0.28	0.7	2.5	25
20,000 and more	7.6	0.23	0.5	2.2	30

Source: NHC file.

least 20 percent after the first six months following registration in which treatment of needs identified by the initial assessment are made. All three effects may be discerned as playing a role in explaining the relationship between medical encounters per user and the proportion of visits for preventive purposes. It is likely then that NHCs have been effective in delivering medical care on a continuous basis to active registrants and thereby have been able to reduce necessary utilization levels. They have also succeeded in making medical services more accessible to minority group members and residents of the South and rural areas—that is among those persons for whom access is otherwise the most limited.

Only 5 percent of all center registrants see a dentist in any three-month period. Since 75 percent of all dental encounters are with dentists, this suggests that dental care is confined to a relatively small portion of center registrants. This is due to the limited resources available at centers for dental care. Primary concern by mandate must be given to medical problems. It should be true though that since a continuity of care is evident in the medical utilization patterns, patients with the most severe dental problems do receive attention. The team method of practice should be helpful in rationing scarce dental resources appropriately at centers.

Compared with the amount of variation in dental care in the United States, NHCs appear to have mitigated differences substantially. Since dental care is more scarce at centers it is especially

TABLE 6

Dental Care Utilization at NHCs and in the United States, by Center Characteristics

Center characteristics	Neighborhood health centers		United States	
	% of registrants seeing a dentist per quarter	*Dental visits per person seeing a dentist per quarter*	*% of population with dental visits within a year*	*Dental visits per person with dental visits per year*
All centers	5.4	2.8	45.0	3.3
Residence				
Urban	5.4	2.8	47.2	3.8
Rural	5.1	2.8	40.7	2.9
Ratio, urban to rural	1.06	0.99	1.16	1.31
Region				
Northeast	5.3	3.2	49.8	3.6
North Central	4.8	2.4	46.0	3.0
South	6.2	2.9	39.3	2.8
West	5.1	2.5	46.4	3.9
Ratio, West to South	0.82	0.89	1.18	1.39
Ethnic group [a]				
White	5.1	3.1	47.3	3.4
Black and others	5.9	2.8	28.3	2.5
Ratio, white to black and others	0.86	1.13	1.67	1.37

Source: NHC file, HEW (1972b).

[a] See note a, Table 3.

significant that it has not been distributed unequally according to sociodemographic characteristics (refer to Table 6). Variations by residence, region, and race in the average number of dental visits per person per year in the United States accrue in substantial amounts both from the percentage of the population with any visits in the year and the number of visits per person with any visits in the year. At NHCs the relatively smaller variations accrue to neither of these factors in consistently large proportion.

Apart from the basic range of services, there is a wide variation in the likelihood of particular services being offered at

centers. The majority of centers, as shown below, have home health care programs while only a limited number offers physical or speech therapy or family planning programs:

Service	*% of centers offering service*
Direct health activities	
Mental health	76
Home health	83
Physical or speech therapy	26
Optometry	37
Sickle cell	40
Lead poisoning	31
Family planning	26
Supporting health activities	
Social and community services	94
Transportation	93
Training	81
Community organization	53
Environmental	67
Research and evaluation	29

Source: U.S. Congress (1974).

Because of budgetary constraints, not all centers can offer the full range of supplemental services. Data in Table 7 suggest that the relative degree of implementation of these services and the relative emphases given to these services vary appropriately with sociodemographic characteristics.

Total benefits per registrant per year at NHCs in urban areas are $145, while at rural centers they are only $125. A large portion of the difference is attributable to prices of medical and dental care which are both 23 percent higher per unit in urban centers. The basic range of ambulatory services—medical, dental, laboratory, X-ray, and pharmacy services—represent only 63 percent of total benefits provided at rural centers while they represent 70 percent of benefits at urban centers. Urban centers also allocate more benefits to mental health and other specialized health care programs, such as optometrical services and lead-poisoning control than rural centers. Rural centers compensate for lower relative benefit levels in those programs with a higher relative level of expenditures for home health care and supporting health activities than urban cen-

TABLE 7

Benefits per Registrant per Year and Distribution of Benefits for Services Provided at NHCs

Service	All centers	Residence		Region				Ethnic group[a]	
		Urban	Rural	Northeast	North Central	South	West	White	Other
	Cost per registrant								
Medical	$60	$62	$46	$92	$54	$52	$51	$66	$65
X-ray	5	5	5	7	4	5	5	6	5
Laboratory	6	6	6	8	7	6	5	7	7
Prescription	9	9	8	8	11	11	7	10	10
Dental	18	18	14	27	15	15	15	18	14
Mental health	11	12	5	9	8	8	18	7	9
Home health	6	5	7	7	8	7	3	10	6
Other direct health	2	2	1	2	2	2	3	5	2
Supporting health activities	25	24	32	38	17	27	21	23	28
Hospitalization	6	5	15	10	1	10	4	12	7
Total exclusive of hospitalization	$143	$145	$125	$197	$124	$132	$127	$152	$147
	% Distribution of cost per registrant								
Medical	42.3	43.0	37.0	46.3	43.4	39.0	40.1	43.4	44.0
X-ray	3.6	3.6	3.8	3.4	3.1	3.8	4.1	3.7	3.7
Laboratory	4.5	4.4	4.7	4.0	5.6	4.5	4.2	4.3	4.8
Prescription	6.4	6.4	6.6	3.8	8.8	8.1	5.5	6.8	6.9
Dental	12.3	12.4	11.3	13.5	12.5	11.0	11.9	11.9	9.7
Mental health	7.5	7.9	3.7	4.7	6.6	6.0	13.8	4.9	6.4
Home health	3.9	3.7	5.8	3.8	4.3	5.1	2.1	6.4	3.9
Other direct health	1.6	1.6	1.4	1.2	2.0	1.4	2.1	3.5	1.3
Supporting health activities	17.9	16.8	25.7	19.2	13.9	20.7	16.2	15.0	19.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

ters. As shown below there are also differences in the manner in which budgets for supporting health activities are spent between urban and rural centers:

Median[2] Distribution of Supporting Activity Costs

	Urban	*Rural*
Social and community service	55	38
Transportation	19	32
Research and evaluation	18	22
Training	6	2
Community organization	2	2
Environmental	0	4

Source: HEW (1973-74: Report No. 4).

Rural centers place a greater emphasis on transportation and relatively less on community and social services than do NHCs located in cities. Appropriately the differences in the way benefits are allocated between urban and rural centers is concentrated between the trade-off of offering more comprehensive service in urban areas where members of the community may more easily take advantage of them and creating better physical access to basic ambulatory services in rural areas, which is essential to assuring necessary care.

Among regions, benefits in the Northeast are unusually high. The average expenditure per registrant per year in the Northeast is $197, compared with only $132 in the South, the region with the next highest benefits per registrant. This difference is concentrated among benefits going for medical care, dental care, and supporting health services. The large expenditures for supporting activities may have contributed to the higher levels of utilization of medical and dental services in the Northeast than any other region. The higher level of benefits for medical and dental expenditures are largely explained by differences in price. A single medical encounter costs NHCs located in the Northeast 53 percent more than NHCs in the South. Although centers in the South have achieved improved utilization levels for basic services in contrast with relative average levels among regions in the United States, they have been permitted to do so mainly because of the lower prices of basic care, which have enabled them to spend a greater proportion of their budget for outreach activities.

[2]Medians are adjusted to add to 100.

There are no marked differences in benefits or the manner in which benefits are allocated between predominantly white centers and those mostly serving members of minority groups. Benefits per registrant per year at white centers are $152 compared with $147 per registrant per year at minority centers. Both groups of centers spend approximately 70 percent of their budgets for the basic range of ambulatory services.

NHCs have shown notable success in improving access to health care among poor persons. Those sociodemographic groups that have been most limited in the amount of ambulatory care received have been able to receive a more equal standard of care at NHCs. These objectives have been contributed to through the achievement of a continuity of care, preventive visits, the use of paramedical personnel, and substantial outreach efforts.

Quality of Care

Neighborhood health centers have been subject to the criticism that they are promoting a two-class health care system because they are specifically designed to treat the poor. One implication of such an argument often is that the quality of care is substandard. Though it is substantively true that NHCs by nature segregate the poor, they have served an important purpose if they provide the poor with access to care and the care meets normal standards of quality.

There is not a complete agreement among health professionals over what constitutes quality in health care in all instances. Morehead et al. (1971) have conducted a study of three types of care offered by all NHCs—adult health assessments, pediatric care of infants, and obstetrical care—for which there are generally accepted standards. The study was limited to patients who had made at least three visits to the center over a period spanning more than four months. Medical records for a sample of registrants meeting this criteria and falling within the groups to which the types of care studied were applicable were audited for desired characteristics at 35 NHCs.

By comparing scores generated by these audits with scores for other providers, Morehead et al. concluded that the quality of care at NHCs is equal to, or better than that offered by other established sources of care. For adult assessments NHCs scored higher for all components audited than either medical school-affiliated out-

patient departments or group practices. NHCs were especially notable in this area for the completeness of routine laboratory studies and chest X-rays. All three types of providers followed the same general pattern in scoring for obstetrical care, with high levels of performance in prenatal work-ups and adherence to prenatal visit schedules, considered the most important elements of obstetrical programs, and less success in the proportion of women registered in the first trimester of pregnancy, family planning counseling, and postpartum visits. The scores for pediatric care were also generally considered consistent with other providers except Child and Youth Programs, which scored 60 percent higher. NHCs showed some deficiency in the completeness of appropriate immunizations compared with group practices, health department well-baby clinics, and Child and Youth Programs.

Although NHCs rated well under this type of review, it reflects the quality of only a small part of services offered. Even with respect to these results, Morehead et al. caution that there was wide variation within any one group of providers. Much of the source of the results, they feel, therefore lies with individual commitment and performance rather than with organizational techniques.

Ultimately the efficacy of the comprehensive care approach depends on its ability to improve health status patterns. Studies in this area are fraught with difficulty. When dealing with small population samples it is not often possible to isolate the causes of reductions in morbidity. NHCs frequently only serve part of the population within their target area. A limited number of reports indicate, though, that NHCs can have an impact. In Baltimore, Gordis (1973) showed that incidence of rheumatic fever was one-third lower among children ages 5-14 in neighborhoods served by comprehensive care centers, a reduction of 60 percent between 1960-64 and 1968-70, while the incidence was unchanged in the rest of Baltimore. Furthermore, the improvement was directly traceable to the detection of streptococcal infections at comprehensive care centers. In Lowndes County, Alabama, until recently the site of an NHC, the infant mortality rate was reduced from 46.9 per 1,000 live births in 1967 to 28.3 in 1971. Over that same period of time infant mortality rates in neighboring counties were little changed. Similarly, in Bolivar County, Mississippi, the infant mortality rate changed from 48.5 to 31.0 in the first four years an NHC was located there. Among blacks, who comprised nearly the totality of

patients served at the Bolivar center, the rate was reduced from 57.2 to 35.7, while the rate for whites in the county increased slightly from 13.5 to 13.7 (Andersen and Morgan, 1973).

The improvement in the amount of health care received by persons served by neighborhood health centers has not been at the expense of high medical standards. Centers have compared favorably with other organizational modes of delivering ambulatory services in the quality of care offered. At the same time they have been serving that segment of the population that has most often been denied both the amount and quality of care received by other persons at other sources. The gains shown are most notable in the South, rural areas, and among blacks and other minority groups. Members of these groups are precisely those who have been most discriminated against by the mainstream of medical practice.

Economic Viability

The benefits of the NHC program to the population it serves are manifest. Yet the question remains whether NHCs can be justified as an economically viable means of serving the health needs of the poor. Frequently the focal point of such discussions is the high cost of the comprehensive approach to health care delivery. Another problem, not as frequently mentioned, is whether NHCs can continue to attract a supply of personnel to serve populations that have been abandoned in large numbers by health professionals in the past. The economic arrangements at NHCs are uncharacteristic of the market for health care. Although a large part of the cost of medical care is now financed by third parties, either through private insurance or public programs, the patient is still generally held responsible for having a source of sufficient remuneration for services rendered. At NHCs, as well as being the supplier of care, the center is the financer of care for the majority of patients. This section will examine NHCs more closely in both of these economic roles.

NHCs as Financers of Care

There are three primary sources from which NHCs may meet their expenses. The most important of these is grants from the federal government under the NHC program run by the Bureau of Community Health Services of HEW. Some centers also receive funds

from other federal agencies and local governments. Such grants represent 87 percent of all costs of operating NHCs (U.S. Congress, 1973a:88). The two other sources of financing are third-party payments and direct patient payments. The principal third-party source is Medicaid, for which many of the poor using NHCs are eligible but which has not generally proved fruitful of reimbursements to centers. Direct payments are limited in that they are only required of the small number of non-poor persons using NHCs.

Because NHCs derive most of their income from grants, they largely operate on fixed annual budgets. From its budget, the center is left to determine the optimal mix of services it will provide to the community. If the center is operating at full efficiency, this will necessitate trade-offs among the number of persons to be served, the range of services to be offered, and the amount of care to be provided to any registrant seeking care. Each alternative the center faces in this type of decision is equally grievous in terms of contradicting the goals of the NHC program. If it is forced to close registration at the center, it is not fulfilling its promise of serving the local poverty population on an equal basis. If it must limit the types of care provided, it does not fulfill its promise of offering comprehensive care in a single setting. If it tries to limit use of the center by any single individual, it is failing to provide the continuity of care together with the quality of care which makes the NHC unique in serving the health needs of the poor.

Indeed, in the complex institutional framework of the NHC, these purposes are complementary. Providing a continuity of care and a comprehensive range of services fosters utilization of the center. As shown in Table 8, the range of services has a distinct effect on the utilization of centers. More registrants will use centers and users will receive a greater number of services, including medical care specifically, if the centers provide full basic ambulatory services or home health care than if they do not. The provision of mental health services apparently does not contribute to greater utilization of centers. The greatest complementation in effect is evident for supporting health activities. When centers are ranked in quartile groups by the expenditure for supporting health services per registrant, both usership and the amount of medical care received per user decline substantially between the highest and lowest quartiles.

TABLE 8

Utilization of NHCs According to Services Offered

Item	*% of registrants using center per quarter*	*Medical encounters per user per quarter*	*Non-medical encounters per user per quarter*
Full ambulatory services[a] provided by center	28.1	2.4	1.4
Not provided	27.6	2.3	1.4
Home health care provided by center	27.8	2.5	1.6
Not provided	27.9	2.3	1.3
Mental health care provided by center	27.0	2.3	1.4
Not provided	32.0	2.5	1.6
Quartile rank of center by expenses for supporting health activities per registrant			
I (highest)	41.9	2.7	1.5
II	26.4	2.6	1.4
III	27.4	2.4	1.5
IV	24.7	2.1	1.3

Source: NHC file.

[a] Includes medical and dental care, X-ray, laboratory, and pharmacy service.

The budgetary nature of NHC operations need only be a constraint on providing service if centers are operating at full efficiency. The primary incentive for efficiency is demand for services relative to the budget of the center. This is reflected in Table 9, where the productivity of professional personnel and cost per service are compared when centers are grouped according to the number of registrants. Physicians working in centers with over 5,000 registrants see 50 percent more patients per quarter than physicians at smaller centers. The difference in productivity of physicians between centers with under 5,000 and over 20,000 registrants more than accounts for the 33 percent greater cost per medical encounter rendered at the smaller centers. The smaller relative difference in price is explained by differences in the mix of physician and non-physician encounters comprising total medical encounters and the mix of services performed by physicians. At the smaller centers physician encounters account for 70 percent of all

TABLE 9

Productivity of Medical Personnel and Cost per Medical Encounter at NHCs

Number of registrants per center	Encounters per full-time equivalent staff per quarter		*Cost per medical encounter*
	Physicians	*Other medical personnel*	
Less than 5,000	469	118	$28.76
5,000 - 9,999	776	165	23.94
10,000 - 19,999	719	105	23.91
20,000 and more	724	120	21.81
Ratio, largest to smallest centers	1.46	1.02	0.76

Source: NHC file.

medical encounters and 36 percent of all the services rendered by physicians are for more time-consuming examinations of well patients. At larger centers physicians perform 73 percent of all medical encounters, but only 27 percent of those are for preventive care. The problem of the productivity, as seen, is very much related to the scale of the center. Centers which serve small populations perform fewer services. The fixed budget of an NHC must be allocated therefore to fewer services, making unit costs higher. Markedly reducing the number of personnel at a center in order to conform to the demand for its services, on the other hand, would cause it to lose its character as an NHC and as a result make the center susceptible to losing its funding.

Consistent with these findings of economies of scale at NHCs, initial guidelines for OEO NHCs required that those seeking funding plan to serve target populations of at least 10,000 persons (OEO, 1968a). While centers with poor productivity levels are generally those that have not met this requirement, Table 5 showed that the smaller centers are usually newer, partly explaining their low registration and some of the difference in productivity, since physicians spend more of their time examining new registrants. Some older centers, though, are included in this group. Lesser-scale programs than NHCs may be appropriate for such areas, but the relative inflexibility of federal programs makes it difficult, for example, to substitute National Health Service Corps personnel for an NHC. Furthermore, in some isolated areas where no other care

is available, the range of services provided at an NHC may be the necessary minimum level of care to assure persons residing in those areas of adequate health services.

The federal government has taken an interest in improving third-party reimbursements and collecting direct payments at NHCs. The reasons cited by HEW are credible. Confronted with its own budget constraints, it argues, it has been seeking ways in which to expand the capacity of NHCs without increasing the cost to HEW. If it is not able to do this, the persons who will suffer the most are those without any alternative but to seek their care from NHCs because of their lack of coverage for services rendered by other providers (U.S. Congress, 1973a).

The impact of these devices on efficiency and the utilization of services, however, must also be considered. As Fein (1970) has pointed out, the existing arrangement leaves little province for choice by the consumer. If no other source of care is available, he must resort to the NHC for treatment. Similarly, if care is not free from any other source, choosing the NHC for care is the only rational choice. In requiring those who are eligible to use third parties, principally Medicaid, for payment, NHCs will make their patients more aware of their ability to choose other providers for their care if they desire. It will also promote efficiency in forcing NHCs to compete with other providers for patients and to be satisfied with established reimbursement levels. Finally, it permits more widespread support of services for needy persons not eligible for third-party coverage.

There are three factors principally responsible for limiting Medicaid reimbursements. First, NHCs have not always sought or received required recognition as providers under Medicaid, either because of lack of diligence in pursuing that status or because their unusual character has been misunderstood by those responsible for approving providers. Second, patient eligibility for Medicaid may be limited. The proportion of the poor covered by Medicaid in some states is quite small. Third, the benefit structure of state Medicaid programs frequently does not encompass the broad range of services offered by NHCs. Under these circumstances, one study reports that reimbursement can probably be increased no more than from the current level of 13 percent to 20 percent of all operating expenses (U.S. Congress, 1973a:88).

Direct payments will also free centers from the constraint of

TABLE 10

Utilization and Cost of Services at NHCs by Primary Payment Source of Registrants

Quartile rank of centers by % of registrants with given primary payment source	*% of registrants using center per quarter*	Medical Services: *Encounters per registrant per year*	Medical Services: *Unit cost ($)*	All Services: *Encounters per registrant per year*	All Services: *Cost per registrant per year ($)*
Center grants					
I (highest)	25	2.2	21	4.2	125
II	28	2.7	23	4.1	137
III	28	2.3	26	3.6	157
IV	32	3.4	25	5.0	191
Third parties					
I	33	3.5	27	5.1	215
II	29	2.7	24	4.2	153
III	28	2.7	21	4.5	143
IV	24	2.1	21	3.5	111
Direct payments					
I	26	2.4	22	3.6	121
II	27	2.5	29	4.0	130
III	27	2.8	26	4.6	178
IV	32	2.9	23	4.9	172

Source: NHC file.

grant resources. But requiring payments of the near poor may reimpose barriers to access to care that NHCs were intended to remove. Even reduced fee schedules for the near poor may prove burdensome because of the high costs of comprehensive care. Some centers have also been loath to investigate the ability of registrants to make direct payments or their eligibility for Medicaid because of the indignities to which such processes expose the individual.

Table 10 verifies that all of these factors already play a role in utilization and the cost of service at NHCs. Centers that pay for services for the largest proportion of registrants totally from their grant funds have achieved the lowest unit cost for medical services, but this has been at the expense of serving each registrant less frequently. Those NHCs which have achieved higher degrees of reimbursement from third parties reflect greater utilization per registrant and higher costs per encounter than those centers which

have been less successful in this regard. The collection of third-party payments enables centers to be more generous in providing care to those registrants covered by these sources. It also encourages registrants to take better advantage of other services provided by the center, though those services may not be covered by third-party sources. That the cost of medical visits is higher at centers with better collections from third parties suggests that either payments by Medicaid are more generous than generally claimed or that centers have not correspondingly increased registration with their wider sources of funds. Utilization per registrant tends to decline as the proportion of registrants identified who must make cash payments increases. The danger of restricting access by requiring direct payments is clear, while the advantages of encouraging centers to collect from third parties seem somewhat more evident.

At centers with over 5,000 registrants, those with relatively stable productivity levels among physicians, the average cost per medical encounter is $23. Some may think this cost is still too high, but increasingly state Medicaid programs have agreed to reimburse centers in line with costs in recognition of the unique combination of services NHCs provide to a population whose health needs have been long neglected. One center in New Jersey has obtained a reimbursement rate of $20 per medical encounter rather than the usual average of $7 in that state, while another center has obtained a $29 rate. An additional reason for the high cost at NHCs is their administrative costs, which represent 16 percent of all operating expenses. Technical assistance efforts by the federal government are under way to assist centers achieve a better record in this area (U.S. Congress, 1973a:87-91).

One method that has received some attention as a means of encouraging greater efficiency at NHCs has been to follow a health maintenance organization (HMO) model of capitation grants to centers. Capitation grants would also have the advantage of providing a stable source of income which might otherwise become a problem if a center comes to depend on third-party fee-for-service payments as a major means of meeting expenses. Such stability however would still depend on the periodicity of turnover in Medicaid roles. Two problems arise with the use of capitation payment schemes. The population served by NHCs is a relatively high-risk group compared with those served by existing HMOs. It is

therefore more difficult to determine the appropriate level of payments that should be made at individual centers. This may also provide an incentive for centers to discriminate in registration procedures against the most high-risk patients. Second, capitation payments may effectively exclude the near poor who do not qualify for Medicaid or NHC support because of the high cost of comprehensive care. Examples of both the benefits and problems mentioned are provided in Sparer and Anderson (1973) and U.S. Congress (1972: 1373-85). The empirical evidence is still insufficient, though, for making any final assessment on the use of capitation payments.

Efforts to limit the budget of the NHC program have not been limited to efforts to improve efficiency at existing centers, but have been directed specifically at cutting hospitalization benefits provided by some centers. Not only does the provision of hospitalization benefits create an incentive for more effective utilization of the NHC, but it provides the necessary backup to the NHC for patients who cannot afford hospitalization to assure that benefits of comprehensive care are fully achieved. At centers that provide hospitalization benefits, 31 percent of registrants use the center per quarter and the average registrant has 3.0 medical visits per year, while at centers without hospitalization benefits only 27 percent of the registrants use the center per quarter with registrants averaging 2.5 medical visits per year (NHC file). Several cases of savings in hospitalization by effective comprehensive care utilization at NHCs have been documented (Zwick, 1972: 403; Klein et al., 1973; Bellin et al., 1969) with reductions ranging as high as 50 percent. Further investigation of how widespread such savings are should be made and must provide contrary evidence if cutting benefits in this specific area is to be justified.

In summary, there are no totally staisfactory ways of financing NHCs. As long as federal funding for centers remains restricted, there will be continued attention focused on this area. Unfortunately, preoccupation with finding ways of cutting down costs tends to divert attention from the purpose and benefits of NHCs. Stoeckle and Candib (1969) suggest that such a preoccupation with efficiency and costs may have been the reason for the decline of an earlier generation of health centers for the poor. It does, however, remain an appropriate question of social choice whether the cost and type of care provided by NHCs are justifiable when weighed

TABLE 11

Probability of 24-Month Survivorship of Physicians at NHCs
by Physician and Center Characteristics

Physician characteristics	*Probability*	*Center characteristics*	*Probability*
Age		Community participation	
30 and under	0.30	High	0.54
30 to 40	0.37	Medium	0.52
40 to 50	0.57	Low	0.42
50 to 70	0.67		
		Quality of care	
Board certified		High	0.51
Yes	0.52	Medium	0.46
No	0.44	Low	0.58
Faculty appointments at medical schools		Grantee	
		University	0.51
Yes	0.54	Hospital	0.49
No	0.45	Health department	0.38
		Community corporation	0.55
Race			
Black	0.59	Use of health teams	
Non-black	0.42	Team care high	0.56
		Personal physician care high	0.44

Medical specialty		Proportion of physicians full-time	
General practitioner	0.42	Under 25%	0.59
Internist	0.39	25% to 50%	0.56
Pediatrician	0.50	50% to 75%	0.37
Obstetrician	0.64	Over 75%	0.43
Salary per month			
$1,500 to $1,750	0.26	Use of paramedical personnel	
$1,750 to $2,000	0.44	Very high	0.52
$2,000 to $2,250	0.52	High	0.59
$2,250 to $2,500	0.72	Not high	0.40
$2,500 and over	0.54	Low	0.40

Source: Tilson (1973).

against the benefits outlined earlier in this paper and the costs and benefits of other government activities.

NHCs As Suppliers of Services

One of the expected stimuli to consumer acceptance of NHCs was the opportunity that would be available to establish a doctor-patient relationship uncommon to other sources of care for the poor. The NHC program has resorted to several devices in order to attract a stable supply of physicians and fulfill this goal. Some centers have established affiliations with medical schools and residence programs. Salary levels have been set at levels commensurate with other institutional settings. And it was believed that NHCs would be attractive and challenging to young physicians.

The program has not been successful in retaining physicians. Fewer than half the physicians employed at centers remain for more than two years. Tilson (1973) has studied the characteristics of the individual physicians and centers as related to this high rate of turnover in a sample of 44 centers. Some findings of his study are reported in Table 11. Those physicians who are likely to remain at centers for more than two years are more often black, older, board-certified, and have faculty appointments at medical schools. It is of some surprise that NHCs have not had higher retention rates among younger physicians. Many perhaps have used the center as an interim place of practice before settling on more permanent plans. While it might have been expected that centers in which there was a high level of participation by the community in policy making may have generated conflicts that would prompt physicians more readily to leave, those centers have been most successful in retaining physicians—54 percent of those physicians in centers which were rated high on an OEO scale of community participation remained at centers for more than two years as compared with 42 percent at centers which received low ratings. The implementation of two other intended organizational characteristics of NHCs, the use of paramedical personnel and the team practice technique, were also correlated with higher two-year survivorship. Salary and the quality of care offered at the center in which the physician practices show no clear releationship to the likelihood of a physician's continued employment at a center. It may be surmised that some combination of idealism and intellectual interest in the experimental mode of health care delivery are the principal factors

TABLE 12

Physician Density in Selected NHC Target Areas and Matched Control Areas, 1967 and 1971

	Physicians per 100,000 population		
	1967	*1971*	*% change*
NHC target areas excluding NHCs			
Community-based physicians	45.4	28.0	-38.3
All physicians	85.3	69.6	-18.4
Including NHCs			
Community-based physicians	45.5	74.6	64.3
All physicians	85.3	118.8	39.3
Matched control areas			
Community-based physicians	45.3	27.3	-39.7
All physicians	56.8	45.9	-19.2

Source: Hurwitz (1972).

influencing a physician to serve at an NHC for prolonged periods of time. If this is the case, the ability of the NHC program to expand may be severely limited.

Another study contributes to this concern. By comparing the exodus of physicians from nine urban neighborhoods in which NHCs were located with neighborhoods in the same cities matched in socioeconomic characteristics, Hurwitz (1972) determined that the establishment of NHCs had not led to an acceleration in the decline of physicians practicing in thos areas (refer to Table 12). Centers had succeeded in their goal of creating a net addition to existing resources. However, over 50 percent of physicians presently employed at NHCs who had previously been in practice had been serving other low-income neighborhoods. Therefore, to some extent NHCs have merely redistributed the supply of physicians serving the poor rather than increased the ranks of physicians voluntarily serving in areas with a concentration of poverty.

NHCs have had problems generally in gaining recognition from the medical profession. Concern is expressed by the profession both over the precedent of federal intervention and the design of the program permitting community residents policy-

making roles at centers. Both tend to undermine the traditional roles of physicians in running their own practices. In some areas this has led to difficulties for physicians working at NHCs in obtaining appointments at hospitals, thereby limiting the effectiveness in serving the poor. The American Medical Association, in 1973, recommended that Public Health Service Act Section 314 (e), the authority for the NHC program, be terminated with the explanation that it believed the program had gone beyond its scope in supporting more than the developmental stages of NHCs (U.S. Congress, 1973b:388). Undoubtedly such a position has contributed to a misunderstanding of the intent of NHCs in the profession.

With the ability of centers always to satisfy their needs for physicians tenuous, the need to make more use of paramedical personnel is evident. It has been shown above that in the South and rural areas, nurse practitioners have had a significant impact in improving the access of the poor to medical care at NHCs. Their use also offers a means of reducing the cost of NHCs. Centers have made wide use of local residents in non-professional positions. This suggests that NHCs may be an instrument to encourage members of the community to be trained in paramedical capacities. The relationships of many centers with medical schools could facilitate such a program.

Summary

NHCs have been notably successful in removing barriers to access to health care among the poor. Although they have not always served areas of comparable degrees of poverty, the majority of the persons served in those communities with centers have been those generally most in need of care: blacks, the lower-income portion of the population, members of larger families, and those with poorer health status. In most instances, a continuity of care has been achieved, including the utilization of preventive services to a large extent. The gains in this regard have been especially notable among minority group members and persons residing in the South and rural areas. The impact of outreach programs has significantly contributed to this result.

With federal resources for directly supporting NHCs remaining at a constant level, the government has sought other means of permitting centers to expand. Productivity is relatively

stable among centers with over 5,000 registrants, suggesting this avenue to increasing service capacity is limited. Other financing mechanisms are also limited in their promise unless some concession is made to restricting access for some persons. When a national health insurance program is implemented this problem will largely solve itself, although some provision must still be made for outreach and other supporting health activities not likely to be covered.

More concern should lie with the problem of attracting physicians to low-income areas and supplementing them with professional assistants. There are no short-run solutions to this problem. If the NHC program is to be expanded, as the results of this study have suggested would be appropriate, this is the principal problem which must be confronted.

Roger A. Reynolds
University of Chicago
Department of Economics
1126 East 59 Street
Chicago, Illinois 60637

Research on this paper was completed while the author was a research assistant at the Brookings Institution. The author is grateful to Karen Davis for helpful comments and encouragement. Financial support was provided by the Robert Wood Johnson Foundation. The views expressed are those of the author and should not be attributed to the trustees, officers or other staff members of the Brookings Institution.

References

Andersen, Robert E., and Susan Morgan
1973 Comprehensive Health Care: A Southern View. Atlanta: Southern Regional Council.

Bellin, Seymour S., H.J. Geiger, and C.D. Gibson
1969 "Impact of ambulatory health care services on the demand for hospital beds." New England Journal of Medicine 280, 15:808–812.

Davis, Karen, and Roger Reynolds
1976 "The impact of Medicare and Medicaid on access to health care." In

Rosett, Richard N. (ed.), The Role of Health Insurance in the Health Service Sector. New York: National Bureau of Economic Research.

Dorsey, Joseph I.
1969 "Physician distribution in Boston and Brookline, 1940 and 1961." Medical Care 7, 6:429–440.

Fein, Rashi
1970 "An economist's view of the neighborhood health center as a new social institution." Medical Care 8,2:104–107.

Gordis, Leon
1973 "Effectiveness of comprehensive care programs in preventing rheumatic fever." New England Journal of Medicine 289,7:331–335.

Hollister, Robert, and Seymour S. Bellin (eds.)
1974 Neighborhood Health Centers. Lexington, Massachusetts: D.C. Heath.

Hurwitz, Elliot
1972 An Analysis of the Effect of OEO Neighborhood Health Centers on the Distribution of Physicians. Ph.D. thesis, Temple University.

Journal of the American Medical Association (JAMA)
1970 "King City: care in a rural setting." JAMA 211, 12:1951.

Klein, Michael, K. Roghmann, K. Woodward, and E. Charney
1973 "The impact of the Rochester neighborhood health center on hospitalization of children, 1968–70." Pediatrics 50,5:833–839.

Langston, Joanne H., and others
1971 Study to Evaluate the OEO Neighborhood Health Center Program at Selected Centers. Washington, D.C.: U.S. National Technical Information Service. Publication No. PB 217–955.

Merton, Walter, and Sylvia Nothman
1972 "Implications of the neighborhood health center experience for future investment of federal funds." Unpublished manuscript.

Morehead, Mildred A., R.S. Donaldson, and M.R. Seravalli
1971 "Comparisons between OEO neighborhood health centers and other health care providers of ratings of the quality of health care." American Journal of Public Health 67,7:1294–1306.

Romm, J.
1971 Initial Analysis of Baseline Surveys for Neighborhood Health Centers. Washington, D.C.: U.S. National Technical Information Service. Publication No. PB 203–583.

Sparer, Gerald, and Arne Anderson
1973 "Utilization and cost experience of low income families in four prepaid group practice plans." New England Journal of Medicine 289 (July 12):67–72.

Sparer, Gerald, and Louise M. Okada
1974 "Chronic conditions and physician use patterns in ten urban poverty areas." Medical Care 12,7.

Stoeckle, John D., and Lucy M. Candib

1969 "The neighborhood health center—reform ideas of yesterday and today." New England Journal of Medicine 52,25:1385-1391.

Strauss, Mark A., and Gerald Sparer

1971 "Basic utilization experience of OEO comprehensive health services projects." Inquiry 8,4:36-49.

Systems Sciences, Inc. (SSI)

1973 Appendices to Further Analyses of Baseline Surveys for Neighborhood Health Centers. Bethesda, Maryland: processed.

Tilson, Hugh H.

1973 "Stability of physician employment in OEO neighborhood health centers." Medical Care 11,5:384-400.

University of Chicago, Center for Health Administration Studies

1972 Health Service Use, National Trends and Variations—1953-71. Washington, D.C.: United States Government Printing Office. DHEW Publication No. (HSM) 73-3004.

U.S. Comptroller General

1970 "Underutilization of physicians and dentists in comprehensive health services projects." Washington, D.C.: processed.

U.S. Congress

1969 Economic Opportunity Act Amendments of 1969. Hearings before the Subcommittee on Employment, Manpower, and Poverty of the Senate Committee on Labor and Public Welfare. 91 Cong., 1 sess. Washington, D.C.: U.S. Government Printing Office.

1972 Health Maintenance Organizations. Hearings before the Subcommittee on Public Health and the Environment of the House Committee on Interstate and Foreign Commerce. 92 Cong., 1 sess. Washington, D.C.: U.S. Government Printing Office.

1973a Health, Education, and Welfare Regulations for Health Services, 1973. Hearings before the Subcommittee on Health of the Senate Committee on Labor and Public Welfare. 93 Cong., 1 sess. Washington, D.C.: U.S. Government Printing Office.

1973b Health Programs Extension Act of 1973. Hearings before the Subcommittee on Public Health and the Environment of the House Committee on Interstate and Foreign Commerce. 93 Cong., 1 sess. Washington, D.C.: U.S. Government Printing Office.

1974 Health Revenue Sharing and Health Services Act of 1974. House Report No. 93-1161. 93 Cong., 2 sess. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Health, Education, and Welfare

1967 Human Investment Program: Delivery and Health Services for the Poor. Office of the Assistant Secretary for Planning and Evaluation. Washington, D.C.: U.S. Government Printing Office.

1972a "Physician visits, volume and interval since last visit, United

States—1969." Vital and Health Statistics. Series 10, No. 75. Washington, D.C.: U.S. Government Printing Office.

1972b "Dental visits, volume and interval since last visit, United States—1969." Vital and Health Statistics. Series 10, No. 76. Washington, D.C.: U.S. Government Printing Office.

1973 "Economic aspects of neighborhood health centers." Bureau of Community Health Services, processed.

1973-1974 "Comprehensive health services projects, data base report." Report Nos. 1-4. Bureau of Community Health Services, processed.

1974 "Health characteristics by geographic region, large metropolitan areas and other places of residence." Vital and Health Statistics. Series 10, No.86. Washington, D.C.: U.S. Government Printing Office.

U.S. Office of Management and Budget

1971-1973 Special Analyses, Budget of the United States Government, Fiscal Years 1971-1973. Washington, D.C.: U.S. Government Printing Office.

U.S. Office of Economic Opportunity (OEO)

1968a "The comprehensive neighborhood health services program, guidelines." Reprinted in U.S. Congress, Federal Role in Health. Report of the Senate Committee on Government Operations. 91 Cong., 1 sess. (1970). Washington, D.C.: U.S. Government Printing Office.

1968b The Tide of Progress, Third Annual Report. Washington, D.C.: U.S. Government Printing Office.

1972 "Comprehensive health services projects, summary report." Quarterly and annual issues, processed.

Zwick, Daniel I.

1972 "Some accomplishments and findings of the neighborhood health center program." Milbank Memorial Fund Quarterly 50, 4:387-420.