

Community Health Centers: An Initiative of Enduring Utility

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WHILE THERE HAS BEEN PERSISTENT CONCERN with the delivery of health care to the poor (for example, Falk et al., 1933), it was not until the second half of this century that serious national initiatives were developed to remedy inequities in access to medical care among minority groups, the poor, and the rural population. In a span of three decades, Medicaid and, to a lesser extent, Medicare have reduced the economic barriers to health services; the expansion of health science schools and programs that produce nurse-practitioners, physician assistants, and other allied health practitioners have markedly increased the supply of providers; and the National Health Service Corps, and health science student loan and support programs with "service" obligations, have placed physicians and other providers in previously underserved communities. The development and support of about 150 community health centers between 1965 and 1971, and of nearly 800 additional ones by 1980, with federal and private foundation funds, must therefore be viewed alongside these other efforts.

The community health centers movement (earlier called neighborhood health centers) thus was part of a general response to reduce differential access to health services. There was a special impetus for them, however. They took shape as part of the war on poverty and

two-thirds of the first 150 were sponsored by the Office of Equal Opportunity (OEO) (Schorr and English, 1968). Local OEO staffs realized that efforts to provide work and educational opportunities in the face of ill health were not realistic. Consequently, local community action programs pressed for permission to use OEO funds for health services, and community health centers were established in many low-income areas.

It is impossible to separate out the contributions of each of the initiatives to the overall improvement in access. But it is clear that from the study of Falk et al. (1933) (about the years 1928 to 1931) to the 1976 Aday, Andersen, and Fleming survey (1980), there has been a truly dramatic change in access to care. Intermediate markers document the clear trend in increased access (Andersen and Feldman, 1956; Anderson et al., 1963; Andersen and Anderson, 1967). We should hasten to add, however, that there are significant numbers—particularly of persons in some urban inner city and rural areas—whose opportunities for health services are still seriously wanting. But it is evident that the initiatives now in place provide access to health services for many formerly without primary care sources across the nation.

Why then continue to press, except in very specific locales, for either additional centers or for fine-tuning the organizational arrangements under which they currently operate? The question, of course, has special relevance in these times of severe resource constraints. The rationale for continued emphasis on both increasing the number of centers and refining their structures and linkage to other health care organizations is found in the same monograph that provides the data on the marked reduction of barriers to access (Aday et al., 1980). Although there are important variations between communities, about 7 percent of the nation's population, and perhaps some 30 percent of the poor, regard their primary source of care to be either hospital ambulatory clinics or emergency rooms.

There are both "soft" and "hard" reasons to be concerned about hospitals as providers of ambulatory health care. The soft reason is that many hospital sites are not designed and organized to maximize continuity of care, encourage appropriate provider-patient relationships, and provide service with dignity. Given current times, however, only the fearless would argue on these grounds for resources to promote additional community health centers.

But the “hard,” that is, the economic, reason is both compelling and consistent with today’s rhetoric. Community health centers (CHC) may help contain rising health care costs, especially as compared with other sources of ambulatory services. The most important test of this hypothesis is whether such centers reduce use of hospitals by virtue of either maintaining health status at a superior level or encouraging treatment on an ambulatory rather than in-patient basis. Of lesser importance, but only in relative terms regarding cost-savings, is whether or not they reduce the use of hospital clinics and of emergency rooms for routine care. Estimates of cost differentials vary, but a two to four times difference between the costs of a CHC and an emergency room visit for the same health problem probably would be considered too conservative by many health cost experts.

In other words, if community health centers do reach a significant part of the target population of the poor, if their clientele formerly used hospital sites for primary care, and if their patients have lower hospital use, there are strong grounds to advocate both their continued growth and further experiments to improve the ways they are organized, operate, and are linked to other health resources in a community. An examination of these issues is the focus of the secondary analysis reported here.

The Data Set

From 1968 to 1971, OEO surveyed catchment areas for planned centers in twelve communities, ten urban and two rural. Interviews were conducted in some 1400 to 1500 households on sources of health care, costs, insurance coverage, and health status, and a range of social demographic measures. In 1975, surveys were again undertaken in Boston, Charleston, South Carolina, Atlanta, Kansas City, and Palo Alto. The two surveys in these five communities constitute the data base for the analysis. There are a number of issues of compatibility and method that prohibit precise time comparisons. First, in at least one site, the catchment area changed and the sampling frame was revised. There may be additional catchment area discrepancies as well because of housing construction, actual versus planned definitions of catchment areas, and so on. Second, several groups were involved in the collection and coding of the two waves of the data. There are

some variations in question-wording for the first wave between sites and there are some between waves as well. A major problem on the first wave is the failure to designate hospital ambulatory clinic and emergency room as separate categories. Third, there are some ambiguities in the documentation of the data set that required combining categories on some variables and eliminating others. At the same time, however, the body of data is rich and provides an unusual opportunity for addressing the issues with which we are concerned.

There have been a number of reports based on the data, the most recent of which is Okada and Wan (1980). A list of published reports is contained in Zappas (1979). Some of the tables are similar to ours, although our own computer analyses were undertaken specifically for this report. There are no major discrepancies between findings reported previously on variables used in the past and this analysis.

Use of Community Health Centers

The 1975 surveys document that community health centers serve as the usual source of care for an average of one-quarter of the populations in the five catchment areas. Among sites, use by the catchment area population varies from 11.5 percent in Kansas City to 32.4 percent in Atlanta (Table 1). About the same proportion use hospital out-patient clinics, although this percentage, as well as the proportion using private physicians, varies considerably from location to location. For example, the Roxbury catchment area in Boston has an unusually high proportion using hospitals for ambulatory care and a low proportion using private physicians; in Palo Alto (actually East Palo Alto) it is the reverse. With the possible exception of Kansas City, it is clear that the centers are a major provider of primary care in their low-income catchment areas.

Information on frequency of care for all sites combined is contained in Table 2. In Table 3 we show site means for ambulatory visits. With the exception of Kansas City, ambulatory visits at centers average around four per year, as do visits for hospital clinic users. The mean, however, for hospital out-patient users for Palo Alto is higher, and for Charleston somewhat lower. In four of the five communities, mean number of visits for residents whose usual source of care are private physicians is higher than for those using the centers. In general, then,

TABLE 1
Usual Source of Care in Five Urban Communities

Source of Care	Area Respondents by Percent					Total
	Atlanta	Boston	Charleston, S.C.	Kansas City	Palo Alto	
Community Health Center	32.4%	28.4%	28.5%	11.5%	20.4%	25.5%
Hospital Outpatient	35.1	45.9	22.3	21.9	12.4	28.5
Private M.D.	23.6	15.5	39.1	52.9	58.0	35.8
Hospital Emergency Room	1.5	2.6	1.4	1.0	0.7	1.5
No Usual Sources	7.4	7.6	8.7	12.7	8.5	8.7
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
100% equals	5,102	4,257	4,145	2,939	3,856	20,299

TABLE 2
Frequency of Ambulatory Care by Usual Source of Care

Source of Care	No Visits	Number of Visits					\bar{X}	100% Equals
		1	2-3	4-6	Above 6			
Community Health Center	16.8%	20.8	25.1	18.8	18.5	4.4	5,138	
Hospital Outpatient	25.2%	19.3	21.1	15.5	18.9	4.5	5,754	
Private M.D.	16.0%	21.5	23.5	17.5	21.5	5.0	7,240	
Hospital Emergency Room	31.5%	23.4	22.4	13.2	9.5	2.9	295	
No Usual Source	60.2%	18.6	11.7	5.0	4.5	1.3	1,745	

TABLE 3
Mean Ambulatory Visits by Usual Source of Care

Source of Care	Mean Number of Visits						Total
	Atlanta	Boston	Charleston, S.C.	Kansas City	Palo Alto		
Community Health Center	4.2	4.3	3.8	7.6	4.6		4.4
Hospital Outpatient	3.8	4.7	3.4	5.0	8.1		4.5
Private M.D.	4.5	5.3	4.0	5.5	5.6		5.0
Hospital Emergency Room	3.6	3.3	1.3	2.2	3.2		2.9
No Usual Source	0.9	1.1	1.3	1.3	1.7		1.3

it is fair to conclude that use of a CHC does not involve excess visits, assuming, of course, the populations to be similar in nature.

Not only do we not have cost data on the sites, but it would be difficult to reach any general conclusion even if we did. A study undertaken under the imprimatur of the U.S. Conference of Mayors (1980) of costs at centers compared with fees of private practitioners found that three centers had decidedly higher costs than private practitioners' fees for ambulatory care in their areas, three lower, and two within \$5 of each other. One of the latter was the Roxbury Center, included in our report; their costs were \$33 per medical visit while the average fee of a private physician was \$35 per visit. The best inference that can be drawn, then, is that nationally the annual costs for care of patients at centers on the average are reasonably close to fees of private physicians; we may assume both are significantly lower than hospital clinic and emergency room costs.

The two final tables presented in this section focus on user characteristics. In Table 4, for all five centers combined, we show the percent of users of minority status, the percent below poverty line, the percent with less than a high school education, the percent who travel less than 15 minutes to their source of care, and the percent that are female. Clearly community health centers, like hospital ambulatory clinics, disproportionately provide services to the poor, minorities, and the least educated. Further, their users tend to travel less to their treatment sites.

TABLE 4
Characteristics of Area Respondents by Usual Source of Care

Source of Care	Area Respondents by Percent					
	Minority		Below Poverty	Below High School	Within 15 Minutes of Care	Female
	Black	Other				
Community Health Center	85.2	5.2	53.6	69.8	74.1	59.6
Hospital Outpatient	80.8	2.5	46.6	66.1	38.9	55.4
Private M.D.	49.2	2.7	20.9	46.6	59.3	58.1
Hospital Emergency Room	74.4	6.1	49.4	66.9	55.9	45.1
No Usual Source	51.8	7.0	30.2	55.2	50.0	40.1

TABLE 5
Age of Area Respondents by Usual Source of Care

Source of Care	Age in Years					
	<1	1-5	6-16	17-45	46-64	65 plus
Community Health Center	38.3%	39.6%	36.5%	21.4%	15.5%	14.3%
Hospital Outpatient	25.9	30.8	29.8	28.5	27.7	25.3
Private M.D.	29.0	24.3	26.1	36.4	47.2	50.7
Hospital Emergency Room	0.6	2.0	1.7	1.8	0.7	0.5
No Usual Source	6.2	3.3	5.9	11.9	8.9	9.2
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
100% equals	324	1,933	5,154	7,259	3,610	1,974

In Table 5, we show the age distribution of residents by usual source of care. Community health centers are serving a disproportionate number of children; private practitioners tend to care for older adults; and hospital clinics serve roughly the same proportion of each age group. While the general pattern clearly holds for three of the five individual sites, the age distributions of patients by source of care vary considerably in the Kansas City and Palo Alto sites. It is clear that age, as in almost all social medical studies, must be taken into account in undertaking analyses. We should note here that age controls do not change the findings on ambulatory visits by source of care presented in Tables 2 and 3.

In sum, then, community health centers are well aligned to the population for whom they were intended. Their users typically are poor, of minority background, and of limited education—the very groups earlier access surveys identified as underserved.

Previous Care Sources of Community Health Center Patients

In this section, we focus on the relations between usual source of care of catchment area residents prior to the development of the five centers and source of care in 1975, when all the centers were in operation.

In two communities, there were no centers in operation at the time of the survey; in the others there were either community health centers located elsewhere that might have been used by some catchment area residents or fledgling centers that had some patients. As shown in Table 6, in general there were marked changes in catchment-area use patterns over the four to seven year time period.

It bears emphasis that we have somewhat limited confidence in the data for reasons described earlier, but the pattern is consistent across all sites except Kansas City; while some proportion of community health center clients were former private physician patients, the majority are drawn from hospital care sources. Our analysis, then, provides strong evidence of the impact of CHCs on hospital outpatient use. In some sites, such as Atlanta and Charleston, it is fair to say that there has been a dramatic reduction in hospital-based ambulatory services.

As we noted, however, it is unfortunate that hospital clinics and emergency rooms were not classified separately on the surveys in all five communities during the first wave. For the one community, Palo Alto, where these data are available, we repeated the analysis with emergency room and ambulatory clinics disaggregated. The findings are presented in Table 7. The results suggest that habitual hospital emergency room use is sharply curtailed by CHC availability. In terms of care needs, it has been estimated that only about one-third of patients using emergency rooms require care in such settings, suggesting, as our data on shift-in-care source indicate, that their use is largely a function of access to other sources of care (Jacobs, 1971). This finding is of key importance in terms of cost implications; only a relatively short time period would be required to amortize the startup costs of community health centers from the cost savings that could be obtained by switches in source of care away from emergency rooms.

Given the misgivings about the data set, we did not deem it sensible to undertake sophisticated statistical analyses to equate the study groups at wave one and two. We did, however, reproduce Tables 4 and 5 (the social demographic and age information) for the total study group and by site. Differences in social demographic composition of the catchment areas cannot explain the findings on reduced outpatient and emergency room use. Rather, the less affluent, the minority-group family, and those closest to the CHCs in travel time are those recruited to CHCs, to a considerable extent from the hospital-user group.

TABLE 6
Usual Source of Care in Five Urban Communities

Source of Care	Area Respondents by Percent					Total
	Atlanta	Boston	Charleston, S.C.	Kansas City	Palo Alto	
Community Health Center						
Wave 1	—*	6.9%	—*	9.8%	9.6%	5.4%
Wave 2	32.4	28.4	28.5	11.5	20.4	25.5
Net Difference	+32.4%	+21.5%	+28.5%	+1.7%	+10.8%	+20.1%
Hospital Out-Patient/ Emergency Room						
Wave 1	62.2	67.4	42.2	22.9	17.0	42.4
Wave 2	36.6	48.5	23.7	22.9	13.1	30.0
Net Difference	-25.6%	-18.9%	-18.5%	0.0%	-3.9%	-12.4%
Private M.D.						
Wave 1	30.5	18.6	50.5	47.0	62.1	41.6
Wave 2	23.6	15.5	39.1	52.9	58.0	35.8
Net Difference	-6.9%	-3.1%	-11.4%	+5.9%	-4.1%	-5.8%
No Usual Source						
Wave 1	7.3	7.3	7.3	20.3	11.3	10.6
Wave 2	7.4	7.6	8.7	12.7	8.5	8.7
Net Difference	+ .1%	+ .3%	+ 1.4%	- 7.6%	- 2.8%	- 1.9%
Numbers of Respondents						
Wave 1	4,153	4,819	4,392	4,300	4,654	22,318
Wave 2	5,102	4,257	4,145	2,939	3,856	20,299

* No CHC data reported in baseline survey.

TABLE 7
Usual Source of Care in Palo Alto

Source	First Wave	Second Wave	Net Difference
Community Health Center	9.6%	20.4%	+ 10.8%
Hospital Out-Patient	7.6	12.4	+ 4.8
Private M.D.	62.1	58.0	- 4.1
Hospital Emergency Room	9.4	0.7	- 8.7
No Usual Source	11.3	8.5	- 2.8
Total	100.0%	100.0%	
100% equals	4,654	3,856	

Impact on Hospitalization

Inpatient hospital use was measured by number of admissions and annual number of nights spent in hospitals. In Table 8 we show the data for all catchment areas combined. The rate of admissions for patients whose usual source of care is a community health center is almost one-half that of hospital outpatient users, with patients of private physicians in between. These findings are remarkably consistent in individual sites as shown in Table 9.

The findings are similar when number of nights of hospitalization is employed as the measure of hospital use. Average rates of hospi-

TABLE 8
Frequency of Hospitalization (1975) by Usual Source of Care

Source of Care	Number of Admissions				100% Equals
	None	1	2 Plus	Rate per 1000	
Community Health Center	92.4%	6.7	0.9	90	5,169
Hospital Outpatient	86.6%	11.2	2.2	170	5,792
Private M.D.	88.7%	9.7	1.6	140	7,279
Hospital Emer- gency Room	89.6%	9.7	0.7	100	297
No Usual Source	96.3%	3.3	0.4	40	1,762

TABLE 9
Rates of Hospital Admissions per 1000, by Site

Source of Care	Atlanta	Boston	Charleston, S.C.	Kansas City	Palo Alto	Total
Community Health Center	90	100	70	140	80	90
Hospital Outpatient	130	160	150	250	240	170
Private M.D.	160	110	120	180	110	140
Hospital Emergency Room	150	110	100	0	150	100
No Usual Source	30	50	30	80	30	40

talization are 700 nights per 1000 CHC users compared with 2400 nights per 1000 for users of hospital out-patient departments (see Table 10). As shown in Table 11, the direction of the finding is the same for all sites, with a difference of twice the number of nights in Atlanta to eight times in Palo Alto.

A key to the analysis of these significant differences in hospital use is the question of whether or not the patients using the community health centers are less "at risk." Clearly no full and definitive analysis can be offered since the survey information provides a limited set of variables. In Table 12 we show the percent hospitalized one or more times by social demographic characteristics. Compared with patients whose usual source is hospital ambulatory clinics, CHC patients—regardless of minority status, poverty level, and educational attainment—are less likely to be hospitalized.

We have noted age differences in the populations of the different sources. As shown in Table 13, for the child population, hospitalization rates among all source of care groups are low and thus age-specific rates for persons 16 and under are quite unstable. However, even among children and certainly among adults of all ages, CHC patients have lower rates than hospital clinics. Our analysis confirms the findings of Okada and Wan (1980), who undertook a similar analysis by type of insurance with only patients without chronic illness. Within type of insurance categories, among nonchronic patients, CHC patients have the lowest rates and number of nights of hospitalization.

In addition to ruling out variables one at a time as explanations for differential hospital use, we undertook multiple regression analyses both for the five sites taken together, and for individual sites. These analyses allow the simultaneous consideration of the effects of race, sex, education, poverty status, age, insurance status, chronicity, and source of ambulatory care, with either number of hospital admissions or annual number of bed nights being the dependent variables. Source of ambulatory care was introduced as a dummy variable. The logic of the analysis was to introduce first the social demographic measures, to add insurance status next, then to add presence pressure of a chronic condition, and, finally, source of ambulatory care.

The analysis is limited, mainly because most persons surveyed had no hospitalizations, and available statistical techniques minimize the ability to predict a markedly skewed dependent variable. Although a minimum amount of variance is explained in total, the findings do

TABLE 10
 Number of Nights of Hospitalization by Usual Source of Care (1975)

Source of Care	Number of Nights in Hospital					Rate per 1000	100% Equals
	None	1-7	8-14	15 plus			
Community Health Center	92.3%	5.1	1.7	0.9	700	5,162	
Hospital Outpatient	86.8%	7.4	2.4	3.4	2400	5,778	
Private M.D.	88.7%	6.7	2.3	2.2	1300	7,271	
Hospital Emergency Room	89.6%	7.1	2.0	1.3	1100	297	
No Usual Source	96.3%	2.5	0.5	0.7	500	1,762	

TABLE 11
Nights Hospitalized per 1000 by Site

Source of Care	Atlanta	Boston	Charleston, S.C.	Kansas City	Palo Alto	Total
Community Health Centers	700	700	800	1000	600	700
Hospital Outpatient	1600	2600	1600	3900	4900	2400
Private M.D.	1700	900	1300	1800	1300	1300
Hospital Emergency Room	1800	700	1500	0	500	1100
No Usual Source	200	700	200	1200	200	500

TABLE 12
 Percent Hospitalized One or More Times and Characteristics of Area Respondents by Usual Source of Care*

Source of Care	Hospitalized One or More Times					
	Ethnic Status		Other	Above Poverty	Below Poverty	High School and Above
	White	Black				
Community Health Center	12.2	7.0	8.9	6.8	8.3	7.2
Hospital Outpatient	19.4	12.1	14.6	13.3	13.8	12.3
Private M.D.	12.6	10.3	6.2	10.4	15.2	10.4
Hospital Emergency Room	10.3	10.0	(16.7)	8.1	13.3	15.5
No Usual Source	4.7	2.9	4.0	4.2	2.9	4.0

* Percentages in parentheses based on N less than 20.

TABLE 13
 Percent Hospitalized One or More Times and Age of Area Respondents by
 Usual Source of Care*

Source of Care	Age in Years					
	<1	1-5	6-16	17-45	46-64	65 plus
Community Health Center	6.5%	4.4	2.4	13.2	11.7	12.7
Hospital Outpatient	7.1%	6.6	4.6	17.0	20.1	22.4
Private M.D.	5.3%	5.1	4.4	13.9	12.3	15.4
Hospital Emergency Room	0.0%	5.3	11.4	10.3	17.4	(10.0)*
No Usual Source	0.0%	1.6	1.0	5.1	4.6	1.1

* Based on *N*s of less than 20.

add to the evidence: when selection variables are taken into account, source of ambulatory care still is associated with number of hospitalizations.

We are reluctant to estimate the extent to which CHCs would reduce hospital experience for persons whose profiles resemble those of the study group, given the large amount of unexplained variance revealed by the regression analyses. It may well be that there are unmeasured health status differences between the CHC and hospital clinic users that account for some of the differences in hospital use rates. We acknowledge that we have limited data on which to test selection differences. But neither age and social demographic controls, nor using chronicity as a proxy for differences in diagnostic conditions indicates that selection differences account for the findings.

We undertook one further test of the "at risk" hypothesis. For patients hospitalized one or more nights, we transformed the variable number of nights to its log and regressed it on the variables used in the previous analysis. For all five sites combined, and for four of the five individual sites, there are no significant differences in length of stay by source of care. Patients of CHCs and hospital ambulatory clinics generally use the same hospitals for inpatient care. This finding of similar lengths of stay, viewed alongside our results regarding patient characteristics as discussed above, suggests that "at risk" differences do not explain the hospital use differentials between CHCs

and hospital outpatient clinics. The longer hospital experiences of hospital outpatient users compared with private physicians at the time of the first wave of interviewing also suggests that CHCs have decreased the pool of patients with excessive hospitalization admissions and lengths of stay.

For the adult population aged 17 to 64, a conservative estimate of the decrease in number of admissions if source of ambulatory care switches from hospitals to CHCs would be in the area of 25 percent; for those over 65, the decrease is somewhat less. Nationwide reduction of a single percent in hospital use by low income persons has major cost reduction implications for public funds expended for health care. We estimate that the average number of nights of hospitalization per resident in the five catchment areas could be reduced from over two to less than one if all hospital ambulatory clinic users transferred to CHCs. Aday, Andersen, and Fleming (1980) report that 8 percent of the 89 percent of the nation's population who have a regular source of care, or 7 percent of the total population, use hospital outpatient or emergency rooms as their usual source. Even if only a proportion of them switched to community health centers for care, annual savings would amount to hundreds of millions of dollars. Such savings would be in addition to the reduced costs of CHC care in comparison to use of hospitals for ambulatory patient services. From a governmental accounting perspective, community health centers represent a substantial cost saving mechanism in terms of hospitalization rates. In sum, from the cost of care standpoint, as well as in terms of the important considerations of improving continuity and quality of care, community health centers represent a viable policy strategy of providing health care to low-income members.

Implications

The overall thrust of this report has been to examine CHCs in terms of their relevance for medical care in the 1980s, not simply in terms of their impact on unmet access to health care. With what we believe have been proper precautions about both the data set and the generalization potential of the analysis, we still believe we can persuasively conclude that:

1. CHCs do provide access to ambulatory health services to residents of low income and minority areas with frequency of ambulatory visits and probably with costs that approximate the care profile of patients of private physicians (both of which sources are typically lower than the costs of care in hospital ambulatory clinics and emergency rooms).

2. CHCs, over a relatively brief time, have considerably reduced the patient populations of hospital ambulatory clinics and emergency rooms, with the potential of extensive cost-savings in relation to the latter sites of care.

3. CHCs' patient populations have measurably lower hospital utilization rates than outpatient hospital-user populations, with reasonable evidence that this is not accounted for primarily by "at risk" selection differences between patients using different sources. Conservatively, the implication is that transfer of a significant proportion of patients from hospitals to CHCs for ambulatory services would result in large annual savings of governmental resources.

Our analysis and discussion and our perspective on the accomplishments of community health centers do not take into account their indirect effects on health services. Three important areas of concern should be noted. First, CHCs are generally "free standing" and may promote isolation between the CHC and the hospital, with consequences both for the referral of CHC patients requiring complex outpatient diagnostic and treatment services and inpatient care, and for the financial viability of hospitals. Second, there are issues such as the quality and level of care provided in CHCs, either compared with private physicians or hospital ambulatory services, that need to be considered. Third, CHCs, as a predominant source of care, have implications for health-science education which to a large extent remains hospital-based.

These and related concerns have led in the last five years to a number of organizational innovations, with Federal and private foundation support, to link CHCs to hospitals while preserving their cost and patient-care advantages (Aiken et al., 1980). Evaluations of a number of these efforts are underway from both the standpoint of patient utilization and of organizational arrangements. They not only provide an opportunity to either confirm or modify what we and others believe has been a positive initiative, but they also allow the development

of more fine-tuned models for future CHCs that are tailored to their catchment areas.

Current evaluation efforts directed at access consequences of different organizational arrangements for CHCs employ fundamentally the same methodology that was used in examining the five centers included in this analysis (with refinements in data measures, collection, and general rigor that justify more sophisticated analysis and hopefully permit more definitive inferences). Without disparaging either the evaluation which resulted in this data set or the more refined studies underway, we believe that further examination of the impact of CHCs demands a modified evaluation design strategy.

First, the goal of CHCs, in terms of the rhetoric of these times, and in the face of the relative saturation of urban areas with opportunities for access to health care, needs to be couched in benefit-cost terms. That is, compared with other provider arrangements, their expansion rests on demonstrating a higher benefit to cost ratio. Such a demonstration not only requires more fine-grained utilization and cost data than currently available but also needs to be undertaken from several different accounting perspectives (e.g., costs and benefits to various levels of government, to hospitals and health care systems, and to consumers and nongovernment third-party insurers). A data information system in a representative set of catchment areas would go far in meeting the need for fine-grained information.

Second, given the difficulty of measuring selection variables reliably, precisely, and fully, particularly health status, and the statistical distributions of the outcome measures which limit the utility of multivariate analysis procedures, we believe "true" experiments are called for, with random assignment of families to different sources of care, be they hospital settings versus private physician care versus CHCs, or between various models of CHCs. For their costs to be justified, such experimental efforts not only require highly reliable and externally valid outcome measures, but study groups large enough to reduce "Type II" errors (i.e., failure to identify "real" effects), and to permit analyses of subpopulations.

Third, the indirect consequences of CHC use on health services and health behavior (e.g., compliance, preventative activities, and so on), health science education, and use by community members of nonmedical human-service resources require assessment. Finally, further eval-

uations must be designed to permit projections both to our changing demographic profile and to alternative consumer and public resource allocation options likely in the future.

It should be acknowledged that these recommendations are a tall order. But if one places CHCs alongside the range of innovations designed to improve the human condition in the several decades since community health centers were "invented," they represent a truly remarkable initiative. Programmatically, the evidence points to their utility for delivering health services to community members of marginal personal resources and limited health-care-resource options; wisdom suggests their continued support.

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