

Contrasts in HMO and Fee-for-Service Performance

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This study compares various aspects of HMO performance in 10 plans with that of the fee-for-service system for the Medicaid population. Additionally, it examines utilization differences between several types of HMO's, grouped according to organization and provider payment. Four areas of behavior were studied—enrollment selectivity, utilization of services, accessibility of care, and satisfaction.

The only significant difference between the two systems was in hospital utilization. Group-practice HMO's had significantly lower hospital utilization than the fee-for-service groups, foundation HMO's did not. This difference seems to indicate that capitation payment to an HMO alone is not significant enough to produce major changes in utilization and that the organized multispecialty group practice arrangement with largely salaried physicians may be more significant. For the other variables—previous health status, ambulatory care use (including preventive care), accessibility, and satisfaction—the two groups were remarkably similar.

IN THE PAST few years the Federal Government has been encouraging and supporting the development of health maintenance organizations (HMO's) as cost-effective systems of high-quality care. Organized as either a group practice or a foundation of individual practitioners, HMO's generally deliver comprehensive health services to a voluntarily enrolled population on a prepayment rather than a fee-for-service basis. This article reports the preliminary findings of a comparative study of 10 HMO's and 10 matched populations receiving care from the fee-for-service system.¹ By including a varied set of HMO's, the study provides the most comprehensive comparison of HMO's with fee-for-service yet compiled. By comparing the different types of HMO's, the study also attempts to identify the relative im-

portance of the methods of paying physicians, the financial risk of the HMO, and organizational structure in producing the difference between the two systems.

An estimated 65 million persons are enrolled in the 181 HMO's existing in the United States today.² The widespread support for HMO's is based on several assumptions about their differences from the traditional fee-for-service system: (1) lower hospital utilization and subsequent lower costs, (2) continuity of care rather than fragmentation, (3) emphasis on prevention, early detection, and treatment, rather than on acute care, (4) greater accessibility to and use of primary medical care; and (5) greater satisfaction with medical care received. These differences are said to result from the unique organizational and financial arrangements of HMO's.

First, HMO's are integrated organizations of various health providers responsible for and overseeing the total health care of their enrollees. In the fee-for-service system, the physician rarely coordinates total patient care from flu shots to kidney dialysis. The centralization of records, continuity of care, and overall responsibility assumed by the HMO theoretically makes for better care and more satisfied consumers.

A second feature is the capitation payment to the HMO. Since the HMO is at risk for health care costs, it has a strong incentive to avoid overutilization, especially high-cost services such as hospitalization. At the same time, there is an incentive to encourage and to provide preventive services that are cost-efficient in the long run. Similarly, early detection in many instances will save on treatment costs. The HMO's would be expected to capitalize on this feature.

Although all HMO's share risk through a capitation payment for some segment of health care, they vary in three ways. Their method of payment to their physicians, the amount of care

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¹ The study originated in the Office of the Assistant Secretary for Health of the Department of Health, Education, and Welfare.

² Rhona L. Wetherille and Jean M. Nordly, *A Census of HMO's*, April 1975, InterStudy, Minneapolis, Minn., 1975.

for which they are at risk, and the organization and delivery of services.³ Different incentives are theoretically operating with each of these variations, with different outcomes

The three HMO models included in this study are characterized by major differences in the method of paying physicians, size of the financial risk, and organization and delivery of services. The following section describes the three models and the results expected from the incentives operating in each

HMO MODELS

The predominant and traditional HMO structure is organized as a group-practice plan in which physicians are salaried, the HMO is at risk for most care (including hospitalization), and primary care is provided in a multispecialty clinic setting often linked to the HMO's own hospital. This model should have the lowest hospitalization and surgery rates and should place greatest emphasis on preventive care. First, since hospitalization is the most costly form of care, the HMO would be expected to institute control mechanisms to keep use to a minimum. Second, salaried physicians do not gain financially by placing patients in hospitals. Fee-for-service physicians, on the other hand, have much to gain. They have shorter "visits" with hospitalized patients than with office patients and thus their productivity and resulting income is greater in the hospital setting. Fee-for-service surgeons have even greater incentives for operating. Their income is totally dependent on the number and complexity of operations performed. Salaried surgeons are paid, regardless of whether or not they operate or the kind of operation performed.

Third, the organization of physicians in large multispecialty groups may also be responsible for constraining hospital use. Economies of scale allow for a wide variety of diagnostic and treatment services to be provided without hospitalization, and back-up coverage on evenings and weekends obviates the incentive for physicians in solo practice to send patients to a hospital rather than having them come to the office. In addition, the peer pressure that results when

physicians practice alongside one another may help avoid overutilization.

This organized setting would also be expected to provide greater continuity and accessibility to care than in the traditional system. Most services, regardless of specialty, would be available to the HMO patient in the same place and often at the same time. Referrals are "down the hall" rather than "down the road."

The second HMO model included in the study is organized like the first with one exception—it is not at risk for hospitalization. Some of the incentive of the organization to hold down hospital use is thus removed, but the other factors—such as the large group-practice setting, mostly salaried physicians, and peer pressure—are still in operation. As a result, hospital use would still be expected to be lower than it would be in fee-for-service, and preventive services, continuity, and accessibility would be greater.

The third HMO model, the foundation, resembles the fee-for-service system in organization and method of paying physicians but includes some additional element of risk for both hospital and physician care by receiving a capitation payment.

Although the risk of capitation payment would be expected to encourage lower hospital use and greater preventive and primary care services, the incentives are more diffused and possibly less effective. The individual physician is in solo practice and not under the direct management control of the HMO as in the salaried models. In addition, some of the same incentives for the individual physician to hospitalize (greater convenience on weekends and evenings, more surgery, more income, etc.) are present as in the fee-for-service system. The only incentive against hospitalization is the overall risk that the foundation will go bankrupt or fees will be reduced at the end of the year if the capitation funds run out.

To counteract this weaker financial incentive, foundations have organized peer-review processes with predetermined standards of utilization against which physicians' practices are compared. Some early success of peer review has been reported, but the concept is relatively new and untested.

A host of combinations of these three HMO models exists. Physicians may share in profits, for example, they may receive bonuses for per-

³Gordon K MacLeod and Jeffrey A Prussin, "The Continuing Evolution of Health Maintenance Organizations," *New England Journal of Medicine*, March 1973

forming specific procedures, they may receive capitation payment for HMO patients while operating in a solo practitioner setting, and the HMO itself may be nonprofit or for-profit

STUDY BACKGROUND

Much has been written about lower hospital utilization rates in HMO's, but comparisons with matched fee-for-service populations in the same geographic area are rare. Similarly, the other purported advantages of HMO's—the increased accessibility, the emphasis on prevention, etc.—have largely gone untested. Furthermore, no empirical studies have examined the variation in use, accessibility, etc., under alternative HMO models.

Here the performance of HMO's in general is compared with the fee-for-service system. In a preliminary way, an attempt is made to explain some of the differences in performance among HMO models based on the alternate incentive systems in operation. The study data were collected during fiscal year 1975 for more than 8,000 Medicaid families distributed between 10 HMO's and the 10 matched control groups from the same geographic areas but receiving their care through fee-for-service.⁴ The data for the individual sites will be analyzed in a future report. Individual sites should not be compared with one another or with national data because no age, sex, or regional adjustments were made.

Use of the Medicaid population provided a known universe, in terms of names and demographic characteristics, to permit careful matching. In addition, it assured equal financial access and benefit coverage for the two populations. There is no evidence or reason to believe that HMO's treat the Medicaid portion of their membership in a different way than other members or that the financial and organizational incentives work differently. In fact, one study has indicated that utilization behavior of the medically indigent in an HMO does not differ significantly from the other membership.⁵

⁴ Data were collected by Westat, Inc., of Rockville, Md., under the direction of Thomas McKenna.

⁵ Merwyn R. Greenlick et al., "Comparing the Use of Medical Care Services by a Medically Indigent and a General Membership Population in a Comprehensive Prepaid Group Practice Program," *Medical Care*, May-June 1972.

METHODOLOGY

Designation of HMO's

The HMO's included in this study were required to be under contract with their State to provide health services to Medicaid recipients and to meet the following criteria: (1) in operation a minimum of 1 year, (2) sufficient Medicaid enrollment to ensure adequate sample size, and (3) no indication of difficulty in retaining the Medicaid contract during the data-collection phase of the study. In June 1973, 14 HMO's met these criteria and 10 were chosen for the study—half of them with Medicaid enrollment only. Since two-thirds of all Medicaid HMO enrollees were located in California, six of the 10 HMO's selected are also located there. The HMO's included represent seven of the traditional HMO structure, one not at risk for hospitalization, and two foundations. Their names and enrollment appear below.

Name and location of HMO's	Enrollees, Jan 11, 1974		
	Total	Medicaid	
		Number	Percent of total
Total..	1,283,263	223,308	17.4
Central Los Angeles Health Project, Calif.	8,669	8,669	100.0
Consolidated Medical System, Calif.	107,000	52,000	48.6
Family Health Program, Calif.	46,995	14,995	31.9
Group Health Cooperative of Puget Sound, Wash.	191,757	4,422	2.3
Harbor Health Services, Calif.	6,194	6,194	100.0
Harvard Health Plan, Mass.	39,750	1,760	4.2
Health Insurance Plan of Greater New York, New York City ¹	826,489	68,869	8.3
Temple Health Plan, Pa.	11,098	11,098	100.0
Redwood Foundation, Calif. ²	29,000	29,000	100.0
Sacramento Foundation, Calif. ²	36,311	36,311	100.0

¹ Not at risk for hospitalization.

² Medical foundations that perform some peer review functions and claims management for a population other than Medicaid but not at risk through a capitation agreement for those patients.

Population

The study group represents a random sample of all public assistance families in the aid to families with dependent children (AFDC) or old-age assistance (OAA) categories for at least 6 months and enrolled in a designated HMO for at least 6 months before the interview. The 6-month requirement ensured that all responses to

TABLE 1—Number and percentage distribution of persons in HMO's and control groups, by age and plan

Plan	Total number	Percentage distribution, by age						
		Total	Under 5	5-14	15-24	25-34	35-44	45 and over
Group practice	9 017	100	18	42	19	11	6	4
Control	9 343	100	17	43	19	11	6	4
Central Los Angeles Health Project	994	100	19	45	19	8	6	3
Control	989	100	18	46	19	9	6	3
Consolidated Medical System	990	100	19	44	16	12	5	3
Control	927	100	19	40	20	11	6	4
Family Health Program	975	100	18	42	19	10	6	3
Control	871	100	20	37	24	10	6	3
Group Health Cooperative of Puget Sound	1,300	100	15	44	17	12	7	4
Control	1 330	100	18	44	14	13	8	2
Harbor Health Services	996	100	20	44	19	9	5	3
Control	1,001	100	19	41	21	10	5	3
Harvard Health Plan	1,126	100	16	48	14	12	6	3
Control	1,465	100	18	42	18	12	6	4
Health Insurance Plan of Greater New York	1,114	100	12	44	18	12	9	4
Control	1,163	100	19	45	14	15	6	2
Temple Health Plan	1,432	100	14	41	23	10	7	6
Control	1,617	100	14	40	22	10	8	6
Foundation and control								
Redwood	1 733	100	17	40	20	13	6	5
Control	751	100	19	37	20	12	6	4
Sacramento	961	100	18	40	19	13	6	4
Control	851	100	16	40	19	12	6	4

the questionnaire were related to the Medicaid and HMO experience

The matched control groups—families in AFDC and OAA for the preceding 6 months and not enrolled in an HMO—were selected from the non-HMO populations living in the same Zip codes and were similarly stratified by Medicaid program category, family size, and age of the household head. A response rate of 92 percent was achieved that yielded about 8,000 family units surveyed and represented data for more than 24,000 individuals (22,656 in AFDC and 1,520 in OAA).

There was one exception to the above procedure. In the Redwood Foundation, individuals do not enroll. The physicians decide whether or not to participate. Residents of three counties comprise the foundation's service area and obtain their services from providers without regard to or necessarily knowledge of a provider's status as a foundation member. Approximately 85 percent of all physicians in the area were foundation members. The study group consisted of 800 families in the tricounty area. The control group consisted of 400 families from two neighboring counties, matched to the study group on the basis of age, family size, and program category.

The data here are confined to the AFDC

population. Tables 1 and 2 show the numbers of persons represented in each HMO and control group and their demographic characteristics. Since perfect matches could not be achieved in all cases, slight differences between HMO's and their controls appear.

Survey Instrument

Trained interviewers used a face-to-face interview with a structured questionnaire eliciting both precoded and open-ended responses. In most cases, the head of the household was interviewed and responded about the experience of all members of the family. All analysis is based on the respondents' perceptions as recorded in the interview, including basic attitudes and recall of specific health occurrences.

The questionnaire was tested in a pilot study in one site and was reevaluated and adjusted before use in the remaining nine sites. Information was elicited in four major areas—selectivity, accessibility, satisfaction, and utilization.

Recall on hospital use was for a 6-month period, on ambulatory use and disability it was for a 1-month period, and on pregnancy experience for 1 year. Utilization data for HMO's included out-of-plan use—less than 1 percent of all use in

TABLE 2—Percentage distribution of persons in HMO's and control groups, by sex, race, ethnic group, and plan

Plan	Percentage distribution										
	Total	Sex		Race				Ethnic group			
		Men	Women	Black	White	Oriental	Other	Mexican	Puerto Rican	Other Spanish	Non-Spanish
Group practice	100	39	61	62	32	(1)	6	8	8	2	82
Control	100	38	62	56	37	(1)	6	7	10	2	80
Central Los Angeles Health Project	100	41	59	91	7	(1)	1	6	(1)	(1)	92
Control	100	39	61	87	8	-	4	9	(1)	1	90
Consolidated Medical System	100	41	59	41	48	(1)	9	18	(1)	5	77
Control	100	36	64	40	54	(1)	4	19	1	4	76
Family Health Program	100	36	64	58	33	(1)	8	12	-	1	87
Control	100	36	64	56	38	1	4	6	-	3	90
Group Health Cooperative of Puget Sound	100	36	64	48	47	1	3	1	-	(1)	98
Control	100	37	63	40	51	(1)	9	3	-	(1)	97
Harbor Health Services	100	40	60	41	47	(1)	10	23	(1)	2	74
Control	100	39	61	41	48	(1)	9	21	(1)	2	76
Harvard Health Plan	100	40	60	60	38	(1)	1	-	33	2	65
Control	100	41	59	66	31	(1)	1	-	24	4	72
Health Insurance Plan of Greater New York	100	35	55	59	29	(1)	12	(1)	26	3	70
Control	100	38	62	54	32	-	13	(1)	27	2	70
Temple Health Plan	100	40	60	94	5	(1)	-	-	6	-	94
Control	100	42	58	64	32	(1)	2	-	26	2	71
Foundation and control											
Redwood	100	37	63	2	90	(1)	7	7	(1)	1	92
Control	100	38	62	10	81	2	6	8	-	2	91
Sacramento	100	37	63	28	71	-	(1)	12	(1)	2	86
Control	100	38	62	22	75	(1)	2	12	(1)	3	84

¹ Less than 1 percent

a given category. In contrast to other studies, this low out-of-plan use is explained by the Medicaid population's obvious lack of financial means for purchasing care outside the HMO. Biases due to the recall problems inherent in most interview surveys are not relevant here, however, as all comparisons are between matched groups and any bias is assumed to be the same for both groups. Comparisons of the actual utilization data collected by the HMO's and data collected here also indicate that the recall biases were small.

FINDINGS

This section presents the findings for the major areas of data collection—enrollment selectivity; hospital and ambulatory-care utilization, including preventive care, accessibility; and satisfaction. The differences among the various types of HMO's are examined with particular attention to differences in health care use.

Enrollment Selectivity

In order to better interpret the utilization data, an attempt was made to determine whether those

who choose to enroll in HMO's are different from those who do not. Are they sicker? Are they more health conscious? It was theorized that persons who perceived their health to be poor or who had more preexisting chronic conditions would be more inclined to join HMO's because of the wide range of services and convenience offered. In California, the incentive for the sick to join HMO's was even stronger. At the time of this study, more than two visits per month to a physician had to be certified by the State. This restriction did not apply to HMO's. In contrast to the incentives for sicker persons to join HMO's, the incentives for the HMO's are to discourage them from joining. Since HMO's are paid on a capitation basis, they do better financially with healthier enrollees.

Previous health status was determined on the basis of the respondents' own ratings of their health 1 year previously. A chronic condition was any of a list of 30 conditions that had lasted at least 3 months or was a recurring problem. The data indicated no significant difference between the study groups and their controls in terms of health status perceived or number of chronic conditions (table 3). More than three-fourths of

TABLE 3—Percentage distributions of persons in HMO's and control groups, by previous health status, number of preexisting chronic conditions, and plan

Plan	Percentage distribution, by previous health status ¹						Percentage distribution, by number of preexisting chronic conditions				
	Total	Excellent	Good	Fair	Poor	Unknown	Total	None	1	2	3 or more
Group practice	100	25	52	16	5	1	100	72	18	6	5
Control	100	26	49	16	6	2	100	72	17	6	5
Central Los Angeles Health Project	100	(²)	(²)	(²)	(²)	(²)	100	70	18	8	5
Control	100						100	71	16	8	5
Consolidated Medical System	100	23	48	19	6	2	100	75	16	5	4
Control	100	31	44	14	7	4	100	71	18	6	4
Family Health Program	100	24	55	16	4	1	100	72	18	5	5
Control	100	25	51	13	7	4	100	73	17	6	4
Group Health Cooperative of Puget Sound	100	37	42	15	4	1	100	61	19	10	10
Control	100	32	45	14	6	3	100	60	22	7	11
Harbor Health Services	100	25	53	15	5	3	100	74	17	5	4
Control	100	30	47	14	7	3	100	76	16	4	4
Harvard Health Plan	100	21	56	17	3	3	100	70	21	6	4
Control	100	25	54	15	4	3	100	73	17	6	4
Health Insurance Plan of Greater New York	100	26	49	18	6	1	100	75	16	5	5
Control	100	27	43	20	7	2	100	76	15	5	5
Temple Health Plan	100	17	62	15	4	1	100	78	15	4	3
Control	100	14	60	19	6	2	100	76	15	5	4
Foundation and control											
Redwood	100	36	45	11	5	3	100	55	22	10	13
Control	100	38	37	12	8	4	100	57	20	12	11
Sacramento	100	31	46	16	5	2	100	68	22	9	11
Control	100	40	38	14	5	3	100	69	20	10	11

¹ Rated by respondent

² Data not available

the respondents felt their health was good to excellent, and about seven-tenths had no chronic conditions. Whether the conflicting incentives on the part of HMO's and consumers are counteracting each other or there are no differences either way cannot be determined.

It was also theorized that persons who had a higher degree of health consciousness—that is, were concerned with nutrition in diet, read books on health, and the like—were more likely to join HMO's. If this were the case, they might seek more health services, particularly preventive care, or have higher levels of expectations. There was, however, no difference between the study groups and the controls. On a simple summated scale based on nine questions measuring health consciousness, three-fourths of the Medicaid families fell in the "somewhat health conscious" category, whether or not they were in an HMO. The results for the Medicaid population may not be relevant, however, for all persons. Medicaid enrollees are perhaps too concerned about basic survival to care about books on health. They may be too concerned about getting enough to eat to worry about leafy green vegetables.

Utilization

Hospital care—As hypothesized in the model, hospital use was significantly lower (two and one-half times) in group-practice plans than in the fee-for-service system (table 4). Between the foundations and their controls, however, there was no statistically significant difference, as shown below.

Type of plan	Annualized rate ¹		
	Admissions per 1,000 persons	Average length of stay	Days of care per 1,000 persons
Group practice ²	46	7.4	340
Controls ²	114	7.7	888
Foundation and control			
Redwood	160	3.9	630
Control	190	4.4	826
Sacramento	106	5.8	610
Control	122	4.5	546

¹ Based on 6-month period

² Differences statistically significant at the 95-percent confidence level

³ May be slightly inflated because of unusually high average length of stay for the HIP control group

Surgical rates reveal similar patterns. The rates for group-practice plans were half those

TABLE 4—Hospital and surgical utilization by persons in HMO's and control groups, by plan

Plan	Annualized rate ¹					
	All hospitalization ²			Surgical care ³		
	Admissions per 1,000 persons	Average length of stay	Days of care per 1,000 persons	Admissions per 1,000 persons	Average length of stay	Days of care per 1,000 persons
Group practice	446	473	4340	24	75	208
Control	4114	477	4888	50	68	318
Central Los Angeles Health Project	434	64	4210	(⁴)	(⁴)	(⁴)
Control	490	62	4562			
Consolidated Medical System	426	468	4168	20	74	148
Control	4146	490	41316	64	51	366
Family Health Program	440	446	4186	14	60	84
Control	4142	460	4854	46	55	254
Group Health Cooperative of Puget Sound	474	47	4346	50	51	266
Control	4146	58	4844	84	40	338
Harbor Health Services	454	60	4322	28	61	172
Control	4104	54	4566	42	50	208
Harvard Health Plan	46	78	4358	24	103	246
Control	496	57	4548	44	24	152
Health Insurance Plan of Greater New York	464	93	4598	16	111	178
Control	4114	163	41,854	36	179	644
Temple Health Plan	438	4137	422	20	64	128
Control	476	474	4564	36	66	238
Foundation and control						
Redwood	160	39	430	82	46	378
Control	190	44	426	120	49	584
Sacramento	108	58	410	66	68	450
Control	122	45	4546	72	47	340

¹ Based on 6-month period
² Excludes pregnancy
³ Tests of significance not yet completed

⁴ Differences statistically significant at the 95-percent confidence level
⁵ Data not available

of their controls. Differences between the foundations and their controls were small.

The fact that foundations show no major differences in hospital use, despite their financial incentive to do so, indicates that the financial incentives of capitation payment to the HMO organization alone may not have significant impact on the hospitalization practices of their physicians and that the presence of an organized group practice of salaried physicians may be more significant. The fact that HIP, which is not at risk for hospitalization, still has lower use than its control group gives further support to the notion that physician payment method and practice organization are the major influences on hospital use. The relative importance of physician payment and practice organization cannot, however, be determined and requires further research. With national health insurance on the horizon, such determinations are imperative.

Ambulatory care—There are two alternative theories on the use of ambulatory care in HMO's, particularly group-practice plans. George Monsma

contends that, just as salaried physicians have no financial incentives to hospitalize, they have no incentive to see ambulatory patients any more than necessary.⁶ He would expect ambulatory care rates in group-practice HMO's to be lower than in fee-for-service where additional visits mean additional income.

Roemer and Klarman contend that the lower hospitalization rates in group-practice HMO's result from the financial incentive to substitute the less costly ambulatory care for the more expensive hospital care.⁷ They would expect ambulatory rates in group-practice HMO's to be higher than in fee-for-service.

In this study the results support neither theory. The number of physician contacts in the group-

⁶ George Monsma, "Marginal Revenue and the Demand for Physicians' Services," in *Empirical Studies in Health Economics* (Herbert E. Klarman, editor), The Johns Hopkins Press, pages 145-60, 1970.

⁷ Milton I. Roemer, "The Influence of Prepaid Physician Services on Hospital Utilization," *Journal of American Hospital Association*, October 16, 1958, and Herbert E. Klarman, "Effect of Prepaid Group Practice on Hospital Use," *Public Health Reports*, November 1963.

TABLE 5—Ambulatory care utilization by persons in HMO's and control groups, by type of provider and plan

Plan	Total visits per 100 persons ¹	Annualized rate ²		
		Physician contacts ³		Non-physician contacts per 100 persons
		Number per 100 persons	Percent patient-initiated	
Group practice.....	396	348	56	48
Control.....	404	360	55	44
Central Los Angeles Health Project.....	(4)	384	(4)	(4)
Control.....	(4)	456	(4)	(4)
Consolidated Medical System.....	391	348	57	43
Control.....	386	348	51	38
Family Health Program.....	344	300	63	44
Control.....	364	324	56	40
Group Health Cooperative of Puget Sound.....	514	408	54	106
Control.....	608	480	44	126
Harbor Health Services.....	436	384	54	52
Control.....	292	288	66	4
Harvard Health Plan.....	274	252	58	22
Control.....	253	216	52	37
Health Insurance Plan of Greater New York.....	443	396	54	47
Control.....	461	420	59	41
Temple Health Plan.....	313	288	51	25
Control.....	395	372	56	23
Foundation and control				
Redwood.....	517	408	53	109
Control.....	451	384	51	67
Sacramento.....	634	516	50	118
Control.....	469	396	53	78

- ¹ Tests of statistical significance not yet completed
- ² Based on 1 month period
- ³ Outpatient visits only
- ⁴ Data not available
- ⁵ Differences statistically significant at the 95-percent confidence level

practice plans was the same as the number in the controls—about 35 visits per person annually. Even in California, where non-HMO visits were restricted without advance approval, physician use was the same except in one foundation (table 5). In both groups, 45 percent of all visits were physician-initiated. It may be, in part, that the financial incentive for fee-for-service physicians to initiate visits is offset by the HMO incentive to prevent hospitalization through substituting greater ambulatory use.

In a recent report on the effects of alternative health care reimbursement systems, Kimbell and Yett discuss the alternative theories on ambulatory use.⁸ They suggest that other explanatory variables—the influence of market and institu-

⁸ Larry J Kimbell and Donald E Yett, *An Evaluation of Policy Related Research on the Effects of Alternative Health Care Reimbursement Systems*, Human Resources Research Center, University of Southern California, 1975

tional controls—require exploration before conclusions can be reached.

Visits to other health professionals would be expected to be greater in HMO's. The substitution of lower-paid professions for physicians, when possible, could result in cost savings. Group-practice plans especially are in a position to make such substitutions and have an obvious incentive to do so. Nevertheless, the data indicate that utilization did not differ significantly for the group-practice plans and their controls.

The data for ambulatory visits to all health professionals show an annual average of four visits per person for both group-practice plans and controls. Foundations show more visits than their controls or other HMO's.

Disability—Since HMO enrollees are using hospitals less yet not seeing physicians more, it is pertinent to determine if their health status suffers. Although no direct attempt was made to measure health status, data were collected on disability days. If the total time sick—bed-days (including time in the hospital) and activity-loss days—were longer for groups with relatively low admission rates, it might be inferred that by staying out of hospitals, persons stay sick longer. This was not the case (table 6). Enrollees in group-practice plans average 13 days of disability per month, and their controls average 14 days, as shown below.

Type of plan	Number of disability days per 100 persons ¹		
	Total	Bed-days	Activity-loss days
Group practice.....	133	58	75
Control.....	142	62	80
Foundation			
Redwood.....	183	48	135
Control.....	205	59	146
Sacramento.....	184	61	123
Control.....	166	46	120

¹ Based on 1 month period

Preventive care—Until recently, preventive care has been considered to be a significant factor in constraining future medical costs. Currently, the efficiency of many preventive measures has been questioned. The economic benefits of physical exams, Pap smears for all women, etc., may not exceed their costs. Other preventive

TABLE 6—Disability days in 1 month for persons in HMO's and control groups, by type of disability day and plan¹

Plan	Percent of population with disability days ²			Number of disability days per 100 persons		
	Total ³	Bed-days	Activity-loss days	Total	Bed-days	Activity-loss days
Group practice	18	13	11	133	58	75
Control	17	12	11	142	62	80
Central Los Angeles Health Project	(4)	(4)	(4)	(4)	(4)	(4)
Control						
Consolidated Medical System	22	15	16	165	63	102
Control	17	12	12	141	53	88
Family Health Program	16	13	10	127	61	66
Control	13	8	9	130	52	78
Group Health Cooperative of Puget Sound	27	19	19	189	71	118
Control	24	15	18	187	64	123
Harbor Health Services	18	14	11	123	55	68
Control	15	10	11	111	38	73
Harvard Health Plan	9	6	4	64	35	29
Control	11	8	5	84	45	39
Health Insurance Plan of Greater New York	21	16	13	192	88	104
Control	24	20	10	231	124	107
Temple Health Plan	10	7	7	70	30	40
Control	16	12	10	112	60	52
Foundation and control						
Redwood	21	11	17	183	48	135
Control	20	11	15	205	59	146
Sacramento	24	15	17	184	61	123
Control	20	11	15	166	46	120

¹ Based on 1-month period
² Tests of significance not yet completed
³ Unduplicated total
⁴ Data not available
⁵ Differences statistically significant at the 95-percent confidence level

measures—such as the Salk vaccine and flu shots for the elderly—have been shown to have positive payoffs.⁹ Regardless of the efficiencies inherent in preventive medicine, HMO's and their advocates have claimed that they do provide more preventive care than the fee-for-service delivery system and the result is less acute care. From a financial point of view, the HMO would certainly be expected to encourage those preventive procedures with positive benefit-cost ratios.

Several measures of preventive medicine were used here. First, measures of maternity care—in terms of number of prenatal visits, trimester of first visit, baby check-up, and mother check-up—were used. Although statistics varied among the sites, the overall results were quite similar

⁹ The National Conference on Preventive Medicine, *Report of Task Force on Economic Impact of Preventive Medicine*, sponsored by the Fogarty International Center of the National Institutes of Health and the American College of Preventive Medicine, 1975

for HMO's and controls. About 52 percent of women with live births in the group-practice plans, compared with 60 percent in the controls, had 11 or more prenatal visits. About four-fifths in both groups had their first visit in the first trimester, nine-tenths had baby check-ups, and somewhat more than four-fifths of the mothers had check-ups. The foundations and their controls showed similar relationships, as table 7 indicates.

Measures of preventive care in the total population were also made and included physical exams, well-baby check-ups, and immunizations. In a 1-month period, about 6 percent of the group-practice plan enrollees had at least one preventive-care procedure and the controls had 9 percent (table 8). In no site was preventive care greater in the HMO than the control. In several sites it was significantly less. There was no difference between the foundations and their control groups.

As a proportion of all visits, preventive care represented 20 percent of visits for group-practice enrollees and 29 percent for the controls. It is possible that during visits for specific problems some preventive procedures are administered and the patients are not aware of it. If an HMO is especially preventive-care conscious, this situation may occur more often in the HMO than in fee-for-service. Nevertheless, it is doubtful that HMO's are providing more preventive care than fee-for-service.

Accessibility

Although outpatient use is the same for HMO and fee-for-service arrangements, accessibility to the system may not be. Accessibility was measured in terms of the time it took to reach a physician (generally by telephone), and the percent able to do so, the time it took to make an appointment, and waiting time in the office. Questions were asked of persons with disability days resulting in a physician visit within the last month, as well as anyone who tried to reach a physician within the past 6 months.

About two-thirds of the persons with disability days contacted a physician. It took the control population considerably longer to do so than the

TABLE 7—Pregnancy-connected services for women with live births in HMO's and control groups, by plan¹

Plan	Percentage distribution, by number of prenatal visits					Percentage distribution, by trimester of first prenatal visit			Percent of births with—		
	Total	Less than 5	5-10	11-15	16 or more	Total	1	2	3	Baby check-up	Mother check-up
Group practice.....	100	20	28	35	17	100	79	20	2	86	83
Control	100	14	27	42	18	100	78	19	3	92	85
Central Los Angeles Health Project	100	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)
Control	100										
Consolidated Medical System.....	100	3	13	81	3	100	74	23	3	---	---
Control	100	6	6	88	--	100	79	15	6	---	---
Family Health Program.....	100	41	25	16	19	100	75	25	3	81	88
Control	100	19	47	32	4	100	74	21	4	96	96
Group Health Cooperative of Puget Sound....	100	9	9	79	2	100	88	12	-	100	87
Control	100	12	2	85		100	88	8	5	90	87
Harbor Health Services	100	18	8	--	75	100	80	20	--	93	73
Control	100	5	7	--	88	100	77	23	-	93	87
Harvard Health Plan	100	21	55	24	--	100	79	16	5	100	83
Control	100	16	43	35	6	100	82	14	4	94	81
Health Insurance Plan of Greater New York....	100	31	38	24	7	100	83	17	-	88	100
Control	100	23	41	20	6	100	75	23	2	84	77
Temple Health Plan	100	19	50	19	12	100	72	25	3	79	79
Control	100	14	42	34	10	100	72	26	2	93	93
Foundation and control											
Redwood	100	18	52	24	6	100	72	24	4	90	77
Control	100	14	52	14	19	100	76	24	--	95	74
Sacramento	100	21	41	31	7	100	100	--	-	80	80
Control	100	30	30	37	3	100	80	17	3	95	84

¹ Based on 1 year period Tests of significance not yet completed

² Data not available

TABLE 8—Utilization of preventative care services by persons in HMO's and control groups, by plan¹

Plan	Percent of all visits for preventative care ²	Number of persons per 100 using preventative care services ³			
		Total ⁴	Physical examination	Well baby check-up	Immunizations
Group practice.....	20	0 06	0 03	(⁵)	0 03
Control	29	09	04	(⁵)	04
Central Los Angeles Health Project	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Control					
Consolidated Medical System	* 19	06	02	(⁵)	04
Control	* 29	09	02	0 01	06
Family Health Program.....	* 18	04	01	(⁵)	02
Control	* 37	10	03	02	06
Group Health Cooperative of Puget Sound....	* 16	06	04	(⁵)	03
Control	* 23	10	04	(⁵)	06
Harbor Health Services	* 12	04	(⁵)	(⁵)	03
Control	* 26	07	02	(⁵)	04
Harvard Health Plan	29	06	05		02
Control	35	07	05	01	02
Health Insurance Plan of Greater New York	25	09	05	(⁵)	03
Control	28	10	06	(⁵)	04
Temple Health Plan	23	06	04	(⁵)	01
Control	25	08	06	(⁵)	02
Foundation and control					
Redwood	25	09	03	01	05
Control	29	09	03	(⁵)	06
Sacramento	13	06	03	(⁵)	03
Control	16	06	02	01	03

¹ Based on 1-month period

² Unduplicated total

³ Tests of significance not yet completed

* Less than 0 005 percent

⁴ Data not available

⁵ Difference statistically significant at the 95-percent confidence level

TABLE 9—Physician accessibility to persons in HMO's and control groups, by plan

Plan	Episodes of disability days				General physician accessibility to persons attempting to call			
	Percent of episodes with physician contact	Average time to contact physician (in hours)	Average time from appointment to visit (in days)	Average time waiting in office (in minutes)	Weekday		Weekday or night	
					Percent successful	Average time (in hours)	Percent successful	Average time (in hours)
Group practice	60	6	11	33	77	4	74	2
Control	60	13	10	32	87	5	80	2
Central Los Angeles Health Project	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Control								
Consolidated Medical System	62	4	9	42	63	9	61	1
Control	62	8	10	25	79	6	74	2
Family Health Program	55	5	7	30	79	13	88	(²)
Control	76	8	9	27	88	3	87	(²)
Group Health Cooperative of Puget Sound	47	15	13	19	72	1	80	(²)
Control	49	40	9	26	93	2	87	(²)
Harbor Health Services	58	6	5	37	81	3	73	(²)
Control	58	3	8	29	86	3	70	3
Harvard Health Plan	67	2	14	32	67	(²)	78	3
Control	69	7	18	34	85	5	71	5
Health Insurance Plan of Greater New York	74	6	11	36	85	4	63	4
Control	80	4	3	39	84	(²)	88	(²)
Temple Health Plan	78	3	20	31	93	4	75	1
Control	71	22	14	46	91	1	86	5
Foundation and control								
Redwood	58	5	10	24	91	6	93	2
Control	63	17	9	21	89	4	82	1
Sacramento	58	21	11	24	83	7	92	1
Control	54	4	12	28	84	6	86	1

¹ Data not available

² Less than one half hour

enrollees—13 hours, compared with 6 hours. Persons making an appointment waited an average of 11 days, regardless of whether or not they were in an HMO, and they all waited an average of 32 minutes once they got to the office (table 9).

General accessibility to physicians was examined in terms of the proportion who tried to reach physicians, those who succeeded, and the time it took to reach physicians. Responses were analyzed separately for weekdays and weekends or nights. Except for the foundations, of those persons trying to reach a physician on a weekday, a larger proportion of the controls succeeded than of HMO enrollees. For foundations, the proportions were the same for both groups. No determination was made, however, of whether or not people reached nurses or other health professionals in the HMO's instead. Some HMO's have screening mechanisms whereby many calls are handled directly by the nurses. At nights or weekends, when the screening mechanisms are less likely to be prevalent, the differences between HMO's and controls narrow. For both groups,

reaching a physician was faster on a weekend or night than on a weekday.

Satisfaction

There has been much debate over consumer satisfaction with one delivery system in comparison with another. A number of questions were asked regarding satisfaction with accessibility and with physician care—the time spent, physician understanding and explanation of condition, personal concern demonstrated, etc.

When responses to all satisfaction questions were summed, over nine-tenths of both groups were satisfied or very satisfied. People appear generally satisfied regardless of situation. To illustrate—14 percent of HMO enrollees with physician visits waited over 1 hour in the office, but only 8 percent of enrollees with visits thought their wait too long. The fact that this is a Medicaid population, used to long waits or no care at all, may account for their relatively high level of satisfaction or for a low level of expectancy.

SUMMARY

Various aspects of HMO performance were compared with that of the fee-for-service system for the Medicaid population. Utilization differences between several types of HMO's, grouped according to organization and provider payment, were also examined. Using matched samples of AFDC recipients, the study interviewed 6,000 persons during fiscal year 1975 and obtained data on the medical care experience of 22,650 individuals in 10 sites. Data were also collected on 2,000 OAA recipients. The results of those interviews will be reported at a later date.

Four areas of behavior were studied—enrollment selectivity, utilization of services, accessibility of care, and satisfaction. On the basis of other studies and claims of HMO proponents, it was expected that HMO enrollees would be sicker than their fee-for-service counterparts at time of enrollment, would use hospitals less and ambu-

latory services more, receive more preventive care, find care more accessible, and be equally or more satisfied. Not all of these expectations were supported.

Briefly, the only significant difference between the two systems was in hospital utilization. Group-practice HMO's had significantly lower hospital utilization than the fee-for-service groups, but foundation HMO's did not. Apparently, capitation payment to an HMO alone is not a factor significant enough to produce major changes in utilization. In fact, the organized multispecialty group-practice arrangement with largely salaried physicians may be more significant. For the other variables—previous health status, ambulatory-care use, including preventive care, accessibility; and satisfaction—the two groups were remarkably similar. Reasons for the differences and similarities have been suggested, but much more research is needed for a better explanation of provider performance.

PROGRAM OPERATIONS

(Continued from page 2)

ing State-administered supplementary payments in the 22 reporting States totaled 304,500—1,500 lower than the October figure. All three eligibility categories showed small caseload declines. Eleven States reported fewer persons receiving State supplements in November than in October, 10 States reported increases, and in one State the

caseload remained unchanged. The number of persons receiving Federal SSI payments in the reporting States increased slightly from 1,270,300 in October to 1,272,100 in November.

State-administered supplementation during November 1975 amounted to \$13.8 million, virtually unchanged from the previous month. Expenditures for State supplements accounted for 11 percent of the total Federal SSI and State payments in the 22 States.