HOSPITAL UTILIZATION OF AN HMO-ENROLLED MEDICAID POPULATION

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This study was undertaken to assess the effect of enrollment in a health maintenance organization (HMO) on a Medical Assistance (MA) population. One of the advantages usually ascribed to an HMO is that, as an organized system of comprehensive care with an emphasis upon the prevention of illness and the maintenance of health, it can have a positive impact upon the incidence, duration and cost of hospitalization by reducing the need of its enrolled population for hospitalization. This study tested that assumption with specific reference to an MA population.

A study population of Public Assistance (PA) persons, who were automatically eligible for MA and who were enrolled in an HMO (Study Group), was compared to a demographically matched control population of PA persons not eligible for enrollment in the HMO (Control Group I) and to a second control population of PA persons who were eligible for enrollment based on their area of residence but who had no contact with the HMO delivery system (Control Group II). If the hypothesis was correct, the Study Group, by virtue of its enrollment in an HMO, would have experienced less hospitalizations than Control Group I. Likewise, Control Group II it was hypothesized represented a more passive group of consumers who would have experienced higher hospital utilization rates than either the Study Group, whose members had shown a sufficiently active concern about their health care to enroll in the HMO, or Control Group I which represented a cross-section of consumers. Control Group II was also included in the study to isolate the effect of location of residence on hospital utilization patterns because of possible differences in the quality of life and the availability of health care in the two geographic areas.

The HMO being studied here was the Health Maintenance Plan (HMP) at Temple University located in Philadelphia, Pennsylvania, which was part of the Comprehensive Health Services Program (CHSP). Persons included in the Study Group (5855 persons) were identified from the files of the HMP. Persons in Control Group I (6514 persons) and Control Group II (3231 persons) were selected from the files of the Philadelphia County Board of Assistance of the Pennsylvania Department of Public Welfare (DPW).

Hospitalization data for HMP enrollees was acquired for an 18 month utilization period from the HMP hospitalization files based on data supplied by its insurer, Blue Cross of Greater Philadelphia, Incorporated. For Control Group I and Control Group II, and for those HMP hospitalizations paid for by DPW, data was supplied by Blue Cross, Blue Shield and Inter-County Hospitalization Plan, the fiscal intermediaries for the MA program in Pennsylvania. The hospitalization data base was then matched against the demographic data base.

In order to assess the relationship between health care services and hospitalization, an analysis of the level of outpatient services received during the period surrounding the hospitalization is required. Unfortunately, this information was obtainable only for the Study Group, since DPW, the Pennsylvania Title XIX agency, handled all claims for outpatient services rendered, and this information was not automated.

Sixty-eight percent (68%) of the Study Group population were seen by a Plan physician during the 18 month utilization period, while 61% of the Study Group was seen by a physician during the 18 3/5 months prior to the utilization period. Those persons with at least one physician visit were seen on the average of 6.5 times by physicians during the 18 month utilization period.

Hospitalized persons tended to be higher utilizers of physician services than non-hospitalized persons. Of the hospitalized persons, 57% had 3 or more physician visits prior to the utilization period compared to 38% of the non-hospitalized patients.

It is frequently hypothesized that a high initial demand for hospitalization occurs when persons enroll in an HMO. However, it is unlikely that the period of time being studied here, although it was shortly after enrollment in HMP, could be considered this initial period, since 70% of the Study Group was enrolled in the CHSP, which offered the same outpatient services as the HMP, prior to enrolling in HMP.

Review of the hospitalization data revealed that approximately one-half of the Study Group hospitalizations, for which the Plan was financially responsible, were, in fact, paid for by DPW through its intermediaries. This was a result of lack of implementation by DPW of mechanisms to restrict enrollees to the use of

only Plan services. This finding raised the question of the level of control that the Plan had over its enrollees. The critical factor for this study was not who paid the hospitalization but whether these hospitalizations were the result of referrals by Plan physicians or were based on referrals over which the Plan had no control. A review of a sample of medical records of hospitalized persons indicated that, although the Study Group persons with HMP-paid hospitalizations were higher utilizers of the Plan's physician services than persons with DPW-paid hospitalizations and although the Plan knew about a significantly higher percentage of the HMP-paid hospitalizations than the DPW-paid hospitalizations, a substantial percentage (almost 50%) of the DPW-paid group were users of the Plan's facilities and could be considered "under control" of the Plan.

In interpreting the results of this study, one must bear in mind that the control group persons were receiving MA supported health care somewhere, either through other comprehensive health care systems (non-HMO) or through traditional modes. The presumed effect of both, the absence of full HMO control of the health services received by the Study Group and the availability of comprehensive health care to the control groups was to reduce the differences in the hospitalization experience between the Study Group and the control groups.

The HMO enrolled Study Group had an annualized hospitalization rate of 126.5 hospitalizations per 1000 enrollees which was significantly lower than the age-sex adjusted rates for Control Group I of 140.5 or 149.3 for Control Group II. These rates are all somewhat underestimated because of difficulties in matching the hospitalization data to the demographic data. Comparison of the hospitalization rates within 20 age-sex categories, revealed that the Study Group when compared to Control Group I had significantly lower rates in one-fourth of the age-sex categories. However, the Study Group rates were actually higher, although not always significantly so, in a substantial number of age-sex categories. A similar lack of consistent patterns in the age-sex category comparisons between Control Group II and the Study Group, and between Control Group II and Control Group I led to the rejection of the hypothesis that the presumed "passive consumers" of Control Group II would utilize more inpatient care than the Study Group or Control Group I. This absence of consistent patterns raises serious questions concerning the ability of the HMO to reduce the incidence of hospitalization.

When hospitalization rates were examined by diagnosis, a number of categories were revealed in which the study group rate was significantly less than one or both of the control groups, e.g., upper respiratory diseases, asthma and ulcers of the stomach. These differences could have been related to the preventive maintenance health care received by HMP enrollees or to early medical intervention by the Plan's physicians. However, because of the lack of a consistent pattern, i.e., both control group rates higher than the Study Group, or rates lower for one sex but not for the other, and because of the lack of detailed diagnosis data, only the limited conclusions noted can be drawn regarding the effect that the HMO had on hospitalization experience for specific diseases or conditions.

In order to impact on hospital costs, a health program must not only reduce hospitalization rates but must also minimize the average length of stay. When average length of stay was examined for those hospitalizations which HMP was responsible for, i.e., excluding those for most mental disorders, there was no significant difference in the average length of stay between the three populations. The figures were Study Group, 7.4 days, Control Group I and Control Group II, 7.0 days.

Combining the average length of stay data with the number of hospitalizations, the average number of hospitalization days per person per year was determined: Study Group and Control Group I experienced 1.0 days per person per year while Control Group II had 1.1 days per person per year. Again, the differences were not statistically significant.

The cost data is highly correlated with the primary hospitals utilized by the patients. Since there were considerable differences in the hospitals where members of the three groups were hospitalized, it is these differences which affected the cost per day (amount of bill) figures. The Study Group rate was $141 per day compared to $131 for each of the two control groups.

In conclusion, the results of this study should not necessarily be interpreted as evidence for rejection of the premise that HMO's offer a viable alternative delivery system for an MA population. Hospitalization experience is only one factor in measuring the health status of enrollees. It does not adequately reflect the quality of professional services. Hospital utilization is subject to numerous and complex intervening circumstances, many of which, such as hospitalizations for accidents and for social problems, including alcoholism and drug addiction, lie largely outside of the control of

an HMO. In addition, preventive care generates hospitalizations for diseases and conditions which are identified by increased exposure to medical providers. Careful analysis of both other outcome indicators and process measures is necessary before any final judgment can be rendered upon the viability of an HMO as an alternative MA delivery system.

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Persons, Hospitalizations and Rates of Temple University Health Maintenance Plan Enrollees by Age and Sex January 19, 1972 - July 18, 1973

MALES AGE	PERSONS SG	PERSONS CG I	PERSONS CG II	HOSPITALIZATIONS (18 Months) SG-DPW	SG-HMP	SG-TOTAL	CG I	CG II	HOSPITALIZATION RATES*(Annualized) SG	CG I	CG II
Under 1	82	54	51	10	4	14	8	10	113.8	98.7	130.7
1-4	457	422	254	27	17	44	55	39	64.2	86.9	102.3(a)
5-14	975	1234	516	41	30	71	96	40	48.5	51.9	51.7
15-44	681	622	350	122	46	168	159	110	164.5	170.4	209.5
45-64	189	174	153	32	26	58	81	45	204.6	310.3(a)	196.1(b)
Total Males	2384	2506	1324	232	123	355	399	244	99.3	106.1**	122.9**
Males Age Adj.									99.3	117.9(a)	112.9
FEMALES AGE											
Under 1	91	45	49	7	11	18	4	4	131.9	59.3	54.6(a)
1-4	455	465	257	14	10	24	41	22	35.1	58.8(a)	57.1
5-14	1054	1208	494	33	35	68	101	30	43.0	55.7	40.5
15-44	1520	1837	850	328	229	557	682	376	244.3	247.5	294.9(a,b)
45-64	351	453	257	46	43	89	133	93	169.1	195.7	241.3(a)
Total Females	3471	4008	1907	428	328	756	961	525	145.2	159.9**	183.5**
Females Age Adj.									145.2	155.9	174.2(a,b)
Total Males & Females	5855	6514	3231	660	451	1111	1360	769	126.5	139.2**	158.7**
Age - Sex Adj. Rate									126.5	140.5(a)	149.3(a)

*Hospitalization rates per 1000 enrollees in each age group.
**The unadjusted total rates were not tested. The population distribution of the SG was used to "adjust" the total rates.

NOTE: All statistical testing was based on the 18 month utilization rates.
(a) Statistically significant difference (two-tailed test) between the CG being tested and the SG at 5% level.
(b) Statistically significant difference between CG I and CG II at 5% level.