Milbank Memorial Fund Quarterly/*Health and Society, Vol. 56, No. 2, 1978*

Why Do HMOs Seem to Provide More Health Maintenance Services?

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> . . . HMO's have a strong financial interest in preventing illness, or failing that, in treating it in its early stages, promoting a full recovery, and preventing any recurrences; they are motivated to function efficiently because they must stay within predetermined budgets.
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> — Richardson, 1972, p. 56

THERE HAS BEEN A GREAT DEAL OF DISCUSSION about the supposed incentives leading Health Maintenance Organizations (HMOs) to provide more preventive health services than fee-for-service (FFS) medical practice. The usual argument is that, because HMOs are responsible for all the medical care required by their enrollees, they will use preventive services to reduce the need for more expensive treatment at a later stage. Sometimes the argument is buttressed with data showing more inoculations, Pap smears, or annual checkups among HMO enrollees than among people with conventional insurance coverage. Counterarguments claim that HMOs also have the incentive to "undertreat" patients and thus might skimp on preventive care or do no more than FFS practitioners.

This paper presents evidence that both sides are correct. HMO enrollees do, in fact, receive more "preventive services" than do

0026-3745-78-5602-0140/$01.00/0

people with conventional coverage. This is not the result, however, of the HMOs having found that "an ounce of prevention" is worth "a pound of cure." Nor is it the result of any health maintenance philosophy. Instead, the greater number of preventive services among HMO enrollees seem merely to result from the lower price patients face for ambulatory visits. In short, patient and provider incentives matter more than "philosophy." This is not to deny the importance of beliefs—HMOs typically offer better coverage for preventive care because their founders and members believe in providing such services. However, the system most likely to maximize the number of preventive services is FFS practice with complete ambulatory insurance coverage.

The approach taken in this paper is to make a comprehensive analysis of the existing literature on the use of preventive services in HMOs and comparison populations. Since there are no large randomized controlled trials of people in HMOs and other systems, the best available data are from populations in two settings whose characteristics are known and, hopefully, controlled either statistically or by matching. Such controls will not eliminate all sources of population bias, but they will remove situations in which, for instance, one group is young and the other old. Even if people were randomized into an HMO and a non-HMO group, the differences observed could be attributed to any of a multitude of different characteristics between the two provider systems. This paper attempts to include all studies of preventive services, identify factors of importance in determining utilization patterns, and draw conclusions from these data.

The first section presents a framework for discussion by outlining the theoretical arguments concerning the use of preventive services in various medical care settings. The HMO debate generally focuses on economic incentives, which are seen to be not as clear as is generally believed, since various professional and legal incentives may also influence behavior. The second section discusses the major studies of preventive use in various settings. The third section demonstrates how these often conflicting studies can be understood when examined in terms of differential ambulatory coverage rather than HMO versus FFS incentives. It also discusses why more preventive care does not take place in HMOs. A final section summarizes the major findings and offers some policy suggestions.

Framework For Discussion: Theoretical Incentives for Preventive Services in Various Settings

Most discussions of preventive services suffer from two problems: first, they either focus on the provider or the consumer, but not both; and, second, they are often unclear as to what is meant by preventive services. Thus, differences are sometimes definitional, rather than substantive. This section will first outline the economic incentives for providing preventive services, and then discuss some of the noneconomic factors that may well be more important. Finally, it will outline some of the problems and approaches to defining preventive services.

Economic Incentives

Economic incentives of preventive services must be derived from a model that includes a production function for health, that is, the relationships between preventive and therapeutic services on the one hand, and health status on the other. The general assumption is that preventive services and earlier treatment will catch a problem in its initial stages and eliminate the need for more extensive curative services at a later stage. The focus of this discussion is on what is often called "secondary prevention," or the screening for and early treatment of disease. "Primary prevention," of which immunization is an example, involves actions to forestall a disease from ever occurring. Whether one chooses a preventive or curative strategy depends on the natural history of the disease and the costs and benefits associated with each strategy. Many diseases have a presymptomatic phase in which they can be detected by a screening program and then treated early. For some of these diseases, there is little advantage to presymptomatic treatment; the symptoms will lead the individual to seek treatment that is as effective later as it would have been earlier. (Gonorrhea is an example. In males, the symptoms are sufficiently clear so that screening is not necessary; in females, however, the symptoms are subtle and case-finding is preferable.) The optimal choice of strategy, in this case, is made from the social viewpoint, reflecting existing technologies for screening and treatment, and alternative uses of resources. In other words, more "prevention" requires a reallocation of resources from other uses.

The social perspective is primarily useful to a social decision-maker in deciding what mix of preventive and curative services is optimal. The market, however, will reach that optimal allocation only under rather stringent conditions. One of these conditions is the requirement that prices reflect resource costs. Such is often not the situation in the medical care system. Fees are usually set by scales of relative values that include substantial distortions in the prices assigned various types of services (Schroeder and Showstack, 1978). Even if relative fees did reflect true costs, medical insurance serves to change the prices seen by patient and provider.

The effective price changes due to insurance are the crucial aspect of discussions about different provider systems. Although any particular setting will not quite match the model, there are three major combinations of ambulatory care financing. At one extreme is the conventional FFS system in which the patient pays the physician directly for each service. Although most people have some health care insurance, coverage is generally poor or nonexistent for ambulatory and, in particular, non-illness care (Andersen, Lion, and Anderson, 1976). At the other extreme is the prepaid health plan, or HMO, in which the enrollee is provided all ambulatory services for a fixed annual fee. In this case, the enrollee faces no monetary price when the service is rendered, and the HMO, while incurring some extra expense, receives no additional revenue. A third model involves prepayment for the enrollees, usually through an insurance scheme, and payment to the provider on a FFS basis by the plan, not the patient.

Applying these financing models to preventive care leads to a number of predictions. (See, for example, Pauly, 1970.) The FFS providers will prefer to offer those services yielding the greatest net profit. For instance, in an extreme view, they may prefer to discourage preventive care if, in the long run, they make more from therapeutic care. The prepaid plan, on the other hand, will promote whatever costs the least in the long run, be it prevention or treatment. Some types of screening such as annual "executive" exams, for example, have little long-term medical benefit and would not be offered by prepaid plans, even though they can be very profitable for FFS providers who encourage them. On the demand side, when the patient bears the cost directly, he or she is less likely to request as much care as when it is prepaid or covered by insurance. Obviously, the outcome of even this theoretical discussion depends on the exact

shape of the supply and demand curves. These, in turn, are to be derived from the specifics of the disease and the efficacy of preventive and therapeutic care. Unfortunately, the data for such predictions are not available. All that can currently be done is to examine behavior and make inferences from these observations.

Non-Economic Factors in Preventive Services

The economic factors discussed above may be taken as tendencies, if everything else is held constant and the system is competitive so that noneconomic behavior is difficult, if not impossible. Fortunately (but unfortunately for the analyst), the medical care system has many market imperfections, so that other factors enter into the analysis. Perhaps of primary importance are the physician's professional training, ethics, and concern for his or her patient. Economists have long recognized that physicians are *expected* to behave in "noneconomic" ways and provide the best possible care (Arrow, 1963). The malpractice liability system reinforces this expectation of doing the best one can. Furthermore, the training provided in medical school largely conditions the style of practice of most physicians. This training tends to emphasize diagnosis and treatment of disease on an inpatient basis. In contrast, screening for asymptomatic disease and providing preventive health care often seems dull, with less psychic rewards than those of a "cure."

While the physician and organization are generally much more influential than the patient in determining what services are rendered, it is in the area of preventive care that the consumers' influence is probably the greatest. Psychosocial orientations toward prevention are important factors in determining how often the patient will want a checkup or screening test (Becker et al., 1977; McKinlay and Dutton, 1974). The absence of specific symptoms makes the preventive visit more postponable and therefore more sensitive to convenience or access barriers (Dutton, 1977).

Identifying Preventive Services

Preventive care is defined by Kasl and Cobb (1966:246) as "any activity undertaken by a person believing himself to be healthy, for the purpose of preventing disease or detecting it in an asymptomatic

stage." While conceptually simple, the empirical application of this definition is complex. For instance, one might clearly count as "preventive" the annual physical exam or checkup. But, how should one count a visit initiated for a sprain or other acute problem during which certain preventive procedures or diagnostic tests are undertaken? The management of chronic conditions often involves periodic revisits to the physician with tests to determine whether the condition is stable or has worsened. Are such visits preventive? Specific procedures also raise a problem — for instance, rectal or pelvic examinations are usually performed with prevention in mind, but in some cases they may be in response to specific symptoms. Thus, it will generally be impossible to derive exact measures of preventive care even within a particular setting, let alone across organizations. There are also some biases built into the data collected from different systems. For example, medical insurance will often only pay for treatment but not preventive visits, so there is an incentive to classify visits as follow-ups rather than checkups.

Rather than strenuously argue for what should ideally be classified as preventive, this paper is limited to a review of already collected data. Some of the measures that will be included are physical exams and checkups, immunizations, screening tests such as Pap smears, and early prenatal care.

Studies of Preventive Services in HMOs and Comparison Populations

This section presents the major findings concerning the use of preventive services by people in HMOs and comparison groups with conventional insurance coverage. The studies are drawn from a comprehensive review of the literature and hopefully include all the available results.

Health Insurance Plan of Greater New York (HIP)

One of the first and most detailed examinations of the use of preventive services is the comparison of HIP enrollees and the overall New York City population (Committee for the Special

Research Project, 1957). These data for 1951 provide several measures indicating that HIP enrollees received more preventive services than nonenrollees. Among women who were pregnant and delivered in 1951, 84.2% of the HIP enrollees saw a physician in their first trimester in constrast to 73.6% of the New York City sample. Furthermore, the HIP enrollees had an average of 10.5 physician visits before delivery versus 9.3 for the New York City women (pp. 182–183). The rate of physical checkup or routine health examination in the 8 weeks preceding the interview was also higher for the HIP enrollees — 11.1/100 versus 9.7/100 (p. 186). Most of this difference is attributable to a higher rate of general checkups, 6.7 versus 5.4, rather than "school, employment, or insurance exams," or an "other and not reported" category. The content of these examinations was measured by the proportion that included each of 13 specific components, such as temperature, pulse, urinalysis, rectal exam, etc. When classified by reason (school, employment, insurance, versus general checkup), there were few differences in content for HIP enrollees and the New York City sample. Thus, it appears that the lower cost for ambulatory visits in HIP led to more preventive utilization. But, once a visit was sought, the content was similar.

Los Angeles School Children with Health Problems

Cauffman, Roemer, and Shultz (1967) investigated the medical care of Los Angeles school children identified by school physicians as having dental, otological, or other medical problems. As expected, children in families with insurance were much more likely to have received attention for their problem (52.3%) than those without insurance (37.7%). Among those with insurance, there were no significant differences attributed to provider type—group versus individual practice or commercial versus provider/consumer insurance plan. In contrast to this lack of difference in utilization for a specific problem, 50% of the children in prepaid group practices reported having periodic health exams in contrast to 36.2% of those with conventional insurance and a fee-for-service practitioner ($p < 0.05$). When the social class of the child's neighborhood is held constant, this relationship disappears for the upper-class children, but remains for those in lower-class areas.

Alameda County Human Biology Laboratory

Alameda County, California, was the site of two population-based surveys. In one, the focus was on the proportion of women aged 20 years and over who had taken a Papanicolaou test (Breslow and Hochstim, 1964). The data in Table 1 exhibit a clear insurance effect and a substantially higher examination rate for native white women in the prepaid Kaiser group than for those with other insurance. For other women with insurance, however, there was no substantial effect of provider type.

The second Alameda County survey focused on the proportion of men and women who had had a general health maintenance exam in the previous year (Breslow, 1973). Table 2 provides these data adjusted for age and income, and includes parallel data on the propor-

TABLE 1

Percentage of Women Who Have Taken Papanicolau Test: by Health Insurance Plan, and Race-Nativity, Alameda County, California, 1962.

Insurance Status of Women	All	Native White	All Other
Total	51	57	32
With Kaiser plan	70	77	41
With other health insurance plans	54	57	37
Without health insurance plans	34	43	19

Source: Lester Breslow and Joseph R. Hochstim, Sociocultural Aspects of Cervical Cytology in Alameda County, California. In *Public Health Reports* 79 (February): 112, 1964.

TABLE 2

Percentage of Persons with Health Maintenance Examinations and Dental Checkups Within Past Year, Adjusted for Age and Income Level: by Sex and Type of Health Insurance Coverage, Alameda County, California, 1965

Type of Coverage	Men		Women	
	Health Maintenance Examination	Dental Checkup	Health Maintenance Examination	Dental Checkup
Kaiser	58	50	63	62
Blue Cross-Blue Shield	45	50	56	60
Other insurance	46	49	57	57
None	43	34	49	41

Source: Lester Breslow, Do HMOs Provide Health Maintenance? Paper presented to Delta Omega, San Francisco, November 7, 1973, p. 4.

tion of patients with dental checkups, to test their general propensity to obtain preventive care. (None of the insurance plans provided any significant coverage for dental exams.) Male Kaiser enrollees had substantially higher rates for health maintenance exams than those with other coverages, while the dental checkup rates were the same for all three groups. Female Kaiser enrollees also had higher exam rates, but this was paralleled by a higher proportion with dental checkups, suggesting that they may have been more prevention-oriented.

Enrollees in Southern California Health Plans

Hetherington, Hopkins, and Roemer (1975) collected data from samples of enrollees in six Southern California health plans. Information on specific preventive procedures was drawn from medical records (Table 3). Regardless of the measure used, the data suggest more preventive care for the prepaid group practice (PGP) enrollees in the Kaiser and Ross-Loos plans. They consistently have the smallest proportion of families without any preventive services and, with a few minor exceptions, have the highest average number of preventive procedures per person. These authors also offer a summary factor analytic score per ambulatory visit. This measure is significantly higher for the PGPs than the other plans, but the two PGPs are not significantly different from one another.[1]

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[1]The interpretation of these data is somewhat obscure. For instance, it is difficult to believe that only 4% of the families in the large commercial plan had any adult with an annual checkup (row 1, column 1). The problem, however, seems to be in the underlying data, not the interpretation of the table. For instance, the authors note in the text that: "For children the record of the large group practice plan is the most impressive, where only 58% of the families with children 18 years and under went without annual checkups and about three out of five of these children had such an examination during the study year. In contrast, fewer than three among 20 children 18 years and younger received annual checkups under the large commercial plan" (p. 155). For the large group (Kaiser), this implies that only 42% (100%–58%) of the families had *any* children with a checkup, but the children in those families who did have a checkup account for 59% of *all* children in the sample. While this is possible, it seems unlikely.

TABLE 3
Measures of Preventive Care Utilization for Enrollees in Six Southern California Health Plans, 1967–68

Preventive Care Measures	Large Commercial	Small Commercial	Blue Cross	Blue Shield	Kaiser	Ross-Loos
Proportion of families with none:						
Annual checkup, persons aged 19+	96.1	90.6	87.5	83.7	73.6	61.2
Annual checkup persons aged 18 and under	90.6	79.5	86.9	76.0	57.8	74.6
Pap smears, adult females	80.7	63.9	66.9	60.9	55.7	54.1
Pelvic exams, adult females	76.2	66.7	69.1	59.6	58.6	57.8
Rectal exams	94.6	85.5	75.6	81.7	63.8	58.8
Immunizations	87.8	84.5	82.9	85.0	58.8	77.6
Average procedures per person:						
Annual checkup, persons aged 19+	0.03	0.05	0.09	0.11	0.21	0.30
Annual checkup, persons aged 18 and under	0.14	0.18	0.38	0.38	0.59	0.30
Pap smears, adult females	0.20	0.39	0.36	0.40	0.45	0.53
Pelvic exams, adult females	0.45	0.74	0.69	0.72	0.82	0.73
Rectal exams	0.03	0.06	0.14	0.13	0.18	0.24
Immunizations	0.04	0.09	0.12	0.10	0.22	0.18
Prevention factor score per person per ambulatory visit:						
Mean score	0.375	0.412	0.401	0.410	0.455	0.435

Source: Robert W. Hetherington, Carl E. Hopkins, and Milton I. Roemer, *Health Insurance Plans: Promise and Performance.* New York: Wiley-Interscience, 1975, pp. 155, 157.

Washington, D.C., Families Using Five Health Care Systems

Families in two Washington, D.C., neighborhoods using different health providers were studied in great detail by Dutton (1976). She estimated multiple regression equations for several measures of utilization with a wide range of independent variables, including health problems, age, sex, race, education, family income, health insurance coverage, attitudes, and usual source of care. Preventive use was identified by the number of the respondent's checkups and the frequency of children's checkups. Patients of solo FFS practitioners were taken as the baseline, and estimates were made of the differential use by patients in other health care systems, holding constant

their personal and family characteristics. On both measures of preventive use, PGP enrollees had the highest score among the five health care systems: FFS solo, FFS group, PGP, public clinics, and hospital outpatient department/emergency rooms. There were no significant differences, however, among the utilizers of FFS solo, FFS group, and PGP on the respondent's checkup measure. For children's checkups, the PGP enrollees had significantly higher utilization than solo FFS users, with users of FFS groups and public clinics in an intermediate position.

Dual Choice Enrollment of Employees in Two Midwestern Firms

All of the studies above are based on population surveys without any particular concern for whether the people were in a dual choice situation.[2] This comparison and the next examine such situations, but as a consequence, their scope is more limited. Slesinger, Tessler, and Mechanic (1976) rely on interview data from families of two firms who chose either Blue Cross-Blue Shield or a prepaid group practice. (The BC/BS plan had some outpatient coverage but did not reimburse physician charges for office visits or physical examinations.) For adults, there were no significant differences in the proportion of respondents having any of the eight selected types of preventive care (general checkup, chest x-ray, tuberculin skin test, urine test, blood pressure, blood test, Pap smear [women only], and sickle cell screening test [blacks only]). It is notable, however, that in every instance the proportion in the prepaid plan was slightly higher. (If the two groups were identical, one would expect such an outcome to occur due to sampling in 4/1000 cases.)

The situation was somewhat different for children. Enrollees in the PGP had significantly more regular checkups and tuberculin skin tests. No significant differences were found for the receipt in the

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[2]Perkoff, Kahn, and Haas (1976) report a much higher utilization rate of preventive services for people in the Medical Care Group of Washington University in contrast to those in the control (traditional insurance) group. Unfortunately, these data were collected in such a way as to lead to systematic underreporting of preventive ambulatory visits in the control group, a point recognized by the authors.

preceding year of five specific immunizations. A different picture emerges, however, if attention is paid to the proportion of children fully immunized at any time against measles, polio, rubella, and mumps. For children under 5 years, there was no significant difference between plans; in fact, the PGP children had a lower rate. For children aged 5–12 years, a significantly higher proportion of those enrolled in the PGP were fully immunized, 53% versus 40%. This suggests that there may have been some self-selection among enrollees, with those more concerned about prevention joining the PGP.

Sault Ste. Marie, Ontario

A series of reports has examined the utilization of members of the Group Health Centre (GHC) in Sault Ste. Marie, Ontario. Two reports refer to the 1967/68 period when the comparison group was composed of employees who had chosen the indemnity insurance option. In one study, the rate of checkups for GHC enrollees was found to be 1.6 times that of the control group, while the immunization rate was 3.0 times as high (Hastings et al., 1973:96). However, these data were drawn from two different sources, namely, claims forms for the indemnity enrollees and internal records for GHC members. That this may have led to an undercounting of visits for the indemnity group is suggested by the second study, which is based on household interviews. In this instance, there was little difference in the immunization status of children under 5 years of age enrolled in the two plans (Mott, Hastings, and Barclay, 1973:187).

Five years later another household survey was undertaken, this time using a random survey of the entire population (DeFriese, 1975). In the intervening period the provincial government had inaugurated a comprehensive health insurance plan providing identical ambulatory as well as inpatient coverage for everyone. The only remaining differences were in the organization of practice — group/salaried versus solo/fee-for-service. In the 1973 survey, about half the respondents reported using solo practitioners as their predominant source of care; somewhat more than a quarter reported they were GHC members and received most of their care there; and the remainder split their allegiance between GHC and solo providers. The survey indicates that GHC member respondents (but not their spouses) were less likely *never* to have had a physical exam. On

the other hand, solo and GHC/solo users (respondents and spouses) were more likely to have had a physical in the last 6 months. If the focus is, instead, on whether each of six specific diagnostic procedures were performed during the respondent's last physical exam, the GHC users had somewhat higher scores, which are statistically significant (De Friese, 1975:141–142).

Medicaid Beneficiaries

A key aspect of the De Friese study is that the universal provincial health insurance allowed the same coverage for members and nonmembers of the GHC. Perhaps the most common instance of a similar situation in the United States is when people with Medicaid (which provides complete ambulatory coverage) have the option of joining an HMO. Two studies report such situations. One (Fuller and Patera, 1976) focuses on an experimental group enrolled in Group Health Association in Washington, D.C. The other is based on a survey of nine HMOs and comparison groups across the country (Gaus et al., 1976).

Medicaid Beneficiaries in Washington, D.C.

Fuller and Patera reported (p. T33) a larger proportion of people aged 6 years or more in the PGP receiving each of seven types of preventive services (routine physical, blood pressure, urinalysis, chest x-ray or tuberculin skin test, Pap smear, and breast exam). The differences in the two groups were statistically significant for all but Pap smears and breast exams. Fuller and Patera point out that these findings are not surprising because the PGP encouraged everyone to have a routine physical at the time of enrollment. It is of interest that the type of preventive visit that is probably most frequently scheduled by the patient—the gynecological visit—exhibits the smallest differences.

For children under 6 years of age, Fuller and Patera analyzed the proportion who had ever received each of five immunizations, as well as a routine physical in the last 6 months. A smaller proportion of the PGP children had each of the six services; the differences were statistically significant for three of the five immunizations (p. T34).

A final measure of preventive use in this study is the pattern of prenatal care. Of the PGP mothers, 60% were seen in their first

trimester in comparison to 74% of the control group mothers. About the same proportion of both groups had no prenatal visits or visits only in the third trimester. Once they began seeing a doctor, 100% of the *control* group women had visits at least monthly, in contrast to only 88% for the PGP ($p < 0.05$). Furthermore, all of the control group mothers had a 6-week follow-up after a full-term pregnancy versus 76% for the PGP mothers ($p < 0.01$).

Medicaid Enrollees in Nine HMOs

Gaus, Cooper, and Hirschman (1976) collected data from Medicaid enrollees in nine HMOs and Medicaid beneficiaries in the same Zip code areas with fee-for-service providers. They used several measures of preventive services, and their rather consistent findings from nine sites across the country are presented in Tables 4 and 5. They summarize their results as follows (p. 11):

> 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 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 4 indicates.
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> 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 5). 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.
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> 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.

TABLE 4

Pregnancy-connected Services for Women with Live Births in HMOs and Control Groups: by Plan[1]

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	-------	81	86
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	-------	-------	90	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.

Source: Clifton R. Gaus, Barbara S. Cooper and Constance G. Hirschman, Contrasts in HMO and Fee-for-Service Performance. *Social Security Bulletin*. 39 (May): 12, 1976.

TABLE 5

Utilization of Preventive Care Services by Persons in HMOs and Control Groups: by Plan[1]

Plan	Percent of all visits for preventive care [2]	Number of persons per 100 using preventive care services [2]			
		Total [2]	Physical examination	Well-baby checkup	Immuniza-tions
Group practice	20	0.06	0.03	([4])	0.03
Control	29	.09	.04	([4])	.04
Central Los Angeles Health Project	([5])	([5])	([5])	([5])	([5])
Control					
Consolidated Medical System	[6] 19	.06	.02	([4])	.04
Control	[6] 29	.09	.02	0.01	.06
Family Health Program	[6] 16	.04	.01	([4])	.02
Control	[6] 37	.10	.03	.02	.06
Group Health Cooperative of Puget Sound	[6] 16	.06	.04	([4])	.03
Control	[6] 23	.10	.04	([4])	.06
Harbor Health Services	[6] 12	.04	([4])	([4])	.03
Control	[6] 26	.07	.02	([4])	.04
Harvard Health Plan	29	.06	.05	.01	.02
Control	35	.07	.05	.02	.02
Health Insurance Plan of Greater New York	25	.09	.05	([4])	.03
Control	28	.10	.06	([4])	.04
Temple Health Plan	23	.06	.04	([4])	.01
Control	25	.08	.06	([4])	.02
Foundation and control:					
Redwood	25	.09	.03	.01	.05
Control	29	.09	.03	([4])	.06
Sacramento	13	.06	.03	([4])	.03
Control	16	.06	.02	.01	.03

[1] Based on 1-month period.
[2] Unduplicated total.
[3] Tests of significance not yet completed.
[4] Less than 0.005 percent.
[5] Data not available.
[6] Difference statistically significant at the 95-percent confidence level.

Source: Clifton R. Gaus, Barbara S. Cooper and Constance G. Hirschman, Contrasts in HMO and Fee-for-Service Performance. *Social Security Bulletin* 39 (May): 12, 1976.

Seattle Prepaid Health Care Project

Diehr et al. (1976) described the findings of the experimental Seattle Prepaid Health Care Project. Low-income (but non-poverty) families in the Seattle Model Cities neighborhood were given the choice of enrolling in the Group Health Cooperative of Puget Sound (GH) or a service benefit plan sponsored by the local BC/BS plans. Both options were available at no cost to the enrollee and offered comprehensive inpatient and ambulatory coverage. Table 6 presents their findings for various ancillary services, of which the first five im-

TABLE 6
Ancillary Services by Plan in the Seattle Prepaid Health Care Project

Variable Definition	Mean		Partial Correlation[1]
	GH	KCM/BC	
Total NSLABS/person-years exposure[2, 3]	3.82	2.81	
NSLABS/years exposure (per person)[2, 3]	3.82	2.87	-0.09
Pap smears[3]	0.21	0.13	-0.10
Flu immunization[3]	0.004	0.014	0.06
DPT-OPV[3]	0.37	0.14	-0.20
Measles immunization[3]	0.04	0.01	-0.11
Other immunization[3]	0.24	0.07	-0.16
Hematology[4]	0.18	0.12	-0.08
Urine[4]	0.63	0.54	-0.033
CBC[4]	0.31	0.32	-0.01
Battery (chemistry profiles)[4]	0.12	0.28	0.08
Smears and cultures[4]	1.04	0.33	-0.20
Total X-rays/total person-years exposure[3]	0.38	0.61	—
Annualized X-rays (person)[3]	0.36	0.60	0.09
Chest[4]	0.18	0.27	0.03
Upper extremities[4]	0.03	0.06	0.03
Lower extremities[4]	0.04	0.09	0.04
EKG[4]	0.04	0.12	0.06

[1]Partial correlation between provider and variable, holding AGE, SEX, RACE AGESEX, Health Status, and FAMSIZ constant. n = 3804 because of unknown values, "other" race. Correlation positive if KC higher, negative if GH higher. A value of 0.032 is significant with a 2-tailed 0.05 level test; 0.042 at 0.01 level; 0.053 at 0.001 level.
[2]Totals for labs include immunizations.
[3]n = 5110 for KC, 2253 for GH. All four program-years.
[4]n = 3709 for KC, 1503 for GH. Final 19 program-months only.
Source: Paula Diehr, et al., Utilization: Ambulatory and Hospital. Chapter 2 of *The Seattle Prepaid Health Care Project: Comparison of Health Services Delivery*, Seattle: University of Washington, November 1976, page II 91.

munizations are clearly preventive, while some of the other services may have been performed either for screening or for diagnostic purposes. The GH enrollees had significantly more immunizations, with the exception of flu shots for the elderly. As indicated by the partial correlation coefficients, these results are statistically significant even when age, sex, race, health status, and family size are held constant. These results are reversed for x-rays (which include EKGs in their table), where BC/BS members have substantially more per person. Examining the results in other ways, such as tests per visit and tests controlling for length of time in the plan, does not alter these patterns.

Interpreting the Findings

These data can be divided into two groups that appear to imply contradictory findings. The first group supports the hypothesis that the HMO enrollees receive more preventive services of various types (Committee for the Special Research Project in HIP, 1957; Cauffman, Roemer, and Shultz, 1967; Breslow and Hochstim, 1964; Breslow, 1973; Hetherington, Hopkins, and Roemer, 1975; Dutton, 1976; Slesinger, Tessler, and Mechanic, 1976; Hastings et al., 1973; Diehr et al., 1976). The second group of studies suggests that there are no differences in the use of preventive services or that the HMO enrollees even receive fewer services (De Friese, 1975; Fuller and Patera, 1976; Gaus, Cooper, and Hirschman, 1976; Diehr et al., 1976). (The Diehr et al. results from the Seattle Prepaid Health Care Project are clearly split, with the HMO enrollees receiving significantly more Pap smears, DPT-OPV, measles, other immunizations, hematology lab tests, and smears and cultures, and significantly fewer flu shots, chemistry profiles, and all types of X-ray studies).

A closer look suggests that the two groups are not really in conflict. With a few exceptions, the different results can be explained by focusing not on the distinction between HMO versus non-HMO, but on whether the individuals had insurance coverage for preventive visits (Table 7). Such coverage is almost universal with HMOs, but is rare with traditional insurance. Thus, those studies that involve a comparison between HMO enrollees and people with traditional insurance coverage (the first group above) are actually testing two

variables: 1) an HMO health maintenance effect, and 2) differential financial coverages for preventive care. In the few instances in which the third party covers preventive visits (the second group of studies), the second (insurance) variable is held constant, and there appears to

TABLE 7
Summary of Findings of Preventive Services in HMOs and Comparison Groups

HMO Group	All Comparison Groups Had Fee-for-Service Payment of Providers	
	Comparison Groups with Fee-for-Service Payments by the Patient	Comparison Groups with No or Minimal Extra Charges for the Patient
HMO enrollees received more preventive services than comparison group	HIP-NY (Committee for the Special Research Project) Los Angeles School Children especially poorer ones (Cauffman et al.) Alameda County Women and Pap Smears (Breslow and Hochstim) Alameda County — Health Maintenance Exams (Breslow) Southern California Health Plans (Hetherington et al.) Washington, D.C., Families (Dutton) Two Midwestern Firms (Slesinger et al.) Sault Ste. Marie (Hastings et al.)	Sault Ste. Marie — specific tests (De Friese) Washington Medicaid –7 services for people aged 6+ (Fuller and Patera) Seattle Prepaid Project — immunizations (Diehr et al.)
HMO enrollees received the same or fewer preventive services than comparison group		Sault Ste. Marie — physical exam (De Friese) Washington Medicaid — children and prenatal care (Fuller and Patera) Medicaid Enrollees in 9 HMOs (Gaus et al.) Seattle Prepaid Project — X-rays (Diehr et al.)

be little or no HMO health maintenance effect. In fact, those studies comparing HMO enrollees with people having full coverage for FFS providers typically have ambiguous results; the HMOs provide more preventive care of some types and less of others. (It is unfortunate that there are so few studies with third party insurance for preventive services and that, in the United States, such coverage is often limited to those on Medicaid. While the Gaus et al. and Fuller and Patera studies are based on Medicaid populations, the Diehr et al. study concerns low-income, but above poverty, people, and the De Friese study is based on a total population sample of Sault Ste. Marie, Ontario. Although the Medicaid experience may not be generalizable to the rest of the population, there is no evidence that the other populations behave differently with respect to the variables of concern.)

Rhetoric versus Behavior

How can one explain the apparent disparity between the rhetoric of health maintenance and the behavior discussed above? In part, the behavior does support the rhetoric in that HMOs, almost by definition, provide full coverage for preventive services in contrast to the usually nonexistent coverage offered by traditional providers. But if everyone had complete coverage for preventive services, say through National Health Insurance, then the results would probably be like those on the right side of Table 7, and HMO enrollees might even receive fewer services than non-HMO enrollees.

A partial explanation for this behavior is that the financial incentives in the two systems tend to encourage the provision of services in the FFS setting and discourage them in the HMO setting. There is little reason for such incentives to be any more or less pervasive, everything else equal, for surgery than for ambulatory care. There is also considerable controversy in the medical profession over the efficacy or usefulness of many "preventive services." Thus, the financial incentives of the HMO may well be supported by good clinical judgment.

The question about preventive services focuses on two major issues — the potential benefits of the services relative to their costs, and the extent to which physicians will actually take the steps to realize these potential benefits. Furthermore, it should be recognized that there are at least two types of services that fall under the

"preventive" heading. The first type (primary prevention) includes those services that are by nature preventive, such as immunizations, and require no follow-up procedures.[3] The second type (secondary prevention) includes various tests and examinations designed to identify disease at an early stage. Such tests may be highly specific, such as mammography for breast cancer, or may cover a wide spectrum of individual tests, such as the multiphasic or preventive checkup.

Generally, the immunization type of service is rarely questioned on cost or efficacy grounds, although, in some cases, routine immunizations have been discontinued or rejected. For instance, smallpox vaccinations have now been discontinued because the small number of people who have adverse reactions to the innoculation far exceeds the cases that would be prevented even if there were a new outbreak. Vaccination for whooping cough has also recently been questioned (Northrup and Bishop, 1977). Even prior to the recognition of Guillain-Barré syndrome, the 1976/77 swine-flu program faced strong public resistance, in spite of a massive public campaign.

Preventive services based on testing an otherwise asymptomatic patient are subject to two problems — costs and follow-up. The financial costs of screening a large number of people can be substantial, especially when relatively few people have undiagnosed problems. For instance, Kaiser has undertaken several long-term trials of multiphasic screening. The results indicate that only for middle-aged men do the potential savings in earnings due to mortality and morbidity exceed the costs of the test (Collen et al., 1973). Of course, such cost figures are subject to a wide range of interpretation. Thus, for mammograms, the low prevalence of even suspicious findings in women 48 years old and over implies a cost of over $2000 per true positive (Collen et al., 1970:463). But Sidney Garfield, of the same Kaiser program, argues that instead of focusing on the $2000, one should emphasize that "[It] costs $4 each to assure 499 women there is no evidence of breast cancer by mammography and $4 to

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[3]This discussion quite consciously omits the evaluation of various preventive behaviors that the individual can adopt, such as good diet, exercise, nonsmoking, etc., or that can be accomplished on a collective basis, such as a clean and quiet environment and workplace. It is very possible that such factors are substantially more important, at the margin, than most current medical care activities. However, the focus here is primarily on actions likely to be taken by medical providers in HMOs and elsewhere.

detect one cancer that, through early surgery, may have a better prognosis" (Garfield, 1970:1087).

But the controversy goes beyond just the costs of the tests. Every test misses some people who really do have the disease (false negatives) and indicates disease in some people who are really disease-free (false positives). The actions that are undertaken in such instances, *e.g.*, false reassurance or "unnecessary" biopsies, also entail costs and risks.[4] Such testing errors can be very embarrassing to the program (*Wall Street Journal* Staff Reporter, 1977). Furthermore, the test itself may entail some risks. For instance, mammography involves some radiation hazard for all women who are screened. Much of the current controversy about mammography relates to the magnitudes of such risks in relation to the potential benefits. Depending upon the true prevalence rates in the population and the accuracies and risks of the test, it may well be advisable to not test on purely medical-risk grounds, even if the test were available at no financial cost. The examples here are drawn from the literature on multiphasic tests and mammography, but other tests have also been questioned. (See, for instance, Sagel et al., 1974; Cochrane and Elwood, 1969.)

Even if a test is cost-effective, problems can occur in its implementation. For a test to be beneficial, its results must be interpreted and appropriate action taken. Williamson, Alexander, and Miller (1967) document the difficulty in getting a medical staff to take note of abnormal test results with appropriate follow-up. Olsen, Kane, and Proctor (1976) found that previously unknown abnormalities identified by multiphasic testing prompted retesting for confirmation in only 28% of the cases. Furthermore, these abnormal findings led to treatment in only 15% of the cases.

These discouraging results are probably not due to financial incentives, but rather to the traditional physician's orientation toward curative care. (The clinician's negative attitude toward screening is supported by evidence that most abnormal findings are laboratory errors, variations in the definition of "normal," not clinically significant, or not treatable [Bradwell, Carmalt, and Whitehead, 1974].)

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[4]Of the 500 women discussed in the preceding paragraph, about one will be reassured when, in fact, she has cancer and four women will be biopsied because they had suspicious findings later proven to be negative. (See, for instance, Shapiro, 1976).

This orientation does not preclude positive attitudes toward preventive care in general. Behavior just does not measure up to rhetoric. Thus, 84% of the physicians in the Olsen et al. study acknowledged a role for automated multiphasic screening in the health care system. Strikingly similar attitudes were found in Mechanic's survey of U.S. general practitioners and pediatricians in FFS solo practice, FFS groups, and PGPs. For the six combinations (two specialty types and three settings), between 76% and 86% of the physicians strongly or moderately approved of multiphasic health screening as part of a doctor's or clinic's practice (Mechanic, 1975:201). There were no differences in approval by setting.

There is also some evidence that at least some HMOs, as organizations, feel preventive services are more important than the physicians who practice in the groups. HIP of New York paid its medical groups on a capitation basis with supplemental payments for meeting specific goals. Included in these incentives are payments for medical records having histories, physical exam results, and the results of three of four specific diagnostic tests. Additional payments were also made for having a high Pap smear rate (HIP, 1970:22). The existence of such incentive payments suggest that the "desired behavior" would not always be met without special incentives. Similar findings with respect to Kaiser physicians are suggested by Williams:

> Judging from spontaneous comment in interviews, Permanente physicians tend to be less enthusiastic about promotional emphasis on preventive medical services—"keeping people well"—than do Kaiser Health Plan representatives. Except for those doctors involved in the automated multiphasic screening program or other aspects of preventive medicine, the typical medical attitude toward disease prevention is one of skepticism, with the obvious exception of immunizations. The doctors not only say healthy patients "clog the system"—this could be a misperception of the primary care problem—but they question the general effectiveness of annual health examinations in reducing morbidity, mortality, and disability. They also point out that the uncovering of many abnormalities that may or may not progress to clinical disease requires follow-up observations of the patient and further stresses the demand-supply balance."
>
> —Williams, 1971, p. 53

More recent evidence suggests that at least the Northern California Kaiser Plan has shifted its stance on health examinations.

In 1976, the publication, *Planning for Health*, which was sent to all Health Plan members, stated that, while many people assume that annual checkups are the most effective way of maintaining health, the "medical profession generally, however, does not agree" (Kaiser Foundation Health Plan, Spring 1976:2). Healthy living habits were stressed, and the following recommendations were made concerning checkups:

School-age children—repeat checkups at intervals of 3+ years are adequate

Adults—complete general checkup within the first 2 years of joining
—if under age 45, repeat checkups can wait 3+ years
—if over age 45, repeat checkups no more than 1½ to 2 years
—for women of child-bearing age, initial pelvic exam and annual tests until gynecologist suggests longer intervals.

Of course, these recommendations are qualified by the admonition that the enrollee should seek care promptly if he or she notices any change in his or her well-being.

A final and important point in evaluating preventive services is that many consumers are less than enthusiastic about some of the services. Olsen et al. (1976:929) report that 22% of their sample refused a free multiphasic health exam when it was offered to them. Moreover, preventive care usually comes at a price. Table 8 presents the preferences expressed by California State employees for adding preventive health services to their benefit coverage. In general, the PGP plans already covered these services. Among those people who thought they were not covered, the only clear support was for the additional coverage for Pap smears. There was overwhelming opposition to coverage for children's immunizations and well-baby care. Furthermore, a breakdown of the results by plan and type of enrollment indicates that employees in the indemnity and service plans covering themselves and two or more dependents were the *most* strongly opposed to these benefits (Dozier et al., 1973:120–121).

Summary and Conclusions

These findings suggest that, contrary to the rhetoric of the health maintenance advocates, the greater use of preventive services by HMO enrollees appears to be attributable to their better financial coverage, not the preventive care ideology. When people have full coverage for "preventive" ambulatory visits, they have at least as

TABLE 8
Preferences for Adding Preventive Health Care Benefits
California State Employees, 1971

Proposed Added Benefit	Extra Monthly Premium		Percentage Distribution of Employee Preferences				
	Employee Only	Employee + 2 or More Dependents	All Employees	Add Benefit	Don't Add	Benefit Already in Plan	No Answer
Pap Test	$ .06	$ .15	100.0	34.7	18.6	36.1	10.5
Immunization for minor children	.00	.70	100.0	19.4	50.4	15.7	14.5
Well-baby care, first year	.00	.34	100.0	13.8	53.0	16.9	16.3
Chest X-ray, urinalysis, and blood tests, etc. in annual physical checkup	1.12	2.51	100.0	22.8	24.7	43.5	9.0
EKG	.45	.75	100.0	25.7	25.3	37.9	11.0

Source: Dave Dozier et al.: 1970–71 Survey of Consumer Experience Report of the State of California Employees' Medical and Hospital Care Program Prepared Under the Policy Direction of the Medical Advisory Council to the Board of Administration of the Public Employees' Retirement System. Sacramento, Calif., 1973: 35, 120–124.

many, if not more, services under the FFS system than in an HMO. These results are entirely in accord with data for hospitalization—HMO enrollees seem to get fewer services if everything else is held constant.

While results of this type may be theoretically sound and empirically defensible, some discussion is warranted when strongly held beliefs are questioned. It is undoubtedly true that, if one is seeking a health plan that offers more preventive care, the average HMO will win hands down when compared to the average health insurance plan. In policy discussions, however, we want to know what is likely to happen if things are changed. Adding complete ambulatory coverage to traditional insurance plans is an easy, although expensive, change. It is almost certain that such a change would be politically easier to implement than enrolling the whole population in a system of HMOs. This paper suggests that if, for some reason, more "preventive services" is the goal, then complete ambulatory

coverage is likely to be the easiest policy to implement.

But it is not at all clear that more is necessarily better. Although some preventive services are probably better than none, and there is convincing evidence supporting the value of certain procedures, there is a rather large gray area in which the services do no harm and little good.[5] They are, however, almost always costly. Thus, it may be expected that HMOs will begin to try to ration the use of at least certain types of services, as in the case of attempting to replace the annual physical with the triannual physical. Whether such changes can be made at *no* health risk is unlikely. Whether the patients would prefer the extra risk in exchange for the potential savings will depend on many factors, among the first of which is some evidence on the effectiveness and costs of such procedures.

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[5]Some "preventive services" may actually do more harm than good. The smallpox and whooping cough examples were mentioned above. Another type of harm stems from labelling individuals as having a disease (Curran, 1974).

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This paper was presented at the 105th Annual Meeting of the American Public Health Association, Washington, D.C., October 30–November 3, 1977.

This research was supported in part by Grant 10-P-90335/9-01 from the Social Security Administration. I am indebted to Sylvester E. Berki, John P. Bunker, Diana B. Dutton, Alain C. Enthoven, and Keith Marton for their helpful comments on an earlier draft.

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