

# Health Care Delivery

## Preventive Attitudes, Beliefs, and Practices of Physicians in Fee-for-Service and Health Maintenance Organization Settings

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*To identify the self-reported differences in preventive practices, attitudes, and beliefs of physicians practicing in fee-for-service (FFS) and health maintenance organization (HMO) settings, we surveyed a 100% sample of primary care physicians practicing in a large, urban, closed-panel HMO and a random sample of physicians, in the same county, who were in an FFS practice. The FFS physicians were more likely to consider behavioral risk factors important than were HMO physicians, and they were more likely to ask their patients about behavioral risk factors. Fee-for-service physicians were more likely than HMO physicians to use continuing medical education courses to upgrade their skills in modifying behavioral risk factors. There was little difference in the self-reported proportion of patients with specific behavioral risks in the FFS and HMO practices. Also, both groups were comparable in their perception of their ability to do behavioral counseling and their perceived success in such counseling. We conclude that FFS physicians are more likely to have positive preventive beliefs, attitudes, and practices than are HMO physicians.*

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**H**ealth promotion and disease prevention is an area where primary care physicians have the potential to decrease excess morbidity and mortality in their patient population. Previous studies have suggested that physicians believe that they have a responsibility to assist patients in modifying risk factors for disease.<sup>1,2</sup> There is also evidence that even modest interventions by physicians can have an effect on patients' behaviors and, while the percent of patients who modify their behavior in response to their physicians' advice may in some cases be modest, the absolute number of people who benefit from such risk reduction is substantial.<sup>3</sup>

Controversy exists about the extent to which the mode of payment of physicians influences preventive behaviors by those physicians. It is assumed that patients in prepaid practices (health maintenance organizations [HMOs]) are more likely to receive appropriate preventive interventions—as reimbursement is not an issue—than in fee-for-service (FFS) settings where prevention services frequently are not reimbursed. Conflicting evidence exists about whether or not this is the case.<sup>4,5</sup>

Two factors might seem to be confounding when examining the preventive services provided to patients in an HMO or an FFS practice. The first is the differential attraction of patients to a specific mode of practice. There is evidence that, in fact, HMOs do attract a different population from that using FFS.<sup>6</sup>

The second variable is a differential attraction of physicians to an HMO or FFS practice. It would be easy to speculate that preventive medicine-oriented primary care physi-

cians might be differentially attracted to HMOs, as there is no concern for the reimbursement of preventive interventions. In fact, HMO physicians may be more inclined toward prevention, for if these interventions are successful, the HMO will be used less, resulting in more "profit" for the HMO. There are little or no data, however, that examine this hypothesis. For that reason, we undertook to examine the self-reported preventive beliefs, attitudes, and practices of primary care physicians in prepaid and fee-for-service practices.

### Methods

In a survey of primary care physicians in HMO and FFS practices, we used a questionnaire that was a slightly modified form of a questionnaire that had previously been used to assess primary care physicians' preventive beliefs, attitudes, and practices.<sup>1,2</sup> It was mailed to all primary care physicians—family physicians, internists, and obstetricians—in a large, urban, closed-panel HMO. A total of 119 HMO physicians were identified initially, 6 of whom were ineligible to participate in the study as they had moved or died. We also mailed the questionnaire to a random sample of 249 FFS physicians practicing in the same county as those in the closed-panel HMO. A total of 20 fee-for-service physicians were ineligible for the study, as they had retired, died, or moved from the area.

Of the 113 eligible HMO physicians, 64, or 57%, returned a completed questionnaire. Of the 229 fee-for-service physicians, 104, or 45%, returned the questionnaire. The

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**ABBREVIATIONS USED IN TEXT**

CME = continuing medical education  
 FFS = fee-for-service  
 HMO = health maintenance organization

questionnaire had a series of questions designed to determine physicians' beliefs about behavioral risk factors for disease, their degree of success with modifying risk factors, the extent to which they inquired about risk factors, the extent of preparation to deal with patient behavior modification, their success rates, materials that might assist their efforts, and their desire for additional education in risk factor management.

**Results**

Responses to the questions were on a 4-point Likert scale. For the sake of analysis, the responses were dichotomized, with 1 and 2 being combined and 3 and 4 being combined. The results were analyzed by  $\chi^2$  with a Yates' continuity correction. When the difference examined was between two mean percentages, we used the *t* test. In addition, we used a nonparametric sign test on our data. This tests the null hypothesis that the distribution of differences between the groups is binomial, with  $P = .50$ . Thus, in response to a 24-item question, if the groups had similar opinions, we should observe 12 items higher for HMO physicians and 12 items higher for the FFS physicians.

*Characteristics of the Respondents*

Table 1 lists the specialties of our respondents in the HMO and FFS practices. The distribution was not significantly different. We used years since graduation from medical school as a proxy for age. The HMO physicians were younger, 17.1 mean years after graduation, than our FFS physicians, who were 25.3 years since graduation. This difference was statistically significant ( $P \leq .001$ ). When we age-adjusted responses to the questionnaire items for the two groups, however, the statistical significance of no item was modified, so we used our unadjusted proportions.

The two groups differed in board certification, with 97% of the HMO physicians being board certified as opposed to 71% of the FFS physicians ( $P \leq .001$ ). Because we had dichotomized our data and there were only two non-board-certified physicians in the HMO practice, any attempt to adjust for board certification introduced more bias than it removed.

There was no difference between the two groups in sex, percent of patients they referred, the percent of their patients who were referred to them, whether they graduated from a United States or a foreign medical school, or percent of time spent in direct patient care.

Fee-for-service physicians, as opposed to HMO physicians, identified a statistically smaller percentage of their total load as new patients, and they were more likely to report that a larger proportion of their patients were white, older than 65, and on Medicaid ( $P \leq .05$ ).

*Beliefs About Prevention*

In both the HMO and FFS groups, all of the respondents (100% of both groups) thought that, in general, physicians should attempt to modify patients' behavioral risk factors.

The physicians were asked to respond to a series of risk

factors and identify whether the risk factors were very important, somewhat important, somewhat unimportant, or very unimportant. Table 2 shows the proportion of those who rated the risk factors very or somewhat important, as opposed to the group as a whole. A number of items achieved statistical significance between the two groups, including three dietary items, three items relating to annual physical examinations or exercise tests, relaxation techniques, and the importance of sleep. In each of these the direction of difference was consistent, in that fee-for-service physicians were more inclined than HMO physicians to think the item was very or somewhat important. In 21 of the 24 items, the FFS physicians were more likely than HMO physicians to think the item was very or somewhat important. This difference, using our nonparametric sign test, was statistically significant ( $P \leq .01$ ).

**TABLE 1.—Area of Specialty of Respondents\***

Specialty	HMO		Fee-for-Service	
	Number	Percent	Number	Percent
General/family practice . . . .	38	59	46	48
Internal medicine . . . . .	18	28	31	32
Obstetrics/gynecology . . . . .	8	13	19	20
Total . . . . .	64	100	96	100

HMO=health maintenance organization  
 \*The fee-for-service respondents include 8 who did not indicate their area of specialization.

**TABLE 2.—Proportion of Those Physicians Who Felt the Risk Factor Was Very or Somewhat Important, By Mode of Practice**

Risk Factor	Practice Type	
	HMO	Fee-for-Service
Eliminate cigarette smoking . . . . .	100	100
Eliminate pipe smoking . . . . .	97	96
Eliminate cigar smoking . . . . .	97	97
Drink alcohol moderately . . . . .	86	92
Drink alcohol not at all . . . . .	25	37
Limit daily caffeine intake . . . . .	75	80
Eat breakfast daily . . . . .	62	68
Avoid high cholesterol foods . . . . .	94	93
Take vitamin supplements* . . . . .	14	29
Minimize sugar intake† . . . . .	44	68
Eat a balanced diet‡ . . . . .	86	99
Avoid excessive calories . . . . .	93	96
Avoid foods high in saturated fats . . . . .	93	98
Decrease salt consumption . . . . .	78	89
Be knowledgeable about drug contents . . . . .	89	95
Have an annual physical‡ . . . . .	29	68
Have an annual exercise test‡ . . . . .	5	31
Have a baseline exercise test‡ . . . . .	11	55
Avoid unnecessary x-rays . . . . .	70	74
Use protective equipment or work clothes if exposed to harmful substances . . . . .	94	97
Engage in aerobic activities at least 3 times per week . . . . .	92	80
Avoid undue stress . . . . .	83	90
Regularly practice relaxation techniques‡ . . . . .	43	72
Always use a car seat belt . . . . .	100	96
Get 7 hours of sleep a night‡ . . . . .	43	70

HMO=health maintenance organization  
 \*Probability of differences between mode of practice  $\leq .05$ .  
 †Probability of differences between mode of practice  $\leq .01$ .  
 ‡Probability of differences between mode of practice  $\leq .001$ .

**Preventive Practices**

The physicians were asked the extent to which they gathered information about certain health behaviors. Table 3 shows the response of the two groups who always or regularly gathered the information, as opposed to those who occasionally, rarely, or never gathered the information. With the exception of four items, the FFS respondents were significantly more likely to indicate they gathered information about behavioral risk factors than were the HMO physicians. Even the four non-statistically significant items showed that FFS physicians were more likely to inquire about risk factors.

*Preparation, Successes, and Support*

Our respondents were asked how well prepared they were to counsel patients about various health behaviors, how successful they were in their efforts to achieve behavioral change, and how successful they would be given the appropriate support. There were no statistically significant differences between the HMO and the FFS respondents on these survey items. For each item, 80% to 90% of respondents thought they were very prepared or prepared to counsel patients. Between 40% and 70% of respondents thought they were very or somewhat successful in achieving behavioral

change. Given the appropriate support, 80% to 95% thought they would be very or somewhat successful in achieving behavioral change.

*Continuing Medical Education Needs*

Respondents were asked how likely they would be to take a continuing medical education (CME) course on a variety of preventive topics if the course were available at a convenient time. Table 4 shows the proportion who were very or somewhat likely to take such a course if it were offered. In every subject area having to do with health behaviors except cancer risk reduction, more FFS respondents than HMO physicians indicated that they would be very or somewhat likely to take a CME course. Generally, the FFS physicians were as much as 20% more likely than the HMO physicians to take a health behavior CME course.

*Types of Patients*

We asked our respondents to estimate the proportion of their patients who had certain attributes, such as are overweight, smoke, or abuse alcohol or drugs. In only two categories were there any significant differences in their reported mean percent of patients with these attributes. The mean percent of the FFS physicians' patients who had problems of drug abuse was 7.3% as opposed to 4.5% of the HMO respondents ( $P \leq .05$ ). By contrast, the HMO respondents had a mean percent of 53.9% sedentary patients in their practice as opposed to 45.5% of the FFS respondents ( $P \leq .05$ ). In no other area did the physicians think that the mean percent of patients in their practice differed in their health behavior.

*Person Responsible for Health Education*

Respondents were asked who in their office is the major person responsible for health education. Table 5 shows the physicians' response to that item. In FFS practices, 94% of physicians said they were the major person responsible for health education. In HMOs, 67% of the physicians said they were the major source of health education. In the HMO group, 28% indicated that nurse practitioners had the major responsibility, as opposed to only 4% of FFS physicians who identified their nurse practitioner or physician's assistant as the primary person responsible for health education.

*Adjuncts to Health Promotion Efforts*

Respondents were asked the value of a variety of things that might assist them in their health promotion efforts.

**TABLE 3.—Proportion of Those Physicians Who Always or Regularly Inquired About Risk Factors, By Mode of Practice**

Risk Factor	Practice Type	
	HMO	Fee-for-Service
Smoking . . . . .	91	95
Alcohol* . . . . .	73	90
Other drugs† . . . . .	71	87
Sugar intake‡ . . . . .	10	38
Diet for weight loss . . . . .	46	55
Salt in the diet* . . . . .	30	55
Other nutritional areas‡ . . . . .	13	40
Regular exercise . . . . .	52	64
Stress‡ . . . . .	32	60
Family history of disease‡ . . . . .	68	91
Occupation . . . . .	68	82

HMO=health maintenance organization  
 \*Probability of differences between mode of practice  $\leq .01$ .  
 †Probability of differences between mode of practice  $\leq .05$ .  
 ‡Probability of differences between mode of practice  $\leq .001$ .

**TABLE 4.—Proportion of Those Physicians Very or Somewhat Likely to Take a Continuing Medical Education (CME) Course in a Subject Area, By Mode of Practice**

CME Course	Practice Type	
	HMO	Fee-for-Service
Communicative skills* . . . . .	32	56
Behavior modification* . . . . .	41	64
Smoking cessation† . . . . .	40	59
Alcoholism and alcohol abuse* . . . . .	34	56
Drug abuse* . . . . .	32	57
Diet and nutrition* . . . . .	43	67
Exercise and physical fitness* . . . . .	46	69
Stress reduction* . . . . .	46	73
Cancer risk reduction . . . . .	57	63

HMO=health maintenance organization  
 \*Probability of differences between mode of practice  $\leq .01$ .  
 †Probability of differences between mode of practice  $\leq .05$ .

**TABLE 5.—Person in Practice With the Major Responsibility for Health Education, By Mode of Practice**

Responsible Person	Practice Type			
	HMO		Fee-for-Service	
	Number	Percent	Number	Percent
Physician . . . . .	39	67	88	94
Nurse practitioner . . . . .	16	28	1	1
Nurse . . . . .	1	2	1	1
Physician assistant . . . . .	0	0	3	3
Health educator . . . . .	0	0	1	1
Nutritionist . . . . .	1	2	0	0
Nurse midwife . . . . .	1	2	0	0
Total . . . . .	58	101*	94	100

HMO=health maintenance organization  
 \*Error due to rounding.

These included such items as patient education material, physician education, referral information, financial reimbursement, and clear recommendations for health promotion or disease prevention. In only two items were there statistically significant differences between the HMO and the FFS physicians. Of the 11 items in this question, however, the FFS physicians were more likely than the HMO physicians on ten items to think that the items were very or somewhat valuable. Again, using the nonparametric sign test, this difference is statistically significant ( $P \leq .01$ ).

Of the FFS physicians, 86% thought that physician education in behavioral modification was very or somewhat valuable, as opposed to 71% of the HMO physicians ( $P \leq .05$ ). Of HMO physicians, 46% thought that financial reimbursement for time spent with patients for health promotion or disease prevention was very or somewhat valuable, as opposed to 85% of the FFS physicians ( $P \leq .01$ ). For all the other items, 70% to 90% of both FFS and HMO physicians thought that the item would be very or somewhat valuable in their efforts. There was no significant difference between the 83% of HMO physicians and 88% of FFS physicians in response to the item, "more time for counseling and related health promotion activities."

## Discussion

It appears the FFS physicians, as opposed to those in an HMO, have a stronger set of beliefs, attitudes, and positive practices related to health promotion and disease prevention. They are more likely than HMO physicians to think that some risk factors were more important than others. Some would criticize the FFS physicians because the items they were more likely than HMO physicians to think were very or somewhat more important are controversial preventive interventions, such as an annual physical examination, taking vitamin supplements, minimizing sugar intake, or practicing relaxation techniques for stress reduction. Noteworthy, however, is that in 21 of the 24 items that compose this question, the FFS physicians were more likely than the HMO physicians to think that the risk factors were very or somewhat important. This difference is statistically significant and bolsters our assertion that FFS physicians have stronger beliefs in preventive measures.

It appears that the FFS physicians routinely inquire about health behaviors more frequently than do HMO physicians. Unlike the information on risk factors, this is an area of substantially less controversy. Most physicians readily agree that a history should be taken about alcohol and drug use, diet, stress, or family history of disease.

Further, the FFS physicians show a strong commitment to disease prevention and health promotion in their attitudes toward continuing medical education in this area. This strong commitment is real, despite the fact that both FFS and HMO physicians feel well prepared to counsel patients. Moreover, a substantial portion of both FFS and HMO physicians feel very or somewhat successful in changing patient behavior, and there is no statistically significant difference between FFS and HMO physicians in their perceived success rate. Therefore, it appears that FFS physicians are more committed to health promotion and disease prevention, not more concerned with their ability to counsel or their perceived success rates.

Another possible explanation for the variation in beliefs, attitudes, and practices is the kinds of patients seen in FFS

and HMO practices. If HMO patients were inherently less likely to have poor health behaviors than FFS patients, then the differences in beliefs and practices between the two groups might be appropriate because of the different nature of their patients. However, there are only two differences in the reported proportion of patients in the two groups with unhealthy behaviors. Fee-for-service physicians estimated that 7.3% of their patients have drug abuse problems as opposed to 4.5% of HMO physicians' patients, and HMO physicians report that 53.9% of their patients are sedentary, as opposed to 45.5% of FFS physicians' patients. There were no significant differences in the other 11 reported health behavior variables between the HMO and FFS physicians' patient panels.

Another possible explanation is the amount of time that an HMO physician may have for health promotion or disease prevention. Physician productivity is an important commodity in HMO practices. The press to see patients may affect a physician's ability to elicit more history about health behaviors or to expend time counseling patients. However, HMO and FFS physicians were not significantly different in their perception of the value of more time for counseling and health promotion activities—83% and 88%, respectively.

Another possible explanation is the availability of specialized health promotion personnel in an HMO. The HMO surveyed has available to its members a specialized health promotion and disease prevention program. In addition, a substantial number of the HMO physicians (28%) identified a nurse practitioner as the major person in their practice who is responsible for health education. Further, in asking our groups what would be useful adjuncts to assist their efforts, the FFS physicians were more likely to rate an adjunct such as a patient education handout as very or somewhat valuable. This is statistically significant and raises the question of what HMO physicians would find valuable to them in their efforts. It may be that they consider the availability of specialized health promotion personnel as valuable and may perceive modifying patients' behaviors as the domain of other specialties. We would note, however, that 100% of the HMO physicians answered that they should try to reduce unhealthy behaviors, even if they thought others should have primary responsibility.

A final point is that reimbursement for preventive services apparently could make a difference in health promotion activities by physicians. Only 46% of the HMO physicians, as opposed to 85% of the FFS physicians, thought that reimbursement for time spent doing health promotion or disease prevention was very or somewhat valuable. Given that the predominant form of physician reimbursement is still fee for service and that FFS physicians appear to be committed to health promotion and disease prevention, attention should be directed at mechanisms to facilitate the use of reimbursement for preventive services.

Our FFS physicians were more likely to be older and fewer of them were board certified. Both of these variables have been found to influence health promotion and disease prevention attitudes of physicians.<sup>1</sup> We were able to age-adjust our rates, and this adjustment did not significantly modify any of our findings. Unfortunately, given the small number of our respondents in an HMO practice who were not board certified, we could not adjust for board certification.

There are other methodologic weaknesses to this study. For example, it is based on physician self-reporting and not

on specific performance. In addition, it raises new research questions regarding the mode of practice and provision of preventive services. We encourage the continued exploration of the influence of the method of payment on the provision of health promotion and disease prevention services by physicians.

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## Management of Heat Illness Syndromes

IN ATHLETIC COMPETITION, when the heat injury index approaches 20°C or 70°F, particular preventive measures—such as jersey changes or more water breaks—should be started, particularly for more susceptible persons. There are three heat illness syndromes: heat cramps, heat exhaustion or heat syncope, and heat stroke. One does not necessarily progress from one category to the next and may enter the scheme in the middle or at the very end.

Heat cramps occur mostly in the calf, thigh, abdomen, and the arms. They occur without injury and are caused by water or electrolyte loss or both. Treatment requires removal from the activity, gentle stretching, and replenishment of fluid.

Heat exhaustion or heat syncope results from an inadequate cardiovascular response to the stress of heat. One sees signs and symptoms related to an inadequate circulating blood volume. The presence of sweating does not rule out a heat-related illness. The treatment of heat exhaustion is to have the person lie down, elevate the lower extremities and replenish fluids . . . just as you would treat shock. Hypotonic solutions are helpful, but water by itself is most important. The core temperature remains normal.

Heat stroke is a medical emergency and carries a high mortality rate. These persons may show signs and symptoms similar to those of heat exhaustion. They become disoriented, irritable, aggressive, and emotionally labile. Taking rectal temperatures is a necessity in the management of heat illness syndromes. A reading of greater than 106° requires immediate cooling in an iced bath, or—second best—by fans blowing over wet sheets or towels. Intravenous fluid replacement should begin immediately, and the patient should be sent to hospital, since severe medical problems may develop, even after successful treatment.

Since long-term problems related to heat injury may be quite dangerous, prevention, of course, is the best course.

—MARTY IVEY, MD

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