

Preventive Services in a Hybrid Capitation and Fee-for-Service Setting

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The potential omission of indicated tests for patients enrolled in prepaid health care plans has been raised as a possibility. This study reviewed the charts of 149 adult patients seen for routine physical examinations or checkups in university-based family medicine or internal medicine clinics. Of the patients included, 67 were enrolled in a capitated plan and 82 enrolled in fee-for-service based plans. Results showed that the rates of compliance with preventive services appropriate to patients' age and sex (Papanicolaou smears, breast examination, mammography, and stool examination for occult blood) were not significantly different for capitated and fee-for-service patients.

Preventive health services are an important component of general medical care. One measure of quality of care is how frequently physicians order preventive services in populations of a given age and sex. Preventive screening measures with low yield for positive results or delayed benefit may be omitted in prepaid settings, though this question has never been examined in insurance plans in which physicians receive a certain amount (capitation) for each enrollee assigned to them. While many health maintenance organizations (HMOs) are considering optional plans and special initiatives to augment health promotion and prevention efforts,¹ the competition in some health care sectors may shift attention from long-term goals such as preventive services to more short-term goals, such as lower capitation-to-expenditure ratios and reduced utilization of services.

Numerous studies have examined the issue of quality of care in HMOs compared with traditional fee-for-service settings. Most of the quality of care studies in HMOs have been conducted in staff model HMOs employing salaried physicians. The Rand study of the Group Health Cooperative of Puget Sound found that the number of preventive

visits per patient was higher in a staff model HMO than in fee-for-service settings.² Several other studies showed higher preventive service utilization in prepaid compared with fee-for-service settings.³⁻⁵ Cunningham and Williamson,⁶ in their extensive review of quality of care in HMOs, found no significant differences between HMOs and fee-for-service settings with respect to use of preventive services. Read et al⁷ found that physicians ordered more tests for prenatal patients in hospital-based fee-for-service settings and community health centers staffed by residents than in HMOs and community-based settings. Luft⁸ predicted that physicians dealing with both fee-for-service and capitated patients in the future would not alter their decision making based on patients' mode of payment, though there are no data to support or refute this prediction. The findings of previous studies are mixed, showing varying levels of compliance with preventive measures in different settings, not necessarily correlating with type of insurance.

Little is known about the use of preventive services among capitated and fee-for-service patients in the same practice. This exploratory, retrospective study examined one aspect of quality of care by measuring the frequency with which physicians ordered preventive measures among outpatients seen in university outpatient clinics for general checkups or routine physical examinations under two types of insurance plans: (1) a capitation-based plan, and (2) fee-for-service patients with private fee-for-service plans. The study tested the hypothesis that physicians would order fewer preventive tests for capitated patients as compared with fee-for-service patients.

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METHODS

The University of Washington Hospital is a tertiary care facility with 146,413 outpatient visits in 1986, including 16,724 to the Family Medical Center (FMC) and 27,130 to the Internal Medicine Clinic. The Association of University Physicians, the medical practice plan affiliated with the University of Washington, is a participating medical group in a capitated-based network model HMO. Enrollees in this HMO are assigned to a primary care provider who acts as a "case manager" overseeing the health care of those patients. Physicians receive no direct financial reward for efficient management of managed health care patients, although faculty physicians receive incentive pay derived from professional fees. This incentive pay typically comprises about 10% of the total faculty income and increases slightly in size when the managed health portion of the practice does well financially. The incentive paid for the management of capitated patients is distributed to primary care physicians in direct proportion to the number of capitated patients assigned to each primary care department. The HMO had 2,871 enrollees in university hospital clinics at the time of the study; 1,385 of the total were assigned to primary care physicians in the FMC, and 415 were assigned to general internists in the Internal Medicine Clinic.

The primary source of data was medical chart review. Charts for patients eligible for the study were selected randomly from lists provided by the university billing facilities, including the list of capitated enrollees assigned to the university and a list of patients registered with fee-for-service, non-Medicare, non-Medicaid insurance carriers. The charts selected for review had to have a routine physical examination or checkup recorded as the principal reason for at least one visit during the period from July 1982 through December 1986. The sample size was computed using previous evidence from studies utilizing chart reviews, which found a compliance rate of approximately 40% for preventive measures. A power calculation predicted that a sample size of 75 per group would have an 80% chance of identifying a 20% difference in compliance rates between groups.

Approximately equal numbers of capitated and fee-for-service patients were selected in the following age and sex categories: women aged 21 to 50 years, women aged 51 to 70 years, and men aged 51 to 70 years. Patients were excluded from the study if (1) they lived outside the Seattle area and were thus unlikely to obtain regular care at University Hospital for health maintenance, and (2) if their clinic visits consisted only of treatment of isolated problems. After exclusions were made, the final usable sample consisted of 149 patients (67 capitated and 82 fee-for-service) 52 women aged 21 to 50 years (28 capitated and 24 fee-for-service); 56 women aged 51 to 70 years (21 capitated, 35 fee-for-service); and 41 men aged 51 to 70 years (18 capitated and 23 fee-for-service). Of the 149 patients studied, 78 were assigned to the FMC and 71 to

the Internal Medicine Clinic.

A variety of prevention criteria have been proposed for the age and sex groups studies.⁹⁻¹³ The following guidelines were chosen for this audit, adapted from recommendations published by Frame^{12,13} with a few modifications:

1. For women aged 20 to 50 years: diphtheria-tetanus booster or tetanus toxoid within past 10 years; Papanicolaou smear and breast examination by physician within past 2 years
2. For women aged 51 to 70 years: diphtheria-tetanus booster or tetanus toxoid within past 10 years; Papanicolaou smear, breast examination by physician, mammography, and stool for occult blood within past 2 years
3. For men aged 51 to 70 years: diphtheria-tetanus booster or tetanus toxoid within past 10 years; stool for occult blood within past 2 years.

The criteria for mammography, breast examination, and stool occult blood were less rigorous than the recommendations of Frame, but this interval was selected because it was considered within the range of common medical practice in the setting studied. Charts were reviewed by investigators, and preventive measures were recorded either as "performed" or "not performed." Preventive criteria not applicable in individual cases (eg, Papanicolaou smears in women who had undergone a hysterectomy, or immunizations for patients who refused them) were considered as missing data. Statistical analysis utilized one-way analysis of variance to compare compliance rates between groups.

Several reliability checks were employed. Billing data provided by the hospital and physician practice for the study period allowed objective utilization comparisons between capitated and fee-for-service patients assigned to the FMC (no data were available for patients assigned to the internal medicine clinic). Every tenth chart was independently audited by a second reviewer. Because of concerns about nonuniversity care, a questionnaire was sent to the 115 patients for whom the patient chart did not document that all criterion preventive measures had been performed. The questionnaire inquired whether patients had obtained any of the preventive measures anywhere (including University Hospital) during the period considered desirable for each measure. Those who did not respond to the questionnaire were telephoned. Using combined mail and telephone inquiry, nonuniversity health maintenance utilization was assessed for 86 of the 115 subjects (75%) for whom the University Hospital chart revealed any missing items from the list of health maintenance criteria considered appropriate for the individual's age and sex group. For the 29 subjects (25%) for whom nonuniversity utilization could not be ascertained, the University Hospital chart provided the sole source of health maintenance information. The telephone calls and mailed reliability check resulted in a change in classification from "not performed" to "performed" for a total of 27 preventive measures (8 among capitated enrollees and 19 among fee-for-service patients) in 21 patients (7 capitated, 14 fee-for-service) patients.

TABLE 1. PROPORTION OF CAPITATED AND FEE-FOR-SERVICE PATIENTS UNDER 65 YEARS OF AGE IN COMPLIANCE WITH RECOMMENDED PREVENTION GUIDELINES, UNIVERSITY OF WASHINGTON HOSPITAL, FEBRUARY 1986-JANUARY 1987

Preventive Measure	Patients in Compliance			P *
	Capitated Patients	Fee-for-Service Patients	All Patients	
	No. (%)	No. (%)	No. (%)	
Papanicolaou smear	46/49 (94)	51/59 (86)	97/108 (90)	ns
Breast examination	47/47 (96)	49/59 (83)	96/108 (89)	ns
Mammography	26/32 (88)	17/21 (81)	45/53 (85)	ns
Stool for occult blood	28/39 (72)	45/55 (82)	73/94 (78)	ns
Tetanus immunization	29/66 (44)	37/82 (46)	67/148 (45)	ns

*One-way analysis of variance
ns—not significant

RESULTS

Results of the chart review are summarized on Table 1, showing the highest compliance rates (both capitated and fee-for-service patients) for Papanicolaou smears (90%) and breast examination (89%), followed by mammography (85%) and stool for occult blood (78%). The lowest compliance rate was for tetanus immunizations (45%). Compliance for capitated and fee-for-service patients did not differ significantly on one-way analysis of variance, indicating that physicians had similar practice patterns with regard to prevention for prepaid and fee-for-service patients.

The billing data are summarized on Table 2. The data provide some indication that, at least for FMC patients, capitated patients generated more charges per patient billed for FMC services, but that dollars per visit in the FMC were similar for both capitated and fee-for-service patients. This finding suggests that capitated patients visited more often, but the length of visit and the charges for services done within the FMC were similar for capitated and fee-for-service patients. As another indicator of the number of services ordered for capitated and fee-for-service patients (preventive and otherwise), figures were compared for laboratory and radiology services. These services included those ordered by physicians based in the FMC and those ordered in other settings, both outpatient and inpatient. They would include not only such tests as mammography and Papanicolaou smears, but also other tests unrelated to prevention. The billing data show that laboratory and radiology charges per FMC patient who made a visit to University Hospital over a 1-year period were \$324 for capitated patients and \$491 for fee-for-service patients.

DISCUSSION

This small retrospective study based on chart review and billing data revealed a high level of compliance for both

TABLE 2. COMPARISON OF CHARGES FOR CAPITATED AND FEE-FOR-SERVICES FAMILY MEDICAL CENTER (FMC) PATIENTS UNDER 65 YEARS OF AGE, UNIVERSITY OF WASHINGTON HOSPITAL, FEBRUARY 1986-JANUARY 1987

Charges	Capitated Patients	Fee-for-Service Patients
Billed in FMC (per patient who made visit)	\$194	\$140
Billed in FMC* (per visit to FMC)	42	44
Billed in radiology and laboratory** (per patient who made visit)	324	491

* Includes charges for visit, professional fee, and any laboratory tests performed in FMC
** Includes charges for services ordered by physicians in FMC and in non-FMC clinics

FMC and internal medicine patients with recommended prevention guidelines for all procedures, except for tetanus immunization. The high compliance rate is probably due in part to the method of selecting charts for review. Charts were excluded if they had no indication that a routine physical examination or checkup had been performed during the study period. These charts were usually those of patients making frequent visits for chronic conditions or acute illness. Many of these patients utilized multiple subspecialists and had no primary care physician overseeing health maintenance. If the study had included charts of any patients registered in University Hospital outpatient clinics (not just those sent for checkups), the difference in compliance rates for preventive services among capitated patients compared with fee-for-service patients would probably have been greater, since based on this audit, capitated patients were more likely than fee-for-service patients to be assigned to a single provider.

For patients seen in the FMC, the higher number of charges per patient for prepaid patients compared with fee-for-service patients may reflect the larger number of visits per prepaid patient and that many of the prepaid patients had just enrolled in the plan and in the FMC, thus tending to make more visits. Given the similar rates of compliance for preventive tests for capitated and fee-for-service patients, it is likely that the higher charges for laboratory and radiology tests outside the FMC for fee-for-service patients arise from management of illness, not from preventive tests.

It was impossible to control for enrollment date with such a small sample size. It might be expected that those patients who had recently enrolled in the capitated plan would have scheduled a health maintenance visit when starting in the new system, whereas those enrolled for a longer period in a fee-for-service plan might have been less inclined to make a health maintenance visit within the specified period studied.

To summarize, it appeared that the amount of preventive care was similar for capitated and fee-for-service pa-

tients seen in this academic setting. Further studies should examine the care of a larger sample of patients in other settings where capitated and fee-for-service patients receive care from the same physician, controlling for patient age, sex, socioeconomic status, race, preexisting conditions, duration of patient-physician relationship, and utilization of care outside the studied setting.

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Commentary

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Even in this day of competitive, business-oriented medical practice, most people still believe that the physician's primary interest and obligation is to serve the patient by attempting to improve health status. Because of this belief, the hypothesis tested in the above study by Ellsbury and colleagues, that physicians would order fewer preventive tests of capitated patients than they would for fee-for-service patients, would have been intuitively rejected. Data supporting that intuitive choice would be comfortably reassuring; but is the question really so simple? Before the reader becomes too complacent by attributing the results of this study to the skillful and highly principled practice patterns of the physicians in the studied practice, some of the continuing uncertainties of using preventive practice as an indication of the quality of medical care should be considered.

First, is the medical establishment so sure of correct preventive practices that it can reasonably expect physicians to comply with these recommendations rather than rely on their individual clinical judgment? Even in the limited list of preventive interventions considered in this study, there continues to be considerable disagreement about their correct use. For instance, in screening mammography serious questions remain about the optimum age at which to begin screening, with different recommendations given by several respected organizations.¹ In this situation, it may not improve medical care to substitute any of these recommendations for the individual judgment of the patient's personal physician. The appropriateness of

screening for colorectal cancer is also not a settled issue. The US Preventive Services Task Force has been unable to find compelling evidence to recommend fecal occult blood screening.² Even with the widely used Papanicolaou smear, there is disagreement over what frequency is the most effective in reducing risk for cervical cancer.³ Although a great deal of uncertainty remains, these issues are likely to be better resolved in the future simply because so much effort is currently being devoted to the study of effective preventive practices. Following the lead of the Canadian Task Force on the Periodic Health Examination, the US Preventive Services Task Force has studied and reported on the merits of a wide range of preventive activities⁴ and soon will make available a more comprehensive guide to clinical preventive services.

Another serious concern about using compliance with recommended screening practices as a measure of the quality of medical care is the question of screening test quality. In the reality of high-volume practice, are screening tests always performed with sufficient quality to provide the same benefits that were apparently demonstrated in the controlled studies? Test quality may be the Achilles' heel of screening for occult disease. Tests as simple as sphygmomanometry for arterial pressure can have significant error, which may result in misdiagnosis.^{5,6} When complex studies with inherent risk such as mammography are considered, there is not only great variation in technical quality but also inconsistency in image interpretation.^{7,8} Even after many years of use, the Papanicolaou test contin-

ues to have worrisome levels of both false-positive and false-negative results.⁹ For the future, perhaps some sort of provider certification system should be developed. Certainly, these issues of variation in test quality must be resolved before all physicians should be bound by recommended preventive screening practices to reach the goal of optimal medical care quality.

The above study design is likely to have resulted in the review of the records of patients more oriented toward prevention because charts were included only if a previous physician visit for a physical examination was recorded. This would raise the question of what is the role of the patient in determining the preventive regimen? Was there any evidence that certain procedures were frequently requested by these patients? Given the recent publicity, female patients would more likely request mammography than tetanus immunization, and in this study there was greater compliance with mammography recommendations. It would be helpful to know the physician's attitudes toward patient activism. Would the physician refuse a patient's request for a screening test? Would the physician coerce an unwilling patient to accept a screening test? There is convincing evidence that patients want to participate in the selection of preventive interventions.¹⁰ As the patient population becomes ever more enlightened, would even more influence be likely to be exerted by patient opinion based on information received from sources other than the physician? Answers to these questions will not emerge from this study, but future efforts should attempt to measure these unknowns. Is it possible that it would be more effective to educate patients to request appropriate clinical preventive measures than to expect physicians to be knowledgeable about current recommendations and to apply them correctly to specific patients?

Although the preceding article shows that the difference between payment based on capitation or fee for service does not seem to have a serious effect on physician behavior in obtaining preventive services, when there is inadequate insurance for these procedures, their use is likely to be reduced.¹¹ We must continue to work for the develop-

ment of payment systems that do not have the effect of denying preventive services to those who have the greatest need.

Although many problems remain, this study has at least given additional evidence that physicians are not likely to be directly influenced by the method of payment for preventive services but will attempt to provide what they believe to be the best possible care for their patients. Now we need to further define what is the best care and develop payment systems to make that care available to everyone.

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