

Special Article

LEAVING GATEKEEPING BEHIND — EFFECTS OF OPENING ACCESS TO SPECIALISTS FOR ADULTS IN A HEALTH MAINTENANCE ORGANIZATION

TIMOTHY G. FERRIS, M.D., M.P.H., YUCHIAO CHANG, PH.D., DAVID BLUMENTHAL, M.D., M.P.P.,
AND STEVEN D. PEARSON, M.D.**ABSTRACT**

Background Gatekeeping refers to the prior approval of referrals to specialists by a primary care physician. Although many health plans view gatekeeping as an essential tool for controlling costs and coordinating care, many patients and physicians object to it.

Methods On April 1, 1998, Harvard Vanguard Medical Associates, a large, multispecialty, capitated group practice previously known as Harvard Community Health Plan, eliminated a gatekeeping system that had been in place for over 25 years. We determined the effects of opening access to specialists on visits to primary care physicians and specialists by adults. In randomly selected cohorts of 10,000 members each, we analyzed visits during 6-month periods for the 3 years before and 18 months after gatekeeping was eliminated.

Results Adults visited a primary care physician an average of 1.21 times and 1.19 times per six-month period before and after the elimination of gatekeeping, respectively ($P=0.05$); the average number of visits to a specialist was 0.78 per six-month period both before and after its elimination ($P=0.35$). There was little change in the percentage of visits to specialists included in the analysis as a proportion of all visits (39.1 percent before the elimination of gatekeeping and 39.5 percent afterward). The percentage of first visits to specialists as a proportion of all visits to specialists included in the analysis increased from 24.7 to 28.2 percent ($P<0.001$). There were small increases in the numbers of visits to orthopedists and physical or occupational therapists. The proportion of visits to specialists for low back pain that were new consultations increased from 26.6 to 32.9 percent ($P=0.01$).

Conclusions In a capitated, multispecialty group practice, we found little evidence of substantial changes in the use of specialty services by adults in the first 18 months after the elimination of gatekeeping. (N Engl J Med 2001;345:1312-7.)

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AUTHORIZATION of referrals to specialists by a designated primary care provider is commonly referred to as gatekeeping. One of the basic tools of managed care, gatekeeping has been considered essential for cost containment, in part because of evidence that unrestricted access to specialists induced a demand for costly and sometimes unnecessary services.¹⁻³ In addition, the expectation was that gatekeeping would increase patients' contacts with generalists, who would provide more comprehensive, preventive, and coordinated care than would specialists.⁴

Although there is evidence of decreases in costs and subspecialty utilization in health plans that use gatekeeping,^{1,5,6} particularly among groups of patients with relatively high rates of subspecialty utilization,⁷⁻⁹ gatekeeping is not always associated with a reduction in subspecialty utilization.¹⁰ In addition, there has been growing concern about the effects of this practice on relationships between patients and physicians. Many patients do not support policies that require their primary care physician to authorize all visits to specialists.^{11,12} In addition, physicians report that they resent suspicion on the part of patients that pressure to restrict costs influences clinical decisions.^{11,13,14} As a result of these negative perceptions and in an effort to gain market share, some managed-care organizations have eliminated gatekeeping.¹⁵

What happens when gatekeeping is eliminated? Data on this question are limited.¹⁵ On April 1, 1998, Harvard Vanguard Medical Associates, a large, Boston-based multispecialty practice previously known as Harvard Community Health Plan, eliminated a gatekeeping system that had been in place for over 25 years. The change applied to both children and adults. We conducted a study to determine the effect of this change on the number and pattern of visits by adults to primary care and specialist physicians.

From the Institute for Health Policy, Division of General Internal Medicine, Massachusetts General Hospital—Partners Health Care System and Harvard Medical School (T.G.F., D.B.); the Medical Practices Evaluation Center, Massachusetts General Hospital and Harvard Medical School (Y.C.); and the Department of Ambulatory Care and Prevention, Harvard Pilgrim Health Care and Harvard Medical School (S.D.P.) — all in Boston. Address reprint requests to Dr. Pearson at the Department of Ambulatory Care and Prevention, 133 Brookline Ave., 6th Fl., Boston, MA 02215, or at steven_pearson@hphc.org.

METHODS

Setting

During the study period, Harvard Vanguard cared for approximately 140,000 adults who were insured through Harvard Pilgrim Health Care. Harvard Vanguard directly employs approximately 120 general internists who serve as the primary care physicians for the adults. At the time of this study, nearly all physicians were paid solely by salary, with 10 percent of the salary withheld until the end of the fiscal year and contingent on the budgetary performance of the entire medical group during the year. Only a few specialists (e.g., neurosurgeons) were reimbursed on a fee-for-service basis.

Since the medical group's inception in 1969, patients had been required to obtain referrals from their primary care providers in order to make appointments with nearly all specialists. Direct access — without a referral — was allowed for services in mental health, dermatology, and beginning in 1995, obstetrics and gynecology. Harvard Pilgrim and Harvard Vanguard decided to end all gatekeeping requirements in 1998. Under the new system, patients were able to call independently and schedule an appointment with any specialist in the medical group. The decision to allow direct access to specialists was communicated to Harvard Vanguard members through posters in the clinics and personal letters and was publicized in newspaper and radio advertisements.

Study Design

We compared absolute and relative utilization of specialty services before and after the removal of gatekeeping at Harvard Vanguard. To determine base-line trends, we identified cohorts of 10,000 randomly selected patients in each of six consecutive six-month periods during the three years before gatekeeping was removed (from April 1995 to March 1998). Similar cohorts were identified for three six-month periods after gatekeeping had been eliminated (from April 1998 to September 1999). We hypothesized that the removal of gatekeeping might cause an overall increase in visits to specialists (with or without a concomitant decrease in visits to primary care physicians¹⁰) or might cause an increase in the proportion of visits to specialists that were initial visits.

To test these hypotheses, we calculated the absolute rates of visits to generalists and specialists, the proportions of visits to primary care physicians and to specialists, and the proportions of new and return visits to specialists. We conducted subanalyses of specialties and conditions for which we hypothesized patients might be more likely to seek care directly from a specialist. The study had more than 80 percent power to detect a 1 percent increase in the rate of visits to specialists, assuming a base-line rate of 0.7 per patient per six-month period.

The sponsor of the study, the Harvard Pilgrim Health Care Foundation, approved funding for the analysis on the basis of a proposal, including the study design, submitted by the investigators. Neither the sponsor nor Harvard Vanguard had any role in the study design; the collection, analysis, or interpretation of data; or the writing of the report. The human-studies committee of Harvard Pilgrim Health Care approved the study. Individual consent was not required, because the administrative data made available to the investigators included no personal identifying information.

Patients

For each six-month period, patients who were 18 years of age or older and were continuously enrolled during the interval were eligible for enrollment. For each eligible patient, all records of visits (which are computer-based) during the six-month period were copied to a data base for analysis. Of the 90,000 patients identified (10,000 for each six-month period), 4 had records of visits that were incorrectly identified, and these patients were subsequently excluded. Patients could be selected in more than one six-month period. Each record of a visit contained the date and place of the visit; the provider's specialty; the diagnostic code, according to

the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM); and the procedural code, according to *Current Procedural Terminology* (CPT). We excluded all records that were not associated with a face-to-face visit to a physician or nonphysician specialist (including records for radiology and pathology services), as well as those for visits to the emergency department.

Variables

The principal outcome variable was a face-to-face visit with a physician or with a nonphysician specialist, such as a physical or occupational therapist. We excluded visits to nurse practitioners and physician's assistants. Since only internists and pediatricians were eligible to serve as primary care providers, these physicians were grouped as primary care providers. (There were no family practitioners in the medical group.) Specialties included orthopedics, surgery, neurology, otolaryngology, cardiology, pulmonology, allergy, rheumatology, audiology, physical therapy, occupational therapy, urology, gastroenterology, endocrinology, ophthalmology, nephrology, podiatry, oncology, speech pathology, and infectious disease. Visits to dermatologists, obstetricians and gynecologists, and mental health workers were analyzed separately, since these visits did not require a referral under the gatekeeping system. Results expressed as proportions of all visits or all visits to specialists exclude these three groups.

A first visit to a specialist (i.e., a visit that had not been preceded by any visits to the same specialist for at least three years) was defined according to CPT codes¹⁶ for a new patient (Appendix 1). The following common symptoms and conditions in adults were identified on the basis of ICD-9-CM codes: low back pain (724.xx), headache (307.81, 350.2, and 784.0), gastroesophageal reflux disease (306.4, 536.8, 536.9, and 787.0 to 787.3), asthma (493.xx), and diabetes (250.xx).¹⁷

Statistical Analysis

We examined temporal trend in the number of visits per patient per six months for the nine periods. In this part of the analysis, multiple (linear or logistic) regression models were used to adjust for age, sex, and seasonal effects. If the outcome variables appeared to be stable over time in the base-line period, we simplified the analysis to compare data from one year (i.e., data from two consecutive six-month cohorts) for the year before and the year after the removal of gatekeeping. Student's t-test or the chi-square test, as appropriate, was used to test differences in mean values. Any imbalance in age or sex among the patients between the two periods was also adjusted with the use of multiple (linear or logistic) regression models. For analyses of specific conditions, we changed the units from the number of visits per patient per six months to the number of visits per 1000 patients per six months. For simplicity, all reported P values are for regression models. For two-tailed tests, a P value less than or equal to 0.05 was considered to indicate statistical significance.

RESULTS

Study Population

After exclusions, the total number of patients in all six cohorts during the base-line period was 59,997 (accounting for a total of 168,425 visits), and the total number in the three cohorts during the period after gatekeeping had been eliminated was 29,999 (79,597 visits). Among all the patients, the mean (\pm SD) age was 41.7 ± 14.5 years, and 53.2 percent of the patients were women. Although the percentage of men and women did not change significantly over the 4.5-year study period, the mean age increased from 39.8 years to 43.7 years ($P < 0.001$).

Visits to Generalists and Specialists

There were only small differences in the mean numbers of visits to generalists and specialists before and after the elimination of gatekeeping (Table 1). Adults visited a primary care physician an average of 1.21 times per six-month period before the removal of gatekeeping and 1.19 times per six-month period after the removal of gatekeeping (P=0.05). Rates of visits to specialists were stable over the base-line period and did not change with the removal of gatekeeping. First visits to specialists increased from 0.19

to 0.22 per patient per six-month period (P<0.001). There were no significant sex- or age-related differences in the effects of the removal of gatekeeping on the rates of visits to specialists (data not shown).

Because patterns of care can shift from generalists to specialists without any change in overall rates of visits, we focused on changes in the percentage of visits to generalists and the percentage of visits to specialists. As shown in Figure 1, the percentages of visits to primary care physicians and to specialists changed little after gatekeeping had been removed. After a stable base-line period, the average proportion of visits to eligible specialists as a percentage of all visits was 29.0 percent during the year before the removal of gatekeeping and 29.6 percent during the year afterward (P=0.39). The increase in the percentage of visits to specialists was due in part to relative decreases in the percentage of visits to obstetricians and gynecologists rather than to decreases in the percentage of visits to primary care physicians.

The percentage of visits to specialists as a proportion of all visits to specialists and primary care practitioners was 39.1 percent during the year before the end of gatekeeping and 39.5 percent during the year afterward (P=0.58) (Fig. 2). The only notable change was an increase in the proportion of visits to specialists for an initial consultation as a percentage of all visits to specialists from 24.7 to 28.2 percent (P<0.001) (Fig. 2 and Table 1).

Visits to Specific Specialists

Of all visits to specialists, only those to occupational or physical therapists increased significantly

TABLE 1. VISITS TO GENERALISTS AND SPECIALISTS THE YEAR BEFORE THE ELIMINATION OF GATEKEEPING (APRIL 1997 TO MARCH 1998) AND THE YEAR AFTERWARD (APRIL 1998 TO MARCH 1999).

VARIABLE	GATEKEEPING	No GATEKEEPING	P VALUE*
Mean no. of primary care visits (per patient/6 mo)	1.21	1.19	0.05
Mean no. of specialty visits (per patient/6 mo)	0.78	0.78	0.35
Mean no. of first visits to specialists (per patient/6 mo)	0.19	0.22	<0.001
Visits to specialists as a proportion of all primary care and specialty visits (%/6 mo)	39.1	39.5	0.58
Initial visits to specialists as a proportion of all specialty visits (%/6 mo)	24.7	28.2	<0.001

*P values are from a linear regression model adjusted for age.

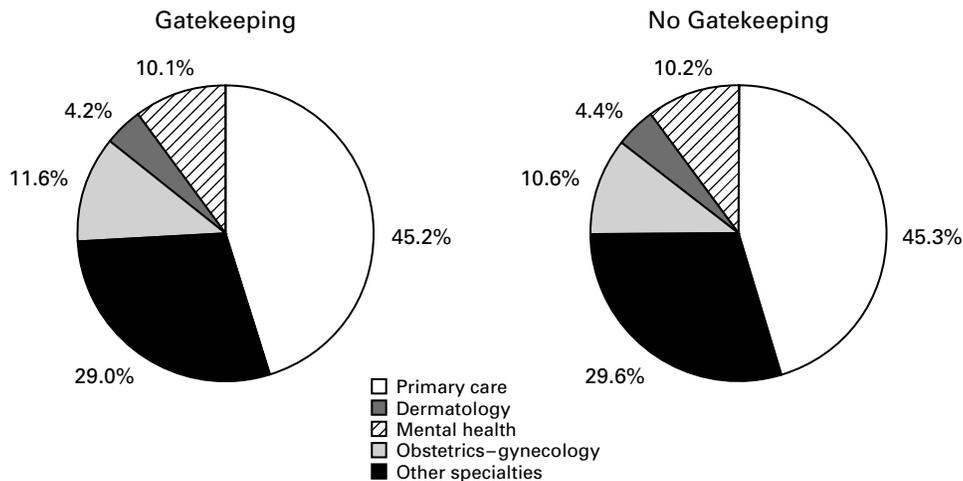


Figure 1. Distribution of Visits by Adults to Primary Care Practitioners and Specialists the Year before the Elimination of Gatekeeping (April 1997 to March 1998) and the Year Afterward (April 1998 to March 1999). Percentages do not sum to 100, because of rounding.

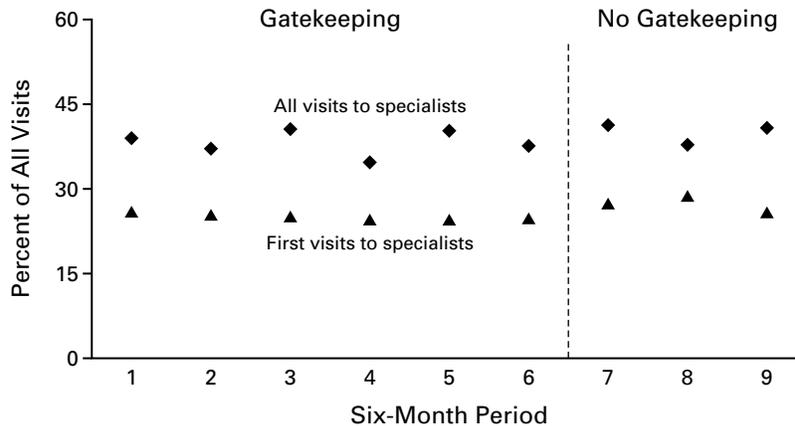


Figure 2. Visits to Specialists as a Percentage of All Visits to Specialists and Primary Care Practitioners for Each Six-Month Period before and after the Elimination of Gatekeeping.

The first six-month period began on April 1, 1995; gatekeeping was eliminated on April 1, 1998 (vertical line), and the last (ninth) six-month period ended on September 30, 1999. $P=0.58$ for the temporal trend in the percentage of visits to specialists; $P<0.001$ for the temporal trend in the percentage of first visits to specialists. Both tests were performed with the use of multivariate models adjusted for age and season.

after the removal of gatekeeping (from 9.6 to 9.9 visits per 1000 adults per six-month period, $P=0.02$). Visits to orthopedists increased from 12.6 to 13.2 visits per 1000 adults per six-month period ($P=0.09$).

Visits for Specific Conditions

Among the specific conditions we investigated, only visits to specialists for low back pain changed substantially after the removal of gatekeeping (from 64.5 to 71.4 visits per 1000 adults per six-month period); the test for discontinuity indicated that the change was associated with the removal of gatekeeping ($P=0.003$). As a proportion of all visits for low back pain, visits to orthopedists, neurologists, and occupational or physical therapists increased from 47.2 percent before the removal of gatekeeping to 51.0 percent afterward ($P=0.06$) (Fig. 3). The proportion of such visits that were initial consultations increased from 26.6 to 32.9 percent ($P=0.01$).

DISCUSSION

In a capitated multispecialty group, we found little evidence of substantial changes in the use of specialty services by adults in the first 18 months after the end of gatekeeping. Overall, there was a negligible change in the mean rate of visits to all practitioners, both generalists and specialists, and visits to specialists as a proportion of visits to all practitioners did not increase significantly after gatekeeping had been eliminated. The lone suggestion of a possible overall effect was the increase in the proportion of visits to specialists for initial consultations. This in-

crease amounted to 30 additional first-time consultations per 1000 adults in a six-month period.

If patients and physicians do not like gatekeeping, why were there not larger increases in the use of specialty services after the elimination of gatekeeping? Preauthorization may simply be an ineffective way to control the number of visits to specialists,¹⁸ but other factors should be considered.

One possible explanation is that habits are slow to change. Even if the patients in our study were eager to gain direct access to specialists, it may take longer than 1.5 years for new patterns of care to emerge.

Another possible explanation is that the patients in this medical group, through self-selection, experience, and acculturation, were less likely than other patients to seek direct access to specialty services when such access became available. The rates of visits to specialists both before and after the elimination of gatekeeping were substantially lower in our study, which involved a population of privately insured patients, than in previous studies, which have largely involved patients with public insurance.⁹ On the other hand, the proportion of visits to specialists in our study was consistent with the patterns of visits in other commercially insured populations.^{5,19}

Rates of referrals to specialists at Harvard Vanguard appear to be consistent with other available data,¹⁹ but the salaried specialists in our study had less financial incentive to see a larger number of patients than would physicians paid on a fee-for-service basis. If timely appointments with specialists were hard to obtain after the removal of gatekeeping, our study may have missed an increased demand for specialty serv-

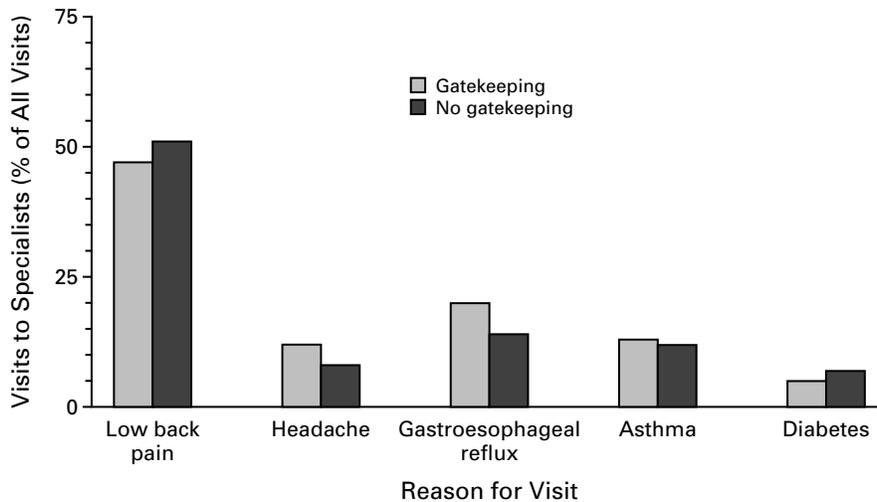


Figure 3. Visits to Specialists for Specific Conditions the Year before the Elimination of Gatekeeping (April 1997 to March 1998) and the Year Afterward (April 1998 to March 1999).

P=0.06 by the test of discontinuity for the change in the proportion of visits to specialists for low back pain.

ices. However, Harvard Vanguard routinely monitors the waiting time for a first visit to a specialist. At the time that gatekeeping was eliminated, the shortest wait for a routine first appointment was less than one week (oncology), and the longest wait was approximately six weeks (neurology and gastroenterology) (Trnka Y: personal communication). These times did not change substantially with the elimination of gatekeeping.

Our results suggest that the elimination of gatekeeping may have resulted in a relative increase in visits to specialists for low back pain. Low back pain is both very common and difficult to treat.²⁰ Given the extent to which people in the United States seek alternative care for back pain, it is not surprising that we found an increase in the percentage of visits to specialists for this condition after gatekeeping had been eliminated.

Several limitations of our study should also be considered. First, because the study was observational, we cannot exclude the possibility of confounding by unmeasured factors. Second, we studied a commercially insured population of adults in a single, well-established, capitated multispecialty group practice in a particular health care market. Our results may not be generalizable to other organizations (such as independent practice associations), health care markets, or patient populations. Third, we did not assess the costs associated with utilization. It is possible that the increase in first visits to specialists led to an increase in the use of high-cost procedures, although any cost increase was likely to be small in the context of our overall findings. Finally, we did not address the important potential contribution of an assigned

primary care provider to the quality of care. The effects of continuity and coordination of services — both aspects of gatekeeping — on the quality of care and outcomes have not been thoroughly evaluated, but the available data suggest that these aspects have a positive influence.²¹⁻²⁵

In summary, we found that the elimination of gatekeeping had only a limited effect on the use of specialty services by commercially insured adult members of a group-model health maintenance organization.

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**APPENDIX 1. CURRENT PROCEDURAL TERMINOLOGY
CODES USED TO IDENTIFY FIRST VISITS.**

CODE	EXPLANATION
92002, 92004	Ophthalmologic services, new patient
97001, 97003	Physical medicine or rehabilitation, new patient
99025	Special services, new patient
99201–99205	Office or other outpatient service, new patient
99241–99245	Office or other outpatient consultation, new or established patient
99321–99323	Domiciliary services, new patient
99341–99345	Home services, new patient
99381–99387	Preventive medicine services, new patient

REFERENCES

1. Moore SH, Martin DP, Richardson WC. Does the primary-care gatekeeper control the costs of health care? Lessons from the SAFECO experience. *N Engl J Med* 1983;309:1400-4.
2. Clancy CM, Hillner BE. Physicians as gatekeepers: the impact of financial incentives. *Arch Intern Med* 1989;149:917-20.
3. Franks P, Clancy CM, Nutting PA. Gatekeeping revisited — protecting patients from overtreatment. *N Engl J Med* 1992;327:424-9.
4. Starfield B. Primary care: concept, evaluation, and policy. New York: Oxford University Press, 1992.
5. Martin DP, Diehr P, Price KF, Richardson WC. Effect of a gatekeeper plan on health services use and charges: a randomized trial. *Am J Public Health* 1989;79:1628-32.
6. Etter J-F, Perneger TV. Health care expenditures after introduction of a gatekeeper and a global budget in a Swiss health insurance plan. *J Epidemiol Commun Health* 1998;52:370-6.
7. Hurley RE, Freund DA, Gage BJ. Gatekeeper effects on patterns of physician use. *J Fam Pract* 1991;32:167-74.
8. Ferris TG, Perrin JM, Manganello JA, Chang Y, Causino N, Blumenthal D. Switching to gatekeeping: changes in expenditures and utilization for children. *Pediatrics* 2001;108:283-90.
9. Schillinger D, Bibbins-Domingo K, Vranizan K, Bacchetti P, Luce JM, Bindman AB. Effects of primary care coordination on public hospital patients. *J Gen Intern Med* 2000;15:329-36.
10. Kapur K, Joyce GF, Van Vorst KA, Escarce JJ. Expenditures for physician services under alternative models of managed care. *Med Care Res Rev* 2000;57:161-81.
11. Grumbach K, Selby JV, Damberg C, et al. Resolving the gatekeeper conundrum: what patients value in primary care and referrals to specialists. *JAMA* 1999;282:261-6.
12. Kerr EA, Hays RD, Mitchinson A, Lee M, Siu AL. The influence of gatekeeping and utilization review on patient satisfaction. *J Gen Intern Med* 1999;14:287-96.
13. Halm EA, Causino N, Blumenthal D. Is gatekeeping better than traditional care? A survey of physicians' attitudes. *JAMA* 1997;278:1677-81.
14. Simon SR, Pan RJD, Sullivan AM, et al. Views of managed care: a survey of students, residents, faculty, and deans at medical schools in the United States. *N Engl J Med* 1999;340:928-36.
15. Richard K, Wood K. Blue Shield of California's Access+ HMO. *Health Aff (Millwood)* 1999;18(3):174-7.
16. Current procedural terminology: CPT 2000. Chicago: American Medical Association, 1999.
17. The international classification of diseases, 9th rev., clinical modification: ICD-9-CM. 4th ed. Vol. 1. Diseases: tabular list. New York: McGraw-Hill, 1995.
18. Eisenberg JM. Doctors' decisions and the cost of medical care: the reasons for doctors' practice patterns and ways to change them. Ann Arbor, Mich.: Health Administration Press, 1986:190.
19. Pearson SD, Katzelnick DJ, Simon GE, Manning WG, Helstad CP, Henk HJ. Depression among high utilizers of medical care. *J Gen Intern Med* 1999;14:461-8.
20. Carey TS, Garrett J, Jackman A, et al. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. *N Engl J Med* 1995;333:913-7.
21. Gill JM, Mainous AG III. The role of provider continuity in preventing hospitalizations. *Arch Fam Med* 1998;7:352-7.
22. Weiss LJ, Blustein J. Faithful patients: the effect of long-term physician-patient relationships on the costs and use of health care by older Americans. *Am J Public Health* 1996;86:1742-7.
23. Bindman AB, Grumbach K, Osmond D, et al. Preventable hospitalizations and access to health care. *JAMA* 1995;274:305-11.
24. Weinberger M, Oddone EZ, Henderson WG. Does increased access to primary care reduce hospital readmissions? *N Engl J Med* 1996;334:1441-7.
25. Blumenthal D, Mort E, Edwards J. The efficacy of primary care for vulnerable population groups. *Health Serv Res* 1995;30:253-73.

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