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Effects of Removing Gatekeeping on Specialist Utilization by Children in a Health Maintenance Organization

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Background: The “gatekeeping” model of access to specialty care has been an essential managed care tool, intended to control costs of care and promote coordination between generalists and specialists.

Objective: To investigate the impact of removing gatekeeping on specialist utilization.

Methods: A capitated multispecialty group discontinued a gatekeeping system on April 1, 1998. We assessed the overall number and distribution of patient visits to primary care physicians and specialists and initial patient visits to specialists before and after the removal of gatekeeping. We performed focused analyses for specific specialties, children with chronic conditions, and children with specific diagnoses.

Results: Elimination of gatekeeping was not associated with changes in the mean number of visits to specialists (0.28 visits per 6 months before and after gatekeeping

was removed) or the percentage of all child visits to specialists (11.6% vs 12.1%; 95% confidence interval, 11.3%-11.9% vs 11.8%-12.4%). The proportion of all specialist visits that were initial consultations increased after gatekeeping was removed, from 30.6% (95% CI, 29.4%-31.8%) to 34.8% (95% CI, 33.6%-36.1%). Visits to any specialist by children with chronic conditions increased from 18.6% (95% CI, 17.7%-19.1%) to 19.8% (95% CI, 19.0%-20.7%). New patient visits to specialists by children with chronic conditions as a proportion of all specialist visits increased from 28.1% (95% CI, 25.9%-30.2%) to 32.3% (95% CI, 30.1%-34.5%).

Conclusions: Replacing a gatekeeping system with open access to all specialty physicians in a managed care organization resulted in minimal changes on the utilization of specialists. Visits to specialists by children with chronic conditions increased after the removal of gatekeeping.

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PRIOR APPROVAL of specialty utilization by a designated primary care physician, commonly referred to as “gatekeeping,” has been one of the essential tools of managed care. Gatekeeping was considered a cornerstone of cost containment in part because of evidence that specialists induced demand for costly and sometimes unnecessary procedures.^{1,2} In addition, gatekeeping was intended to enhance patients’ contact with generalists, who provide more preventive, comprehensive, and coordinated care than specialists.³

Although there is evidence for decreased costs and subspecialty utilization in gatekeeping plans,⁴⁻⁷ gatekeeping is not always associated with lower subspecialty utilization.^{8,9} Concern about the effects of gatekeeping on patient-physician relationships has been growing. Patients do not support the role of a gatekeeper physician.^{10,11} Physicians report resent-

ing patient suspicions that resource allocation pressures influence their clinical decisions.^{10,12,13} In addition, gatekeeping may result in lower subspecialty utilization for vulnerable populations, including children with chronic conditions.⁷ Overall, the effects of gatekeeping on child health services has received considerably less attention than the effects on adult populations. The low rates of specialist use among children, particularly for those with chronic conditions,¹⁴ suggests that underuse of specialists may be a greater problem in the delivery of health care to children than overuse.

Influenced by these negative perceptions and seeking to gain market share, some managed care organizations have recently dropped their gatekeeping requirement.¹⁵ What happens when gatekeeping is eliminated? Only a few articles¹⁵ describe the aftermath of eliminating gatekeeping. We¹⁶ previously reported evidence that removing gatekeeping from a

PATIENTS AND METHODS

SETTING

Previously a staff-model component of Harvard Pilgrim Health Care, Harvard Vanguard Medical Associates is a multispecialty provider group. During the time of this study, Harvard Vanguard cared for approximately 140 000 adults and 50 000 children. Harvard Pilgrim insured more than 90% of all patients. Harvard Vanguard directly employed approximately 50 pediatricians who served as the primary care physicians for the child population. All physicians during the time of this study were paid solely by salary, with a 10% withholding contingent on the budgetary performance of the entire medical group for the year.

Since the medical group's inception in 1969, patients had been required to have a referral from a primary care physician to make an appointment with nearly all specialist physicians. Direct access was already allowed to mental health, dermatology, and, beginning in 1995, obstetrics and gynecology. Harvard Pilgrim and Harvard Vanguard decided to end all gatekeeping requirements on April 1, 1998. Under the new system, patients or their parents were able to call independently and book any specialty appointment with any of the specialists available to the primary care physicians. This decision to provide direct access to specialty providers was communicated to Harvard Vanguard members through personal letters and posters in the clinics, and it was also advertised widely throughout the community.

STUDY DESIGN

We compared absolute and relative utilization of specialist services before and after the removal of gatekeeping at Harvard Vanguard. To appreciate secular trends, we constructed a 3-year baseline period by analyzing patient

cohorts in 6 time intervals of 6 months' duration before the end of gatekeeping on April 1, 1998. We compared the use of specialists in these cohorts with that of 3 subsequent cohorts selected from the period after gatekeeping had been eliminated. We hypothesized that the removal of gatekeeping might affect visits in either of 2 ways: (1) there might be an increase in visits to specialists (with or without a concomitant decrease in visits to primary care physicians⁸) or (2) there might be an increase in the proportion of specialist visits that were generated by new, self-referred patients. To test these hypotheses, we analyzed the absolute rates of visits to generalists and specialists, the proportion of visits to primary care physicians vs specialists, and the proportion of new visits vs return visits to specialists.

Because the removal of gatekeeping may not affect the utilization of different specialists equally, we conducted subanalyses of specialties and conditions for which we hypothesized that patients might be more likely to seek specialist care directly. The institutional review board of Harvard Pilgrim Health Care approved the study.

PATIENTS

Each patient cohort was created by randomly selecting 10 000 eligible HMO members who were younger than 18 years and continuously enrolled during each 6-month interval. For individuals selected, all medical claims that occurred within the 6-month period were copied to a database for analysis. Of 90 000 children identified from eligibility files, 60 had been incorrectly matched to encounter claims and were subsequently excluded. Each encounter claim contained the date of visit, place of service, provider specialty, and associated *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM)¹⁷ diagnosis and *Physicians' Current Procedural Terminology*¹⁸ procedure codes. We excluded all encounters not associated with a

Continued on next page

capitated multispecialty group resulted in only small changes in the utilization of specialists by adults. As a result, specialty care health plans and physician groups contemplating the elimination of gatekeeping have little information with which to judge the possible effects on patient behavior and subsequent utilization.

On April 1, 1998, Harvard Vanguard Medical Associates, Boston, Mass, a capitated multispecialty practice previously known as Harvard Community Health Plan, eliminated a gatekeeping system that had been in place for more than 25 years. The goal of this study is to determine the effect of this change in specialty access on the number and pattern of visits to primary care physicians and specialists by children.

RESULTS

STUDY POPULATION

After exclusions, the total number of patients distributed throughout all 6 cohorts of the baseline period was 59 952 (a total of 167 255 visits). The 3 cohorts after the end of gatekeeping consisted of 29 988 patients (73 754

visits). For all patients, the mean $\pm$ SD age was 7.9 ± 5.3 years, and 49.4% were girls. Although the sex composition did not change significantly during the study, the mean age of the sample increased from 7.7 years to 8.3 years during the 4.5-year study ($P < .001$).

VISITS TO GENERALISTS AND SPECIALISTS

There were only small changes after the lifting of gatekeeping in the mean number of patient visits to generalists and specialists (**Table**). Children visited a primary care physician an average of 2.16 times (95% confidence interval, 2.12-2.19) per 6-month period before the removal of gatekeeping and 2.05 times (95% CI, 2.01-2.08) per 6-month period after the removal of gatekeeping. Rates of visits to eligible specialists were stable over the baseline period and did not change with the removal of gatekeeping. First consultation visits to specialists increased from 0.09 visits (95% CI, 0.08-0.09) to 0.10 visits (95% CI, 0.09-0.10) per member per 6 months. There was no significant sex- or age-related differences in the effects of removing gatekeeping on visit rates to specialists (data not shown).

face-to-face visit (including radiology and pathology) and encounters for emergency department visits.

VARIABLES

The principal outcome variable was a face-to-face visit with a physician. Nurse practitioner and physician assistant visits were not coded in the database and therefore were excluded. Provider specialty was already assigned to each claim in the Harvard Vanguard database. Because only internists and pediatricians were eligible to serve as primary care physicians, these specialties were grouped as primary care. Specialties included orthopedics, surgery, neurology, otolaryngology, cardiology, pulmonology, allergy, rheumatology, audiology, physical therapy, urology, gastroenterology, endocrinology, ophthalmology, nephrology, podiatry, oncology, speech pathology, and infectious disease. All references to specialties refer only to the included specialties listed, unless otherwise indicated. Visits to dermatologists, obstetrician/gynecologists, and mental health workers were analyzed separately because these visits had not required a referral under the gatekeeping system.

A first-time patient visit to a specialty department was defined using *Physicians' Current Procedural Terminology* codes for a new patient (available from the authors). Physician offices used these codes to indicate that the identified patient had not been under the care of the specific specialist physician during the preceding 3 years. Children with chronic conditions were identified using a previously developed list for identifying chronic conditions using ICD-9-CM codes.^{14,19,20} Any single claim for a face-to-face visit using an included ICD-9-CM code (excluding mental health and asthma) was used to define a child with a chronic condition. The common childhood complaints of asthma (493.XX), headache (784.0, 307.81, and 350.2), middle ear disease (380-385.9 and 388.6-388.8), and muscle or joint

pain (840-848, 719.4, 719.7, 729.1, 845.0, 726.9, 848.9, 724.2, and V71.9) were identified using ICD-9-CM codes.

ANALYSIS

We used 3 measures to determine the effects of ending gatekeeping. First, we calculated the mean visit rate per member by first counting the number of visits to generalists and specialists for each member, then averaging for all eligible members during each period. Second, we calculated the percentage of all visits that were made to primary care physicians and specialists for each period. Third, we calculated the percentage of visits to specialists that were new patient visits for each period. To do this, we counted new visits for specialists and divided by the number of total specialist visits for each period. We then compared these rates and proportions from before and after the discontinuation of gatekeeping.

We repeated these same analyses for specific subgroups of patients selected by age, sex, diagnosis, and specialty. For diagnosis-specific analyses, we considered only visits to specialists that were relevant to the diagnosis (allergy and pulmonology for asthma, orthopedics for muscle and joint pain, etc). For these analyses, we changed the units from visits per child per 6 months to visits per 1000 children per 6 months to increase the relevance of the data.

Our analysis strategy started with examining the time trend from the 9 periods. In this part of the analysis, multiple (linear or logistic) regression models were used to adjust for age, sex, or seasonal effects. If the outcome variables seemed to be stable over time in the baseline period, we simplified the analysis to focus on the comparisons between data from 1 year before and 1 year after the removal of gatekeeping. *t* Tests (2 sample, 2-tailed) or χ^2 tests, whichever were appropriate, were used to test the mean differences. Any change in age or sex between the 2 periods was also adjusted using multiple (linear or logistic) regression models.

Because care patterns can shift from generalists to specialists without any change in overall visit rates, we focused on changes in the percentage of visits to generalists and specialists. As shown in **Figure 1**, the percentage of visits to primary care physicians and specialists changed little after gatekeeping was removed. After a stable baseline period, the percentage of all visits to eligible specialists averaged 10.8% during the year before removal of gatekeeping and 11.0% during the year after removal of gatekeeping ($P=.29$).

Figure 2 displays the percentage of visits to specialists as a proportion of all visits included in the analysis for each of the 6-month periods of the study. There was no significant change in the percentage of visits to specialists associated with the removal of gatekeeping ($P=.65$). Specialist visits averaged 11.6% (95% CI, 11.3%-11.9%) during the year before the end of gatekeeping and was essentially unchanged at 12.1% (95% CI, 11.8%-12.4%) during the year after the end of gatekeeping (Table). The only notable change found in association with the lifting of gatekeeping was an increase in specialist visits by patients for a first-time consultation from 30.6% (95% CI, 29.4%-31.8%) before the removal of gatekeeping to 34.8% (95% CI, 33.6%-

36.1%) after the removal of gatekeeping (Table and Figure 2).

VISITS TO SPECIFIC SPECIALISTS

None of the specialties included in our study had a statistically significant increase in visits after the removal of gatekeeping. The only suggestion of an effect was found in visits to allergists, for whom visits increased from 46.5 visits per 1000 children per year before the removal of gatekeeping to 54.5 visits per 1000 children per year after the removal of gatekeeping ($P=.06$).

SPECIALIST VISITS FOR SPECIFIC CONDITIONS

There were no significant increases over time in the rate of child visits to specialists among children with the 4 specific conditions we studied (**Figure 3**). A small increase in the rate of visits to specialists by children with chronic conditions was not significant. Nonetheless, the percentage of visits to specialists as a proportion of all visits to generalists and specialists increased from 18.6% (95% CI, 17.7%-19.1%) to 19.8% (95% CI, 19.0%-20.7%). For children with chronic conditions,

Visits to Generalists and Specialists for the Year Before and the Year After the Removal of Gatekeeping*

Visits	Gatekeeping	No Gatekeeping	Difference
Primary care visits, mean No. per 6 mo	2.16 (2.12-2.19)	2.05 (2.01-2.08)	-0.11 (-0.06 to -0.16)
Specialist visits, mean No. per 6 mo	0.28 (0.27-0.30)	0.28 (0.26-0.30)	0 (-0.03 to 0.02)
New patient visits to specialists, mean No. per 6 mo	0.09 (0.08-0.09)	0.10 (0.09-0.10)	0.01 (0 to 0.02)
Specialist visits, % of primary care or specialist visits per 6 mo	11.6 (11.3-11.9)	12.1 (11.8-12.4)	0.45 (0.04 to 0.87)
New patient visits to specialists, % of specialist visits per 6 mo	30.6 (29.4-31.8)	34.8 (33.6-36.1)	4.2 (2.5 to 6.0)

*95% Confidence intervals are given in parentheses.

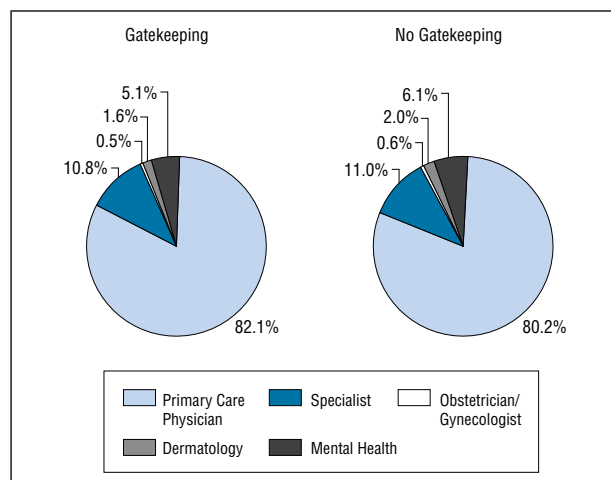


Figure 1. Distribution of child visits to generalists and specialists in the year before and the year after the removal of gatekeeping.

initial consultations to specialists as a percentage of specialist visits increased from 28.1% (95% CI, 25.9%-30.2%) to 32.3% (95% CI, 30.1%-34.5%). The increase in specialist visits for children with chronic conditions occurred primarily in orthopedics.

COMMENT

This study of the effect of removing the gatekeeping requirement in a capitated multispecialty group found little evidence for substantial changes in specialist utilization by children in the first 18 months after the end of gatekeeping. The percentage of visits to specialists by first-time patients increased somewhat, but overall we found a negligible change in the mean rate of visits to both generalists and specialists, and we found no increase in the percentage of all visits to specialists.

Our only suggestion of a possible overall effect was the increase in the proportion of visits to specialists by first-time patients. This increase amounted to 22 additional first-time consultations per 1000 child members in a 6-month period. Although this increase in first-time consultations to specialists did not result in an overall increase in specialist visits at Harvard Vanguard, a different practice setting with different availability of specialists may demonstrate an increase in overall visits to specialists.

If patients do not like gatekeeping, why did we not find larger increases in specialty use associated with the removal of gatekeeping? First, even the studies demonstrating changes in utilization with the initiation of gate-

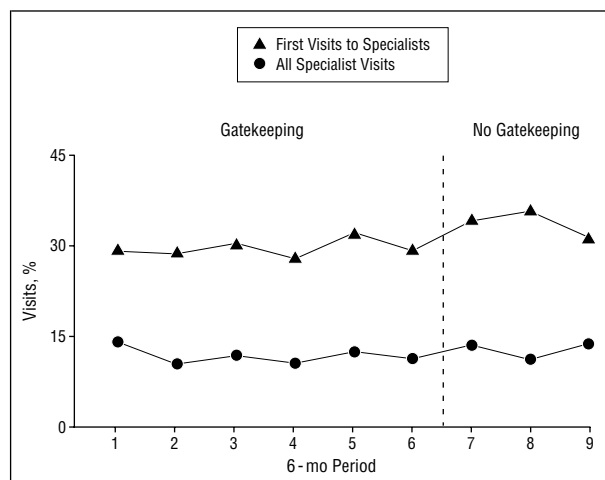


Figure 2. Specialist visits as a percentage of all child visits for each period and first patient visits to specialists as a percentage of all specialist visits. $P = .65$ for change in temporal trend for percentage of visits to specialists. $P < .001$ for change in temporal trend for first patient visits to specialists. Both tests were performed using multiple regression models adjusting for age and season.

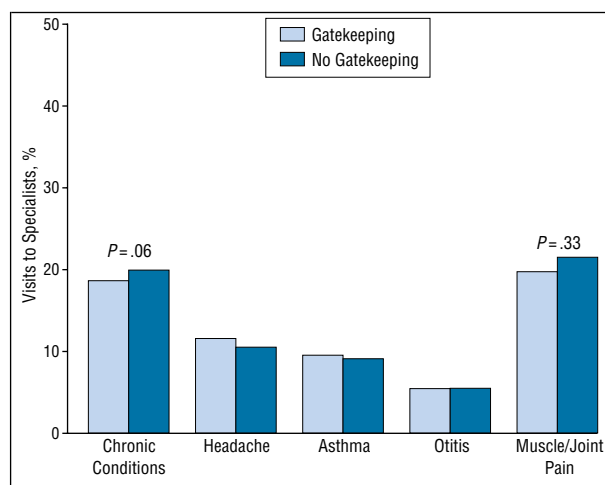


Figure 3. Specialist visits as a proportion of all primary care physician and eligible specialist visits by diagnosis before and after the removal of gatekeeping. Chronic conditions refers to all children who had any visit-based billing diagnosis of a chronic condition (see the "Patients and Methods" section).

keeping found only relatively small decreases in specialty utilization.⁵ Eisenberg²¹ pointed out in 1986 that gatekeeping was a relatively weak intervention for controlling the costs of care associated with physician decisions. Forrest and colleagues²² found that self-referral was

What This Study Adds

Gatekeeping, the requirement for preauthorization of specialist visits, is common in managed care, yet the effect of this administrative requirement on rates of visits to specialists by children is unknown. In this study, the removal of gatekeeping had minimal effects on the utilization of specialists by children. Children with chronic illness were more likely to visit a specialist after the removal of gatekeeping.

relatively uncommon even when patients had the option. In addition, stopping gatekeeping is not the same as starting it. One anecdotal study¹⁵ found minimal effect associated with the removal of gatekeeping. Another study⁸ compared expenditures in a gatekeeping plan with those in a more open-access arrangement and found small differences between them. Parents already enrolled in a managed care plan may have a lower propensity to use specialty services or a lower propensity to seek specialty care directly, thus minimizing the effect of an administrative mechanism such as gatekeeping. Also, habits are slow to change. It may take longer than 1.5 years for a change in established care-seeking patterns to occur. In addition, the threshold for referral to specialists before the discontinuation of gatekeeping may have been low, thus minimizing the effect of stopping gatekeeping. Finally, patients may have preferred to see their primary care physician first if they found the wait to see a specialist to be excessive.

There were 3 findings in our study that may merit further investigation. First, we found an increase in new patient visit rates to specialists associated with the removal of gatekeeping. The ability of specialists to accommodate more first-time patients without increasing overall visit rates (presumably by scheduling fewer follow-up visits) is rarely considered when assessing the effect of administrative and financial changes on specialty visit rates. It may be worth investigating whether this substitution affects the costs and quality of specialty care for children.

Second, our results suggest that the removal of gatekeeping may have resulted in a relative increase in visits to allergists. Our results are consistent with those of Forrest et al,²² who found a greater likelihood of self-referred visits for allergic conditions. Allergic phenomena are increasingly common in child populations, and there may be some pent-up demand among parents of children with allergies or suspected allergies to consult a specialist. The effect of gatekeeping on costs and quality of care (including patient and physician satisfaction) for this set of conditions deserves further investigation.

Third, new patient visits to specialists (mostly orthopedics) for children with chronic conditions increased after gatekeeping was removed. If this increase reflected real changes in specialty care-seeking behavior by parents of children with chronic conditions, then the requirement for previous approval for specialist vis-

its in this population may be a significant barrier to access to care.

This study has several limitations. We studied a single, well-established, capitated multispecialty group in a particular health care market, and our results may not be generalizable to other organizations (such as an independent practice association) or markets. Specifically, the patients were a stable population, most of whom had parents who had made a choice to be a member of a health maintenance organization with gatekeeping. Therefore, this population may have a lower propensity to seek specialty care outside of their primary care relationship. We did not study referrals made by physicians, and it is possible that these changed in ways that were not detected by the measure (visits) used in this study. We did not assess costs associated with utilization. It was possible that use of high-cost procedures increased with the increase in new patient visits to specialists, although in the context of the overall findings of this study, any increase in costs was likely to be small. Finally, we are not able to comment on the effects of the removal of gatekeeping beyond 18 months.

Gatekeeping has been one of the principal means that health care managers have used to reduce inappropriate utilization. Despite some limited evidence that gatekeeping has been modestly effective on cost reduction, the effect of gatekeeping on quality of care and outcomes for children has not been thoroughly evaluated. Recent work has been critical of gatekeeping for the pressures it places on physicians and patients, but health care managers have had little empirical data on which to base decisions regarding the usefulness of gatekeeping and the possible fiscal consequences of removing this barrier to specialty care. This study of health services utilization before and after the discontinuation of gatekeeping suggests that stopping a gatekeeping requirement for commercially insured patients in a multispecialty group practice does not necessarily result in increased specialist visits.

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