Diabetes and Disenrollment in a Health Maintenance Organization Setting

A 4-year longitudinal study with a matched cohort

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OBJECTIVE — The increasing enrollment of Medicare beneficiaries in health maintenance organizations (HMOs) in recent years has caused concern about whether HMOs and their providers have created an unfavorable environment for members who are chronically ill. This study was designed to examine whether there are any differences in disenrollment rates among enrollees with diabetes and enrollees without diabetes.

RESEARCH DESIGN AND METHODS — This was a 4-year longitudinal follow-up study with a matched cohort. Medicare beneficiaries (aged ≥65 years) with diabetes identified through pharmacy records in 1994 were matched with a comparison group according to age, sex, comorbidities, and type of provider groups in an HMO in California.

RESULTS — The overall distribution of the characteristics of members in the diabetic and matched nondiabetic group is almost identical. The matched-pair χ^2 tests indicated that there were no statistical differences in disenrollment rates between diabetic and nondiabetic members during all three follow-up periods (P = 0.16–0.85).

CONCLUSIONS — We found that the HMO members with diabetes did not disenroll from the HMO at a higher rate than those without diabetes. The findings should alleviate some of the concern that HMOs and their contracted providers have created an unattractive environment for members who have chronic diseases such as diabetes.

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The rapid growth of prepaid health care and the increasing enrollment of Medicaid and Medicare clients in health maintenance organizations (HMOs) have caused concern about the adequacy of services for people with chronic diseases in a capitated health care delivery system. A recent published study portrayed HMOs as a "revolving door" in which the healthy go in, and the sick go out (1). Although the study had its limitations (2), it did increase concern about whether HMOs and their providers are providing sufficient care for members with chronic diseases. To address the concern about whether "the sick go out," we conducted a longitudinal study (1995–1997) in an HMO in California to compare the disenrollment rates of Medicare beneficiaries who had diabetes with those who did not have diabetes after matching for age, sex, comorbidities, and type of provider groups. California has the highest penetration of managed care in the nation. Californians represent one-third of total U.S. Medicare HMO enrollees.

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Abbreviations: FFS, fee-for-service; HMO, health maintenance organization; IPA, independent physicians' association.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

The rationale for choosing Medicare beneficiaries as the study population was that the enrollees could enroll and disenroll on a monthly basis under the Medicare Risk program. This unrestricted disenrollment provides a "safety valve" for beneficiaries, especially for those with special health care needs. The other reason for choosing Medicare beneficiaries was that diabetes is more prevalent among the elderly. After considering all of the factors mentioned above, we determined that Medicare beneficiaries with diabetes would be a good population in which to examine whether there are any differences in disenrollment among seniors with the disease versus those without the disease.

RESEARCH DESIGN AND METHODS

Study sample

The study cohort was selected from all Medicare members who were enrolled in Health Net, a major network independent physicians' association (IPA) type of HMO in California that has ~1.7 million members. Members selected were aged ≥65 years as of 1 January 1995. Members who died during the study period (1 January 1995 to 31 December 1997) were not included in the study. The total number of members who satisfied the inclusion criteria was 13,122. If those members had any breaks in enrollment of >45 days during the follow-up period (1 January 1995 to 31 December 1997), they were treated as "disenrolled." There were no major changes in enrollment or coverage policies during the study period.

Based on prescriptions in the HMO's pharmacy database that were filled in 1994, 1,112 members of the study population were identified as having diabetes, which was 8.5% of the cohort. The diabetic members were identified on the basis of selection criteria outlined in a published article (3). Specifically, the population included those members who were taking either insulin or sulfonylureas.

Matching

To ensure that the diabetic and nondiabetic members were comparable, individual

Table 1—*Characteristics of the study population*

Variables	Diabetic members (%)	Nondiabetic matched cohort (%)
n	1,112	5,560
Age (years)		
65–69	32.9	32.7
70–74	33.4	33.5
75–79	20.5	20.6
80–84	10.4	10.4
85+	2.8	2.8
Sex		
Male	52.9	52.6
Female	47.1	47.4
Comorbidities		
Coronary and peripheral vascular disease	63.0	58.3
Hypertension	43.4	39.8
Acid peptic disease	20.5	19.4
High cholesterol	20.1	17.8
Depression	12.2	11.2
Glaucoma	11.6	8.9
Thyroid disorder	10.3	9.5
Rheumatologic disease	9.0	8.0
Asthma	7.4	7.3
Provider groups		
PMG	87.9	87.8
IPA	12.1	12.2

All comorbidities were defined according to the criteria presented by Clark et al. (3).

matching was done by using the Greedy algorithm. The algorithm involves proceeding sequentially through the list of members (sorted in random order), and selecting the best available match at each step (4). For every member with diabetes, five matches were identified (n = 5,560). The two groups were matched regarding age, sex, type of medical group (participating medical group or IPA), and comorbidities (e.g., coronary and peripheral vascular disease, high blood pressure, high cholesterol levels, glaucoma, acid peptic disease, thyroid disorders, depression, rheumatologic disease, and asthma). These comorbidities were defined according to the criteria outlined in the same article used for identifying diabetic patients (3). The comorbidities were also identified based on prescriptions in the HMO's pharmacy database in 1994 and were selected as the matching criteria because they represented the nine most common diseases among the study cohort in 1994.

Statistical analyses

Descriptive analyses were performed to summarize the characteristics of the members with diabetes and the members in the matched cohort. Matched-pair χ^2 analyses were used to examine differences in disenrollment rates between diabetic members and the matched nondiabetic cohort in all three follow-up periods (1995–1997). The statistical power of detecting a 5% difference in 3-year disenrollment rates between diabetic members and nondiabetic members is >97 because the power of a χ^2 test without matching is 97%. All matching and data analyses were performed with the SAS statistical program (5).

RESULTS — The descriptive statistics of the identified diabetic members and nondiabetic matched cohort are presented in Table 1. More than 66% of identified diabetic members were aged 65–74 years, and 53% were men. Regarding the comorbidities among identified members with diabetes, 63% had coronary and peripheral vascular disease, 43% had hypertension, 21% had acid peptic disease, 20% had high cholesterol levels, and 12% had glaucoma. Additionally, 12% of members with diabetes had depression, 10% had thyroid disorders, 9% had rheumatologic disease, and 7% had asthma. Approximately 88% of the identified diabetic members were enrolled in a medical group setting. The overall distribution of the characteristics of members in the matched cohort was almost identical to that in the diabetic group.

As illustrated in Fig. 1, ~6% of identified diabetic members as well as nondiabetic members were disenrolled between 1 January and 31 December 1995. Within the 2-year period (1995–1996), 16% of diabetic members and 14% of nondiabetic members disenrolled. During the 3-year period (1995–1997), 19% of members from the diabetic group disenrolled, and 18% of the nondiabetic matched cohort disenrolled from the HMO. The matched-pair χ^2 tests indicated that there were no statistically significant differences in disenrollment rates between the identified dia-

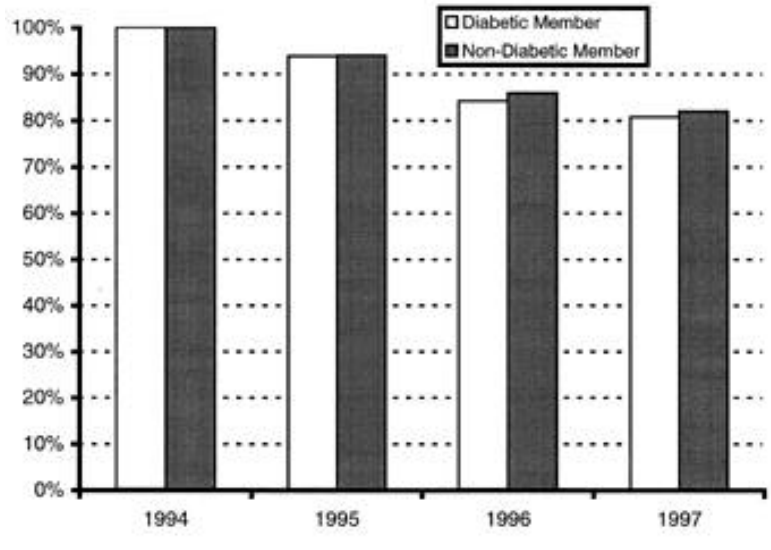

Figure 1—*Enrollment status of diabetic and nondiabetic members identified in 1994.*

betic and nondiabetic members during all three follow-up periods (P = 0.16–0.85).

CONCLUSIONS — The findings of this study demonstrate that the members with diabetes did not disenroll from the HMO at a higher rate than those without diabetes after matching for age, sex, comorbidities, and type of provider groups in all three follow-up periods. The findings agree with the conclusion of a national study conducted by researchers at the Health Care Financing Administration that compared disenrollment rates between Medicare HMO enrollees diagnosed with cancer and enrollees without cancer. They found that cancer patients were not more likely to disenroll than the cancer-free enrollees (6).

Decisions regarding disenrollment are influenced by many factors. Surveys of disenrollees have found that beneficiaries' reasons for disenrollment often involve misunderstandings on the part of enrollees about the terms of enrollment, dissatisfaction with their physician or health plan, or problems with access to services (7,8). This would be particularly true for members with chronic diseases such as diabetes because these members cannot avoid issues by not using the system.

A possible additional explanation for the retention of diabetic members in the HMO could be that these members may have formed a satisfactory relationship with their physicians and health plans. Additionally, the popularity of disease management programs in HMOs for patients with chronic diseases such as diabetes and asthma may aid in retention. The members participating in these programs receive educational materials and consultation calls from health professionals aimed at enhancing their disease self-management skills.

Another reason for retention may be that the coverage in HMOs is usually more comprehensive than that of fee-for-service (FFS). For example, HMOs usually cover prescribed medications, which are commonly paid out-of-pocket by Medicare beneficiaries in an FFS environment.

Further studies are needed to determine the factors related to retention of members with diabetes or other chronic diseases in HMOs. Similar studies could also be conducted for members with other chronic diseases, such as cardiovascular disease. Additionally, it is not our intention to generalize the findings to HMOs as a whole. If necessary, a national or a multiple-state study should be conducted. It would be ideal to determine whether those disenrolled members enrolled with another HMO or returned to FFS or whether the disenrollment was related to involuntary reasons such as moving out of the service area of the HMO. However, we can assume that the patterns are similar between the two comparison groups.

In conclusion, diabetes is a chronic disease that is very demanding on the health care system. Continuity of quality care is crucial for these members. Changing health plans may create unnecessary interruptions in care. It is important that this study demonstrate that members with diabetes did not disenroll from the HMO at a higher rate than those without diabetes. The findings should alleviate some of the concern that HMOs and their providers have created an unattractive environment for members who are chronically ill. On the other hand, we believe that constant monitoring of elective disenrollment rates from HMOs, especially among those with special health care needs, may be helpful in detecting problems in quality of care and access to care for HMO enrollees. Monitoring these rates will also enhance the ongoing policy discussions regarding access to care, quality of care, and cost of care for Medicare beneficiaries.

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