

# Special Reports

## Evaluation of the Medicare Competition Demonstrations

by Kathryn M. Langwell and James P. Hadley

*A summary of findings from the Evaluation of the Medicare Competition Demonstrations is presented in this article. The purpose of this evaluation was to examine the implementation and operational experiences of the 26 health maintenance organizations that operated as demonstrations from 1983 to 1985, their experiences in marketing their plans, the factors that affected beneficiaries' decisions to join or not join a plan, the extent to which beneficiaries were satisfied with their choice of plans, the quality of care provided by the plans, and the impact of the demonstrations on Medicare beneficiaries' use and cost of services.*

### Medicare risk contracting

Between the time the original Medicare legislation was enacted in 1966 and the present, Medicare has offered a number of different contracting options to health maintenance organizations (HMOs) wishing to participate in the Medicare program. Initially, these options involved payment provisions that were based on the traditional benefit and cost-reimbursement philosophy of the original Medicare program; however, they have expanded and evolved over time in order to increase HMO participation in Medicare and to encourage beneficiary enrollment in prepaid plans.

By December 31, 1979, 14 years after the inception of the Medicare program, only 64 organizations, with a total enrollment of 521,894 beneficiaries, had signed contracts with the Medicare program. Thirty-one of these organizations were group practice prepayment plans (484,755 beneficiaries enrolled), 32 had cost contracts with Medicare (42,766 beneficiaries enrolled), and 1 had a risk contract with Medicare (19,268 beneficiaries enrolled).

Medicare's relative lack of success in attracting HMOs to participate in the program, particularly under the risk-based option, can be attributed to the fact that the contracting options offered by Medicare failed to provide HMOs with sufficient financial incentives, and the retrospective cost-based reimbursement and cost-finding procedures used by Medicare differed substantially from the HMOs' usual procedures of relying on prospectively determined rates. In order to test other methods of contracting that might increase HMO participation in the

program, the Health Care Financing Administration (HCFA) solicited interest in and developed a series of demonstration projects to test alternative forms of HMO risk contracting. The first of these demonstrations, the Medicare Capitation Demonstrations, tested various reimbursement models among eight HMOs that began operation from 1980 to 1981. Reimbursements to individual plans ranged from 85 percent to 95 percent of the adjusted average per capita cost (AAPCC) and were linked to a number of risk-sharing arrangements.

Encouraged by the responses of both HMOs and beneficiaries to the initial demonstration, HCFA solicited HMO interest in a second demonstration entitled the Medicare Competition Demonstrations. More than 50 HMOs and competitive medical plans (CMPs) applied to participate. Because regulations were already being prepared to implement a national program that would permit HMOs and CMPs to enroll Medicare beneficiaries on a completely prepaid capitated basis, only 26 of these HMOs and CMPs were permitted to be a part of the Medicare Competition Demonstration.<sup>1</sup> The first of these began operation in 1982; the majority, however, became operational during 1983 and 1984.

In September 1983, Mathematica Policy Research, Inc. (MPR) and its principal subcontractor, Medical College of Virginia (MCV) were awarded a contract by HCFA to undertake a comprehensive evaluation of the Medicare Competition Demonstrations. In order to assess the demonstration HMOs' and CMPs' experience in and effects on the Medicare market, the following specific elements were evaluated:

- The implementation and operational experiences of the participating HMOs.
- The HMOs' experiences in marketing their plans to Medicare beneficiaries and the factors that affected beneficiaries' decisions to join or not join an HMO.
- The extent to which enrollees were satisfied with their choice of HMO.
- The quality of care provided by the plan.
- The impact of the demonstration on Medicare beneficiaries' use and cost of services.

Each of these issues has been covered in detail in the evaluation reports produced under this project (Langwell et al., 1985; Brown et al., 1987; Rossiter et al., 1988; Langwell and Hadley, 1989). The major findings from those reports are summarized and synthesized in this article, and the implications of these findings for the Tax Equity and Fiscal Responsibility Act (TEFRA) program and future evaluations are discussed.

<sup>1</sup>Because CMPs differ from HMOs only to the extent that the former are not federally qualified, for the purpose of this article, any reference to the demonstration HMOs should be understood to include all of the HMOs and CMPs that participated in the Medicare Competition Demonstrations.

Reprint requests: James P. Hadley, Health Care Financing Administration, 2306 Oak Meadows Building, 6325 Security Boulevard, Baltimore, Maryland 21207.

## Medicare experience over time

The 26 HMOs and CMPs that entered the Medicare market from 1982 through 1984 under the Medicare Competition Demonstrations were studied through 1986. Consequently, we were able to observe not only the effect that the demonstration HMOs (and TEFRA program) had on the Medicare market, but we also were able to document the process of HMO participation in the Medicare program over a 2- to 3-year period. This is a particularly important issue, because many of the analytic findings reported in subsequent sections of this article represent impacts at specific points in time. Our ongoing contact with these demonstration HMOs revealed the dynamic nature of the HMO industry and the importance of recognizing that it is not sufficient to examine the implications of HMOs for the Medicare market by using a "snapshot" approach. HMOs will be continuing to change and refine their role in the health care market and in the Medicare component of that market. Our objective in this section is to present an overview of the directions that these 26 HMOs and CMPs took from 1982 through 1986 and to discuss the implications of these trends for the interpretation of the evaluation findings and for the future direction of the Medicare HMO program.

### Characteristics and changes

The 26 HMOs and CMPs that entered the Medicare market under the demonstration program were not closely representative of the HMO industry. The organizational characteristics of the demonstration participants are compared with the characteristics of

all U.S. HMOs for the years 1984 and 1986 (Table 1). Between 1984 and 1986, the number of HMOs in the United States grew from 306 to 595. The composition of the HMO group in 1986 was substantially different from that in 1984 and markedly different from the composition of the demonstration group:

- HMOs participating in the demonstration were more likely to be federally qualified in 1984 than were nonparticipating HMOs; by 1986, 91.7 percent of demonstration HMOs were federally qualified, compared with 50.8 percent of all HMOs.
- Demonstration HMOs were much less likely to be for profit than were all HMOs.
- Demonstration HMOs were more likely to be of the staff model organizational type and less likely to be individual practice associations (IPAs) than were all HMOs (from 1984 through 1986 the proportion of all HMOs that were IPAs increased substantially).

Thus, demonstration HMOs were not representative of all U.S. HMOs in 1984. By 1986, however, the differences between the characteristics of the demonstration HMOs and those of all HMOs became even more pronounced. Consequently, it may be inappropriate to make generalized statements about the demonstration experience without considering the implications of these differences.

Although the HMOs and CMPs that entered the Medicare market under the Medicare Competition Demonstrations differed somewhat from HMOs that chose not to participate, during the next 3 years (1984-86), these HMOs experienced considerable organizational change. In addition, a number of plans withdrew from participation in the Medicare program by the end of 1986. Organizational changes that

**Table 1**  
**Organizational characteristics of Medicare competition demonstrations and all health maintenance organizations (HMOs): United States, 1984 and 1986**

Item	1984		1986	
	Demonstrations	All HMOs <sup>1</sup>	Demonstrations	All HMOs <sup>1</sup>
Number	26	306	<sup>2</sup> 24	595
<b>Percent federally qualified</b>				
Yes	80.8	64.4	91.7	50.8
No	19.2	36.6	8.3	49.2
<b>Percent for profit</b>				
Yes	23.1	NA	33.3	<sup>3</sup> 58.5
No	76.9	NA	66.7	39.8
<b>Percent affiliated</b>				
Yes	43.3	NA	62.5	NA
No	57.7	NA	37.5	NA
<b>Model</b>				
Staff	34.6	17.3	29.2	11.9
Group	15.4	22.9	16.7	14.5
Individual practice association	38.5	41.2	29.2	58.0
Network or mixed	11.5	18.6	25.0	15.6

<sup>1</sup>Information for all HMOs was taken from the June 1984 and June 1986 editions of the InterStudy reports.

<sup>2</sup>ChoiceCare and Delmarva terminated their risk-sharing contracts as of December 31, 1985.

<sup>3</sup>Only HMOs reporting a profit status are included.

NOTE: NA denotes not applicable.

SOURCE: (Rossiter, 1988).

occurred among the participating HMOs from 1984 through 1986 included:

- One CMP became federally qualified.
- Two HMOs converted from nonprofit to for-profit status.
- Five HMOs became affiliated with national chains.
- Four HMOs changed from staff model to mixed or network model organizations.

These changes, during a 3-year period, are representative of the state of the HMO industry, which has experienced continuing rapid growth and organizational change, generally.

By year end 1986, 4 of the original 26 demonstration HMOs had terminated their Medicare risk contracts. The contracts that were not renewed included Delmarva, which was terminated by HCFA because of insolvency problems, ChoiceCare, Maxicare Chicago, and HealthOhio, which converted to a cost contract. All of these were IPA or network HMOs. In addition, all of these plans were in low AAPCC areas, had contracted with a high proportion of area physicians, and were paying physicians on a contractual fee-for-service basis.

### **Benefits, premiums, and copayments**

HMOs that entered the Medicare market under the demonstration program gained a competitive advantage over other HMOs through name recognition, an advantage that later market entrants under TEFRA did not have. On the other hand, these early entrants were faced with the problems of educating Medicare beneficiaries to the general HMO concept and designing benefit packages that would be sufficiently attractive to entice beneficiaries to join a health care financing and delivery system that was essentially unfamiliar to them. In order to successfully enter the Medicare market, most HMOs chose to examine the benefit and premium package being offered by traditional Medicare supplemental insurers for the purpose of designing a package that would encourage enrollment in HMOs. Typically, the demonstration HMOs designed very generous benefit packages that required minimal or no copayments and offered these packages at a premium substantially below that being charged by local Medicare supplemental insurers. Because most medigap insurance coverage picks up all deductible and coinsurance payments, leaving insured beneficiaries responsible only for the incurred costs that exceed the Medicare allowable level, the benefit package offered by the demonstration HMOs was even more generous than a simple comparison of benefits, copayments, and premiums would suggest.

The Medicare product being offered in the initial demonstration year was often based on marketing considerations within the constraints set by the AAPCC level and by the HMOs' projection (based on very limited data) of the costs that would be associated with serving the Medicare population. It is not surprising then that there were changes in the

package during the next 3 years. We compared the 1984 and 1986 premiums and key benefits offered by the Medicare HMOs and CMPs that were in the Medicare market continuously during this period and found that:

- Premiums increased in 7 plans, decreased in 4, and remained the same in 15 plans.
- Supplemental benefits—particularly vision, hearing, and dental—were reduced.
- In most plans, cost sharing remained stable or increased.

These results are particularly interesting because, in the middle of the 3-year period, the plans converted from demonstration status to TEFRA program status. Under the TEFRA rules, they were required to “give back” to enrollees, in the form of reduced premiums and copayments or increased benefits, profits above a level negotiated between the HMO and HCFA. The decline in generosity of the packages offered suggests that HMOs initially may have underestimated the costs of serving Medicare beneficiaries and, over time, were modifying the benefit package to reflect what they had learned about the costs of serving this population.

In addition to changes made in response to their increased experience, as well as to competitive pressures in the Medicare HMO market, it appears that many of the changes in the product being offered by Medicare HMOs were the consequence of changes in the level of the AAPCC from year to year. Of those HMOs that experienced a decline in the AAPCC from 1984 through 1986, all raised their premiums. Only 30 percent of HMOs in areas that had an increase in the AAPCC raised premiums during this period. Although a change in the AAPCC is not the only factor underlying decisions related to premium level and benefit package, it does appear that premium increases are likely to follow changes in AAPCC levels facing Medicare risk HMOs.

We also examined the extent to which early decisions about product design appear to influence subsequent decisions. In the 3 years that these original demonstration plans have been studied, both benefits and premiums have changed. In most cases, the total package had become less generous than it was in 1984. However, when we compared benefits offered by the original demonstration HMOs in 1986 with benefits offered by all TEFRA risk HMOs, we found that the demonstration HMOs have continued to offer more generous benefits than later entrants to the Medicare market:

- 70 percent of the demonstration HMOs, but only 40 percent of all HMOs, offered prescription drug benefits.
- 70 percent of the demonstration HMOs, but only 52 percent of all HMOs, offered hearing exams.
- 17 percent of the demonstration HMOs, but only 8 percent of all HMOs, offered hearing aids.
- 25 percent of the demonstration HMOs, but only 9 percent of all HMOs, offered some dental coverage.

- The average premium charged by the demonstration HMOs in 1986 was \$1.71 less per month than the average premium charged by all TEFRA HMOs and CMPs.

One reason the original risk HMOs may have offered such generous benefits was that they were in high AAPCC areas and therefore expected to receive sufficiently high revenues to cover the costs of these supplemental benefits. However, they may also have chosen to offer an exceptionally rich benefit package as a marketing strategy to attract beneficiaries to this new program. If so, they may have found it difficult to pull back from this generous package, even if it became clear after the initial year or two that these benefits were more expensive than they had anticipated.

### Enrollment and disenrollment patterns

At the end of 1984, the 26 demonstration HMOs had all been enrolling Medicare beneficiaries for at least a year. The total number of Medicare enrollees in these HMOs and CMPs was 123,588, ranging from a low enrollment of 130 in one plan to a high of 43,788 in an HMO that had started enrolling in late 1982. The average enrollment across the 26 demonstration HMOs was 5,779 Medicare beneficiaries. Disenrollments in 1984 were somewhat higher than expected, based on an observed disenrollment rate in the industry of approximately 5 percent. However, Medicare beneficiaries are permitted to disenroll with as little as 2 weeks notice. Although this provision provides a "safety net" for Medicare beneficiaries who enroll without understanding the implications of HMO service delivery and for those who are dissatisfied with the quality of services they receive, it also implies that Medicare HMO enrollment is very fluid.

By 1986, the total enrollment in these HMOs had grown to 315,838—a 75-percent increase overall. In general, the rate of increase in enrollments was greater from 1984 to 1985 than from 1985 to 1986. This may reflect either the HMOs' decisions to limit expansion, the increased competition from new HMOs and CMPs that began entering the Medicare market during 1985, or the ability of HMOs to attract a larger proportion of the Medicare population over time.

The disenrollment ratio (defined as the ratio of the number of disenrollments during the year to the total number of beneficiaries active at any time during the year) was 16 percent in 1984 and had grown to 19.5 percent by 1986. In all, 76,577 Medicare beneficiaries chose to leave these HMOs and CMPs during 1986. However, the disenrollment ratios varied widely across plans and over time. Disenrollment was more common in multiple demonstration plan markets, particularly in Miami and in Los Angeles. In single demonstration plan areas, the disenrollment ratio was generally below 5 percent. Disenrollment in 1986 ranged from a low of 2.6 percent to a high of 61.9 percent. Unusually high disenrollment ratios in several HMOs, particularly in 1986, may reflect the

presence of new HMOs in these markets and the increased competitive nature of these markets. Nearly one-quarter of disenrollments from mid-1985 to mid-1986 involved beneficiaries who joined another HMO.

A survey of 3,000 Medicare beneficiaries who enrolled and did not enroll in the demonstration HMOs was conducted in early 1985 to obtain data on the characteristics of HMO enrollees compared with other Medicare beneficiaries. Enrollees were found to be significantly different from nonenrollees on a variety of dimensions. Enrollees were:

- More likely to be—
  - married
  - younger
  - low income
- More likely to report—
  - being worried about their health
  - that they avoid going to the doctor
  - not talking about their health
  - being able to perform instrumental activities of daily living
  - excellent health status
- Less likely to—
  - reside in a nursing home
  - be Medicaid eligible
  - have had Medicare supplemental insurance
  - have a regular physician
  - indicate that seeing the same physician is very important
  - have had a physical exam in the past year

The differences in characteristics of beneficiaries who joined Medicare HMOs compared with nonenrollees suggest these enrollees may be less likely to use health services. Their lower rates of Medicare supplemental insurance and lower probability of having a regular physician may be because they are less concerned about needing health care or because of their lower income, which makes it difficult to pay substantial insurance premiums and to pay the Medicare deductible and coinsurance amounts. Beneficiaries who were poor (but not Medicaid eligible), who did not have insurance, and who did not have a regular source of care were four times as likely to join a Medicare HMO than were other beneficiaries. This finding suggests that Medicare HMOs may be associated with improved financial access to health care for some beneficiaries.

### Satisfaction and disenrollment

Even though beneficiary enrollment decisions may be heavily influenced by financial considerations and the attractiveness of the HMO benefit package, to retain these enrollees, HMOs must provide services that satisfy Medicare beneficiaries. Satisfaction is an even more important issue for the Medicare HMO enrollee population than for the non-Medicare population, because Medicare enrollees are free to disenroll almost immediately upon deciding that they are dissatisfied with some aspect of the HMO service delivery system. Most non-Medicare HMO enrollees

are free to change their insurer only once annually during the time their employers offer an open enrollment period; thus, they are less likely to react to dissatisfaction by disenrolling.

Satisfaction is also a dimension of overall quality of care. Because most beneficiaries have little or no training in or knowledge about medicine or the provision of health care, they may not always be able to judge the clinical quality of the care they receive from health care providers; however, their perceptions about the quality of care they receive and the responsiveness of the delivery system to their needs and concerns may well affect the frequency with which they use the services provided by the HMO. In addition, of course, these perceptions do determine the beneficiaries' willingness to remain in the HMO. To the extent that Medicare HMO market penetration is expected to stimulate competition and to reduce Medicare program costs in the long run, satisfaction and continuing enrollment are important issues to examine.

Data from two surveys of beneficiaries who enrolled in the demonstration HMOs and of a comparison group who remained in fee-for-service arrangements were used to examine several dimensions of satisfaction with health care and the relationship between satisfaction and disenrollment. A key issue for these analyses was to determine whether Medicare HMO enrollees were more or less satisfied with their medical care arrangements than were fee-for-service beneficiaries and whether joining the HMO resulted in an increase or a decrease in satisfaction compared with the enrollees' degree of satisfaction with their prior arrangements.

## Satisfaction

The analysis of degree of satisfaction experienced by Medicare beneficiaries with respect to their health care arrangements revealed that the overwhelming majority of Medicare beneficiaries were "very satisfied." The key results from this analysis are summarized in Table 2. Approximately 81 percent of beneficiaries reported being very satisfied, and there was no difference in overall levels of satisfaction reported by enrollees and nonenrollees.

Despite the comparable levels of overall satisfaction with care reported by the HMO and fee-for-service groups, there were substantial differences between the two groups on specific dimensions of satisfaction. Enrollees were significantly less satisfied than nonenrollees with the perceived professional competence of their providers and with the willingness of HMO staff to discuss problems with them. The difference between HMO enrollees and fee-for-service beneficiaries was relatively large, with roughly 54 percent and 57.4 percent, respectively, of HMO enrollees very satisfied with HMO provider professional competence and willingness to discuss problems compared with 64 and 67.0 percent, respectively, of fee-for-service beneficiaries who reported themselves to be "very satisfied" with these

**Table 2**  
**Comparison of levels of overall and specific satisfaction reported by health maintenance organization demonstration enrollees and nonenrollees**

Satisfaction measures	Enrollees	Nonenrollees	Percent difference
	Percent reporting highest satisfaction		
Overall satisfaction	80.8	79.3	1.5
<b>Individual measures</b>			
Professional competence	53.8	63.7	<sup>3</sup> - 9.9
Willingness to discuss	57.4	67.0	<sup>3</sup> - 9.5
Courtesy	63.5	65.7	-2.2
Travel	71.1	67.9	3.2
Appointment arrangements	78.9	81.5	-2.6
Waits reasonable	72.3	67.9	<sup>4</sup> 4.4
Availability of emergency room care <sup>1</sup>	60.5	62.9	-2.4
Experience with claims processing <sup>2</sup>	91.3	60.0	<sup>3</sup> 31.3
<b>Summary measures</b>			
Perceived quality of care	68.9	76.4	<sup>3</sup> - 7.5
Perceived access to care	75.4	75.5	-0.1
Number of respondents	1,175	782	NA

<sup>1</sup>At baseline, asked of all respondents with regular source of care; at followup, it was asked of those who used emergency room care.

<sup>2</sup>At baseline, asked of all respondents with regular source of care; at followup, it was asked of those with claims processing experience.

<sup>3</sup>Significant difference at the 1-percent level, using two-tailed test.

<sup>4</sup>Significant difference at the 5-percent level, using two-tailed test.

NOTE: NA denotes not applicable.

SOURCE: (Rossiter et al., 1988).

dimensions of their health care arrangements. HMO enrollees, on the other hand, were more satisfied than fee-for-service beneficiaries with regard to two other dimensions of care: the amount of time patients were kept waiting before they were attended to and the time and effort required to process claims. The differences between the two groups on satisfaction with waiting time was small, but statistically significant. More than 90 percent of HMO enrollees were satisfied with claims processing experience compared with only 60 percent of fee-for-service beneficiaries. Most HMOs eliminate or minimize claims processing for enrollees, which contributes substantially to overall enrollee satisfaction.

Comparing satisfaction levels of enrollees and nonenrollees, however, will not give us a complete perspective on how HMO enrollment affects beneficiary satisfaction. To fully assess this effect, we must also consider the level of satisfaction that HMO Medicare beneficiaries had achieved in the fee-for-service sector prior to joining the HMO. The difference between satisfaction before and after joining the HMO is one measure of the performance of HMOs and their impact on satisfaction. Overall, those beneficiaries who had been more dissatisfied with selected aspects of their fee-for-service health care arrangements were more likely to join an HMO. When enrollees in the demonstration plans were

surveyed concerning their satisfaction with the HMO compared with their prior source of care, it was clear that enrollment increased their satisfaction substantially. Only about 64 percent of enrollees reported being very satisfied with their prior fee-for-service arrangements. After 12 to 16 months of experience in a Medicare HMO, however, 81 percent of enrollees reported being very satisfied. Nearly 29 percent of enrollees reported greater satisfaction with the HMO than with their prior fee-for-service arrangements, and only 9 percent reported a decrease in satisfaction. These results provide strong support for a view that, for beneficiaries who join and continue to belong to Medicare HMOs, their satisfaction levels are improved and that, overall, they are as satisfied as Medicare beneficiaries who have chosen to remain in the fee-for-service sector.

## Disenrollment

Disenrollees were excluded from the analysis of satisfaction with health care arrangements in order to maintain comparability between HMO enrollees and fee-for-service beneficiaries who were assumed to have identified their preferred health care arrangements. However, entirely ignoring disenrollees fails to account for the fact that a substantial proportion of Medicare beneficiaries who enroll in HMOs are sufficiently dissatisfied with some aspect of the HMO experience to leave the HMO after some period. Therefore, we also examined disenrollment from Medicare HMOs, with a particular focus on the reasons for disenrollment.

The data used for this study came from two beneficiary surveys, conducted a year apart, as well as from information on Medicare expenditures for health care used by these beneficiaries prior to enrolling in the HMO. In all, 305 survey respondents had disenrolled from their original HMO by the time of the second survey—approximately 15 percent of the survey sample—excluding those who died. Of these 305, nearly 25 percent disenrolled from the original HMO but subsequently joined another HMO. This latter group should probably be regarded as being dissatisfied with a particular HMO but not dissatisfied with the HMO concept, in general.

## Characteristics of disenrollees

When the characteristics of disenrollees were compared with those of continuing enrollees, we found that disenrollees were:

- Poorer and less likely to have had Medicare supplemental insurance prior to joining the HMO.
- More likely to say that seeing the same physician is important and were more worried about their health, in general.
- More likely to have rated their prior source of care as excellent and were more likely to have felt that the costs of prior health care were reasonable.

- Generally in worse health, as measured by the presence of a health problem that may have required hospitalization, had lower instrumental activity of daily living scores, and had higher Medicare reimbursements on their behalf during the 2 years prior to joining the HMO.

Disenrollees, then, are more likely to have characteristics that may be associated with a higher propensity to use health services and may make greater demands on the HMO system. Their greater degree of worry about their health and their stronger preference to see the same physician at each visit may combine with their higher propensity to use services to produce greater dissatisfaction when they encounter HMO restrictions and access barriers.

## Reasons for disenrollment

Disenrollees were asked during the survey for their reasons for disenrollment. Approximately one-quarter of disenrollees stated that they had disenrolled because they misunderstood one or more of the terms of HMO membership at the time they joined. Almost one-half of these misunderstandings concerned the necessity for HMO enrollees to change from their fee-for-service physician to an HMO physician.

Nearly one-half of all disenrollees reported some dissatisfaction with the HMO, with the largest percent reporting that the HMO was an inconvenient distance from their place of residence. Nearly 7 percent left the HMO because their physician had left the HMO. Those beneficiaries who disenrolled within 3 months of joining the HMO were more likely to say that they disenrolled because of a misunderstanding about the HMO than were those who disenrolled later in their HMO membership. Later disenrollees had a higher overall level of dissatisfaction with the HMO and were more likely to report reasons related to the convenience of obtaining HMO services or to the operational aspects of the HMO.

## Analysis of factors affecting disenrollment

Although the descriptive analysis provides information about the differences between disenrollees and continuing enrollees in characteristics and satisfaction levels, the extent to which selected factors influence or are associated with disenrollment decisions cannot be determined through descriptive comparisons. To examine the relationship between specific factors and disenrollment decisions of Medicare beneficiaries, we developed and estimated a model of the disenrollment decision. The model assumes that disenrollment is a function of Medicare enrollees' characteristics and attitudes and of the characteristics of the HMO to which they belong, as well as the available alternatives.

The results indicate that enrollees who used the HMO's services and were dissatisfied were significantly more likely to disenroll than were those who had not used the services and were not

dissatisfied. Enrollees who had continued to maintain their Medicare supplemental insurance policies while enrolled in the HMO also were more likely to disenroll, presumably because their alternatives did not include any period of financial vulnerability upon disenrollment. Enrollees in staff model HMOs were most likely to disenroll, possibly because staff model HMOs are more restrictive in their choice of physician and location than are most other types of HMOs. Among the variables that indicate an association between health status and disenrollment, only the amount of Part B Medicare expenditures prior to joining the HMO approached a level of significance that indicated a relationship may exist.

## Quality of care

It is difficult to predict a priori what the effect of capitation will be on quality of care. Although a change to the capitation method of payment for services could have an adverse effect on quality of care, that is, if HMOs were to reduce needed services in an effort to cut costs, the quality of care could remain at a high level if only unneeded services were reduced. In fact, quality of care could increase if unneeded hospital admissions were reduced (thus decreasing the probability of iatrogenic illness) and if routine and preventive care was increased in an effort to detect and treat illness early, thereby avoiding the need for expensive hospital treatment.

In the Medicare Competition Evaluation, our focus was on examining whether there was any significant difference between the quality of care that beneficiaries received in the HMOs they joined compared with the quality of care beneficiaries received in fee-for-service arrangements. Although we could have chosen to examine quality from the standpoint of how closely the care delivered by HMOs approximated a quality of care "ideal," we chose to use fee-for-service care as the criteria because, regardless of how closely the care provided by HMOs matched up to an ideal (e.g., criteria set by a physician panel), it was fee-for-service and not the ideal that represented the alternative for beneficiaries choosing not to join an HMO.

To analyze quality of care we examined three primary components of HMO services:

- Beneficiaries' ability to access HMO services.
- The process of care.
- The extent to which enrollment in an HMO had an impact on beneficiary health status.

The data, approach, and analytic results of each of these components are discussed in the next section.

## Access to care

One concern that has been expressed about the appropriateness of HMOs as a delivery system for the Medicare program is that, in order to control utilization, HMOs may create access "barriers" (e.g., primary care gatekeepers, prior authorization

requirements) that may be difficult for some to understand and may require a good deal of persistence on the part of enrollees to make sure that their health needs are taken care of. In some cases, these barriers may have deleterious effects on Medicare enrollees' health because of patients' inability to access the care they require in a timely manner. The Medicare Competition Evaluation addressed the barrier to access issue by analyzing a sample of Medicare beneficiaries' responses to questions about symptoms and access to care in the fee-for-service and HMO systems and the promptness with which recommended treatments were administered by examining medical records. (See the following section on "Process of care".) Data used to address the beneficiaries' views of access came from the baseline and followup telephone surveys discussed previously.

Access to care was measured by asking beneficiaries during the baseline interview about symptoms they were experiencing (e.g., shortness of breath, chest pain, persistent cough, etc.). During the followup survey, beneficiaries who had reported symptoms were asked whether they had seen a health care professional for their problem and, if not, why not. For the analysis of these data, symptoms were collapsed into "urgent," "semiurgent," and "nonurgent" categories. In addition to comparing enrollees and nonenrollees, a subanalysis was performed on beneficiaries 80 years of age or over because any problems with access would be expected to produce the greatest amount of dysfunction in this group.

Both HMO enrollees and fee-for-service enrollees reported high rates of caregiver followup for urgent, semiurgent, and nonurgent symptoms (98 percent of enrollees versus 96 percent of nonenrollees overall). No significant differences were found between enrollees and nonenrollees in the percent of beneficiaries who saw a caregiver for their symptoms, in the analysis by level of urgency, or in the subanalysis of beneficiaries 80 years of age or over.

## Process of care

To examine the clinical aspects of quality of care is a complex and difficult process. However, HCFA believed that the analysis of quality issues in Medicare HMOs would not be complete unless clinical quality also was assessed. An approach to analyzing the quality of the process of care in Medicare HMOs and in fee-for-service settings was developed, and data were collected from medical records in eight of the demonstration HMOs and from fee-for-service physicians' offices and hospitals in the HMO market areas.

In this portion of the study, we examined the routine medical care provided to HMO enrollees and fee-for-service beneficiaries, as well as the care provided to beneficiaries with one of two resource-intensive medical conditions: congestive heart failure and colorectal cancer.

The tracer conditions and the criteria used in the medical record review were established by physician panels. Panel members included physicians from the specialty fields of oncology, cardiology, and geriatrics. In addition, physician panel members were selected to provide a balance of fee-for-service and HMO experience as well as a mix of clinical and research skills.

Although the extent to which medical records were complete and showed good documentation influenced the process of care analysis, the panel attempted to choose criteria for which adequate documentation would be expected if good quality of care took place.

## Routine care

The routine care provided to beneficiaries was examined through a review of 1,590 medical records (777 fee-for-service patients and 813 HMO patients), which were randomly selected from the eight HMOs and from fee-for-service provider records. For the HMO sample, 54 percent of the records were from staff or group model plans and 46 percent were from IPA or network model plans.

Ambulatory records for the routine care sample were examined for physical examinations, history taking, performance of screening tests, immunizations, followup of abnormal laboratory results, detection of serious illness, and management of diabetes mellitus and diastolic hypertension.

Significant differences were found between HMO enrollee records and fee-for-service records in a number of areas. HMO enrollee records evidenced better medical history taking, more complete physical examinations, more screening tests, and a greater frequency of immunizations than did fee-for-service records. No significant differences were found between the HMO and fee-for-service samples in terms of followup on abnormal test results or the detection of serious illness.

The two groups also were similar in terms of prevalence of hypertension and diabetes mellitus: Approximately 27 percent of both groups had hypertension and 17.6 percent of fee-for-service beneficiaries versus 19.9 percent of HMO enrollees were diagnosed with diabetes mellitus. No difference was found between the two groups of beneficiaries in how diabetes mellitus was managed—except that HMO providers were more likely to perform urinalysis on and to refer to an ophthalmologist those patients whose diabetes was poorly controlled.

Greater differences were noted, however, in the treatment of hypertensives, with HMO providers being more likely to document medical history taking, physical examination, laboratory tests, and interventions. HMO patients, however, were significantly more likely than fee-for-service patients (59.8 percent versus 46.1 percent,  $p < .01$ ) to have "poor control" of blood pressure at followup. It appears that HMO providers were more likely to take a conservative approach to treatment (e.g., dietary counseling and weight loss) than their fee-for-service

counterparts. In cases where medication was prescribed, there was no difference between the two groups in terms of adjusting medications for patients with uncontrolled hypertension at followup (94.7 percent of fee-for-service providers versus 96.2 percent of HMO providers).

## Resource-intensive conditions

We also reviewed medical records to examine the quality of care provided to 170 HMO enrollees and 191 fee-for-service beneficiaries who had been hospitalized with the diagnosis of congestive heart failure (CHF), as well as 149 HMO enrollees and 182 fee-for-service beneficiaries who had been hospitalized with the diagnosis of colorectal cancer (CRC). Both inpatient and ambulatory care physician records were reviewed for this portion of the study.

In our analysis of the abstracted CHF records, we found no significant differences between HMO and fee-for-service cases in terms of current and past medical histories taken and the physical examination given during patients' initial visits. In terms of ambulatory management, HMO physicians were significantly more likely to advise dietary salt restriction, and fee-for-service physicians were almost twice as likely to modify medication for those patients with uncontrolled blood pressure.

Although the point at which CHF cases with clinical deterioration were hospitalized was similar for most symptoms, HMO physicians were almost three times more likely than fee-for-service physicians to admit patients who displayed an increase in angina and who did not respond to medication to the hospital within 24 hours. No differences were found in the timeliness of diagnostic studies performed prior to hospitalization.

In terms of inpatient management of CHF, no significant differences were found between the two groups in prescribing or monitoring therapies. Differences were found when we examined physician followup after hospital discharge: HMO physicians were found to schedule followup visits within 1 week of discharge much more frequently than fee-for-service physicians (42 percent versus 27 percent).

In the initial evaluation of CRC patients, HMO practitioners were significantly more likely than fee-for-service practitioners to document history taking (66 percent versus 52 percent) and to perform an endoscopic or radiologic procedure (93 percent versus 90 percent). No significant differences were found regarding the stage of the cancer at the time of diagnosis or operative procedure. Unlike the findings for CHF, there were no significant differences between HMO and fee-for-service patients in terms of followup after surgery.

## Impacts on health status

To assess whether enrollment in a HMO had an impact on health status and disability, enrollee and fee-for-service comparison groups were administered a



series of questions on health status, including activities of daily living (ADLs) and instrumental activities of daily living (IADLs) scales on both the baseline and followup beneficiary surveys.

The examination of these data focused on the changes in health and disability status between the baseline and followup surveys. The analysis was performed by examining ADL and IADL item responses from the baseline and followup surveys for individual beneficiaries and, then, by determining whether there was a worsening of health status (i.e., whether there was a decline in any individual ADL or IADL item on the scales) between baseline and followup. As with the access study, in addition to an overall comparison of enrollees and fee-for-service beneficiaries, a subanalysis was done for the group of beneficiaries 80 years of age or over.

Results of the analysis revealed that there were no significant differences between the two groups in the percent of beneficiaries whose health status worsened between baseline and followup surveys and no significant differences in the percent who showed no change in health status. Fee-for-service beneficiaries were more likely than enrollees to have worsened in their "ability to shop for groceries or clothes." In addition, no significant differences in changes in IADLs for the enrollee and fee-for-service group members 80 years of age or over were found. Finally, changes in disability were considered by examining the number of annual bed-days, the number of bed-days during the 2 weeks prior to the survey, and the number of restricted-activity days. At followup, the number of bed-days was significantly different between the two groups, with HMO enrollees experiencing a marked increase (+1.99 days) in the number of annual bed-days compared with fee-for-service beneficiaries (-.15 days). However, when baseline differences in health status were controlled for using multiple linear regression, these differences by enrollment status were only of marginal significance ( $p = .10$ ).

Because data unadjusted for differences between the two groups in terms of personal characteristics were used in these comparisons, logit models were developed using the variables on which the two groups differed during baseline as independent variables and measures of health status as dependent variables. Results of this analysis supported the descriptive comparisons in that enrollment in an HMO was found to be not significantly associated with health status changes at the time of followup.

## Discussion

Although concern has been expressed that the incentives of capitation may lead physicians to limit beneficiary access to needed services and to undertreat beneficiaries in an effort to reduce costs, there is no evidence of this occurring on a widespread basis according to the analyses of quality of care conducted for the Medicare Competition Evaluation.

The findings from these analyses of quality of care indicate that the quality of care received by beneficiaries who enrolled in the demonstration HMO plans was at least equal to the quality of care received by beneficiaries in the fee-for-service sector in terms of the access beneficiaries had to treatment, the response of physicians to medical problems, the process of care provided to beneficiaries undergoing treatment, and the outcomes of treatment.

Even though our analyses suggest that the chances of receiving poor quality of care are no higher for HMO enrollees than for beneficiaries who receive their care in the fee-for-service sector, HMOs are perceived as having an incentive to undertreat beneficiaries. In order to counter this perception and minimize cases of individual physicians providing insufficient or poor quality of care, HMOs need to make an effort to develop and maintain organizational structures that are clearly focused on preventing and detecting quality problems.

Such structures may already exist in the TEFRA program HMOs. With the experience gained from the demonstrations and a number of years of operation under TEFRA, both the HMOs and HCFA's Office of Prepaid Health Care, along with the Health Standards and Quality Bureau's peer review program, may have made significant progress in establishing and monitoring HMO compliance with quality of care mechanisms and structures to prevent and detect individual quality of care problems.

Regarding the issue of incentives to undertreat, it is important to keep in mind that fee-for-service care providers may have just as strong an incentive to overtreat beneficiaries as HMO care providers have to undertreat. Overtreatment may also result in poor quality care and negative outcomes, particularly among the elderly, from the risks associated with treatments and the possibility of the patient developing iatrogenic illness. In addition, although HMO physicians have some accountability to the HMO for the quality of care they provide (however informal the HMO monitoring system may be), there is no equivalent accountability for fee-for-service physicians.

## Use and costs of services

The analysis of the impacts of the Medicare Competition Demonstrations on use and costs of services was a critical aspect of the evaluation. If HMOs are to be successful in the market for Medicare services, they must be able to control service use and the costs of services provided to Medicare beneficiaries sufficiently that they can break even while receiving payments that are 95 percent of the fee-for-service average in their counties of operation. HMOs may achieve these savings through a number of mechanisms:

- Comprehensive utilization control procedures (e.g., primary care gatekeeper, prior authorization requirements, discharge planning).

- Financial incentives to providers (e.g., capitating primary physicians, negotiating per diem rates with hospitals) that reward restraint in using services.
- Efficiency in the mix of services and in the provision of any given service by an appropriate lowest cost provider.
- Prudent buyer approaches, including purchasing in bulk, negotiating volume discounts, using market power to extract greater discounts from health care providers than are offered to other insurers or third-party payers.

HMOs may also be financially successful in the Medicare market if they are able to attract a healthier mix of enrollees than the norm for their market area. This "favorable selection" may occur for reasons that have to do with Medicare beneficiaries' preferences for style of care and degree of attachment to fee-for-service providers or may be influenced by the HMOs' marketing practices and success at targeting healthier beneficiaries.

Medicare HMOs receive 95 percent of the adjusted average per capita cost (AAPCC) of care for Medicare beneficiaries in each county of residence, classified by age, sex, disability, Medicaid eligibility, and institutional status. Efficient HMOs that offer strong utilization controls and financial incentives to providers may well be able to generate a substantial surplus, which can then be converted into improved benefits and reduced cost sharing for Medicare enrollees and a "reasonable" profit margin for the HMOs. In this case, the HMO is better off financially, Medicare beneficiaries have an enriched benefit package at low out-of-pocket cost, and the Federal Government will save by paying only 95 percent, rather than 100 percent, of the AAPCC.

However, if biased selection is present in this market, the outcome is not so clearly beneficial to all parties. If HMOs attract a disproportionately sicker segment of the Medicare population, they will suffer financial losses and eventually terminate their risk contracts. Medicare beneficiaries who enroll in these HMOs with adverse selection may, in the short run, benefit by the reduced cost sharing and additional benefits available to them. If the HMO then terminates its contract, these beneficiaries may suffer from discontinuity of care if they must change providers as a result. On the other hand, if HMOs attract a favorable mix of beneficiaries, the HMO and the Medicare beneficiaries may benefit financially from these circumstances. However, the Federal Government will bear increased costs, because they pay more for HMO enrollees than the costs that Medicare would have incurred for these individuals had they remained in the fee-for-service sector. Understanding the impact of Medicare HMOs on use and costs of services by Medicare beneficiaries requires attention both to the selection of beneficiaries into HMOs and to the management of care provided to beneficiaries enrolled in HMOs, after accounting for selection bias.

## Biased selection

The examination of the nature and extent of biased selection in the Medicare Competition Demonstrations focused on three measures of biased selection:

- Comparison of enrollees to nonenrollees on prior use of health services under the Medicare program.
- Comparison of enrollee and nonenrollee post-enrollment period mortality rates.
- Comparisons of patterns of prior reimbursement experience for disenrollees and continuing enrollees.

In addition, as background to the detailed analysis of biased selection, a descriptive examination of the characteristics of enrollees and nonenrollees in Medicare HMOs was conducted using data from the baseline survey of HMO enrollees and of nonenrollees residing in the same market areas who chose not to join an HMO when the opportunity presented itself. Results of that descriptive study suggested that enrollees in Medicare HMOs were significantly different from nonenrollees in a number of ways. In contrast to nonenrollees, enrollees were younger, poorer, more dissatisfied with their prior source of care, more worried about their health, and in excellent (self-reported) health. Nonenrollees, on the other hand, were more likely to be in nursing homes, Medicaid-eligible, seeing a regular physician, confined to bed during the 2 weeks prior to the survey interview, aware of a health problem that they thought might require hospitalization, and had more out-of-pocket expenditures for health care in the previous year. These differences suggested that enrollees were healthier and were, in some respects, less likely to have sought or obtained health care prior to joining the HMO. The full analysis of biased selection in the Medicare Competition Demonstrations was intended to investigate the nature and extent of the differences between enrollees and nonenrollees in health status and use of services prior to joining a Medicare HMO.

When data on prior reimbursements under the Medicare program in the 2 years preceding enrollment were compared for HMO enrollees and nonenrollees, the results were quite striking. For the 2-year pre-enrollment period, average total Medicare reimbursements per enrollee across all HMOs were 21 percent below the AAPCC-adjusted average reimbursement for nonenrollees. The differences varied widely across HMOs and were significantly different from zero for 14 of the 17 demonstration HMOs. One HMO experienced enrollment of beneficiaries with prior reimbursements under Medicare that were 26 percent higher than the nonenrollee mean in their market area. This HMO reported substantial financial losses and terminated its Medicare risk contract in December 1985. In the other 13 demonstration HMOs, enrollees had significantly lower mean reimbursements than nonenrollees, even after adjustment for the fact that nonenrollees had different average AAPCC risk factors. The range for these 13 HMOs was from 18 percent lower to

43 percent lower prior reimbursements than the range for nonenrollees. As can be seen in Table 3, the extent of biased selection did vary by characteristics of the demonstration HMOs. IPA and mixed model HMO enrollees were, on average, more similar to nonenrollees in their prior reimbursement patterns than were group and staff model HMO enrollees. The only plan with adverse selection, based on prior reimbursements, was an IPA, and the three HMOs that appeared to have neutral selection (i.e., there was no significant difference between prior reimbursements of their enrollees and nonenrollees in their market areas) were mixed model and IPA HMOs. Thus, even among IPAs and mixed model HMOs, one-half experienced favorable selection based on prior reimbursement comparisons.

Similar conclusions about the nature and extent of biased selection into these demonstration HMOs emerged when post-enrollment mortality rates were compared for enrollees and nonenrollees. Mortality is a significant contributor to overall costs of health care, because 28 percent of total expenditures under the Medicare program are for the approximately 5 percent of beneficiaries who die each year. An HMO that enrolls a lower than average proportion of these terminally ill individuals is much more likely to have experienced favorable overall selection. Although there are some potential drawbacks to interpreting mortality rate differences as indicators of biased selection (e.g., HMO enrollees might have lower mortality rates because HMO styles of care are different from fee-for-service styles of care), the

analysis of biased selection included comparison of mortality rates for enrollees and nonenrollees. The results of that analysis showed that mortality rates were lower for enrollees than for nonenrollees in all the demonstration HMOs, although the difference was statistically significant for only 12 of the 17 HMOs. Overall, the enrollee mortality rate was nearly 25 percent lower than the nonenrollee mortality rate.

Even though the general finding of favorable selection was consistent for the prior reimbursement results and the mortality results, there was some variation in the results by demonstration HMO. The most striking difference was that the one HMO that clearly had experienced adverse selection based on prior reimbursements experience appeared to have experienced favorable selection based on the mortality results. The actual experience of that HMO—high utilization of services by beneficiaries, eventually causing the HMO to terminate its Medicare contract—suggests that the results based on prior reimbursements may be a more accurate reflection of biased selection than are mortality rates.

Finally, the effects of disenrollment patterns on the extent of biased selection in the Medicare Competition Demonstrations also were examined. The characteristics of an HMO's members at any point in time are determined not only by who joins the plan but also by who remains enrolled. Disenrollment patterns are especially important for this evaluation because such a large proportion of Medicare members disenroll: Nearly 30 percent of first-time enrollees in the demonstration HMOs disenrolled within 24 months after joining.

The effects of disenrollment on biased selection in the Medicare Competition Demonstrations was examined by comparing the preenrollment reimbursements of disenrollees with those enrollees who remained in the HMOs for 24 months or until death and by revising the enrollee-nonenrollee comparison of prior reimbursements to account for differences among enrollees in the length of time enrolled. Again, the results were striking and strongly supported a finding that most HMOs experienced favorable selection during the demonstration period. In every demonstration HMO, those who disenrolled had average prior reimbursements that were greater than the mean for those who were continuously enrolled. Overall, disenrollees' prior reimbursements were more than 50 percent higher than prior reimbursements for continuing enrollees. Thus, the biased selection arising at the time of enrollment in the demonstration HMOs appears to have been exacerbated by the subsequent patterns of disenrollment that have occurred in the demonstration program.

The results of the analysis of biased selection provide strong evidence that the demonstration plans experienced substantial favorable selection in enrollment and that the mix of enrollees became even more favorable over time as substantial numbers of higher use profile beneficiaries disenrolled during the subsequent 2 years. The bias appears to have been

**Table 3**

**Comparison of prior average Medicare reimbursements of Medicare beneficiaries enrolled and not enrolled in medical care evaluation (MCE) health maintenance organizations (HMOs), by type of HMO**

Type of HMO	Medicare reimbursement		
	Total	Part A	Part B
<b>All HMOs</b>			
Enrollees	\$2,252	\$1,349	\$ 902
Nonenrollees	*3,243	*2,068	*1,175
<b>All staff models</b>			
Enrollees	1,956	1,138	818
Nonenrollees	3,306	2,150	1,156
<b>All group models</b>			
Enrollees	1,532	984	548
Nonenrollees	*2,368	*1,586	*781
<b>All individual practice associations</b>			
Enrollees	2,505	1,516	990
Nonenrollees	*3,270	*2,102	*1,168
<b>All mixed models</b>			
Enrollees	3,000	1,773	1,227
Nonenrollees	3,774	2,270	1,504

\*Indicates enrollee-nonenrollee difference significantly different from zero at the .01 significance level (two-tailed test).

SOURCE: (Brown et al., 1987).

substantially greater for group and staff model HMOs than for IPAs and mixed model HMOs, but there also appears to have been substantial variation even among IPAs and mixed model HMOs. The implications of these findings are twofold:

- It appears that the Medicare program has paid more to HMOs on behalf of enrollees than the costs that would have been incurred had the beneficiary chosen to remain in the fee-for-service sector.
- Simple comparisons of enrollee and nonenrollee use and costs of services, adjusting for AAPCC factors, are not enlightening because enrollees appear to be individuals who are systematically more likely to use fewer services than are nonenrollees.

The individual-level analysis of use and cost impacts of the Medicare Competition Demonstrations program, reported in the next section, incorporates the results of the biased selection analysis in order to determine the extent to which HMOs have been able to affect actual use and costs of services. In addition, the analysis provides estimates of the magnitude of the loss to the Medicare program that has occurred as a result of the pronounced favorable selection that has been identified during the demonstration period.

## Use and cost impacts

The analysis of the impacts of the Medicare Competition Demonstrations on the use and costs of services provided to enrolled Medicare beneficiaries, after adjusting for biased selection into these demonstration HMOs and CMPs, was conducted in two stages. First, the impact of the demonstration HMOs on enrollees' use of services was examined. Because the HMOs' abilities to report individual beneficiary use data for ambulatory services were severely limited, the analysis of use impacts focuses on hospital service use. This limitation makes it impossible to examine the issue of substitution of ambulatory services for inpatient services; on the other hand, in nearly all studies of the impact of HMOs on use of services by younger enrollees, it was found that HMO membership has an effect on hospital use but little consistent impact on ambulatory service use. In the use impacts analysis we also examined the use of skilled nursing facilities and of home health agency services by individual beneficiaries to permit some consideration of substitution issues. Finally, service use patterns of enrollees and nonenrollees who died during the study period are examined to determine whether membership in HMOs affects the frequency with which very high-cost, older enrollees use services.

To examine the impact of the Medicare Competition Demonstrations on costs to the Medicare program, a model was developed and estimated to determine the level of expenditures that the Medicare program would have incurred for HMO enrollees had they remained in the fee-for-service sector. This estimated cost was then compared with the average reimbursements experienced by nonenrollees with the

same characteristics in the HMO market areas, so that the proportional difference between what HCFA would have paid and what costs would have been incurred could be determined.

## Impacts on inpatient use

Results of the hospital use impact analysis indicate that, as a group, the Medicare HMO demonstrations reduced hospital inpatient use by approximately 8 percent during the 2-year period. The nine HMOs for which data were available had no impact on hospital use in enrollees' initial year of enrollment, but they were successful in reducing hospital use rates in the second year by an amount in the range of 14 to 28 percent. This reduction in hospital use in the second year was the result of lower admission rates rather than of shorter lengths of stay. The experience of individual HMOs varied considerably, however. During the first enrollment year, five HMOs achieved reductions in hospital admission rates, two had no statistically significant impact on admission rates, and two experienced significantly higher admission rates than would have been expected based on enrollees' prior use experience. In the second year, three HMOs had no statistically significant impact on admission rates, and three other HMOs reduced admission rates by at least 25 percent. Two HMOs that had reduced admission rates in the first year could not be included in the analysis of impacts in the second year because there were no available data.

When skilled nursing facility (SNF) and home health agency (HHA) use by HMO enrollees are compared with the preenrollment use of these services by these beneficiaries and with the use by nonenrollees, the results suggest that Medicare HMOs may be substituting SNF days for hospital days. Although enrollees used fewer SNF days than nonenrollees prior to their HMO enrollment—43 days per 1,000 versus 248 days per 1,000—the post-enrollment use of SNF services was dramatically higher for enrollees. For the demonstration HMOs as a group, the post-enrollment SNF use rate for enrollees was 609 days per 1,000 enrollees, more than twice the nonenrollee rate of 303 days per 1,000. The rate of SNF use by enrollees increased relative to that of nonenrollees from the preenrollment to the post-enrollment period in every HMO examined, and the post-enrollment use rate for enrollees was higher than that of nonenrollees in three of the five reporting HMOs (although the difference was statistically significant in only one HMO).

For the HHA use analysis, only two HMOs were able to provide data that could be compared with nonenrollee use of these services. The results of the comparison of enrollee and nonenrollee HHA use, preenrollment and post-enrollment, indicate that, for these two HMOs, there was no evidence of any change in enrollee use of HHA services under risk contracting.

Comparison of service use by enrollees and nonenrollees who died during the post-enrollment

period revealed that enrollees who died were 3 years younger than nonenrollee decedents, on average, and had significantly lower levels of prior use of services before joining an HMO. Overall, 3,869 hospital days were used per 1,000 enrollee decedents prior to joining the HMO compared with 6,286 days per 1,000 nonenrollees who subsequently died. Their post-enrollment use, prior to death, was somewhat more similar: Enrollee decedents used 14,582 days of hospital care per 1,000 decedents compared with 19,607 days per 1,000 nonenrollee decedents. Enrollee decedents used more than twice as many SNF days as were reported for nonenrollee decedents—5,190 per 1,000 compared with 2,183 per 1,000—which again suggests that HMOs may be substituting SNF services for hospital services in some cases.

### Impacts on Medicare costs

The analysis of the impact of risk contracting on Medicare program costs required comparison of the actual costs incurred for enrollees in the followup period (i.e., 95 percent of the AAPCC) to the costs that would have been incurred had they not enrolled. This analysis was hindered by the fact that average reimbursements computed from HCFA claims data and from published county level HCFA data are considerably lower than the values implied by the county AAPCC values.<sup>2</sup> This discrepancy introduced some uncertainty about whether the claims data were fully capturing Medicare costs. To deal with this problem, two alternative sets of impact estimates were pursued. First, it was assumed that the discrepancy between the claims data and the AAPCC is entirely the result of AAPCC overestimates of costs. Under this assumption, it was estimated that HCFA's payments for enrollees during the period studied were 50 to 74 percent higher than the costs that would have been incurred had enrollees remained in the fee-for-service sector.

The alternative assumption was that the AAPCC values were accurate and that the impact of risk contracting on HCFA's costs depended exclusively on the adequacy of the risk factors to control for biased selection. Under this more conservative assumption, it was estimated that, during the period studied, HCFA paid 15 to 33 percent more for beneficiaries enrolled in risk HMOs than would have been paid had those enrollees remained in the fee-for-service sector.

The evidence strongly suggests that risk contracts with HMOs that participated in the Medicare Competition Demonstrations resulted in higher Medicare program costs than would have occurred in the absence of risk contracting. However, the discrepancy between the HCFA claims data and county AAPCC levels must be accounted for before

any firm conclusions can be drawn about the magnitude and extent of the impact of risk contracting on Medicare costs.

### Discussion

Results of the analyses of the impacts of the Medicare Competition Demonstrations on the use and costs of services by Medicare beneficiaries who enrolled in these plans suggest several conclusions:

- The results of the analysis of biased selection provide strong evidence that the demonstration HMOs experienced substantial favorable selection in enrollment. The extent of favorable selection appears to have been greater for group and staff model HMOs than for IPAs and mixed model HMOs, but evidence of favorable selection is present even for several of these latter plans.
- The analysis of the impact of the Medicare Competition Demonstrations on service use indicates that HMOs and CMPs had little or no effect on hospital use in the first year that they served the Medicare population but, by the second year, there was a measurable and significant reduction in the use of hospital services. Higher SNF use patterns observed for the post-enrollment period enrollees suggest that HMOs are, to some extent, successful in substituting SNF services for more costly hospital days.
- The results of the evaluation of the impact of the Medicare Competition Demonstrations on costs to the Medicare program indicate that risk contracting may have increased Medicare program costs. The magnitude of these excess costs ranges from 15 to 74 percent under alternative assumptions. However, data discrepancies were identified that make it uncertain whether these results are accurate representations of the impact.

Although these findings suggest that the Medicare Competition Demonstrations quite possibly have been associated with higher costs to the Medicare program than would have been incurred under the fee-for-service system, it is not clear that these results can be fully generalized to the current TEFRA program. The Medicare Competition Demonstrations HMOs and CMPs are not representative of the HMO industry in a number of ways. The composition of the demonstration HMOs is disproportionately group and staff model HMOs, both of which have been more likely to experience significant favorable selection than other types of HMOs. In addition, the willingness of these HMOs and CMPs to participate in a demonstration program may indicate that some systematic differences exist between these HMOs and those that chose to enter later, after the Medicare program had refined the capitation rules and more experience had been gained. It is also possible that beneficiaries who elected to join an HMO under a demonstration status (rather than after the permanent, ongoing program was in place) are different, in ways that are related to their propensity to use health

<sup>2</sup>HCFA claims data do not include the hospital capital costs "pass through" nor the periodic reconciliations that are included in full Medicare costs. However, these two adjustments do not fully account for the discrepancy observed. The analysis reported here did include an adjustment for pass-through costs, and the results reflect that adjustment.

services, from Medicare beneficiaries who joined subsequently. We anticipate that the comprehensive evaluation of the ongoing TEFRA program will provide answers to these issues.

## Summary and discussion

The Medicare Competition Demonstrations were initiated in 1982 to provide information to the Health Care Financing Administration on the feasibility and impacts of risk contracting with HMOs on behalf of Medicare beneficiaries who voluntarily enroll. In January 1985, when the demonstration program was in an early stage, the final TEFRA regulations were issued by the Department of Health and Human Services to permit all qualified HMOs to enroll and serve Medicare beneficiaries. Despite the termination of the demonstrations by mid-1985, the National Evaluation of the Medicare Competition Demonstrations continued with the cooperation of the demonstration HMOs that had converted to permanent program status under the TEFRA regulations. Consequently, the evaluation was able to focus on the performance and impacts of HMOs under demonstration and program status during the 1984-86 period.

The results of the evaluation provide useful information for refinement of the TEFRA HMO program, as well as findings of interest to the research community. The key conclusions from this evaluation include:

- Risk contracting is operationally feasible, and HMOs have been successful in marketing to Medicare beneficiaries. By mid-1988, when the evaluation was ending, more than 1 million Medicare beneficiaries were enrolled in more than 130 Medicare HMOs and CMPs.
- HMOs are more likely to appeal to Medicare beneficiaries who are low income but not Medicaid eligible, who do not have Medicare supplemental insurance, and who do not have a regular source of care before joining the HMO. These enrollees may have faced significant financial barriers to access to health services and these barriers were reduced by the availability of the HMO option.
- HMO enrollees and Medicare beneficiaries who do not enroll in HMOs indicate comparable levels of overall satisfaction with their health care arrangements, although HMO enrollees reported less satisfaction with specific elements related to the perceived quality of care they received at the HMO.
- Disenrollment from Medicare HMOs is high—approximately 30 percent of beneficiaries disenroll within 2 years. Disenrollment was most frequent from staff model HMOs and disenrollees were more likely than were continuing enrollees to have characteristics associated with a higher propensity to use health services.

- The process of care provided in HMOs is not significantly different, or is somewhat better, than the care provided in fee-for-service settings. This finding holds for basic care, management of chronic conditions, and management of resource intensive conditions. In addition, Medicare beneficiaries in HMOs report access to care that is quite similar to fee-for-service patients, for specific symptoms.
- Selection into HMOs was notably favorable during the demonstration period. Medicare beneficiaries who enrolled in HMOs had used significantly less health care in the 2 years prior to joining the HMO and were significantly less likely to die during the 2 years following enrollment.
- Medicare HMOs had little impact on Medicare enrollees' use of hospital services during the initial enrollment year. During the second year, however, there was a measurable and significant reduction in use of hospital services by these enrollees. This finding may reflect HMOs' learning to manage older patients' care or may be the result of enrollees' having had untreated conditions prior to joining the HMO.
- Although discrepancies in the Medicare claims data create uncertainty about the validity of the results of the cost impact evaluation, there was considerable evidence that suggests that Medicare program costs were increased as a result of risk contracting with the Medicare Competition Demonstration HMOs and CMPs.

Overall, the National Evaluation of the Medicare Competition Demonstrations provides evidence that Medicare risk contracting is operationally feasible, and most HMOs and CMPs have been operating successfully in the Medicare market. Medicare enrollees are satisfied, and some beneficiaries may have improved access to care of equal or higher quality than is available in the fee-for-service sector. It is less clear that the Medicare program has achieved any savings from the risk contracting experience with the demonstration HMOs and CMPs. However, the demonstration HMOs and CMPs are not representative of the HMO industry or of TEFRA risk-contract HMOs in a number of ways and, consequently, these results may not be fully generalizable to the current TEFRA program. The evaluation findings do point the way for future research including HCFA's evaluation of the TEFRA HMO-CMP program, which began in early 1988 and will continue through 1992.

## References

Brown, B.: *Final Analysis Report: The Structure of Quality Assurance Programs in HMOs and CMPs Enrolling Medicare Beneficiaries*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Feb. 1987.

Brown, R., et al.: *Second Annual Report: National Medicare Competition Evaluation*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Apr. 1987.

Brown, R., et al.: *Biased Selection in the Medicare Competition Demonstration*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Feb. 1987.

Brown, R., et al.: *Enrollment and Disenrollment in Medicare Competition Demonstration Plans: A Descriptive Analysis*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Sept. 1986.

Harkins, E.: *Analysis Plan—Impacts on Quality of Care: Patient Satisfaction*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., 1986.

Langwell, K., et al.: *The National Medicare Competition Demonstrations Evaluations: Report on the Implementation of the Medicare Competition Demonstrations*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Feb. 1986.

Langwell, K., et al.: *First Annual Report: National Evaluation of Medicare Competition Demonstrations: Medicare and HMOs: A History and Review of Early Experience*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Nov. 1985.

Langwell, K., and Hadley, J.: *National Evaluation of the Medicare Competition Demonstrations: Summary Report*. Contract No. 500-83-0047. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Jan. 1989.

Nelson, L., Rossiter, L., Adamache, K., and Berman, K.: *The National Medicare Competition Demonstrations Evaluation: A Preliminary Analysis of the Use and Cost of Services: Aggregate HMO Data*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., June 1986.

Nelson, L., and Brown, R.: *National Medicare Competition Demonstrations Evaluation: Impact of Medicare HMOs on the Use and Cost of Services*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Jan. 1989.

Retchin, S., and Brown, B.: *National Medicare Competition Evaluation: An Analysis of Health Status Outcomes and Access to Care for Enrollees in Risk-Based Plans Compared to Medicare Beneficiaries in the Fee-for-Service Sector*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., July 1988.

Retchin, S., et al.: *National Medicare Competition Evaluation of the Quality of the Process of Care*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., May 1988.

Rossiter, L.: *Report on the Impact of the Medicare Competition Demonstrations on the Fee-for-Service Sector*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Aug. 1988.

Rossiter, L., et al.: *Analysis Report of Patient Satisfaction for Enrollees and Disenrollees in Medicare Risk-Based Plans*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., May 1988.

Rossiter, L., et al.: *Third Annual Report: National Medicare Competition Evaluation*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Apr. 1988.

Wooldridge, J., et al.: *Data Collection Design and Implementation Report: Evaluation of the Quality of the Process of Care*. Prepared for the Health Care Financing Administration. Washington, D.C. Mathematica Policy Research, Inc., Apr. 1988.

## Acknowledgments

The National Evaluation of the Medicare Competition Demonstrations was conducted from 1983 through 1988 by Mathematica Policy Research (MPR) and the David Williamson Institute for Health Studies, Medical College of Virginia (MCV) under Contract No. 500-83-0047 with the Health Care Financing Administration (HCFA), Office of Research and Demonstrations. This summary draws on research conducted by the staff at these two organizations. Randall Brown, Kathryn Langwell, and Louis Rossiter were co-principal investigators. In addition, Lyle Nelson of MPR had the principal responsibility for the analysis of use and cost impacts, Barbara Brown at MCV was the lead analyst for the quality assurance program analysis, and Sheldon Retchin at MCV was the principal analyst for the clinical evaluation of the quality of the process of care in Medicare health maintenance organizations (HMOs) and fee-for-service settings. A full list of reports and published papers from the evaluation is contained in the references to this article.

As is often the case for research efforts that last for several years, some of the individuals who were responsible for the initial phases of the evaluation moved on to other endeavors before the project was completed. J. Alan Brewster was MPR's project director for the Medicare Competition Evaluation from 1983 through 1985, and Alan Friedlob was the HCFA project officer during the first 18 months of the project. Both of these individuals contributed significantly to the design of the evaluation, and this design provided a solid foundation for all of the subsequent research that was conducted. We would like to thank Shelly Nelson, Nancy Carlton, Judith Wooldridge, Ann Ciemnecki, Killard Adamache, Tony Tucker, Elizabeth Bates, Pam Allen, Randy Hirscher, Lisa Schopler, Gary Swearingen, Sharon Corbin-Jallow, Beverly DeShazo, and the many other MPR and MCV staff who contributed to this exceptionally complex project. James Hadley was the HCFA project officer for the final 4 years of the evaluation. A number of other individuals at HCFA provided ongoing guidance and valuable comments on work in progress,

including Sidney Trieger, Ronald Deacon, Gerald Riley, James Lubitz, James Beebe, and Paul Eggers of the Office of Research and Demonstrations; Lauren Deigh of the Office of Prepaid Health Care; and Evelyn King of the Office of the Assistant Secretary for Planning and

Evaluation, Department of Health and Human Services. The cooperation and assistance of the HMOs and competitive medical plans that participated in the Medicare Competition Demonstrations are also gratefully acknowledged.