

GAO

Report to the Chairman, Subcommittee
on Health and Environment, Committee
on Commerce, House of Representatives

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MEDICARE

Most Beneficiaries With Diabetes Do Not Receive Recommended Monitoring Services



**Health, Education, and
Human Services Division**

B-270222

March 28, 1997

The Honorable Michael Bilirakis
Chairman, Subcommittee on Health and Environment
Committee on Commerce
House of Representatives

Dear Mr. Chairman:

Diabetes is a prevalent, costly, chronic disease that has substantial effects on the Medicare program: at least 1 in 10 beneficiaries is diagnosed with diabetes, and on average these beneficiaries cost Medicare considerably more than those without diabetes. Most experts agree that preventive care—both appropriate medical management and patient self-management—can improve the quality of life for people with diabetes. Prevention for diabetes aims to slow the disease’s progression through screening, monitoring, and treating conditions to keep them from worsening and becoming more costly.

You asked us to examine how well the health care system provides preventive services to Medicare beneficiaries with diabetes. We focused our review on the following questions: (1) To what extent are Medicare beneficiaries with diabetes receiving recommended levels of preventive and monitoring services? (2) What are health maintenance organizations (HMO) that serve Medicare beneficiaries doing to improve delivery of recommended diabetes services? and (3) What activities does the Health Care Financing Administration (HCFA) support to address these service needs for Medicare beneficiaries with diabetes?

To respond to these questions, we identified a representative sample of more than 168,000 people with diabetes in the Medicare fee-for-service program and reviewed their service claims records for 1994. About 90 percent of the people with diabetes in our cohort were aged 65 or older; about 10 percent were under age 65 and disabled. We also surveyed 88 HMO plans serving Medicare beneficiaries on their approaches to preventive diabetes care. The plans varied in total enrollment, geographic location, and other characteristics. The combined Medicare enrollment of the 88 health plans was about 2.7 million members. (For detailed descriptions of our methodology, see apps. I and II.)

We also interviewed staff of 12 of the surveyed HMO plans (plans that reported having extensive preventive and monitoring services) and of 6

disease management companies.¹ In addition, we reviewed the professional literature on diabetes care and discussed diabetes management issues with representatives from medical specialty societies, interest groups, national and regional HCFA offices, and recognized experts. We conducted our work between October 1995 and November 1996 in accordance with generally accepted government auditing standards.

Results in Brief

Although experts agree that regular use of preventive and monitoring services can help minimize the complications of diabetes, most Medicare beneficiaries with diabetes do not receive these services at recommended intervals. More than 90 percent of fee-for-service Medicare beneficiaries with diabetes visited their physicians at least twice in 1994; however, only about 40 percent received an annual eye exam, and only about 20 percent received the recommended two specialized blood tests per year to monitor diabetes control.² On the whole, these fee-for-service utilization rates did not vary substantially by patient age, sex, or race. The provision of preventive and monitoring services under managed care is also below recommended levels, although data for this service delivery approach are limited. For example, among people with diabetes aged 18 to 64 who were enrolled in private HMO plans, less than half received an eye exam in 1995. According to diabetes experts, several factors may contribute to low use of monitoring services, including physicians' lack of awareness of the latest recommendations and patients' lack of motivation to maintain adequate self-management care.

Medicare HMO efforts to improve diabetes care have been varied but generally limited. Most plans report that they have focused on educating their enrollees with diabetes about self-management and their physicians about the need for preventive and monitoring services. Some HMOs have begun to take additional steps, such as tracking the degree to which physicians provide preventive care, and a few plans have developed comprehensive diabetes management programs. Because virtually all of these efforts have begun within the past 3 years, little is known about their effectiveness.

¹Disease management companies are organizations, often affiliated with pharmaceutical firms, that contract with employers, insurers, and HMOs to provide educational materials, individual or group counseling, and sometimes service reminder systems for people with specific diseases, such as diabetes or asthma.

²The recommended eye exam for people with diabetes is a dilated, funduscopy eye examination, most often performed by an ophthalmologist or optometrist. The specialized blood test is the glycohemoglobin or glycosylated hemoglobin test.

HCFA also has begun to test preventive care initiatives for diabetes and has targeted this area for special emphasis. Its efforts include helping to plan a nationwide diabetes education program, encouraging local experiments to increase use of monitoring services and improve quality of care for people with diabetes, and developing performance measures for providers of diabetes care. But like the efforts of Medicare HMOs, HCFA's initiatives are quite recent, and the agency does not yet have results that would allow it to evaluate effectiveness. To the extent that these initiatives prove cost-effective, they may help promote better management of diabetes care.

Background

Diabetes affects a significant portion of Medicare beneficiaries and results in an even larger share of Medicare costs. Diagnosed cases of diabetes are estimated to be 10 to 15 percent of the Medicare population, or roughly 3 million to 5 million people, and nearly as many cases may be undiagnosed.³ According to one estimate, treating people with diabetes may account for as much as 25 percent of all Medicare costs.⁴

People who have diabetes use more health services than nondiabetics: they have two to three times more ambulatory contacts (physician, emergency room, and hospital outpatient visits), three times more hospitalizations, and are more likely to live in nursing homes. Moreover, diabetes is the leading diagnosis associated with use of Medicare's rapidly growing home health services, representing about 10 percent of all home health visits. In addition, complications of the disease clearly can diminish quality of life. Diabetes is a leading cause of blindness, end-stage renal disease, and lower extremity amputations; and people with diabetes have rates of coronary heart disease and stroke that are two to five times those of nondiabetics.

³Diabetes mellitus comprises a heterogeneous group of metabolic disorders characterized by high blood glucose (sugar) levels. Though there is no single cause of diabetes, both genetic and environmental or lifestyle factors—such as obesity and lack of exercise—are involved in its etiology. Diabetes occurs more commonly among women, minorities, and people of lower socioeconomic status. The two major types of diabetes are (1) insulin-dependent diabetes mellitus, known as juvenile or type I diabetes, and (2) noninsulin-dependent diabetes mellitus, known as adult onset or type II. Noninsulin-dependent diabetes accounts for about 90 percent of all cases. Despite the terminology, people with noninsulin-dependent diabetes may use insulin or oral medications to help control blood glucose levels.

⁴The estimated 25 percent of all Medicare costs is cited in M.I. Harris and R.C. Eastman, "Early Detection of Undiagnosed Non-Insulin-Dependent Diabetes Mellitus," *Journal of the American Medical Association*, Vol. 276, No. 15 (1996), pp. 1261-62. This figure refers to Medicare costs for all services provided to people with diabetes, including services for conditions that may be unrelated, such as cancer therapy. Moreover, Medicare beneficiaries with diabetes commonly have several chronic conditions, adding to the cost of their care.

Diabetes experts generally agree that routine provision of several preventive and monitoring services can help physicians and patients manage the disease more effectively and control its progression. A 1993 landmark study, known as the Diabetes Control and Complications Trial (DCCT),⁵ and other studies have provided evidence of opportunities for improving care.⁶ The DCCT showed that improved glucose control can retard the onset and progression of the complications of diabetes. The American Diabetes Association's (ADA) current recommendations for diabetes management, the most frequently cited clinical practice guidelines for diabetes care, reflect these studies' results.⁷

Most of the ADA-recommended preventive and monitoring services are covered benefits for Medicare beneficiaries with diabetes. Excluded as covered benefits, however, are some services and supplies that might facilitate active patient self-management. For example, people in traditional, fee-for-service Medicare (about 90 percent of all beneficiaries) bear the costs of insulin, syringes, and, in some cases, glucose test strips used to help monitor their blood sugar levels at home.⁸ For those beneficiaries enrolled in an HMO (about 10 percent of Medicare beneficiaries nationwide), these supplies and services may or may not be included in the benefit package, depending on the HMO. Some members of the Congress have proposed legislation that would expand Medicare coverage to include payment for diabetes education in an outpatient, nonhospital-based setting, as well as payment for blood-testing strips for all beneficiaries with diabetes.⁹

⁵The Diabetes Control and Complications Trial Research Group, "The Effect of Intensive Treatment of Diabetes on the Development and Progression of Long-Term Complications in Insulin-Dependent Diabetes Mellitus," *The New England Journal of Medicine*, Vol. 329, No. 14 (1993), pp. 977-86. Although this trial involved only people with insulin-dependent (type I) diabetes, there is reasonable agreement that the results should be applied to people with noninsulin-dependent (type II) diabetes as well.

⁶Two studies that have confirmed the DCCT are (1) P. Reichard, M. Pihl, U. Rosenqvist, and J. Sule, "Complications in IDDM Are Caused by Elevated Blood Glucose Level: The Stockholm Diabetes Intervention Study (SDIS) at 10-Year Follow Up," *Diabetologia*, Vol. 39 (1996), pp. 1483-88; and (2) Y. Ohkubo, H. Kishikawa, E. Araki, and others, "Intensive Insulin Therapy Prevents the Progression of Diabetic Microvascular Complications in Japanese Patients With Non-Insulin-Dependent Diabetes Mellitus: A Randomized Prospective 6-Year Study," *Diabetes Research and Clinical Practice*, Vol. 28 (1995), pp. 103-17.

⁷The ADA is a national nonprofit educational organization, whose most recent clinical guidance was published in "Clinical Practice Recommendations 1997," *Diabetes Care*, Vol. 20, suppl. 1 (1997).

⁸Currently, Medicare pays for 100 testing strips per month for people with diabetes who use insulin. The consensus seems to be that the number of strips covered is adequate but that coverage should be extended to some people with diabetes who do not use insulin.

⁹For example, two bills were introduced in January 1997: H.R. 15, the Medicare Preventive Benefit Improvement Act of 1997, which includes proposed diabetes screening benefits, and H.R. 58, the Medicare Diabetes Education and Supplies Amendments of 1997.

Medicare Beneficiaries With Diabetes Are Not Receiving Recommended Levels of Monitoring Services

Under both fee-for-service and HMO delivery, Medicare beneficiaries with diabetes are falling far short of receiving recommended levels of monitoring services, according to available evidence. A number of factors, both patient- and physician-related, may contribute to the low use of these services.

Providers Agree on Services but Recognize Need for Flexibility on Frequencies

The ADA clinical care guidelines reflect the published evidence and expert opinion on what constitutes quality diabetes care. The guidelines recommend monitoring services that with appropriate follow-up and treatment, may lead to improved health outcomes. Receiving these monitoring services, however, does not guarantee improved blood sugar control or prevention of complications.

Nonetheless, experts generally agree that providing the monitoring services recommended by the ADA represents good diabetes care. Among the ADA's recommendations for people who have noninsulin-dependent diabetes (more than 90 percent of diabetics in Medicare), we selected six monitoring services (see table 1) that can be measured using Medicare claims data. Several other recommended services were excluded because all occurrences could not be identified by this methodology. For example, foot examinations to detect people at elevated risk of ulcers and infections (and to prevent lower extremity amputations), when provided, are most likely to be part of an office visit and if so would not be claimed as a separate service.

Table 1: Diabetes Monitoring Services Included in Our Analysis

Service	Frequency per year	Purpose
Physician visits	Two to four	Monitor general health and diabetes control, order and review lab tests, conduct foot exams, and refer to other services
Eye exam (dilated)	One	Identify early signs of diabetic retinopathy and refer for treatment
Glycohemoglobin test	Two	Assess and monitor achievement of glycemic control goals
Urinalysis test	One	Monitor kidney function by testing for albumin or protein
Serum cholesterol test	One	Monitor cholesterol as a contributor to heart disease and circulatory problems
Flu shot (in season)	One	General preventive service for high-risk populations such as older people and people with diabetes

Source: ADA, "Clinical Practice Recommendations, Standards of Medical Care for Patients With Diabetes Mellitus," *Diabetes Care*, Vol. 19, suppl. 1 (1996). The annual flu shot is recommended by the American College of Physicians and supported by the Centers for Disease Control and Prevention (CDC).

The recommended service frequencies specified in table 1 generally apply to the average person with noninsulin-dependent diabetes.¹⁰ However, some debate surrounds the most appropriate frequencies for certain individuals, particularly older people with diabetes: for example, whether the eye exam should be provided annually or whether providing it every 2 years is just as effective. Some individuals may need more or fewer services depending on their age, medical condition, whether they use insulin, or how well their blood sugar is controlled. According to an ADA representative, a small percentage of people with diabetes could appropriately receive certain recommended services at reduced frequency.

¹⁰Because these are service targets, 100-percent compliance for all people with diabetes should not be expected.

**Under Fee-for-Service
Care, Utilization Rates for
Recommended Services
Leave Room for
Improvement**

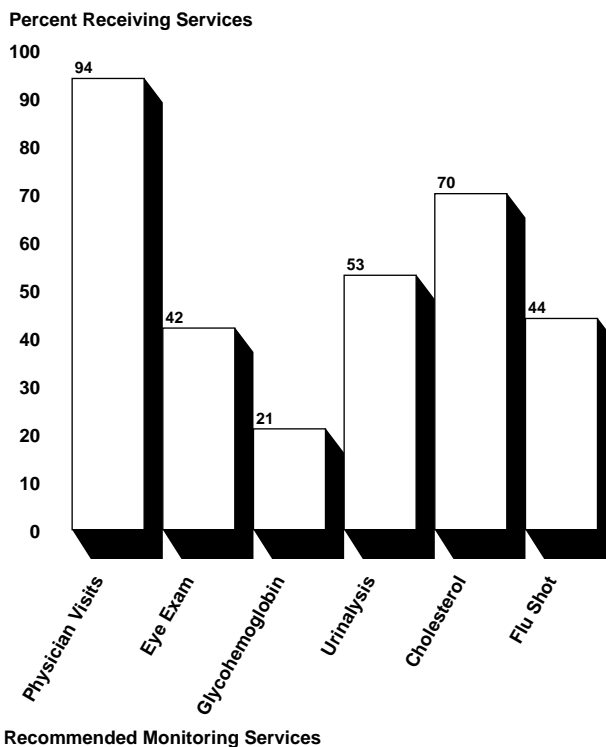
Overall, our cohort of about 168,000 Medicare beneficiaries with diabetes fell far short of receiving the recommended frequencies of the six monitoring services in 1994.¹¹ As figure 1 shows, Medicare beneficiaries with diabetes had the opportunity to receive such services because 94 percent of them had at least two physician visits in 1994. In fact, the mean number of physician visits was 9.5.¹² However, less than half of these beneficiaries with diagnosed diabetes received an eye exam (42 percent), only 21 percent received the two recommended glycohemoglobin tests, and only about half (53 percent) had a urinalysis.¹³

¹¹In our analysis of utilization rates for these monitoring services, we did not adjust for differences in the severity of patient illness or comorbidities, which are important contributors to service use variations. Some qualifications related to the use of Medicare claims data are discussed in app. I.

¹²We did not determine the primary purpose of the visits, and many may have been for purposes other than monitoring the patient's diabetes.

¹³Some experts observed that the service utilization rates we obtained, while low compared with recommended levels, generally showed some improvement since the late 1980s and early 1990s.

Figure 1: Fee-for-Service Utilization Rates for Recommended Monitoring Services, 1994



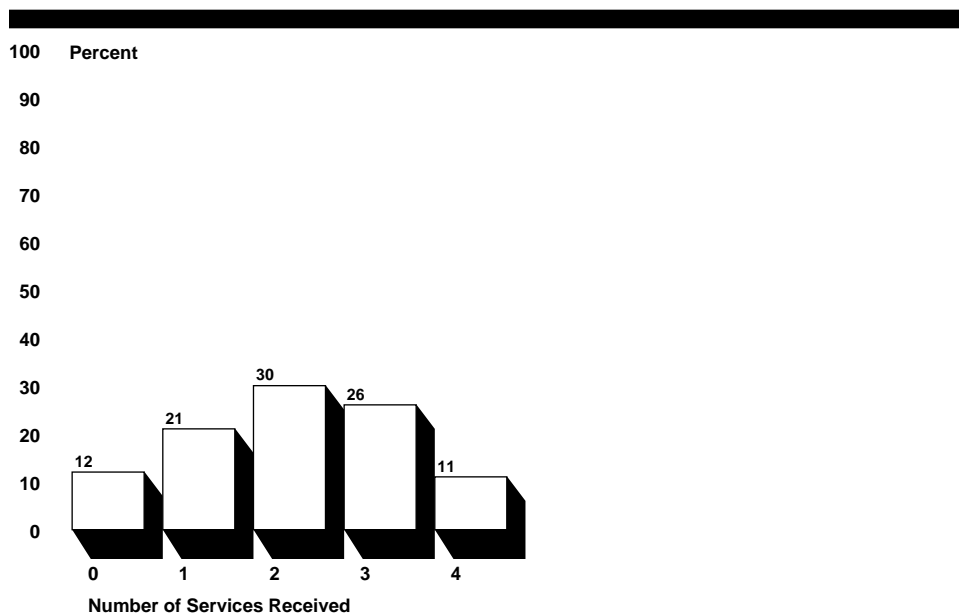
More Medicare beneficiaries with diabetes (70 percent) received a serum cholesterol test than any of the services except physician visits. This may reflect both the successful public education campaign of the late 1980s about cholesterol risks and the frequent inclusion of cholesterol in automated multichannel blood tests. The annual flu shot is likely to be underreported in Medicare claims data because many people receive flu shots in nonmedical settings such as shopping malls and business offices. One HCFA official estimated that Medicare claims may underreport the number of flu shots received by as much as 20 percentage points.

Utilization rates are even lower when considering the monitoring services as a unit. (See fig. 2.) About 12 percent of the Medicare beneficiaries with diabetes in our cohort did not receive any of the following key monitoring services: at least one eye exam, one glycohemoglobin test,¹⁴ one urinalysis,

¹⁴For this analysis, we looked for only one glycohemoglobin test, instead of the recommended two, because so few beneficiaries in our cohort had received two tests.

and one serum cholesterol test. About 11 percent of beneficiaries showed Medicare claims for all four of these services.

Figure 2: Percent in Fee-for-Service Receiving Key Monitoring Services, 1994



Note: The four key services are at least one eye exam per year, one glycohemoglobin test, one urinalysis, and one serum cholesterol test.

Utilization rates for the six monitoring services by patient age, sex, race, and geographic characteristics were as follows:

- Utilization rates were generally similar for men and women and for all age groups over age 65. The single most notable utilization difference was in the annual eye examination rate for people with diabetes under age 65. Forty-three percent of people with diabetes aged 65 to 74 and 44 percent of those aged 75 and older received an eye exam, compared with only 28 percent of the disabled in Medicare under age 65.
- White Medicare beneficiaries with diabetes received the six monitoring services at consistently higher rates than did beneficiaries who were black or of another racial group,¹⁵ but for most services the differences were not

¹⁵For this analysis, we used four beneficiary race categories on the basis of those available in HCFA Medicare claims data: white, black, other (including Hispanic, Asian, and North American Natives), and unknown.

great. For example, the utilization rate for the eye exam was 43 percent for whites, 36 percent for blacks, and 37 percent for beneficiaries of other races. The rate for at least one glycohemoglobin test was 39 percent for whites, 31 percent for blacks, and 37 percent for beneficiaries of other races.

- The use of diabetes monitoring services varied by geographic area. For example, among the 10 states that had the largest Medicare fee-for-service diabetes populations in our study, Florida and New York had the highest percentages of beneficiaries with diabetes who received all four key services, at 18 and 16 percent, respectively; Pennsylvania had the lowest rate, 8 percent. As another example of this variation, of all 50 states and the District of Columbia, Nebraska had the highest eye exam rate (54 percent), and Alabama had the lowest (32 percent), followed by Tennessee and Oregon (33 percent).
- Seventy-four percent of our Medicare fee-for-service diabetes cohort lived in Metropolitan Statistical Areas (MSA) and the remaining 26 percent lived in non-MSAs, generally rural areas. Monitoring services' utilization rates were slightly but consistently higher for beneficiaries living in MSAs, as a whole, than for those living outside MSAs.

(Detailed data on service utilization rates by these characteristics appear in app. I.)

Limited Data Suggest Monitoring in Medicare HMOs Also Falls Short of Recommendations

Because HCFA does not require its HMO contractors to report patient-specific utilization data, we could not systematically assess the use of recommended monitoring services by beneficiaries with diabetes in Medicare HMOs. Unlike fee-for-service providers, Medicare HMOs are paid a monthly rate per enrollee, regardless of the actual services provided. Therefore, to be paid, the plans do not need to document utilization, costs of care, or patient case mix. Individual plans, however, may develop such information for in-house management purposes.

Diabetes monitoring services' utilization rates are also below recommended levels in Medicare HMOs, according to the limited data we obtained from published research and other sources. For example, the HMO component of HCFA's Ambulatory Care Diabetes Project, including 23 health plans that volunteered as project participants in five states (California, Florida, Minnesota, New York, and Pennsylvania), determined that 61 percent of Medicare enrollees received an eye exam in an 18-month period ending in 1995; 69 percent received at least one glycohemoglobin test.

Another indicator of the level of monitoring services provided to people with diabetes in HMOs is the eye exam rate reported in the Health Plan Employer Data and Information Set (HEDIS), a standardized, voluntary HMO performance reporting system developed by the National Committee on Quality Assurance (NCQA). HEDIS data are the most commonly used HMO performance measures for the non-Medicare, employer-insured HMO population. Nationwide, the average diabetic eye exam rate reported by HMOs participating in HEDIS was 42 percent in 1995, but the rate varied widely among the few plans whose reports we obtained, ranging from 20 to 70 percent. Although it is unclear whether these rates also apply to Medicare beneficiaries with diabetes enrolled in HMOs, the national average rate of 42 percent was the same rate we found in our 1994 Medicare fee-for-service population.

Patient and Physician Factors Contribute to Less-Than-Recommended Utilization

Although it is unclear what specifically accounts for the less-than-recommended use of monitoring services, diabetes experts have identified several factors, including patient and physician attitudes and practices, that contribute to suboptimal diabetes management in general. Many of these factors are not unique to diabetes management; they also affect delivery of preventive care for many other chronic conditions.

Experts agree that the patient bears much of the responsibility for successful diabetes management. For a variety of reasons, however, people with diabetes may not actively manage their disease. Lack of knowledge, motivation, and adequate support systems are often cited as key reasons. People with diabetes may not fully understand the seriousness of their disease or the need for regular preventive and monitoring services. Consequently, they may not always follow up on routine appointments and referrals. For many, diabetes self-management does not become a priority until serious complications develop. Then, difficult changes in well-established habits, such as diet, lack of exercise, and smoking, may be needed. A family support system is important to help patients make such changes, but it is often lacking.

Experts have also noted that the substantial out-of-pocket costs for people with diabetes—that can result from incomplete insurance coverage for diabetes-related supplies, such as insulin, syringes, and glucose-testing strips—may discourage some people with diabetes from actively managing their disease. For example, syringes may cost about \$10 to \$15 per 100, insulin costs about \$40 to \$70 for a 90-day supply, glucose-testing meters

cost from \$50 to \$100, and glucose-testing strips cost \$.50 to \$.72 each (or about \$1,000 a year for a person with diabetes who tests four times a day).

Physicians and other health care providers also may contribute to low utilization rates for recommended services, according to literature reports and experts we contacted. Some physicians may not be well versed in the latest diabetes care guidelines, or they may not know of recent research demonstrating the efficacy of treatments. Others may disagree with the need for all recommended services for all patients or, specifically, with the recommended frequency of services. Some physicians may be discouraged from active diabetes management with older patients because, though some monitoring services may identify complications, they do not prevent them; and without patient behavior changes, health outcomes are unlikely to improve.

Another important factor affecting physician practices is the severity of a patient's diabetes and the extent of other medical problems. Many Medicare beneficiaries with diabetes have several serious medical conditions. We were told that during a patient visit, a physician is likely to focus on a patient's most urgent concerns, neglecting ongoing diabetes management and patient education.

Finally, inadequate support systems for many providers may contribute to less-than-recommended service delivery, according to some reports. Managed care plans and physician practices may lack automated medical records and service-tracking systems that could provide timely records of patient service use and reminders when routine preventive and monitoring services, such as those for diabetes, are needed.

HMO Efforts to Manage Diabetes Care Are Varied but Limited

Collectively, the 88 HMOs in our survey reported a wide range of diabetes management efforts; in general, however, most plans' efforts are limited. The HMOs identified more than 30 different kinds of diabetes management activities, ranging from featuring articles on diabetes in their publications to monitoring the degree to which their physicians are providing preventive services.¹⁶ The type and number of reported activities varies greatly: a few HMOs have comprehensive diabetes management programs, but most plans' efforts are much more limited. HMOs told us that they have focused their efforts on educating people with diabetes about self-management and their physicians about the need for recommended

¹⁶For details about these approaches and their use by HMOs according to size, model type, geographic location, and tax status (profit or nonprofit), see app. II. In general, we did not find strong associations between the types of approaches used and specific HMO characteristics.

preventive and monitoring services. Even HMOs with comprehensive diabetes management programs have initiated their efforts mostly in the past 3 years. As a result, little is known yet about the effectiveness of these efforts or which approaches work better than others.

Although we did not survey fee-for-service group practices on their diabetes management approaches, several of these groups also may be exploring ways to improve diabetes care in response to the DCCT research findings and practice guidelines. For example, one multispecialty group practice has established a comprehensive diabetes education and treatment center, and another group told us they have started to monitor utilization of the diabetic eye exam and have implemented a quality-improvement program to increase utilization.

Most Efforts to Date Focus on Education

Every HMO in our survey reported using at least one type of effort to educate enrollees with diabetes about appropriate diabetes management. Following are examples of the kinds of approaches they reported:

- **Written materials:** The most common approach (used by 82 of the 88 plans) is featuring articles about diabetes management in publications directed to all enrollees. Other approaches include placing brochures about diabetes management in physicians' waiting rooms and making a comprehensive manual on diabetes care available to all enrollees with diabetes.
- **One-on-one educational sessions:** Sixty-eight HMOs reported having diabetes-related health professionals, such as nurses, certified diabetes educators, or other specialists, provide diabetes education to individuals with diabetes. During our follow-up interviews with 12 plans,¹⁷ the HMOs reported a wide variety of approaches to educating such enrollees, from regular meetings with experts on exercise and nutrition to a telephone-advice service that fields enrollees' questions about diabetes.
- **Classes:** During our follow-up interviews, we learned that a number of HMOs offer classes for several levels of diabetes education: basic classes for people newly diagnosed with diabetes, intermediate classes to provide ongoing management support, and advanced classes for people with diabetes who want to learn how to closely control their blood sugar levels.

Besides educational efforts for enrollees, most HMOs said they also had begun educational efforts for physicians. Commonly used techniques to

¹⁷We selected 12 of the 88 surveyed plans for additional, follow-up interviews. The plans we selected reported providing extensive preventive and monitoring services. We collected some of the material in this section during these follow-up interviews.

educate physicians on the importance of preventive care include sending written materials (reported by 71 plans) and holding meetings with groups of physicians (46 plans). Nearly three-fourths of the HMOs reported using clinical practice guidelines on diabetes care.¹⁸ Some supplement these guidelines with more intensive education. For example, one HMO reported that its endocrinologists meet regularly with small groups of primary care physicians to provide training on important diabetes topics, such as diabetic eye disease and foot care. The plan has also developed a physician training video on diabetic foot care.

Some of the HMOs—10 of the 88 we surveyed—contract with disease management companies to provide diabetes education services. One such company, for example, offers what they call three platforms of services: (1) educational mailings, (2) telephone-based education and counseling, and (3) face-to-face education and counseling. For a fixed, per person, monthly fee, which varies by the platform selected by the contracting group, the disease management company provides services to any of the plan’s enrollees with diabetes who choose to participate.

Many Plans Are Augmenting Education With Other Approaches

Although education may effect short-term behavioral changes, some experts express concern about the difficulty people with diabetes and physicians have in maintaining behavioral changes. Information about managing diabetes is essential to good control of blood sugar levels, but information alone may not be enough to motivate the behavior and lifestyle changes necessary to maintain such control. For example, one diabetes expert told us that many people with diabetes revert to old behaviors within 6 months unless they receive additional education or support. As the director of diabetes clinical research at a large pharmaceutical firm put it, “the successful implementation of good diabetes management, through good control of blood sugar levels, can only be achieved through significant daily changes in lifestyle by the diabetic. This is very hard to do.”

HMOs reported using a wide variety of approaches to continuously encourage appropriate diabetes management. Following are some of the approaches they reported:

¹⁸Some relationship does exist between the type of approach and a characteristic of the HMO, according to our analysis: the greater the number of Medicare enrollees, the higher the likelihood that the HMO has a clinical practice guideline. Forty-six percent of HMOs with less than 10,000 Medicare enrollees reported having such a guideline, compared with 84 percent of HMOs with 20,001 to 50,000 Medicare enrollees and 92 percent with more than 50,000 enrollees.

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- Reminders to enrollees and physicians: About half of the HMOs reported one or more such efforts. For example, one HMO provides a small, wallet-sized “scorecard” to enrollees with diabetes that lists recommended annual services and has a chart for enrollees to record the dates they receive each service. One HMO posts signs in examining rooms reminding people with diabetes to remove their shoes and socks to prompt physicians to check patients’ feet, and another attaches service reminder sheets to enrollees’ charts when they come in for any visit.
 - Performance monitoring and feedback: Many health plans are trying to improve preventive care utilization rates by providing feedback to physicians on their compliance with recommended standards. Of the 62 plans that reported use of a clinical practice guideline for diabetes, 52 have a system to monitor physicians’ compliance with it. The plans are most likely to monitor utilization of services related to HEDIS reporting requirements, and some reported systems to convey such utilization results to their physicians.¹⁹
 - Diabetes registries: HMOs reported maintaining regularly updated registries of their enrollees with diabetes to monitor overall compliance with recommended standards and to mail them information and appointment reminders. For example, one HMO uses its registry and its claims records to mail a reminder letter to enrollees who have not received an eye exam in the past year. Another plan combines its diabetes registry with pharmacy, laboratory, and billing data, all of which can be accessed by physicians to review a patient’s use of services and determine which services should be provided.
 - Diabetes clinics: A few HMOs reported offering regular comprehensive diabetes care clinics. This involves the HMO setting aside days when people with diabetes can see their physicians, a nutritionist, a podiatrist, and other specialists and receive all necessary laboratory services in a single visit. One HMO reported the hope that these clinics would encourage self-sustaining diabetes support groups, while reducing the number of physician office visits.
 - Support systems: One HMO has been providing education and support to Medicare beneficiaries who have diabetes or asthma through a voluntary, confidential, toll-free telephone system. Nurse counselors trained in these chronic diseases answer health care questions, provide education, and encourage self-management skills.

Five of the HMOs reported committing substantial resources to develop a systemwide comprehensive diabetes management program. For example,

¹⁹To monitor HEDIS performance measures, the plans collect data according to NCQA specifications, using chart reviews, claims or encounter data, or a combination of both.

one HMO we contacted has established a population-based approach to diabetes management, with long-term goals of improving patient health status and satisfaction as well as performance on cost and utilization. The HMO measures patient outcomes with both clinical and subjective values, which range from improved blood glucose control and prevention of microvascular disease to the patient's assessment of improved quality of life and sense of well-being. The plan relies on a variety of interventions to meet enrollees' needs, including diabetes chronic care clinics at several family practice sites, patient self-management notebooks, and diabetes telephone education. Interventions designed to help physicians provide better care to enrollees with diabetes include an online diabetes registry for physicians that is updated monthly, use of evidence-based clinical practice guidelines, outcomes reports for physicians, and provider education and training by diabetes expert teams consisting of an endocrinologist and a nurse. These teams travel to all family practice sites several times each year to see patients jointly with the family practice teams.

Little Evidence Available on Effectiveness of Diabetes Management Efforts

HMOs in our survey generally had little information about the extent to which their diabetes management approaches have affected the use of recommended monitoring services. Even the plans reporting the most comprehensive approaches told us that they collect utilization data on five or fewer services and began collecting this information in 1993 or 1994. Some HMOs said they collect no such data. The service monitored most often (by 58 HMOs) was the diabetic eye exam, probably because HEDIS, the performance-reporting system for commercial HMOs, requires plans to measure the percentage of their enrollees with diabetes under age 65 who receive an annual eye exam.

Although little information exists on the relative effectiveness of specific approaches, most experts generally believe that intensive and sustained interventions are most likely to support long-term behavior change. For example, one disease management company told us that its in-person counseling and education program is likely to be more effective at improving utilization rates than communicating with enrollees by telephone or mailings. Because intensive interventions are probably more expensive to provide than other approaches, measuring their effectiveness is important.

Of the 88 plans surveyed, 13 reported having information about the effect of their diabetes management efforts on the service use or health

outcomes of their enrollees with diabetes or on the costs to their plans. This is largely because most diabetes management programs are relatively new, and plans do not have systems established to collect and analyze data on outcomes or cost. From the plans that reported information about the effectiveness of their diabetes management efforts, we heard the following:

- Using a variety of strategies, one HMO has shown improved utilization and outcomes. Annual eye examinations increased from 47 percent of enrollees with diabetes in 1994 to 53 percent in 1995, and glycohemoglobin test results showed that the percentage of enrollees with diabetes in good or optimal control improved from 35 to 39 percent.
- Officials of another HMO believe that increased utilization of annual eye exams and glycohemoglobin testing, measured over a 2-year period, are attributable to a program that includes mailings to people with diabetes and an annual performance report for physicians. To increase utilization of the eye exam, the HMO used its diabetes registry to identify 24,000 enrollees with diabetes who had no record of ever receiving an eye exam. After sending letters to those enrollees and their physicians, the plan found that 2,640, or 11 percent, went for an eye exam within 3 months, and, as a result, 48 were referred for appropriate treatment.
- One HMO found that enrollees' glycohemoglobin values improved by 16 percent after the HMO established a diabetes management program, including a 2-day self-management class for enrollees newly diagnosed with diabetes, quarterly follow-ups with a certified diabetes educator or registered nurse, quarterly reminder letters about scheduling appointments, and a communication system for the plan's multidisciplinary diabetes team. According to plan officials, in many cases, their enrollees were able to stop taking insulin and control their diabetes with other methods.

HCFA Has Targeted Diabetes for Special Initiatives, but Effectiveness Is Still Largely Unknown

HCFA has identified diabetes as a major health problem in the Medicare population and has targeted the disease for special initiatives to improve physician and patient awareness, service delivery, and, ultimately, patient health outcomes. As in the private sector, however, most of HCFA's diabetes management initiatives are either new or not yet under way; therefore, clear evidence on which approaches are most effective is not yet available. In addition, some experts suggest that the agency should do more to encourage improved diabetes management.

Diabetes Education and Service Delivery Initiatives Have Begun

Four years ago, HCFA officials crafted a strategic plan for the agency that was designed to move it from its traditional role as a payer to that of a responsible, value-based purchaser. HCFA's mission includes not only protecting the fiscal soundness of HCFA programs, but also ensuring access to affordable, quality health services for its beneficiaries to improve their health status. To this end, HCFA officials determined that diabetes care was a suitable target for action initiatives.

HCFA has started several types of initiatives designed to educate beneficiaries and physicians about diabetes management and to encourage increased use of recommended services. These initiatives are based on the belief that if beneficiaries and providers know about the steps involved in effectively managing diabetes, and if systems are in place to help remind them when certain services are needed, then both may take a more active role in ensuring that appropriate diabetes services are delivered. Following are some of HCFA's initiatives in this area:

- Nationwide Diabetes Education Program: HCFA is actively participating in the National Diabetes Education Program, organized by CDC and the National Institute of Diabetes and Digestive and Kidney Diseases, part of the National Institutes of Health. This program is designed to increase general public awareness of diabetes as well as patient and provider education about diabetes and practice guidelines. A draft program plan is expected by June 1997.
- Local projects to encourage utilization: HCFA contracts with peer review organizations (PRO) to conduct local projects to improve the quality of care for Medicare beneficiaries.²⁰ Working with the HCFA regional offices, PROs currently are required to implement at least one diabetes-related quality-improvement project involving the providers in their states. Twenty-one PROs have reported a total of 33 diabetes-related projects now under way. For example, the PRO in the state of Washington has developed a method, using Medicare claims data, for identifying beneficiaries with diabetes who are at high risk of lower extremity amputations and encouraging them to get therapeutic shoes to prevent such complications. In addition to fee-for-service quality projects, many PROs are working with HMOs to develop strategies for improving diabetes care, including patient information mailings and physician reminder systems. In Arizona, the PRO has collected baseline data on 15 quality indicator services from six participating HMOs. Together, they have implemented a variety of interventions, including the creation of diabetes databases, special referral

²⁰PROs generally are private, nonprofit organizations of physicians and health professionals, with each PRO covering one or more states. Many PROs are coordinating their diabetes efforts with CDC's Diabetes Control Programs in various states.

and education for noncompliant patients, and the provision of diabetes services to homebound patients. After 1 year of implementation, the quality indicators services have improved by 38 percent.

- Multistate evaluation of intervention strategies: HCFA's Ambulatory Care Diabetes Project involves fee-for-service and HMO providers and PROs in eight states. The two-part project has completed baseline data collection on diabetes service utilization. The intervention stages have been completed, and the remeasurement phase began on January 1, 1997. Participating HMOs have been developing a wide variety of interventions not limited to education, such as reminders to enrollees and physicians and special incentives for beneficiaries.

HCFA Is Preparing to Implement Other Initiatives

HCFA also has committed to encouraging the development of better data-collection systems for tracking service use. The agency is planning several initiatives to develop better information on utilization:

- Application of HEDIS performance measures in Medicare: This year, for the first time, HCFA will require its HMO risk and cost contractors to report the new HEDIS 3.0 performance measures, including the diabetic eye exam rate and flu shot rate. A measure of the glycohemoglobin test may be added in the future. HCFA eventually plans to release this information as part of a comparative "report card" on Medicare HMOs to help beneficiaries choose among plans.
- Expansion of performance measurement to include fee-for-service: HCFA is considering pilot tests to determine the feasibility of expanding performance measurement to include fee-for-service beneficiaries in addition to HMO beneficiaries. Such an expansion would most likely include the diabetes measures used in HMO plans and examine performance at both the community level and for beneficiaries receiving care from large group practices.
- Development of other measurement systems: HCFA is supporting the development of other process- and outcomes-based performance-measurement systems for monitoring diabetes care. Specifically, HCFA awarded a contract to the RAND Corporation to refine quality-of-care measures, including diabetes measures, developed by the Foundation for Accountability.²¹ These measures may be tested in Medicare HMOs and fee-for-service in 1997, and, if successful, HCFA may consider adopting them as a reporting requirement in 1998.

²¹The Foundation for Accountability is an independent organization of consumers and public and private health care payers that promotes the use of patient-oriented measures of health care quality.

-
- Registry of beneficiaries: HCFA's Office of Research and Demonstrations is planning an ongoing registry of a representative sample of Medicare beneficiaries in fee-for-service and HMOs that would provide a study population for regular surveys of health status, health history, and socioeconomic and functional status. This new program would provide a valuable database for a wide range of studies, including research on the chronically ill, such as people with diabetes.

Because several of HCFA's diabetes management initiatives have started only recently, and others are still in the planning stages, it is not yet possible to determine which of these projects are most likely to be effective. Some experts have suggested that HCFA should do more, including the following:

- test the effects of easing potential barriers to active diabetes self-management, such as the current limitations on coverage of supplies (including blood-testing strips) and diabetes self-management education;
- implement incentive systems to reward physicians for achieving and maintaining practice changes that promote better health outcomes;²²
- test diabetes management programs, such as mailed reminder cards or a telephone counseling service, with voluntary Medicare patient participation; and
- support provider-certification programs specifically for diabetes care that are being developed by professional organizations.

Conclusions

Diabetes care is a microcosm of the challenges facing the nation's health care system in managing chronic illnesses among the elderly. The prevalence and high cost of diabetes make it an opportune target for better management efforts. When beneficiaries receive less than the recommended levels of preventive and monitoring services, the result may be increased medical complications and Medicare costs. On the other hand, following the recommendations may enhance beneficiaries' quality of life.

Effectively managing diabetes is hard to accomplish, however, and requires a concerted effort by beneficiaries and physicians. People with diabetes often do not understand or fully appreciate the seriousness of their disease nor the potential for serious complications. Physicians,

²²HCFA is planning to test an outcomes-based reimbursement incentives approach that eventually may be applied to diabetes. In a demonstration involving anticoagulation therapy, HCFA plans to establish an incentive payment to providers based on documentation of good patient outcomes, rather than on physician compliance with recommended processes of care.

whether in fee-for-service or managed care, may not take all steps necessary to ensure that their patients with diabetes receive recommended preventive care. Among HMOs, where coordinated care and prevention are expected to receive special emphasis, many plans are exploring ways to improve diabetes management through reminder systems, telephone hot lines, incentive programs, group clinics, and other approaches. In general, however, providers may be reluctant to invest in more targeted and expensive approaches until their cost-effectiveness is more evident. Recognizing the importance of this issue, HCFA has initiated a reasonable and promising strategy of testing a variety of approaches to learn what works in Medicare—that is, what is effective and what can be implemented at reasonable cost.

Agency Comments and Our Response

HCFA officials generally agreed with the information and issues discussed in a draft of this report, noting that, “interventions to prevent the progression of early complications . . . [that] cause significant morbidity are of key importance to this high risk population.” They raised one conceptual issue on the appropriate quality of care for elderly diabetes patients. Most Medicare beneficiaries with diabetes have had the disease for many years and are likely to have other serious chronic conditions. Therefore, the appropriate frequency of certain monitoring services, such as glycohemoglobin testing, should depend on the treatment regimen for an individual patient, rather than a generic recommendation. HCFA officials also provided a number of technical suggestions that we incorporated where appropriate. A copy of HCFA’s comments appears in appendix III.

We recognize that the service and frequency recommendations in the ADA guidelines are not standards to be applied absolutely to every Medicare beneficiary with diabetes but represent good care for an average person. Because we examined the records for more than 168,000 Medicare beneficiaries, we believe our conclusions on aggregate underperformance of preventive and monitoring services are accurate.

In addition, we obtained comments on our draft report from several experts in diabetes care and public health. They generally agreed with our finding that the use of diabetes preventive and monitoring services could be improved. Like HCFA officials, they observed that differences among individuals with diabetes may justify some variation in the use of recommended services. We responded to these points and incorporated technical comments as appropriate.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to interested parties and make copies available to others on request. Please call me on (202) 512-7119 if you or your staff have any questions. Major contributors to this report are listed in appendix IV.

Sincerely yours,

A handwritten signature in black ink that reads "Bernice Steinhardt". The signature is written in a cursive style with a large, looping initial "B".

Bernice Steinhardt
Director, Health Services Quality
and Public Health Issues

Contents

Letter		1
Appendix I Methodology for Determining Use of Recommended Diabetes Services in Fee-for-Service Medicare	Selecting a Diabetes Cohort From Medicare Fee-for-Service Data Files Adding Enrollment and Eligibility Data to Diabetes Cohort Records Identifying and Counting Recommended Diabetes Services	26 26 27 27
Appendix II Methodology for Determining Use of Diabetes Management Approaches by Medicare HMOs	Methodology Survey Results	35 35 37
Appendix III Comments From the Health Care Financing Administration		40
Appendix IV Major Contributors to This Report		42
Tables	Table 1: Diabetes Monitoring Services Included in Our Analysis Table I.1: Diabetes Cohort Demographic Characteristics Table I.2: Overall Utilization Rates for Recommended Services Table I.3: Utilization Rates for Recommended Services, by Age Group Table I.4: Utilization Rates for Recommended Services, by Race Table I.5: Utilization Rates for Recommended Services, by Sex	6 29 30 30 31 31

Contents

Table I.6: Combined Utilization Rates for Four Key Services, by Diabetes Cohort Demographic Characteristics	32
Table I.7: Utilization Rates for Recommended Services, by State	33
Table II.1: Characteristics of HMO Plans in Our Survey	36
Table II.2: HMO Responses to Selected Survey Questions	37
Table II.3: Diabetes Interventions Reported by HMOs	38
Table II.4: HMOs Efforts to Monitor Recommended Services by Plan Characteristic	39

Figures

Figure 1: Fee-for-Service Utilization Rates for Recommended Monitoring Services, 1994	8
Figure 2: Percent in Fee-for-Service Receiving Key Monitoring Services, 1994	9

Abbreviations

ADA	American Diabetes Association
CDC	Centers for Disease Control and Prevention
DCCT	Diabetes Control and Complications Trial
HCFA	Health Care Financing Administration
HEDIS	Health Plan Employer Data and Information Set
HMO	health maintenance organization
MSA	Metropolitan Statistical Area
NCQA	National Committee on Quality Assurance
PRO	peer review organization
SAF	Standard Analytical File

Methodology for Determining Use of Recommended Diabetes Services in Fee-for-Service Medicare

A 1995 HCFA study of eye examinations for Medicare beneficiaries with diabetes in the state of Washington provided a model for identifying people with diabetes and specific services in the Medicare claims data. We modified that model to address our research question on the basis of published research in the field, consultation with HCFA officials involved in similar studies and a Medicare part B carrier, and input from an informal panel of expert reviewers.

The analysis was performed in three steps: (1) selecting a cohort of Medicare beneficiaries with diabetes, (2) adding beneficiary data to select only people who were enrolled in Medicare fee-for-service and part B during the entire study period, and (3) analyzing cohort characteristics and 1994 service utilization rates. This appendix describes the general methodology and results.

Selecting a Diabetes Cohort From Medicare Fee-for-Service Data Files

We used HCFA's 5% Sample Beneficiary Standard Analytical File (SAF) to obtain a nationwide representative sample of Medicare beneficiaries. This file contains final action claims data for a 5-percent sample of Medicare beneficiaries. We determined that this file would provide a sufficient number of claims from which to select a representative sample of Medicare fee-for-service beneficiaries with diabetes. We limited this part of our analysis to two parts of the 5% Sample Beneficiary SAF—Inpatient Data and Physician/Supplier Data—for calendar years 1992 and 1993.²³ We did this because our selection criteria involved only inpatient hospital and physician services. To be selected for our cohort, a beneficiary had to have had at least one inpatient hospital admission or two physician visits coded for diabetes.

Because we wanted to measure the extent to which Medicare beneficiaries with diabetes received recommended medical services, we selected only beneficiaries we could positively identify as having diabetes. HCFA officials advised us that hospital inpatient claims noting a diagnosis of diabetes were reliable. Therefore, we required only one hospital inpatient admission for selecting a beneficiary.

Physician/Supplier Data, however, might note a diabetes diagnosis when a beneficiary was being tested for diabetes, even if the test result was negative. Therefore, to avoid selecting people without diabetes, we required beneficiaries to have had at least two physician visits with a

²³We identified our diabetes cohort from 1992 and 1993 claims data, then reviewed cohort member claims in 1994 for service utilization rates.

diagnosis of diabetes before selecting them on the basis of physician visits alone.²⁴ To eliminate selections based on a physician office visit (claim 1) and a laboratory or other procedure arising from the same visit (claim 2), we selected only claims coded as “face-to-face” physician visits.

Adding Enrollment and Eligibility Data to Diabetes Cohort Records

After adding enrollment and eligibility data to our diabetes cohort records, we could delete certain beneficiary groups from our sample. First, we excluded all beneficiaries with a date of death on or before December 31, 1994, because these people would not have had a complete year’s service history for 1994. We also excluded beneficiaries who were not enrolled in part B (for coverage of physician services) for all of 1994. They might have received services for which they paid themselves, and Medicare would have had no record of the services. Likewise, we excluded beneficiaries who were enrolled in an HMO at any time during the year because Medicare would have had no claims records for the services they received while in the HMO. Finally, after reviewing preliminary data, we excluded (1) end-stage renal disease beneficiaries because we could not determine whether some services we were looking for had been put under a different procedure code and (2) beneficiaries with diabetes living outside the 50 states and the District of Columbia.

During this step, we also resolved changes in beneficiary identification numbers and obtained current residence and demographic data. We used the Enrollment Data Base and Health Insurance Skeleton Eligibility Write-Off files for this purpose.

Identifying and Counting Recommended Diabetes Services

The last step was to determine the services received by our diabetes cohort in 1994 by comparing the cohort with the 1994 5% Sample Beneficiary SAF. This time, we checked all six component claims files: Inpatient, Hospital Outpatient, Physician/Supplier, Skilled Nursing Facility, Home Health, and Hospice. We also checked a special file of influenza vaccinations developed by HCFA.

²⁴As with inpatient claims, we accepted any of the ICD-9-CM codes to identify diabetes (the 250 codes), plus a few codes for diabetes-related conditions. ICD-9-CM is the International Classification of Diseases, 9th revision, Clinical Modification (5th edition, 1996), the standard coding system used for medical conditions.

Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare

We searched the claims files for procedure codes for six diabetes preventive and monitoring services recommended by the American Diabetes Association (ADA):²⁵

- physician visits,
- glycohemoglobin test,
- dilated eye examination,
- urinalysis,
- serum cholesterol test, and
- influenza vaccination.

We determined the number of beneficiaries in our cohort who received each of the services as well as combinations of services. These numbers provided numerator data to calculate the percentage of cohort members with diabetes who received the services at recommended intervals. The denominator was the total number of beneficiaries with diabetes that we identified in our final cohort (that is, the 168,255 beneficiaries who were alive through 1994 and continuously enrolled in Medicare part B and fee-for-service). We analyzed the six service utilization rates by patient age, race, sex, Medicare eligibility category, and state and Metropolitan Statistical Area of residence. Tables I.1 to I.7 provide detailed data from some of these analyses, along with a demographic description of the final 1994 Medicare fee-for-service diabetes cohort.

Determining service utilization rates using Medicare claims data presents potential sources of bias. On the one hand, rates based on services identified in the claims data may underestimate actual utilization because claims or billing data may be miscoded, incomplete, or missing. When people receive services in nonmedical settings or if for any reason a bill is not submitted to Medicare, no record of the service appears in claims data. We believe influenza vaccination is the service most affected by such underreporting in our study, but underreporting may apply to other services to a lesser extent. On the other hand, our rates may be overstated because our cohort consists of Medicare beneficiaries with a known diagnosis of diabetes who used diabetes-related services in 1992, 1993, and 1994. These individuals had relatively strong ties to the health care system and were perhaps more likely than the average beneficiary to be referred

²⁵We relied primarily on ADA recommendations because our review of the literature and contacts with medical professional societies and diabetes experts indicated that ADA's guidelines are the most widely accepted. We defined the six services using the 1996 HCFA Common Procedure Coding System, which is a modified version of the American Medical Association's Physicians' Current Procedural Terminology.

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

to and follow up on recommended services. Nonetheless, these potential biases are not great enough to invalidate our findings.

In interpreting our results, it should be noted that (1) service utilization rates are not adjusted to reflect differences in the severity of diabetes or the extent of comorbidities among cohort members; (2) physicians and diabetes experts may disagree about optimal frequencies for some monitoring services in some patients because research evidence may be inconclusive and individual patients vary in age, comorbidities, and other factors; and (3) performing monitoring services as recommended does not ensure improved health outcomes. Some studies have shown, for example, that increased frequency of glycohemoglobin testing has not been associated with improved blood glucose values.

**Table I.1: Diabetes Cohort
Demographic Characteristics**

Characteristic	Number	Percent
Total diabetes cohort	168,255	100.0
Age		
Under 65	15,170	9.0
65-69	39,243	23.3
70-74	44,600	26.5
75-79	34,205	20.3
80-84	21,467	12.8
85 and older	13,570	8.1
Race		
White	134,512	80.0
Black	21,272	12.6
Other	6,742	4.0
Unknown	5,729	3.4
Sex		
Male	68,799	40.9
Female	99,456	59.1
Medicare eligibility category		
Aged	152,200	90.5
Disabled	16,055	9.5

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

Table I.2: Overall Utilization Rates for Recommended Services

Service and frequency	Number	Percent
Physician visits, two or more per year	157,338	93.5
Eye exam, one or more per year	70,475	41.9
Glycohemoglobin		
Two or more per year	35,074	20.9
One or more per year	63,980	38.0
Urinalysis, one or more per year	89,365	53.1
Serum cholesterol, one or more per year	117,326	69.7
Flu shot, one per fall season ^a	74,214	44.1

^aThe flu shot may be underreported in Medicare claims because people may obtain it in nonmedical settings.

Table I.3: Utilization Rates for Recommended Services, by Age Group

Service and frequency	All ages	Under 65	65 to 74	75 and older
Physician visits, two or more per year	93.5	90.1	93.3	94.6
Eye exam, one or more per year	41.9	27.9	42.5	44.2
Glycohemoglobin				
Two or more per year	20.9	19.1	23.1	18.5
One or more per year	38.0	36.5	41.0	34.8
Urinalysis, one per year	53.1	49.5	52.5	54.6
Serum cholesterol, one per year	69.7	64.6	70.7	69.7
Flu shot, one per fall season ^a	44.1	30.4	46.3	44.4

^aThe flu shot may be underreported in Medicare claims because people may obtain it in nonmedical settings.

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

Table I.4: Utilization Rates for Recommended Services, by Race

Service and frequency	Total	White	Black	Other	Unknown
Physician visits, two or more per year	93.5	93.9	91.9	91.8	92.8
Eye exam, one or more per year	41.9	43.1	36.1	37.2	41.4
Glycohemoglobin					
Two or more per year	20.9	21.7	15.5	20.1	21.7
One or more per year	38.0	39.2	30.7	37.0	38.5
Urinalysis, one per year	53.1	53.3	52.0	53.5	52.7
Serum cholesterol, one per year	69.7	70.7	64.2	69.3	68.9
Flu shot, one per fall season ^a	44.1	47.1	28.0	35.8	43.6

^aThe flu shot may be underreported in Medicare claims because people may obtain it in nonmedical settings.

Table I.5: Utilization Rates for Recommended Services, by Sex

Service and frequency	Total	Male	Female
Physician visits, two or more per year	93.5	92.0	94.5
Eye exam, one or more per year	41.9	39.5	43.6
Glycohemoglobin			
Two or more per year	20.9	21.3	20.5
One or more per year	38.0	38.7	37.5
Urinalysis, one per year	53.1	53.0	53.2
Serum cholesterol, one per year	69.7	68.7	70.4
Flu shot, one per fall season ^a	44.1	46.6	42.4

^aThe flu shot may be underreported in Medicare claims because people may obtain it in nonmedical settings.

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

**Table I.6: Combined Utilization Rates
for Four Key Services, by Diabetes
Cohort Demographic Characteristics**

Characteristic	Percent receiving none	Percent receiving all
Total diabetes cohort	11.9	10.8
Age		
Under 65	18.6	7.7
65-69	12.5	11.4
70-74	11.0	12.1
75-79	10.1	11.5
80-84	10.9	10.2
85 and older	12.3	6.9
Race		
White	11.2	11.3
Black	15.5	7.7
Other	14.7	10.0
Unknown	12.3	10.4
Sex		
Male	13.4	10.7
Female	10.9	10.8
Medicare eligibility category		
Aged	11.2	11.7
Disabled	18.5	7.7

Note: The combined recommended service indicator includes each of the following services annually: eye exam, one glycohemoglobin test, urinalysis, and serum cholesterol test.

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

Table I.7: Utilization Rates for Recommended Services, by State

State	Number of cohort diabetics	Percent receiving recommended services						
		Four key services	Physician visits	Eye exam	Glycohemoglobin (two)	Urinalysis	Cholesterol	Flu shot
Alabama	3,595	5.5	92.4	32.4	12.7	56.4	64.8	43.8
Alaska	106	12.3	93.4	35.9	32.1	57.6	75.5	52.8
Arizona	1,531	16.0	91.9	41.6	28.4	56.7	80.5	51.8
Arkansas	2,014	7.1	92.8	46.5	10.9	50.8	54.5	51.3
California	10,806	12.3	94.4	43.3	21.3	56.3	74.2	36.9
Colorado	1,102	14.0	91.5	41.1	29.1	52.3	67.2	47.3
Connecticut	2,480	14.6	95.0	47.2	25.2	60.1	67.8	47.1
Delaware	548	10.8	94.2	45.8	18.4	44.0	68.8	44.5
District of Columbia	474	13.3	93.9	43.0	19.8	51.9	76.6	28.7
Florida	10,872	17.5	95.4	52.3	25.1	63.8	81.0	46.3
Georgia	4,781	7.5	93.4	34.4	14.8	55.5	67.1	36.1
Hawaii	580	8.8	96.6	35.9	20.3	54.0	76.2	46.7
Idaho	512	11.1	91.4	35.9	29.3	51.0	72.9	56.8
Illinois	7,618	9.0	92.1	39.9	18.7	47.3	68.2	39.4
Indiana	4,205	6.8	93.8	37.8	17.8	43.5	62.0	50.5
Iowa	1,962	12.2	93.2	46.7	23.1	51.3	65.4	52.8
Kansas	1,604	12.7	92.0	48.4	28.0	53.2	69.3	50.3
Kentucky	2,969	6.7	93.9	35.4	14.1	51.9	65.6	43.1
Louisiana	3,421	7.3	92.5	43.6	11.3	53.1	67.1	33.7
Maine	977	12.8	93.2	46.4	24.3	46.5	70.7	51.9
Maryland	3,163	12.3	93.7	43.0	25.1	48.9	70.6	44.0
Massachusetts	4,283	14.8	95.0	53.1	27.6	54.3	68.0	27.3
Michigan	7,770	11.3	93.9	38.3	24.0	57.8	71.2	47.3
Minnesota	1,937	10.7	91.5	41.2	28.4	51.7	58.9	48.8
Mississippi	2,398	4.7	90.4	36.0	9.3	57.0	61.8	39.9
Missouri	3,848	9.6	94.3	39.0	23.7	48.8	65.4	45.5
Montana	448	8.5	90.2	45.1	15.4	51.1	62.1	54.0
Nebraska	1,015	10.5	91.3	53.9	18.4	49.1	61.6	55.9
Nevada	520	12.3	90.4	35.2	24.8	56.2	75.0	42.9
New Hampshire	730	9.9	93.7	45.9	26.9	46.7	65.8	43.6
New Jersey	6,087	12.3	93.8	43.1	24.5	48.0	78.0	41.2
New Mexico	699	10.6	89.7	36.5	22.6	49.6	65.4	29.8
New York	12,175	16.2	93.9	50.9	24.9	56.5	75.0	41.6
North Carolina	5,412	8.5	92.9	41.0	15.3	54.6	66.4	42.4

(continued)

**Appendix I
Methodology for Determining Use of
Recommended Diabetes Services in
Fee-for-Service Medicare**

State	Number of cohort diabetics	Percent receiving recommended services						
		Four key services	Physician visits	Eye exam	Glycohemoglobin (two)	Urinalysis	Cholesterol	Flu shot
North Dakota	400	11.5	89.8	46.0	23.8	57.3	67.8	51.8
Ohio	9,455	8.2	94.7	40.3	17.2	49.4	66.6	49.8
Oklahoma	2,090	8.3	91.7	34.9	17.6	51.8	68.9	43.5
Oregon	1,243	10.8	92.5	32.9	27.5	49.6	76.5	53.3
Pennsylvania	11,794	7.9	95.6	37.7	22.1	46.1	69.4	49.1
Rhode Island	801	12.6	95.1	47.9	23.2	58.4	58.1	43.1
South Carolina	2,947	6.5	92.9	37.5	10.4	53.7	60.4	42.6
South Dakota	444	10.8	88.1	40.1	21.4	55.9	64.0	50.0
Tennessee	3,964	7.4	93.0	32.8	16.7	55.4	65.4	48.1
Texas	9,483	10.8	91.4	41.6	18.4	56.0	72.4	40.3
Utah	663	9.2	88.4	38.5	22.3	47.1	67.1	47.4
Vermont	374	8.3	94.1	35.3	24.1	40.6	59.9	42.8
Virginia	4,270	10.4	93.3	40.1	21.3	54.0	68.1	49.3
Washington	2,299	14.8	92.2	43.2	28.9	52.2	75.7	50.3
West Virginia	1,756	6.4	92.9	35.7	14.1	47.6	64.8	40.7
Wisconsin	3,445	9.6	93.4	38.0	27.0	48.9	64.4	52.6
Wyoming	185	7.0	89.2	36.8	18.4	41.6	67.0	40.5
United States	168,255	10.8	93.5	41.9	20.9	53.1	69.7	44.1

Note: The four key services in the combined recommended service indicator (at least one per year) include eye exam, one glycohemoglobin test, urinalysis, and serum cholesterol test.

Methodology for Determining Use of Diabetes Management Approaches by Medicare HMOs

This appendix discusses our examination of diabetes management efforts by Medicare HMOs. It briefly describes our methodology and the key findings from our survey.

Methodology

To better understand the approaches to diabetes management used by HMOs, we conducted a telephone survey of nearly half of the current Medicare risk-contract plans. We selected plans that had (1) enrollment of at least 1,000 Medicare beneficiaries (as of April 1996) and (2) a contract effective date no later than December 31, 1993. By using minimum enrollment and participation date as selection criteria, we could eliminate plans with so few Medicare enrollees that their population of enrollees with diabetes might be too small to warrant special diabetes management efforts and plans new to Medicare that might not be fully familiar with the special needs of Medicare enrollees. Of the 201 Medicare risk-contract HMOs operating in April 1996,²⁶ 90 plans met these criteria, and we interviewed representatives of 88 of the plans (2 plans did not participate). Data on plan characteristics were obtained from HCFA reports and officials (see table II.1).

²⁶HCFA, *Monthly Report of Medicare Managed Care Plans* (Washington, D.C.: Apr. 1996), <http://www.hcfa.gov/stats/monthly.htm> (cited Apr. 12, 1996).

**Appendix II
Methodology for Determining Use of
Diabetes Management Approaches by
Medicare HMOs**

**Table II.1: Characteristics of HMO
Plans in Our Survey**

Descriptive variable	Number of plans
Model type	
Staff	13
Group	15
Independent practice association	60
Tax status	
For profit	54
Not for profit	34
Medicare contract experience	
Less than 5 years	28
5-10 years	45
More than 10 years	15
Medicare enrollment	
10,000 or less	24
10,001-20,000	27
20,001-50,000	25
More than 50,000	12
Location	
Northeast	17
Southeast	11
Midwest	9
Central	19
West Coast	32

The telephone survey, consisting of 23 multiple-choice and open-ended questions, was designed to determine each HMO's specific approaches to diabetes management. The questions addressed interventions targeted to plan enrollees and physicians, as well as plan-level activities, such as the HMO's ability to identify its enrollees with diabetes and monitor utilization rates of recommended services. To administer the survey, we interviewed the individual identified by the plan as being most familiar with plan approaches to diabetes management. In most cases, the respondent was the plan's medical director; in other cases, it was a physician from the plan's endocrinology department or a representative of the plan's wellness or quality improvement department. We did not attempt to independently verify the responses to our questions.

Survey Results

The 88 HMOs reported a wide range of diabetes management efforts, encompassing more than 30 different initiatives. Their efforts predominantly focused on educating patients about self-management and providers about recommended services. Many of the HMOs used similar strategies for improving care. (See table II.2.)

Table II.2: HMO Responses to Selected Survey Questions

Survey question	Number of HMOs responding "yes"
Does your plan occasionally include information about diabetes in regular newsletters mailed to all enrollees?	82
Does your plan provide (diabetes-related) information to physicians through newsletters or mailings to physicians?	71
Does your plan have health professionals, such as diabetes educators, nutritionists, or diabetes nurses, available for enrollee education?	68
Does your plan have any policies or procedures that are used to guide physicians' treatment of diabetic enrollees, such as guidelines, practice parameters, or information briefs?	62
Does your plan maintain a list or registry of your enrollees with type II diabetes?	61 ^a
Does your plan use case managers to monitor the medical care that your diabetic enrollees receive?	60
Has your plan set performance goals for diabetes care?	58
Does your plan mail educational newsletters or pamphlets about diabetes care to your diabetics?	41
Does your plan operate any type of program designed to consolidate services for diabetics?	31
Does your plan have a computer system that generates reminders for physicians when specific patients are due for specific services?	24
Can you estimate about what proportion of all your Medicare enrollees have type II diabetes?	20

^aMany of the HMOs that responded "yes" to this question do not actively maintain or use their registry information about enrollees with diabetes. Many plans explained that their registry is updated annually as they identify their enrollees with diabetes for the Health Plan Employer Data and Information Set.

In general, we did not find a strong association between the use of particular approaches to diabetes management and specific HMO characteristics, such as model type, tax status (for profit or not for profit), or size. (See tables II.3 and II.4.) However, for-profit HMOs reported slightly higher use of several diabetes management approaches than not-for-profit HMOs. These included use of diabetes registries, mailings to enrollees with

**Appendix II
Methodology for Determining Use of
Diabetes Management Approaches by
Medicare HMOs**

diabetes, and employment of diabetes-related health professionals, such as certified diabetes educators or nutritionists. Similarly, HMOs with the most experience as Medicare contractors—either in Medicare enrollment or in length of Medicare contract—were more likely to use certain diabetes management approaches, such as clinical practice guidelines, mailings to physicians and enrollees, and a diabetes registry.

Table II.3: Diabetes Interventions Reported by HMOs (Percent)

Descriptive variable	Clinical practice guidelines	Mailings to enrollees with diabetes	Allied health professionals^a	Case management	Mailings to physicians	Diabetes registry
Model type						
Staff	92	46	85	77	69	69
Group	80	33	87	53	80	73
Independent practice association	63	50	73	70	83	68
Tax status						
For profit	82	56	83	69	94	78
Not for profit	53	32	68	68	59	56
Medicare contract experience						
Less than 5 years	54	50	64	68	79	57
5-10 years	73	53	82	71	82	80
More than 10 years	93	20	87	60	80	60
Medicare enrollment						
10,000 or less	46	38	75	67	71	54
10,001-20,000	70	48	82	82	78	70
20,001-50,000	84	44	76	52	84	72
More than 50,000	92	67	75	75	100	92
Location						
Northeast	94	59	88	65	77	65
Southeast	55	27	36	82	46	36
Midwest	78	22	78	44	56	67
Central	74	47	79	79	95	79
West Coast	59	53	84	66	94	78

^aSuch as certified diabetes educators or nutritionists.

**Appendix II
Methodology for Determining Use of
Diabetes Management Approaches by
Medicare HMOs**

Table II.4: HMOs Efforts to Monitor Recommended Services by Plan Characteristic (Percent)

Descriptive variable	Eye exam	Glycohemoglobin	Urinalysis	Cholesterol	Flu shot	Foot exams
Model type						
Staff	55	46	55	46	46	36
Group	92	69	54	46	62	31
Independent practice association	95	60	55	50	45	36
Tax status						
For profit	87	59	56	54	49	41
Not for profit	89	59	52	41	48	26
Medicare contract experience						
Less than 5 years	86	71	71	48	52	43
5-10 years	97	58	52	55	46	33
More than 10 years	67	42	33	33	50	25
Medicare enrollment						
10,000 or less	86	50	50	43	43	36
10,001-20,000	91	67	67	67	57	38
20,001-50,000	91	52	38	33	38	29
More than 50,000	80	70	70	50	60	40
Location						
Northeast	85	85	77	77	62	39
Southeast	50	25	50	50	50	25
Midwest	71	29	14	14	43	0
Central	93	64	50	43	43	50
West Coast	96	57	57	46	46	36

Comments From the Health Care Financing Administration



DEPARTMENT OF HEALTH & HUMAN SERVICES

Health Care Financing Administration

The Administrator
Washington, D.C. 20201

30 1997

TO: Bernice Steinhardt
Director, Health Services Quality
and Public Health
General Accounting Office

FROM: Administrator
Health Care Financing Administration

SUBJECT: GAO Draft Report, "Medicare: Most Diabetics Do Not Receive
Recommended Monitoring Services"

Thank you for the opportunity to comment on the GAO draft report concerning the status of care provided to Medicare beneficiaries with diabetes. This report is a thoughtful and thorough review of the difficult issues that confront patients with diabetes and those who provide their care. GAO identified many of the major concerns the health care system must address in treating patients with diabetes and recognizes many of the uncertainties tied to appropriate interventions.

We carefully reviewed the report and have technical comments that are available on request. There is one major conceptual issue in the report that we would like to reinforce because it significantly influences interpretation of any results or conclusions. We suggest that the concept of appropriate quality of care for elderly diabetic patients should receive more focus. The mean age of diagnosis for Type II diabetic patients in the United States in 1989 was 51 years of age (according to the Health Interview Survey). Most Medicare beneficiaries with diabetes have a relatively long duration of diabetes with significant comorbid conditions such as hypertension.

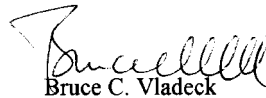
Poor control of blood sugars and hypertension can impact adversely on elderly patients with diabetes, but optimal target levels for metabolic and hypertensive control cannot be uniformly defined for elderly patients with significant comorbidity. Interventions to prevent the progression of early complications such as proteinuria, foot problems and early eye changes to stages where they cause significant morbidity are of key importance to this high risk population.

Page 2 - Bernice Steinhardt

Although the frequency of testing for glycosylated hemoglobin is relatively easy to measure from claims data, this may not be the most sensitive measure of the quality of appropriate care for diabetic Medicare beneficiaries. As an example, generic recommendations about frequency of testing have been revised by the American Diabetes Association in its 1997 position statement to include "For any individual patient, the frequency of Ghb testing should be dependent on the treatment regimen employed and on the judgment of the clinician." Since glycosylated hemoglobin testing is relatively new; i.e., not yet standardized between laboratories and highly correlated with fasting blood sugars in the elderly population, providers may choose simpler methods of monitoring patients for poor control.

HCFA is working with its partners in the Peer Review Organization community and other Federal agencies to develop strategies to improve the care and quality of life for the Medicare population with diabetes. We appreciate GAO's recognition of this effort.

Should you have questions or require additional information (technical comments), kindly contact Ron Miller of the Executive Secretariat at (410) 786-5237.


Bruce C. Vladek

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