Contract No.: 500-95-0047 (09)
MPR Reference No.: 8756-320

MATHEMATICA
Policy Research, Inc.

The Washington University Medicare Coordinated Care Demonstration Program After One Year

Final Report

June 20, 2005

Nancy Archibald
Jennifer Schore
Randall Brown
Deborah Peikes
Sean Orzol

Submitted to:

Centers for Medicare & Medicaid Services
Office of Strategic Planning
C30-20-17
7500 Security Boulevard
Baltimore, MD 21244

Project Officer:
Carol Magee

Submitted by:

Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
Telephone: (609) 799-3535
Facsimile:(609) 799-0005

Project Director:
Randall Brown

ACKNOWLEDGMENTS

We would like to thank the many individuals who contributed to the preparation of this report. The program staff at the Washington University School of Medicine, Dr. John Lynch, Sandra Graff, and Jackie Reed, answered our many questions about the operation of their program. Our thanks also go to Dr. Sam Forman and Linda Solomon, the program staff we interviewed at American Healthways. In addition, we extend our thanks to the program care managers we interviewed for this report: Carol Jo Entwistle, Vicki Fairbanks, Jenny Rivera, Jackie Tamalunas, Cindy Tepley, Vivian Thwaits, Margaret Carey, Ginger Greenblatt. Their examples of typical care manager-patient interactions provided invaluable insight into the program's care management model. We especially thank three CMS staff members—Carol Magee (project officer for the evaluation), Cindy Mason (project officer for the demonstration), and Renee Mentnech (Director, Division of Beneficiary Research) for their overall guidance and ongoing support.

Several other staff members at Mathematica Policy Research made important contributions to this report. Programmers Amy Zambrowski, Nazmul Khan, Stephanie Chin, and Licia Gaber skillfully processed Medicare claims data, Medicare enrollment data, and program data. Bob Schmitz provided valuable critical comments on an earlier draft of the report. Patricia Ciaccio edited and Jane Nelson produced this report. Any remaining errors or omissions are the responsibility of the authors.

CONTENTS

Page

CONTENTS *(continued)*

Page

TABLES

TABLES *(continued)*

Table **Page**

EXECUTIVE SUMMARY

The Medicare Coordinated Care Demonstration (MCCD), mandated by the Balanced Budget Act of 1997, is testing models aimed at improving the care of chronically ill beneficiaries with Medicare fee-for-service coverage. Fifteen programs are participating in the demonstration sponsored by the Centers for Medicare & Medicaid Services (CMS). Mathematica Policy Research, Inc. (MPR) is evaluating the demonstration using both implementation analysis and impact analysis based on a randomized design. This report is one of a series that will describe each program during its first year and will provide estimates of its impact on Medicare service use and costs during the first six months of project operation.

Research during the past decade suggests that successful care coordination usually has several features. These include effective ***patient identification***, ***highly qualified staff***, ***physician buy-in***, and ***financial incentives*** aligned with project goals. Successful programs also offer a well-designed, structured intervention that typically includes:

- A multifaceted assessment whose end product is a ***written care plan*** that can be used to monitor patient progress and that is updated as the patient's condition changes
- A process for providing ***feedback to care coordinators***, ***project leaders***, ***and physicians*** about patient outcomes
- ***Patient education*** that combines the provision of factual information with techniques to help patients change self-care behavior
- Procedures for ***integrating fragmented care***, ***facilitating communication*** among providers, and, when necessary, ***arranging for community services***

The ultimate purpose of this report series is to assess the extent to which demonstration programs have these features, as well as to describe early enrollees in the programs and their Medicare service use and costs during the first few months after enrollment. Information for the report comes from telephone and in-person contacts with program staff and from analysis of Medicare and program-generated data. The next report series will focus on Medicare service use and costs over a longer time and will include all first-year enrollees.

This report describes the Washington University School of Medicine's MCCD program, called the "Washington University Care Coordination Program." After presenting an overview of program, the report addresses the following questions: Who enrolls in the program? To what extent does the program engage physicians? How well is the program implementing its approaches to improving patient health and reducing health care costs? What were enrollees' Medicare service use and costs during the program's first months of operation? Finally, the report discusses the program's strengths and unique features, as well as potential barriers to project success.

Program Organization and Approaches. The Washington University School of Medicine in St. Louis, Missouri, is the host for the demonstration program. For the demonstration, it has partnered with StatusOne Health Systems, a health management company that provides software, training, and care management services. The demonstration operates from the Washington University School of Medicine's Care Coordination department in St. Louis and StatusOne's telemonitoring operations center in southern California. The prototype for the demonstration was developed in 1997 by Washington University's Care Coordination department (then operating as a medical services organization known as Health Management Partners) and StatusOne. Health Management Partners held a full-risk contract with a health plan to provide utilization review and care management services for approximately 1,300 high-risk enrollees, including Medicare + Choice beneficiaries. Health Management Partners' St. Louis-based care managers provided in-person and telephone contacts to patients. The prototype employed 15 care managers who were co-located in the offices of nine physician groups. A pre-post analysis found that the prototype improved patients' functional status and had reduced unnecessary hospitalizations by approximately 60 percent. In addition, staff reported that physicians liked the prototype program because it reduced office visits.

The Washington University Care Coordination Program's key staff include a program director, who also is the medical director (he is referred to as the medical director throughout this report), a St. Louis-based care management supervisor, the care coordinators (called "St. Louis-based care managers" in this report), a care management assistant, and an enrollment coordinator. The St. Louis-based care managers contact patients by telephone and see them in their homes. The medical director, an internist specializing in pulmonary and critical care medicine, provides administrative oversight for the entire program and medical oversight for all care management activities. His day-to-day responsibilities include consulting with care managers on clinical issues and interacting with the physicians participating in the demonstration. He also is the medical director for the Washington University Physician Network (WUPN); nearly all program patients have WUPN physicians. The key StatusOne staff include a medical director, care managers, and the care managers' supervisor. The StatusOne medical director works from the company's headquarters in Massachusetts, while the care management supervisor and the care managers work from StatusOne's southern California telemonitoring operations center. The StatusOne care managers (called "California-based care managers" in this report) contact their patients by telephone only. One year after the start of the demonstration, the program had two full-time St. Louis-based care managers and five full-time and one part-time California-based care managers.

The program seeks to reduce hospitalizations and emergency room visits by better coordinating patients' social and financial resources with their health care needs. Specifically, the program seeks to optimize medical care coordination and increase patients' self-management skills, daily activity, and fitness. In addition, it tries to help patients strengthen relationships with family and friends, undertake mental challenges, and become involved in their communities. The program uses three approaches to accomplish these goals: (1) improving communication and coordination between patients and physicians, (2) providing education to improve patients' adherence to care regimens and thereby improve their health, and (3) improving access to support services by referring patients to needed Medicare- and non-Medicare-covered services. The program does not try to change physicians' clinical practice, but it would like them to see the benefits of care management for their practices.

Patient Identification. The Washington University Care Coordination Program targets high-risk, fee-for-service Medicare beneficiaries age 18 or older who are living in the greater St. Louis, Missouri, area and receiving care from WUPN physicians. The program does not target specific diagnoses. Instead, it tries to identify patients who are likely to become clinically unstable and require hospitalization in the next 12 months. Specifically, the program targets patients who have frequent emergency room visits and hospitalizations, multiple comorbidities, a history of falls or other safety concerns, or terminal illnesses undergoing active treatment (as opposed to palliative care). In addition, it targets patients who have few social supports, insufficient financial resources, temporary or permanent loss of function, or poor coping skills. As in all MCCD programs, beneficiaries also must meet three CMS requirements: (1) be enrolled in Medicare Parts A and B, (2) not be in a Medicare managed care plan of any kind, and (3) have Medicare as their primary payer. The program began enrolling patients in August 2002.

To identify patients, the program sends administrative claims data from WUPN to StatusOne every month. StatusOne runs the data through a proprietary patient identification algorithm and generates a list of potentially eligible patients. StatusOne returns the list to the program's enrollment coordinator and her staff at Washington University to verify patient eligibility. The enrollment staff send eligible patients a letter on Washington University letterhead (signed by the demonstration's medical director) and the consent form. If a patient does not call the program or return the signed consent form within 10 days, the enrollment staff call the patient to describe the purpose of the demonstration and the services it provides, answer questions, and review the consent form. The program also solicits patient referrals from ancillary providers and community organizations. To identify eligible high-risk patients, the staff screen referred patients with a list of the program's inclusion and exclusion criteria. The program asks interested patients to sign and return the consent form. When the program receives the patient's signed consent form, it submits the patient's information to MPR for randomization. MPR randomly assigns consenting patients to the treatment group, in which they receive care coordination services in addition to their usual Medicare benefits, or to the control group, in which they receive only their usual Medicare benefits. Patients are not required to obtain their physician's approval before enrolling in the program.

Assessment, Care Planning, and Monitoring. All patients receive an Initial Health Screen (IHS), which collects information on their acuity and begins to identify needs and goals for care. The IHS, developed by StatusOne, collects information on self-reported health status, prior use of health care services, diagnoses, medications, limitations in activities of daily living, and social supports and living arrangements. The IHS includes the patient's goals (expressed in their own words) and nursing goals. The California-based care managers conduct the IHS for all patients and input responses to the IHS directly into both discrete and free text data fields within CareLink™, the care management software developed by StatusOne and used for the demonstration. Immediately after administering the IHS, the care managers use their clinical judgment to assign patients to one of five acuity levels—Level 1 is the most acute, Level 5 the least acute. As of March 2005, 9 percent of the program's patients were at acuity Level 1, 7 percent at Level 2, 24 percent at Level 3, 43 percent at Level 4, and 16 percent at Level 5. The care manager administering the IHS also assigns the patient to either a St. Louis- or California-based care manager for ongoing followup, depending on the complexity of the patient's needs. Patients at all acuity levels can be followed by St. Louis-based or California-based care

managers, although St. Louis-based care managers tend to be assigned more complex cases. The assigned care manager then contacts the patient.

The care managers use the results of the IHS to develop individualized care plans for each patient. They use a template in CareLink to select common problems and goals in six areas: (1) coordination of care, (2) self-reliance, (3) activity and fitness, (4) community involvement, (5) social supports, and (6) mental challenge. Care managers can customize each goal to the patient's needs. They ask the patient and their caregiver/family for input when developing the care plan. They also ask for information from home health staff, therapists, or staff from a skilled nursing facility or assisted-living facility if they play a major role in the patient's care. Care managers document the care plan in CareLink and use the plan to identify patients needs and interventions and to guide each patient contact. The program views the care plan as a dynamic document that is updated with each patient contact The care managers are required to update care plans every 1 to 2 weeks for acuity Level 1 and 2 patients; 3 to 6 weeks for acuity Level 3 patients; 4 to 6 weeks for acuity Level 4 patients; and 8 to 10 weeks for acuity Level 5 patients. Care managers also update care plans following adverse events such as hospitalizations, emergency room visits, and falls and with new diagnoses, changes in mental status, or in reaction to one of the program's "red alert" events.

The patients' acuity level determines the frequency of follow-up monitoring. The program contacts the highest-acuity patients (Levels 1 and 2) every one to two weeks, Level 3 patients every two to three weeks, Level 4 patients every three to four weeks, and the lowest-acuity patients (Level 5) every four to six weeks. (Care managers are available by pager to patients 24 hours a day, seven days a week.) Monitoring contacts may be either by telephone or in person, at the care manager's discretion, and include patient education, reassessment of the patient's status, and evaluation of the patient's progress toward meeting the care plan goals. A California-based care manager may request that a St. Louis-based care manager conduct an in-home visit if she believes an issue needs to be investigated in person. Patients also may be switched from California- to St. Louis-based care management, and vice versa, as the complexity of the patient's needs change. The St. Louis-based care management supervisor approves all requests for transfer of monitoring responsibilities. Approximately 5 percent of program patients were transferred from California to St. Louis-based care managers in the first year of the demonstration.

CareLink generates patient contact reminders for the care managers. In addition, the care managers keep a list in CareLink of patients who are at imminent risk of an adverse event. If a patient on the list calls the program outside of normal office hours or when their care manager is sick or on vacation, the care manager covering the call will monitor the patient especially closely for signs that an adverse event may be occurring. (During the first six months of the program, just over two percent of care managers' patient contacts were conducted in person.)

Staffing and Project Quality Management. Both maintaining and improving care quality and ensuring that projects attain their goals require that staff have adequate qualifications, training, and supervision and that management has the tools and support to monitor project progress toward those goals. The Washington University Care Coordination Program requires that all its care managers be registered nurses with three to five years' experience caring for patients with chronic illnesses. Experience working with senior populations, as well as in

utilization management or care management, is preferred but not required. During year 1, both of the St. Louis-based care managers and two of the California-based care managers were certified by the Commission for Case Manager Certification.

At the start of the project, the program held two days of training for all the care managers in StatusOne's southern California offices. The training included the rationale behind the demonstration, as well as procedures for transferring patients, using the assessment tools, developing care plans, using CareLink, and arranging community-based services. After this training, new care managers are assigned to a preceptor who is a more experienced care manager. The new care manager begins to contact patients under the guidance of the preceptor. Before new care managers begin to contact patients independently, they must demonstrate their ability to develop care plans, accurately assign patients to the correct acuity level, and interact with patients appropriately. The program also holds in-service training programs for the care managers every two months. Both supervisors informally review a sample of care plans each week to ensure that they are up-to-date, interventions are appropriate for the patient, and the care being provided adheres to the program's clinical practice guidelines.

The program developed several committees and subcommittees to oversee and direct it. The joint management steering committee was responsible for program startup and management of the working relationship between Washington University and StatusOne. In the first year of the demonstration, the program also had an operations subcommittee, medical advisory board, and quality improvement subcommittee. The quality improvement subcommittee developed a quarterly auditing tool to evaluate whether the care managers consistently adhere to program policies and procedures. It reviews the results of the audit with the care management supervisors, who are then responsible for implementing any corrective actions based on the committee's recommendations.

The program generates many reports from CareLink to monitor its operations. The care management supervisors can generate aggregate reports at the care manager level and by primary care physician and acuity level. These reports monitor the completion of care plans, frequency of monitoring contacts, and discharge status. By reviewing the frequency of monitoring contacts, the program found that care managers were not contacting patients as often as its policies required. The program would like to hire another St. Louis-based care manager to address this issue, but it cannot identify an appropriate candidate. So in the interim, the program hired a full-time care management assistant based in St. Louis to help the care managers with their more administrative tasks. Under the direction of the care managers and the care management supervisor, she makes calls to service providers and keeps in touch with patients in between care manager contacts. This assistant does not have a nursing background but has experience in utilization review and was a care management assistant for a managed care plan.

WHO ENROLLS IN THE PROGRAM?

After one year of operation, the Washington University Care Coordination Program had enrolled 705 patients in the demonstration treatment group and 700 patients in the control group, or about 70 percent of the 2,000 patients expected in the first year. In the program's first three months, its patient identification algorithm identified 4,835 potentially eligible Medicare beneficiaries. However, many of these patients were ineligible because they did not have the

required Medicare coverage. In addition, many patients could not be contacted or declined to participate. Of those identified as potentially eligible during the first year, approximately 11 percent consented to be randomized. The program staff believe that the percentage of patients identified by the algorithm who go on to enroll in the program has increased. They stated that, early in the demonstration, the algorithm was being applied to older data, so a higher number of patients were no longer alive or had moved and could not be reached.

Although the program enrolled most of the beneficiaries it planned to enroll during the first year, it faced three main difficulties with enrollment. First, it had initially contracted with a Phoenix-based provider of health care communications and call center services to help recruit patients. Despite extensive training and oversight from Washington University, the call center had little success in recruiting patients. The program staff believe this was because (1) the call center's out-of-area telephone number looked like a telemarketer's when it was displayed on patients' caller identification systems, and (2) the call center could not describe the program in enough detail to answer patient's questions. Washington University terminated the call center's contract after two months, and program enrollment staff made all the calls again that the call center initially had placed. A second difficulty with enrollment was that a large number of patients could not be contacted. At the start of the demonstration, the program used older claims data to identify potential patients and when it attempted to contact them many had died or moved to a different address. As more recent data were used, the program staff believe that a higher percentage of patients identified by the algorithm went on to enroll. The program's third difficulty with enrollment was what it perceived to be a high rate of patient refusal to participate. Staff expected that at least 90 percent of eligible Medicare beneficiaries would enroll, but only about 20 percent did (based on the program's experience during its first three months: 556 enrollees out of 2,683 eligible). The program staff believe that this is because the demonstration required patients to actively enroll, or "opt in." The most common reasons patients gave for declining to participate are that: they do not think they need the program, are apprehensive about participating in a research study, or do not want another party involved in their care. To overcome these concerns, the program changed its introductory letter in its first year of operation so it explicitly stated that enrollees will not take experimental medications, will not have to change their doctor, and do not have to leave their homes to participate. The program staff believe that the revised letter has increased patient enrollment. The program reached its target enrollment of 2,000 participants in September 2004, approximately two years after it began operating.

To gain another perspective on the proportion of eligible beneficiaries enrolling in the Washington University Care Coordination Program and to describe their characteristics, the evaluation simulated the program's eligibility criteria using Medicare enrollment and claims data. Washington University's partner, StatusOne, uses a proprietary algorithm to identify high cost beneficiaries. To preserve its proprietary nature, StatusOne suggested that the evaluation test two approaches to simulating its criteria. One approach used diagnoses alone to identify eligible beneficiaries. The second approach used a narrower set of diagnoses or claims for inpatient or emergency room service use. Neither came close to approximating the diseases, utilization, or costs of Washington University's actual participants during its first six months, but the evaluation used the second approach because it appeared to more closely match the program's description of its target population. The simulation presented in this report showed that, during the program's first six months of operation, less than one percent of an estimated

118,040 eligible beneficiaries enrolled in the program. The analyses did not distinguish between beneficiaries receiving care from WUPN physicians and other beneficiaries in the service area. Thus, the number of eligible nonparticipants who might truly have had access to the demonstration probably is smaller.

Program participants differed from eligible nonparticipants along nearly all the dimensions in this analysis, in part because of the limited information available to the evaluation to simulate the program's eligibility criteria noted above. Participants were more likely than eligible nonparticipants to be under age 65 (27 versus 13 percent) but less likely to be over age 74 (38 versus 50 percent) (Table 1). Participants were more likely to be male (46 versus 42 percent), considerably more likely to be nonwhite (39 versus 17 percent), and considerably more likely to be eligible for Medicaid (21 versus 11 percent).

Participants had a higher prevalence than eligible nonparticipants of many typically high-cost conditions: coronary artery disease (68 versus 43 percent), congestive heart failure (47 versus 23 percent), diabetes (46 versus 33 percent), chronic obstructive pulmonary disease (48 versus 32 percent), cancer (38 versus 28 percent), stroke (31 versus 20 percent), renal disease (23 versus 6 percent), and peripheral vascular disease (22 versus 12 percent). Because of their poorer health, participants were more likely than nonparticipants to have been hospitalized in the year before enrollment (70 versus 30 percent), and in the month before enrollment (10 versus 5 percent). (The evaluation used November 15, 2002, the midpoint of the six-month enrollment period used in this analysis, as a pseudo-enrollment date for nonparticipants.) Participants also had significantly higher average monthly Medicare expenditures than nonparticipants during the year before enrollment ($2,697 versus $787).

When developing the cost estimate for the program's Medicare waiver application, MPR estimated that Medicare costs would average $909 per month for eligible beneficiaries in the absence of the program during the demonstration period. It thus appears that the program has enrolled patients who have costs that are considerably higher than the estimates, with average monthly costs of $2,697 before enrollment.

The St. Louis-based care management supervisor reported that patients seem to be very satisfied with the program. The program has received many letters and telephone calls from patients and caregivers praising the care managers' efforts. Patients have said that their health has improved after the care managers removed barriers to their obtaining care. The St. Louis-based care management supervisor also reported that physicians have had positive comments about the program because their patients are more likely to keep their appointments, take their medications, and attend physical therapy.

TO WHAT EXTENT DOES THE PROJECT ENGAGE PHYSICIANS?

The program has organizational links with WUPN physicians that pre-date the demonstration. The fact that the program's medical director also is WUPN's medical director helped the program gain physician acceptance. In addition, many WUPN physicians had been involved in the demonstration's prototype, so they already were familiar with the concept of care management and with some of the program staff. Because of these existing relationships, the

Table 1

Characteristics of MCCD Participants and Eligible Nonparticipants During First Six Months of Program Intake (Percent, Except as Noted)

	Participants[a]	Eligible Nonparticipants[b]
Age at Intake		
Younger than 65	27.0	12.9
65 to 74	35.4	37.1
75 to 84	27.5	35.7
85 or older	10.1	14.3
Male	46.0	42.2
Nonwhite	38.7	16.6
Medicaid Buy-In for Medicare A or B	20.6	10.8
Medical Conditions Treated in Past Two Years		
Coronary artery disease	67.8	42.5
Congestive heart failure	47.1	22.6
Diabetes	45.8	32.6
Chronic obstructive pulmonary disease	47.8	32.2
Cancer	37.5	28.0
Stroke	31.4	19.5
Renal disease	23.3	5.9
Peripheral vascular disease	22.4	12.3
Hospital Admission in Past Year	70.3	30.1
Hospital Admission in Past Month	9.9	4.8
Total Medicare Reimbursement per Month (Dollars)	$2,697	$787
Number of Beneficiaries	**940**	**117,322**

Source: Medicare Enrollment Database and National Claims History File.

Note: The intake date used in this table is the date of enrollment for participants. For eligible nonparticipants, the intake date is November 15, 2002, a date during the six-month enrollment period examined.

[a]Participants who do not meet CMS's insurance payer and coverage requirements for the demonstration or who had an invalid Health Insurance Claim (HIC) number on MPR's enrollment file are excluded from this table because Medicare data were not available for them. Enrolled members of the same household as the research sample members are included.

[b]Eligibility for the program was approximated by identifying patients with diagnoses for selected chronic conditions or claims for inpatient or emergency room service use. The actual eligibility criteria used by the program are proprietary.

program's management staff had expectations regarding the WUPN physicians as partners in care management. At the start of the demonstration, they expected WUPN physicians would (1) attend patient case conferences, (2) provide advice and consultation to the care coordinators, and (3) review care plans.

The program planned four approaches to maintain and enhance its relationships with WUPN physicians. First, it planned to create a medical advisory board, made up of WUPN physicians, to provide input into program operation. Second, the program planned to hold educational forums for physicians to highlight the goals of the demonstration and provide information on recent developments in clinical care. Third, it planned to send WUPN physicians bimonthly rosters of their patients enrolled in the program and quarterly summaries of their patients' care plans and progress toward meeting their goals. Finally, the program planned to pay the physicians for the time they spent in care management activities.

In the first year of the demonstration, the program implemented most of its approaches to building relationships with physicians. It created a medical advisory board consisting of six WUPN physicians and the StatusOne and Washington University medical directors. The medical advisory board reviewed the program's clinical practice guidelines, identified physicians the program should approach about recruitment, and gave advice on how to establish rapport with physicians. The program held quarterly educational forums for physicians that offered continuing medical education credit. It sent physicians bimonthly rosters of their patients enrolled in the program. Also in the first year of the demonstration, physicians met many of the program's expectations regarding their participation in the demonstration, and the care managers were able to consult physicians about specific patient care issues.

Based on the program's experiences in its first year of operation, however, the management staff modified its approach to building physician relationships and revised some of its expectations of physicians. For example, the program discontinued the educational forums for physicians because they were expensive and the same 10 to 20 physicians were attending. In addition, the program discontinued mailings of bimonthly patient rosters (at the recommendation of the advisory board) because some physicians said they were being inundated with too much paper. The program also has not paid physicians for their care management activities. Its program payment from Medicare includes $8.33 per patient per month to reimburse physicians. However, because it has not found a way to equitably distribute this money to all the physicians involved in a patient's care, it is depositing the money in an account until it decides on a method of distribution. The program has not held patient case conferences with physicians, but it is trying to build the support of its medical advisory board for these conferences as a way to resolve difficult patient management issues. In a final departure from its plans, the program now does not expect physicians to review patients' care plans and does not send the care plans to them. As the demonstration progressed, the program devised a more limited role for physicians to prevent overburdening them and to increase the likelihood that they would accept care coordination.

One year into the demonstration, the care managers and the care management supervisors believed that the program was successfully building relationships with physicians, albeit in a more limited way than originally planned. The care managers have not had any conflicts with physicians. Moreover, some physicians have asked the care managers for help (for example, to find out why patients were not showing up for their appointments or to ask if the care managers could arrange transportation for patients to office visits). More generally, WUPN physicians

have begun to call the program to find community-based services for their patients who are not enrolled in the demonstration.

Improving physicians' clinical practice is not a goal of the program. However, the St. Louis-based care management supervisor reported that, in a few instances, the care managers believed that physicians were not following the clinical practice guidelines the program used. The care managers reported their concerns to the program's medical director. In some cases, he was able to provide further details on the clinical management of the patients' conditions and alleviate the care managers' concerns and in other cases he has felt it necessary to intervene with the physicians.

Changing physicians' clinical practice is not a goal of the program. However, the program would like physicians to recognize the value of care management in making their visits with patients more efficient. The staff feel that, if they can remove barriers to patient adherence and help prioritize patients' questions, physician office visits will be more efficient, and physician burden will be reduced. The St. Louis-based care management supervisor believes that the more patients a physician has in the program, the higher the level of trust that develops with the care manager and thus, the more accepting the physician is of care management.

HOW WELL IS THE PROJECT IMPLEMENTING KEY INTERVENTION APPROACHES?

Improving Communication and Coordination. The program seeks to improve communication and coordination of care, while developing patients' autonomy. To that end, the care managers encourage patients to communicate directly with their physicians and to manage their own care. For example, they prompt patients to ask their physicians about appropriate treatments and preventive care. They encourage patients to keep a list of their medications and bring it to their physician office visits. In addition, the care managers ensure that patients have scheduled appropriate appointments, then follow up to determine if they have kept these appointments. The program recognizes that not all patients can manage their own care, and the care managers try to enlist the support of family and friends to help such patients.

The care managers communicate directly with patients' physicians if necessary, usually by fax or telephone. However, the care managers use letters and faxes to physicians to document their assessments, care plans, and progress notes for those patients for whom the care manager and physician have particular concerns. The St. Louis- and California-based care managers communicate with physicians in the same manner, except that the St. Louis-based care managers contact physicians more frequently because their patients have more complex care needs. The St. Louis-based care management supervisor reported that the care managers have successfully set up ways to communicate with physicians about the management of individual patients.

The program uses several approaches to improve coordination of care. First, it tracks hospitalizations and emergency room visits. The largest area hospital alerts the program when a demonstration patient is admitted or seen in the emergency room. (The staff report that nearly all program patients receive hospital care in this facility.) When the care manager learns about a hospitalization or emergency room visit, she tries to gather information from the patient, family,

and physician about the cause. The care manager revises the interventions in the patient's care plan to try to prevent a recurrence. Second, the care managers try to resolve patients' medication issues by identifying problems with medications during their initial and reassessment contacts. When problems are identified, the care manager usually faxes a list of current medications to the physicians involved and communicates with them to resolve the problem. Then, to prevent such problems in the future, the care manager asks one of the physicians to be in charge of all medications for that patient. Third, if patients report that they are receiving conflicting advice from their physicians, the care managers attempt to resolve the situation by speaking with the physicians involved. If the patient has not received a needed service (such as a diagnostic test), the care manager will try to find out why and remove any barriers to the patient receiving the service. Finally, the program has developed preventive care guidelines that the care managers use to remind patients when screening tests and examinations are needed.

Improving Patient Adherence. The program provides education to all patients targeted to their diagnoses. The care managers look for teachable moments, when they believe patients are particularly ready to accept information. During the initial assessment, the care managers identify patient-specific teaching goals based on their clinical perception of patients' knowledge deficits, rather than by using a formal knowledge assessment tool. They document teaching goals in the "nursing goals" section of the IHS. To guide its education intervention, the program uses 14 disease-specific clinical practice guidelines covering the conditions common to most program patients, rather than a formal curriculum. The guidelines were developed jointly by Washington University and StatusOne, or by StatusOne alone, based on guidelines from the major disease associations and other publicly available sources. The guidelines provide care managers with a clinical overview of the condition, questions to ask during the initial patient assessment, potential disease-specific action steps (for the care plan), references for further reading, and patient education materials. CareLink also contains links to the internet websites of other evidence-based guidelines that the care managers can use to assist them in patient education.

The goal of education is to improve the ability of patients to manage their own care. The care managers provide patient education on such topics as disease etiology and signs and symptoms and their relationship to patient behaviors. The care managers also teach patients how to improve their self-care skills, adherence to treatment recommendations, and ability to communicate with their providers by modeling interactions for them. Care managers inform patients about the availability of community resources. However, the program recognizes that not all patients are able to care for themselves. Thus, if the patient has a cognitive deficit, the care manager will identify family and friends and teach them how to take part in the patient's care.

The program adapts its education intervention to patients' literacy level and language. The St. Louis-based care management supervisor reported that many of the program's patients have low literacy levels. She stated that, for these patients, the care managers supplement the patient education materials in the clinical practice guidelines with materials that are written at lower reading levels or are picture-based. The St. Louis-based care management supervisor reported that all program patients can communicate in English, but the program has access to an interpreter and document translation services if it enrolls non-English-speaking patients.

The care managers use three methods to determine whether their teaching has been effective. First, they gather feedback during their telephone and in-person contacts with patients. For example, the care manager will look into a patient's refrigerator to determine if the food in it is consistent with the patient's recommended diet. During telephone contacts, the care manager will listen to how patients describe their daily activities and routines. Second, the care managers will look at the patients' clinical progress, such as whether they are keeping dialysis appointments or have been hospitalized. Third, the care manager confers with the primary care physician, family and caregivers, and other ancillary providers regarding the patient's condition. If it appears that patient education has not been effective, the care managers reteach the concepts with which the patient is having difficulty. They also may refer the patients to outside education specialists, such as a diabetes educator. In addition, they conduct more in-person visits and model advocacy behavior to make patients more comfortable interacting with their physicians.

The care managers provide most of the program's patient education, but they occasionally refer patients to community education services (such as those provided by the Alzheimer's Association). The program does not require care managers to have specific patient education training or experience. However, because they all are registered nurses and many have attained case manager certification, program management believes that they have the necessary teaching skills. The program provides frequent in-service training to keep care managers' knowledge up-to-date, but it does not train new care managers on how to educate patients.

Increasing Access to Services. The program's approach to increasing access to support services is to identify all of a patient's needs for such services and the reasons those needs are not being met (for example, whether it is because the patient does not know how to access them or cannot afford them). If the problem is a lack of financial resources, the care manager determines whether there is a source of funding for the service. The program promotes self-reliance by encouraging patients to set up services themselves after the care manager has provided contact information. The care managers prompt patients to set up the services and support them in doing so, then confirm that the service is in place and being provided as desired. The care managers will arrange services directly for patients if necessary. The program developed an extensive list of community resources, patient support groups, and health and fitness resources that the staff loaded into CareLink. If the needed service requires a physician's order for it to be covered by Medicare, the care managers will obtain the order. If the needed service is not listed in CareLink, the care manager will identify a source to provide it. The program has one St. Louis-based care manager who also is a social worker. Although all the care managers are experienced in identifying and arranging community-based services for their patients, the social worker care manager provides additional assistance if needed.

Despite its emphasis on identifying service needs, the program data for the first six months of operation indicate that no patients were referred to non-Medicare-covered services. Only 11 percent of patients had contact with care managers in which they were referred to Medicare-covered services. (By the end of the program's first year, 5 percent of patients had contacts in which they were referred to non-Medicare-covered services, and 23 percent of patients had contacts to identify needs for Medicare-covered services.) The care managers report that the services to which they most frequently refer are adult day care, meals-on-wheels, senior centers, and assistance applying fort Medicaid benefits. Staff attributed these low rates to the care managers being busy with patient assessments and care plans during the program's first year.

The program had planned to offer an "exceptional services" benefit, under which the care manager could use program funds to pay for services not covered by other programs that would help to maintain patients in their homes such as transportation or medications. Early in the demonstration, the program's management realized that the program payment from CMS (about $173 per member per month) would not be enough to cover these benefits as well as the costs of care coordination. The care managers find pharmaceutical company-sponsored medication assistance programs for their many patients who cannot afford medications or obtain free samples from the patients' physicians. The St. Louis-based care management supervisor also reported that the program has become "very creative" about obtaining donated goods for its patients. For example, the durable medical equipment department of a local hospital has donated walkers to the program, Pfizer has donated scales, the St. Louis Area Agency on Aging has donated glucometers, and the local diabetes association has donated diabetes-testing supplies. In addition, the program staff have collected school supplies for the children of program patients and purchased holiday food baskets and warm pajamas for the winter. The St. Louis-based care management supervisor estimated that by the third year of the demonstration between 30 and 40 percent of program patients had benefited from these charitable donations.

WHAT WERE ENROLLEES' MEDICARE SERVICE USE AND COSTS?

This report presents preliminary estimates of Medicare service use and costs for people who enrolled in the Washington University Care Coordination Program in its first four months of operation. The follow-up period (the first two full months after random assignment) is too short to draw inferences about the true effects of the program over a longer period. Except for an increased likelihood of using outpatient physician and other Part B services among the treatment group, there were no statistically significant differences between the two groups in Medicare service use. The total Medicare Part A and B costs for the treatment group, exclusive of demonstration costs, were $4,859 ($2,429 per month), on average, during the first two months after enrollment, compared to $4,230 ($2,115 per month) for the control group. The treatment-control difference of $629 is not statistically significant ($p = 0.39$). It is too soon to tell whether the treatment group's Medicare costs will differ from the control group's costs in the future. During the first two months, CMS paid an average of $338 per patient (approximately $169 per month) to the program. Thus, if the control group costs remain the same, the program needs a savings of only eight percent to attain cost neutrality.

CONCLUSION

Program Strengths and Unique Features. The Washington University Care Coordination Program has many features associated with effective care coordination programs, while also having some unique features.

- The program targets Medicare beneficiaries with high-cost diagnoses. Beneficiaries who enrolled did, in fact, have high Medicare reimbursements during the year before enrollment. Enrollment, although somewhat below program expectations, has been high compared to most of the other demonstration programs.

- Based on the results of the initial assessment, the program assigns patients to one of five acuity levels that determine the frequency of follow-up monitoring and reassessment. The program uses St. Louis- and California-based care managers to contact patients by telephone or through in-person visits, depending on the complexity of their needs. The care managers conduct individualized assessments and develop care plans that target patients' unique needs.

- Both St. Louis- and California-based care managers use CareLink, an Internet-based care management information system developed by StatusOne to store data from the IHS, care plans, and ongoing patient monitoring in discrete and free-text data fields. CareLink reminds the care managers when patient contacts are due.

- Care managers identify patients' service needs and determine the extent of their coverage under Medicare, Medicaid, and supplemental insurance. Care managers also explore services available through charitable sources.

- The program has worked to enhance its acceptance by physicians. After receiving feedback from some physicians, it eliminated routine mailings to them to reduce the burden it placed on physicians' time.

- All care managers are registered nurses, most have experience in disease management or care management, and many are certified care managers.

Potential Barriers to Program Success. One aspect that warrants continued attention is the strength of the program's intervention. The care managers identify patient problems in six areas (coordination of care, self-reliance (which includes adherence to treatment recommendations), activity and fitness, community involvement, social supports, and mental challenge), but many of their patient goals, such as joining a reading group or learning to use the internet, would more directly improve patients' quality of life than their health. In addition, the program's patient education intervention, which is more directly related to improved health, appears adequate but unsystematic in the way it is presented to patients, depending largely on the skills and approach of individual care managers. In addition, in the first year of the demonstration the program referred only a small number of patients to community-based services. Although arranging services is not a primary focus of the program, program staff report that it is an important part of what they do. Thus, one would expect a higher rate of referrals to supportive services given the severity of illness of the program's patients, the high incidence of patients' psychosocial problems (as reported by staff), and patients' low income. The effect of the program's interventions on the patient outcomes measured by the evaluation is not yet known. However, the program is enrolling patients with serious health problems and high health care costs, and the cost of its intervention is relatively low. Thus, to meet demonstration budget neutrality goals, it would only need to make modest improvements in patient health and modest (eight percent) proportional reductions in Medicare costs.

INTRODUCTION

The Medicare Coordinated Care Demonstration (MCCD), mandated by the Balanced Budget Act of 1997, is testing models aimed at improving the care of chronically ill beneficiaries with Medicare fee-for-service coverage. Fifteen programs are participating in the demonstration sponsored by the Centers for Medicare & Medicaid Services (CMS). The programs are hosted by organizations as diverse as hospital systems, disease management vendors, and retirement communities and are serving patients in 16 states and the District of Columbia. Mathematica Policy Research, Inc. (MPR) is evaluating the national demonstration, through both impact and implementation analyses.[1]

This report is one of a series that will describe each program during its first year of implementation and provide preliminary estimates of its impact on Medicare service use and costs. First, it briefly describes the data and methodology used in this series of reports and presents an overview of the program that is the focus of this report. It then addresses the following questions: Who enrolls in the program? To what extent does the program engage physicians? How well is the program implementing its approaches to improving patient health and reducing health care costs? What were enrollees' Medicare service use and costs during its first months of operation? The report concludes with a discussion of the program's strengths and unique features, as well as potential barriers to program success.

This report describes the Washington University School of Medicine's demonstration program, which it calls the "Washington University Care Coordination Program." The program

[1]Lovelace Health System's CMS Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus is also part of the MPR evaluation. Appendix Table A.1 lists the host for each demonstration program in the evaluation, as well as each program's service area and target diagnoses.

began enrolling Medicare beneficiaries in August 2002 and targets beneficiaries at high risk of near-term hospitalization.

DATA SOURCES AND METHODOLOGY

Implementation Analysis. The evaluation's implementation analysis uses information gathered during telephone interviews with program staff conducted approximately three months after the program began enrolling patients and in-person interviews conducted approximately six months later. For each site, one of three MPR implementation team members conducted the telephone and in-person interviews using semistructured protocols. The interviews covered organization and staffing, targeting and patient identification, program goals, and care coordination activities (such as assessment, patient education, and service arranging). They also covered physician attitudes toward the program and interventions with physicians, quality management, record keeping and reporting, and financial monitoring. Use of the protocols ensured that each interviewer collected as consistent a set of information for each program as possible, while allowing the interviewer to explore issues of specific importance to each program. The structure of the protocols also makes synthesizing findings across programs more efficient. MPR staff also reviewed written materials each program provided, including its proposal to CMS, its operational protocol, materials it provided to patients and physicians, and forms used in its operation. (Appendix Table A.2 contains a full list.) This analysis also includes an examination of data each program collected specifically for the evaluation describing care coordinator contacts with patients, patient disenrollment, and services the program purchased for patients during its first six months of operation.

Participation Analysis. The evaluation uses Medicare claims and eligibility data to estimate the number of beneficiaries in the Washington University Care Coordination Program's

service area who were eligible for the program and the percentage that actually enrolled during the program's first six months of operation. Beneficiaries are identified as eligible if, for any month between August 2002 and February 2003, they (1) lived in the program's service area, (2) were enrolled in Medicare Parts A and B, (3) had Medicare as the primary payer, (4) were not in a Medicare managed care (Medicare + Choice) plan, and (5) met the program's target diagnosis and service use requirements (described in detail in Appendix B). November 15, 2002, the midpoint of the six-month enrollment period examined in this analysis, is used as a pseudo-enrollment date for nonparticipants; the actual enrollment date is used for participants. Participants and eligible nonparticipants were then compared with respect to demographic characteristics, diagnoses, and utilization histories to determine the extent to which participants are typical of the pool of eligible beneficiaries.

Unlike the other programs in the demonstration, the Washington University Care Coordination Program would not divulge the proprietary algorithm it uses to identify potential demonstration participants. The program proposed that, to conduct the participation analysis, MPR use two approaches to simulate the criteria the program uses to identify eligible Medicare beneficiaries. Unfortunately, neither approach came close to approximating the characteristics of participants who enrolled in the program during the first six months. Appendix B describes the approach used for the participation analysis.

Impact Analysis. This report also presents early impact estimates based on key study outcomes. The evaluation's impact analysis is based on the random assignment of consenting, eligible Medicare beneficiaries to receive either the program intervention in addition to their regular Medicare benefits (the treatment group) or their regular Medicare benefits only (the control group). Comparison of outcomes for the two groups will yield unbiased estimates of the impact of care coordination. Disenrollees are not excluded from the analysis sample because

doing so would introduce unmeasured, preexisting differences between the treatment and control groups that random assignment is meant to avoid.

The report provides two types of comparisons of estimated treatment and control group means for Medicare-covered service use and costs. The first uses outcomes measured over the first two months after random assignment for beneficiaries who enrolled in the program during its first four months. The second compares treatment and control group means for each calendar month after program startup, using all sample members enrolled through the end of each month, to observe any trends in treatment-control differences.

In this report, the impact of the program's intervention is estimated as the simple difference in mean outcomes between treatment and control patients. T- and chi-squared tests are used to establish whether differences are statistically significant. The next round of site-specific reports will use regression analysis to adjust for any chance baseline differences between the two groups that arose despite random assignment. (Appendix B describes in more detail the methods used to obtain Medicare data, construct variables, and choose analysis samples.)

The treatment-control comparisons presented in this report may not reflect the true long-term impacts of the program, for several reasons. First, the comparisons are based on a smaller sample of early enrollees (only patients enrolling during the first four months of program operation). Second, the outcomes are measured too soon after patient enrollment to expect programs to be able to have sizable impacts. (The timetable for the evaluation's first report to Congress defined the observation period for this report.) Third, program interventions may change as staff gain more experience with the patients they have enrolled. Finally, if programs change their eligibility criteria or the type of outreach they conduct, they may enroll different types of patients.

Despite these shortcomings, the treatment-control differences are presented to provide some limited feedback to the programs on how the two groups compare. Later analyses will examine Medicare service use and cost impacts over a longer time and will include all enrollees during the program's first 12 months. Those analyses also will examine patient outcomes based on telephone interviews with treatment and control group members. Interview-based outcomes include the receipt of preventive health services, general health behaviors, self-management, functioning, health status, and satisfaction with care, as well as disease-specific behaviors and health care.

OVERVIEW OF THE WASHINGTON UNIVERSITY CARE COORDINATION PROGRAM

Program Organization and Relationship to Physicians. The Washington University School of Medicine in St. Louis, Missouri, is the host for the demonstration program, and its partner is StatusOne Health Systems, a program of American Healthways, Inc.[2] StatusOne, headquartered in Hopkinton, Massachusetts, develops products to manage high-risk populations and provides care management services for these patients. Washington University and StatusOne operate the demonstration together and split the monthly per-patient payment from CMS. The program's patients all live in the St. Louis area.

Demonstration staff are located in the Washington University School of Medicine's Care Coordination department in St. Louis and StatusOne's telemonitoring operations center in Aliso Viejo, California. The Care Coordination department shares office space with the Washington University Physician Network (WUPN), a wholly owned subsidiary of the Washington University School of Medicine. WUPN is an independent physician association that contracts

[2]American Healthways, Inc. acquired StatusOne Health Systems in September 2003, a little over one year after the start of the demonstration.

with managed care plans and participates in medical management, quality improvement, and disease management programs. It includes 300 primary care physicians and more than 900 clinical faculty from the Washington University School of Medicine.

The prototype for the demonstration was developed in 1997. At that time, the Washington University School of Medicine's Care Coordination department operated as a medical services organization (known as Health Management Partners) and was jointly owned by BJC HealthCare and the Washington University School of Medicine.[3] Health Management Partners held a full-risk contract with a health plan that covered 75,000 members, 15,000 of whom were Medicare + Choice beneficiaries. Health Management Partners provided utilization review and care management services for the health plan's high-risk enrollees and contracted with StatusOne to provide consulting and software services. Together, Health Management Partners and StatusOne developed the prototype's care management intervention, based on national guidelines. Health Management Partners' St. Louis-based care managers provided this intervention to patients through in-person and telephone contacts. The prototype employed 15 care managers who worked from the offices of nine WUPN physician groups.

When the prototype program ended in 2000, Health Management Partners was providing care management services to approximately 1,300 patients.[4] In a pre-post analysis, the program staff found that patients' functional status had improved and unnecessary hospitalizations

[3]BJC Health System was created in 1993 by the merger of Barnes-Jewish Inc., an urban, academic medical center, and Christian Health Services, a suburban community hospital network. In 2000, BJC Health System changed its name to BJC HealthCare.

[4]The program ended when Health Management Partners and the health plan—its only client—were unable to negotiate terms to renew their contract. BJC HealthCare and Washington University then dissolved Health Management Partners, and its staff were absorbed into Washington University's newly formed Care Coordination department.

decreased by approximately 60 percent (Lynch et al. 2000). In addition, program staff reported that physicians liked the prototype because it reduced office visits.

Washington University and StatusOne modified the prototype care management program for the demonstration in several ways. Because they no longer had access to the health plan's administrative databases, they found new ways to identify potential patients. Similarly, because they no longer had a mandate from a health plan to conduct their program, they developed strategies for patient recruitment. In the prototype, patients had to opt out of the program if they did not want to participate. Under the demonstration, Washington University and StatusOne needed to actively convince patients to enroll, or "opt in." They also changed the intervention. The prototype used St. Louis-based care managers only; for the demonstration, they added California-based care managers employed by StatusOne. The care managers in the prototype program worked in the same place as the WUPN physicians; for the demonstration program, the St. Louis-based care managers work from one central office.

Washington University's key staff for the demonstration include a program director, who also is the medical director (he is referred to as the medical director in the rest of the report), a St. Louis-based care management supervisor, the care coordinators (called "St. Louis-based care managers" in this report), a care management assistant, and an enrollment coordinator. Washington University employs all these staff members, and all work from the university's offices in St. Louis. Except for the program's medical director, who has other administrative and clinical responsibilities, and one care manager, all the Washington University staff members work exclusively on the demonstration.[5] The medical director, an internist specializing in

[5]In fall 2003, Washington University's Care Coordination department contracted to provide care management services to a Washington University-sponsored preferred provider organization (PPO). One Washington University care manager manages both demonstration and PPO patients.

pulmonary and critical care medicine, provides administrative oversight for the entire program and medical oversight for all care management activities. His day-to-day responsibilities include consulting with care managers on clinical issues and interacting with the WUPN physicians participating in the demonstration—a role made easier because he is WUPN's medical director. The St. Louis-based care management supervisor formerly was the director of utilization management and care management for Health Management Partners. She is a registered nurse and a certified care manager with more than 30 years of nursing experience and many years of experience in utilization review, care management, and quality improvement. She is responsible for ensuring that the intervention is provided as planned, supervising and training the care managers, reporting program data, and helping the care managers solve problems. The St. Louis-based care managers contact patients primarily by telephone, but they occasionally see patients in person.

The key demonstration staff at StatusOne include a medical director, a California-based care management supervisor, and the care managers. These staff also work on other StatusOne projects. The StatusOne medical director works at the company's headquarters in Massachusetts, while the care management supervisor and the care managers are located in StatusOne's southern California telemonitoring operations center. In addition, a half-time medical director, a pharmacist, a psychologist, and nurse practitioners work in StatusOne's southern California offices, and the care managers can consult them. The California-based care managers work from their home offices and contact their patients by telephone.

One year after the start of the demonstration, the program had two full-time St. Louis-based care managers and one part-time and five full-time California-based care managers. All the care managers were registered nurses. The program's target was to have a California-based care manager-to-patient ratio of 1 to 100 and a St. Louis-based care manager-to-patient ratio of 1 to

50. (In general, the program assigns patients with more complex care needs to St. Louis-based care managers and those with less complex care needs to California-based care managers.) With 705 treatment group patients and approximately 7.5 full-time-equivalent care managers, the care management supervisors reported that they were able to keep within these targets.

When the program started the demonstration, it already had an established relationship with WUPN physicians. These physicians know the staff of the Care Coordination department from prior projects, and the demonstration's Washington University medical director also is WUPN's medical director. In addition, the demonstration host indirectly employs the physicians caring for the demonstration's patients. Thus, the program staff believe strong potential exists to involve the physicians in the operation of the program and to continue to build relationships with them.

Program Approaches. The program seeks to reduce hospitalizations and emergency room visits by better coordinating patients' social and financial resources with their health care needs. Specifically, the program seeks to optimize the coordination of medical care and increase patients' self-management skills, daily activity, and fitness. In addition, it tries to help patients strengthen relationships with family and friends, undertake mental challenges, and become involved in their communities. The program uses three approaches to accomplish these goals: (1) improving communication and coordination between patients and physicians, (2) providing education to improve patients' adherence to care regimens and thereby improve their health, and (3) improving access to support services by referring patients to needed Medicare- and non-Medicare-covered services. The program's St. Louis-based medical director believes the relationship between the patient and care manager is the key to achieving these goals. He believes it is very important for patients to have someone to listen to them and take the time to

understand their concerns. The program does not try to change physicians' clinical practice; however, it would like them to see the benefits of care management for their practices.

Target Criteria and Patient Identification. The Washington University Care Coordination Program targets high-risk, fee-for-service Medicare beneficiaries age 18 or older who are living in the greater St. Louis, Missouri, area (including some counties in Illinois) and receiving care from WUPN physicians. As in the other demonstration programs, participants must (1) have both Medicare Parts A and B, (2) have Medicare as their primary payer, and (3) not be in a Medicare managed care plan of any type. The program does not target specific diagnoses. Instead, it tries to identify patients who are likely to become clinically unstable and require hospitalization in the next 12 months. Specifically, the program tries to identify patients who have frequent emergency room visits and hospitalizations, multiple comorbidities, safety issues or a history of falls, or terminal illnesses undergoing active treatment (as opposed to palliative care). In addition, it targets patients with disadvantages, such as few social supports, insufficient financial resources, temporary or permanent loss of function, or poor coping skills. Beneficiaries do not have to be the patient of a WUPN physician to be eligible to participate. Beneficiaries are not eligible to participate in the program, however, if they have a psychiatric condition as a principal diagnosis, are receiving hospice services, or are receiving care management services from an organ transplant program.

To identify patients, the program sends administrative claims data from WUPN to StatusOne every month. StatusOne runs the data through a proprietary patient identification algorithm, generates a list of potentially eligible patients, and returns the list to the enrollment coordinator and her staff at Washington University. She and her staff recheck the patients' demographic information against WUPN's administrative claims database to see if any changes have occurred in the patients' status or contact information. The enrollment staff then verify that each

identified patient has Medicare Parts A and B, has Medicare as their primary payer, is not enrolled in a Medicare + Choice managed care plan, is age 18 or older, and lives in the targeted counties in Missouri or Illinois.

The enrollment staff send eligible patients a letter on Washington University letterhead (signed by the demonstration's medical director) and the consent form. (Appendix C contains a copy of the consent form.) If a patient does not call the program or return the signed consent form within 10 days from when the letter was sent, the enrollment staff call the patient to describe the purpose of the program and the services it provides, answer questions, and review the consent form. They ask interested patients to sign and return the consent form to the program. When the program receives the signed consent form, it submits the patient's information to MPR for randomization. MPR randomly assigns consenting patients to the treatment group, in which they receive care coordination services in addition to their usual Medicare benefits, or to the control group, in which they receive only their usual Medicare benefits. Patients do not have to obtain their physician's approval before enrolling in the program.[6]

The program also solicits referrals from ancillary providers and community organizations. In addition, it accepts self-referred patients. The program distributed marketing materials to organizations and clinics operated by Washington University School of Medicine and BJC HealthCare that serve Medicare beneficiaries. When referred beneficiaries call the program, the staff use a list of the program's inclusion and exclusion criteria to identify eligible high-risk patients.

[6]The St. Louis-based care management supervisor reported that, although the program does not seek physicians' approval before enrolling a patient, physicians have not expressed dissatisfaction with this approach.

Assessment, Care Planning, and Monitoring. For all treatment group patients, care management begins with an Initial Health Screen (IHS), which collects information on patients' acuity and begins to identify needs and goals for care (see Appendix C). The California-based care managers conduct the IHS by telephone. The IHS, developed by StatusOne, covers the patient's self-reported health status, history of health care service use, diagnoses, medications, limitations in activities of daily living, and social supports and living arrangements. The IHS includes patients' goals expressed in their own words, such as "being able to drive again" or "to walk without a leg brace." It also includes nursing goals, such as, "The patient will maintain a diet that adheres with the American Diabetes Association recommendations, control weight, and monitor blood sugars for the next six months." The IHS takes between 10 and 60 minutes to complete. Typically, only the patient's responses are used to complete the IHS. However, the care managers may call the patient's physician to confirm information that appears to be incorrect or incomplete. The care managers seek input from the patient's family if the patient has an impairment that prevents accurate collection of information. The care managers complete the IHS directly into discrete data fields within CareLink™, the care management software developed by StatusOne and used for the demonstration.[7] Care managers will print out and send copies of the IHS to physicians who request it. Patients' physicians do not have access to CareLink.

[7]CareLink is an Internet-based disease management software product that was customized by StatusOne for the demonstration. Both the St. Louis- and California-based care managers use CareLink. CareLink stores data from the IHS, care plans, and ongoing patient monitoring in discrete and free-text data fields. CareLink reminds the care managers when patient contacts are due. It does not interface with any other information system the demonstration uses, such as the WUPN administrative claims database, the data source for the patient identification algorithm. The program's management staff use CareLink to generate reports monitoring the care managers' performance. These reports include case managers' caseloads, acuity distribution, active care plan rate, and the number of patients waiting for an initial contact. Other reports provide information on patients' use of services before and after entry into the program. CareLink also provides the program data needed for the evaluation.

Immediately after administering the IHS, the California-based care manager uses her clinical judgment to assign the patient to one of five acuity levels (Level 1 is the most acute, Level 5 the least acute) and to either a St. Louis- or a California-based care manager for ongoing followup. As of March 2005, 9 percent of the program's patients were at acuity Level 1, 7 percent at Level 2, 24 percent at Level 3, 43 percent at Level 4, and 16 percent at Level 5. The St. Louis-based care management supervisor commented that it is difficult to determine whether this distribution has changed, as some patients have improved and become less acute, while others have become more acutely ill as their disease has progressed. In general, the program has found that enrolled patients are less severely ill than they had anticipated.

Patients at all acuity levels can be followed by St. Louis- or California-based care managers, although St. Louis-based care managers tend to be assigned more complex patients. Patients probably will be assigned to St. Louis-based care management if they (1) are cognitively impaired, have severe untreated depression, have a low educational level, or lack family support; (2) have a poor social or financial situation that may affect their health status; (3) live in a skilled nursing facility where there are concerns about the quality of care; (4) are hospitalized (at the time of enrollment) and expected to be discharged with significant loss of function; (5) have problems with their caregiver; or (6) have had repeated hospitalizations. In addition, a patient may be assigned to St. Louis-based care management at any time if the California-based care manager detects any of the following "red alert" criteria: (1) the patient's responses do not seem reliable, (2) there is a possibility that the patient is being abused, or (3) the patient's or family's tone creates a suspicion that something is not right.

After completion of the IHS, the assigned care manager contacts the patient. St. Louis-based care managers monitor patients by telephone or through in-person visits at their discretion. For example, they may do more in-person visits if the patient has a hearing or speech

impairment. California-based care managers monitor patients only by telephone, but they can request an in-person consultation by a St. Louis-based care manager if they identify an issue requiring visual evaluation.

The program conducts periodic reassessments, with the frequency determined by patients' acuity level. Level 1 and Level 2 patients are reassessed every 4 to 6 weeks, Level 3 and Level 4 patients every 6 to 8 weeks, and Level 5 patients every 8 to 10 weeks. The program does not use a specific form for the reassessment; instead, the care manager asks questions relevant to the patient. These questions might include such topics as the current status of the patient's symptoms, medications, functional status, recent physician visits and scheduled visits, hospitalizations and emergency room visits since the last reassessment, and whether the patient needs preventive care, such as a mammogram or vaccination. Based on the results of the reassessment, the care manager may assign the patient to a different acuity level. The information obtained from the reassessment is entered into CareLink.

Between August 16, 2002, and February 11, 2003, 482 patients had enrolled and been randomly assigned to the Washington University Care Coordination Program's treatment group (Table 1). Seventy-seven percent of patients (371 of 482) had at least one contact for assessment; among these, approximately 57 percent had their first contact within two weeks of enrollment. The program's policy is to complete the IHS within two weeks of random assignment. The difference between the actual and expected time to completion of the IHS may reflect the rapid pace of enrollment during the program's initial months and resulting backlog of patients waiting to be assessed.

The care managers use the results of the IHS to develop individualized care plans (which the program calls "action plans") for each patient. (Appendix C contains examples of care plan action items.) They use the care plan to identify patient needs and interventions and to guide

TABLE 1

CARE COORDINATOR CONTACTS WITH PATIENTS
DURING FIRST SIX MONTHS

Number of Patients Enrolled[a]	482
Number of Patients with at Least One Care Coordinator Contact (Percent)	374 (78)
Total Number of Contacts for All Patients	1,136
Average Number of Contacts per Patient, Among Those Contacted	3
Number of Care Coordinators Contacting Patients	11
Among Those Patients with at Least One Contact:	
Percentage of contacts care coordinator initiated	96.0
Percentage of contacts by telephone	96.9
Percentage of contacts in person at patient's residence	2.4
Percentage of contacts in person elsewhere	0.7
Of All Patients Enrolled, Percentage with Assessment Contact	77.0
Among Those Patients with an Assessment, Percentage of Patients Whose First Assessment Contact Is:	
Within a week of random assignment	36.8
Between one and two weeks of random assignment	20.4
More than two weeks after random assignment	42.8
Of All Patients Enrolled, Percentage of Patients with Contacts for:	
Routine patient monitoring	56.4
Providing emotional support	52.1
Providing disease-specific or self-care education	73.7
Explaining tests or procedures	66.6
Explaining medications	71.4
Monitoring abnormal results	11.8
Identifying need for non-Medicare-covered service	0.0
Identifying need for Medicare-covered service	11.2
Monitoring services	15.4
Average Number of Patients Contacted per Care Coordinator	31.2
Average Number of Patient Contacts per Care Coordinator	94.7

Source: Washington University Care Coordination Program data received April 2003 and updated July 2003. Covers six-month period beginning August 16, 2002, and ending February 11, 2003.

[a]Number of patients enrolled in the treatment group as of February 11, 2003.

each patient contact. The care managers use a template in CareLink to select common problems and goals in six areas. The six areas (with examples in parentheses) are (1) coordination of care (schedule laboratory tests or set up transportation); (2) self-reliance (take medication as prescribed or keep a journal of glucose levels); (3) activity and fitness (eat regular, balanced meals or get dressed every day); (4) community involvement (attend church or visit the community center); (5) social supports (offer to baby-sit or telephone a friend); and (6) mental challenge (read a book or surf the Internet). The care managers can customize each goal to the patient's needs. For example, under the goal of self-reliance, the care manager may select the action item, "Call care manager when self-monitoring indicates results outside parameters" from the care plan template. She can then customize the item by describing the parameters for the patient, which could involve blood sugar levels, weight, or peak flow levels. The care plan template allows the care manager to enter a date by which the goal should be met.

When developing the care plan, the care manager asks for input from the patient and the caregiver/family. The care manager also will seek information from home health staff, therapists, or staff from a skilled nursing facility or assisted-living facility if they play a major role in the patient's care. Care managers document the care plan in CareLink. The program views the care plan as a dynamic document that is updated with each patient contact. The care managers are required to update care plans every 1 to 2 weeks for acuity Level 1 and 2 patients; 3 to 6 weeks for acuity Level 3 patients; 4 to 6 weeks for acuity Level 4 patients; and 8 to 10 weeks for acuity Level 5 patients. Care managers also update care plans following adverse events such as hospitalizations, emergency room visits, and falls and with new diagnoses, changes in mental status, or in reaction to one of the program's "red alert" events. The program does not give a copy of the care plan to the patient's primary care physician.

The patients' acuity level determines the frequency of follow-up monitoring. The program monitors the highest-acuity patients (Levels 1 and 2) every one to two weeks, Level 3 patients every two to three weeks, Level 4 patients every three to four weeks, and the lowest-acuity patients (Level 5) every four to six weeks. If necessary, the care managers will follow-up with patients more frequently. CareLink generates patient contact reminders for the care managers. In addition, the care managers keep a list in CareLink of patients who are at imminent risk of an adverse event. If a patient on the list calls the program outside of normal office hours or when his or her care manager is sick or on vacation, the care manager covering the call will monitor the patient especially closely for signs that an adverse event may be occurring. St. Louis-based care managers are available to patients 24 hours a day, seven days a week. Patients can leave voice mail messages for care managers; the voice mail system then pages the care manager. The care manager usually returns the patient's call within a few minutes. (The care managers cover each other's calls when they are on vacation.) The California-based care managers work a flexible schedule so they are available when patients in St. Louis are most likely to call them. If patients call the California-based care managers after office hours, they are able to leave a voice-mail message that the care managers return the next business day.

The patient's care manager conducts monitoring contacts with the patient. The mode of contact for a patient assigned to a St. Louis-based care manager may be either by telephone or in person, at the care manager's discretion. A California-based care manager may request that a St. Louis-based care manager evaluate the patient in an in-home visit. For example, if the California-based care manager suspects that the patient's condition is worsening, the patient is not taking medication correctly, or if something in the home environment seems unsafe, she may ask a St. Louis-based care manager to investigate.

Patients also may be switched from California-based care management to St. Louis-based care management and vice versa. The program will transfer a patient from California- to St. Louis-based care management under three conditions. The first is if a patient cannot say what his or her health needs are because of cognitive impairments, depression, knowledge deficits, a language barrier, or complexity of the care plan. The second is if the care manager believes a patient's social or financial situation may negatively affect the patient's health status. The third is if the patient lives in a long-term care facility and the care manager believes the patient may not be receiving enough assistance from the facility's staff to support coordination of care. In addition, a patient who has recently been discharged from a hospital may temporarily switch to St. Louis-based care management. Conversely, a patient whose condition improves or who moves to a more supportive living arrangement may switch to California-based monitoring.

In transferring patients, the program is sensitive to the attachments that patients develop with their care managers. When a patient is transferred from a California-based to a St. Louis-based care manager, the program generally does not tell the patient that he or she is being transferred, but instead says that a St. Louis-based care manager will be coming to the patient's home to provide additional care. The St. Louis-based care manager will gradually take on more responsibility for the patient's management, while the California-based care manager remains available to the patient. The care management supervisor reported that transitioning patients from St. Louis-based to California-based care managers is more difficult because patients tend to become more attached to care managers who they see in-person. If a patient resists being transferred from a St. Louis-based to a California-based care manager, the program will not transfer them. The care management supervisor also reported that CareLink is a valuable tool in the transfer of patient care because it documents all of the information that a care manager needs to take over a patient's care.

The St. Louis-based care management supervisor approves all requests for transfer of monitoring responsibilities. She believes these criteria have worked well and that patients are being managed effectively. At the end of the first year of operation, no patients had been switched from St. Louis- to California-based monitoring. However, California-based care managers had requested that a St. Louis-based care manager evaluate 53 of their patients. Of these patients, 32 (approximately 5 percent of all treatment group patients) were transferred to St. Louis-based care managers for ongoing monitoring. Monitoring contacts conducted by both St. Louis- and California-based care managers include patient education, reassessment of the patient's status, and evaluation of the patient's progress toward meeting the goals of the care plan.

Of the 482 patients enrolled in the first six months of operation, 78 percent had at least one contact with a care manager, and the average patient had three contacts (Table 1). Care managers initiated nearly all patient contacts (96 percent), and most (97 percent) were by telephone. Among all patients enrolled, 56 percent had received a contact from a care manager for routine monitoring and 52 percent for emotional support.

Staffing and Program Quality Management. Maintaining and improving care quality and ensuring programs attain their goals both require that staff have adequate qualifications, training, and supervision and that managers have the tools and support needed to monitor the program's progress toward its goals. The Washington University Care Coordination Program requires that its care managers be registered nurses with three to five years' experience caring for patients with chronic illnesses. Experience working with senior populations and in utilization management or care management is preferred but not required. Both of the St. Louis-based care managers and two of the California-based care managers are certified by the Commission for Case Manager Certification.

At the start of the project, the program held two days of training for the California- and St. Louis-based care managers in StatusOne's southern California offices. Training included the rationale behind the demonstration, as well as procedures for transferring patients between St. Louis- and California-based care management and instruction in how to use the assessment tools, develop care plans, use CareLink, and arrange community-based services. (Appendix C contains a copy of the care management training agenda.) As new care managers have been hired, they have undergone similar classroom-based training. After this training, new care managers are assigned to a preceptor who is a more experienced care manager. The new care manager begins to contact patients under the guidance of the preceptor. Before new care managers begin to contact patients independently, they must demonstrate their ability to develop care plans, accurately assign patients to the correct acuity level, and interact with patients appropriately.

St. Louis-based care managers report to a supervisor at Washington University, California-based care managers to a supervisor at StatusOne's southern California office. Every week, each supervisor reviews a sample of care plans the care managers have developed to ensure that they are up-to-date, interventions are appropriate for the patient, and the care being provided adheres to the program's clinical practice guidelines. The program also holds in-service training programs every two months for the care managers in both locations.

The program developed several committees and subcommittees to oversee and direct the program. The joint management steering committee was responsible for program startup and management of the working relationship between Washington University and StatusOne. The demonstration's Washington University medical director was the chair of the joint management steering committee, which included StatusOne's medical director, a representative from Washington University, a representative from StatusOne, and two nonvoting members. In the first year of the demonstration, the program also had an operations subcommittee, medical

advisory board, and quality improvement subcommittee. At the end of the first year, the joint management steering committee turned over management of the program to the operations subcommittee. The operations subcommittee is responsible for overall program management, for developing policies and procedures for patient recruitment and program work flows, and for compiling a directory of community resources. It is made up of the two care management supervisors, the enrollment coordinator, and a California-based senior care manager. The operations subcommittee met weekly at the start of the project but now meets every other month.

The medical advisory board provided input to the steering committee on the medical aspects and structure of coordinated care and reviewed the program's clinical practice guidelines. The demonstration's medical director chaired the medical advisory board, which was made up of six WUPN physicians who had many patients in the demonstration. The quality improvement subcommittee developed and oversaw care coordination performance standards and developed the protocols used for patient assessment and care planning. In addition, it created a quarterly auditing tool to evaluate whether the care managers consistently adhere to program processes and standards of care. Two reviewers audit a sample of three current patients' records for each care manager. The tool assesses whether the records appropriately document 19 items. These items include the patient's current situation, functional status, goals specific to the patient, frequency of patient contact, and substantive clinical and psychosocial interventions. The quality improvement subcommittee reviews the audit results, and the care management supervisors implement any corrective actions based on its recommendations. In January 2005, the medical advisory board merged with the quality improvement subcommittee and now meets quarterly. It consists of the Washington University and StatusOne medical directors and 10 WUPN physicians.

The program generates many reports from CareLink to monitor its operations. The St. Louis-based care management supervisor can generate aggregate reports at the care manager level, as well as by primary care physician and acuity level. (Appendix C contains a sample of CareLink management reports.) These reports monitor the completion of care plans, frequency of monitoring contacts, discharge status, and inactive care plans.

By tracking the frequency of monitoring contacts, the program found that care managers were not contacting patients as often as its policies required. The program would like to hire another St. Louis-based care manager, but it cannot identify an appropriate candidate. So to address this concern, the program hired a full-time St. Louis-based care management assistant to help the care managers with their more administrative tasks. This staff member does not have a nursing background but has experience in utilization review and as a care management assistant for a managed care plan. Under the direction of the care managers and the care management supervisor, she makes calls to service providers and keeps in touch with patients in between their contacts with the care manager. For example, she calls a patient with diabetes to remind him to monitor his blood sugars, then records the blood sugars he reports. She also helped the program during the recent shortage of flu vaccine by locating available vaccine, then calling the program's highest-risk patients to tell them when and where they could be vaccinated.

WHO ENROLLS IN THE PROGRAM?

Although the program enrolled more than 1,400 beneficiaries, it did not meet its enrollment target for the first year of operation. Staff attributed this to an inability to contact potential patients and a higher-than-expected rate of patient refusal to participate. To increase enrollment, the program changed the way it contacts patients and increased marketing directed to WUPN physicians. The program appears to have enrolled patients with very high health care costs.

Patients seem satisfied with the program—only 2 of 482 voluntarily disenrolled in the first six months of operation.

Enrollment After One Year. After one year of operation, the Washington University Care Coordination Program had enrolled 705 patients in the demonstration treatment group and 700 patients in the control group (MPR Weekly Enrollment Report, week ending August 17, 2003). This is 70 percent of the program's target enrollment of 2,000 patients in the first year.

The program encountered three main difficulties with patient enrollment. First, at the start of the demonstration, the program contracted with a Phoenix-based provider of health care communications and call center services to help recruit patients. The call center sent letters to prospective patients and made follow-up telephone calls to explain the program and ask beneficiaries to enroll. Despite extensive training and oversight from Washington University, the call center had little success in recruiting patients. The program staff identified two main reasons for this: (1) the call center's out-of-area telephone number looked like a telemarketer's when it was displayed on patients' caller identification systems, and (2) the call center could not provide enough details about the program to answer people's questions. After two months, Washington University terminated the call center's contract, and the university's enrollment staff made all the calls again that the call center originally had placed.

A second difficulty with enrollment was that a large number of patients could not be contacted. At the start of the demonstration, the program was using older claims data to identify potential patients. By the time the program attempted to contact these patients many of them had died or moved to a different address. As the demonstration continued and more recent data used, the program staff believe that a higher percentage of patients identified by the algorithm went on

to enroll.[8] However, the care management supervisor reported that the program is still unable to contact a large number of potential patients because they do not respond to telephone messages left for them by the program's enrollment staff.

The program's third difficulty with enrollment was a higher-than-expected rate of patient refusal to participate. The program staff had expected that at least 90 percent of eligible Medicare beneficiaries would enroll in the program, but only about 20 percent did. The program does not track the reasons patients decline to participate. However, the staff believe common reasons are that patients do not think they need the program, are apprehensive about participating in a research study, or do not want another party involved in their care. The staff also believe that the consent form dissuades patients from enrolling because it makes them more wary than necessary of the program. To deal with this issue, the program changed its introductory letter so it clearly states that enrollees will not take experimental medications, will not have to change their doctor, and do not have leave their homes to participate. The program staff believe that the revised letter has successfully increased patient enrollment. In addition, the program has increased its marketing efforts to WUPN physicians in the hope that they will encourage their patients to enroll.

Despite these difficulties, the program's level of enrollment is higher than that of many other MCCD programs, probably because of its access to WUPN's administrative claims data. The program reached its target enrollment of 1,000 treatment group patients in September 2004, about two years after it started operating.

[8]The program tracks the enrollment status of patients identified by its algorithm. In the program's first three months of operation, the algorithm identified 4,835 potentially eligible Medicare beneficiaries. Of these, 2,152 were ineligible because they did not have Medicare Part B, they had moved away or died, or their contact information was incorrect. Of the 2,683 eligible beneficiaries, 1,318 were undecided or could not be reached, 809 declined to participate, and 556 (20 percent of the 2,683 eligible beneficiaries) consented to be randomized.

Percent of Eligible Beneficiaries Participating. The evaluation simulated the Washington University Care Coordination Program's eligibility criteria using Medicare enrollment and claims data to estimate the proportion of eligible beneficiaries participating in the program. (Appendix B contains a detailed description of the simulation.) Washington University's partner, StatusOne, uses a proprietary algorithm to identify high-cost beneficiaries. To preserve the confidentiality of that algorithm, StatusOne suggested that the evaluation test two approaches to simulating its criteria. One approach used diagnoses alone to identify eligible beneficiaries. The second used a narrower set of diagnoses or claims for inpatient or emergency room service use. Neither came close to approximating the diseases, utilization, or costs of Washington University's actual participants during its first six months, but the evaluation used the second approach because it appeared to more closely match the program's description of its target population. The simulation found that 118,040 beneficiaries (40 percent of all Medicare beneficiaries in the area) were eligible for the program between August 2002 and February 2003, the program's first six months of operation. That is, they met CMS's three demonstration-wide criteria, lived in the program's service area, and met the program's clinical eligibility criteria as conveyed to MPR.[9] During the same six months, 718 eligible beneficiaries (0.6 percent of the 118,040 eligible beneficiaries) enrolled in the demonstration.[10] (See Tables B.2 and B.3.)

[9]Between August 2002 and February 2003, 296,749 beneficiaries were living in the program's service area. Of those, 100,309 (34 percent) would have been ineligible for the program because they did not meet one of CMS's demonstration-wide criteria. Of the remaining 196,440 beneficiaries who met these criteria, 118,040 (60 percent) also met the diagnostic and service use criteria the program provided at some point during the six-month intake window, and they had none of its exclusion criteria (to the extent they could be simulated with the Medicare data). (See Table B.2.)

[10]In fact, 972 beneficiaries actually enrolled in the program during its first six months. When estimating the participation rate, the evaluation excludes enrollees with invalid Health Insurance Claim (HIC) numbers on MPR's enrollment file and those who did not meet CMS's demonstration-wide criteria or the program's geographic, diagnostic, utilization, or exclusion criteria (as measured using Medicare data). These enrollees were excluded from the participation analysis to use a consistent definition of eligibility for the numerator and denominator of the ratio. (Beneficiaries with invalid HIC numbers may well be eligible, but the beneficiary's Medicare data could not be obtained to assess that, so they were excluded. HIC numbers for them have since been corrected.) This leaves 718

The program staff estimated that there were approximately 184,000 fee-for-service Medicare beneficiaries in the St. Louis metropolitan area. Of these, the program staff believed that six percent (or 11,000) beneficiaries would meet the program's eligibility criteria. The program projected a target enrollment of 2,000, meaning that about 18 percent of its estimated eligible population would have to agree to participate during the first year of the demonstration.[11] The actual enrollment of 718 represents seven percent of the program's estimated number of eligible beneficiaries.

Comparison of Participants and Eligible Nonparticipants. Program participants differed from eligible nonparticipants along nearly all dimensions in this analysis. (Again, eligible nonparticipants were identified using an approach recommended by StatusOne in lieu of sharing its proprietary patient identification algorithm.) Participants were an average of four years younger than eligible nonparticipants due to a higher proportion being under age 65 (27 versus 13 percent) and a lower proportion being over age 74 (38 versus 50 percent) (Table 2). Participants were more than twice as likely to be nonwhite (39 versus 17 percent). Participants also were considerably more likely than nonparticipants to be eligible for Medicaid (21 versus 11 percent) and to be entitled to Medicare as a result of being permanently disabled or having end-stage renal disease (ESRD) (40 versus 19 percent). Participants were more likely than eligible nonparticipants to have chronic conditions. During the two years before enrolling, 68 percent of participants had been treated for coronary artery disease, 48 percent for chronic obstructive

(continued)
known *eligible* participants. Eighty percent of the reduction was due to beneficiaries with addresses outside the catchment area according to the Medicare data. When we compare participants to eligible nonparticipants in Table 2, however, we only exclude participants with invalid HIC numbers and those who did not meet the Medicare demonstration-wide requirements, leaving 940 participants. Thus, the comparison more closely reflects the differences between all actual participants and those who were eligible to participate but did not.

[11]The program planned to keep the size of its treatment group at about 1,000 patients throughout the rest of the demonstration, enrolling additional participants only to replace those who disenrolled.

TABLE 2

CHARACTERISTICS OF ALL PARTICIPANTS AND ELIGIBLE NONPARTICIPANTS DURING THE FIRST SIX MONTHS OF PROGRAM ENROLLMENT
(Percentages, Unless Otherwise Noted)

	Demonstration Participants (Treatments and Controls)[a]	Eligible Nonparticipants	
Age at Intake			
Average age (in years)	69.5	73.5	***
Younger than 65	27.0	12.9	***
65 to 74	35.4	37.1	
75 to 84	27.5	35.7	***
85 or older	10.1	14.3	***
Male	46.1	42.2	**
Nonwhite	38.7	16.6	***
Original Reason for Medicare: Disabled or ESRD	40.3	19.0	***
State Buy-In for Medicare Part A or B	20.6	10.8	***
Newly Eligible for Medicare (Eligible Less than Six Months)	0.64	1.56	**
Enrolled in Fee-for-Service Medicare 6 or More Months During Two Years Before Intake	99.2	97.5	***
Medical Conditions Treated During Two Years Before Month of Intake[b]			
Coronary artery disease	67.8	42.5	***
Congestive heart failure	47.1	22.6	***
Stroke	31.4	19.5	***
Diabetes	45.8	32.6	***
Cancer	37.5	28.0	***
Chronic obstructive pulmonary disease	47.8	32.2	***
Dementia (including Alzheimer's disease)	6.8	5.9	
Peripheral vascular disease	22.4	12.3	***
Renal disease	23.3	7.1	***
Total Number of Diagnoses (number)	3.3	2.0	***
Days Between Last Hospital Admission and Intake Date[b]			
No hospitalization in past two years	17.3	55.8	***
0 to 30	9.9	4.8	***
31 to 60	13.1	3.6	***
61 to 180	28.8	10.2	***
181 to 365	18.6	11.5	***
366 to 730	12.5	14.1	

TABLE 2 *(continued)*

	Demonstration Participants (Treatments and Controls)[a]	Eligible Nonparticipants	
Annualized Number of Hospitalizations During Two Years Before Month of Intake[b,c]			
0	17.7	56.2	***
0.1 to 1.0	37.1	30.1	***
1.1 to 2.0	23.2	8.7	***
2.1 to 3.0	10.9	2.7	***
3.1 or more	11.1	2.2	***
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]			
Part A	$1,681	$425	***
Part B	$1,016	$362	***
Total	$2,697	$787	***
Distribution of Total Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]			
$0	0.2	1.3	***
$1 to 500	22.7	68.1	***
$501 to 1,000	14.5	10.1	***
$1,001 to 2,000	19.2	8.9	***
More than $2,000	43.4	11.5	***
Number of Beneficiaries	**940**	**117,322**	

Source: Medicare Enrollment Database and National Claims History File.

Note: The intake date used in this table is the date of enrollment for participants. For eligible nonparticipants, the intake date is November 15, 2002, roughly the midpoint of the six-month enrollment period examined.

[a]Participants who do not meet CMS's demonstration-wide requirements for the demonstration or had an invalid HIC number on MPR's enrollment file are excluded from this table because we do not have Medicare data showing their reimbursement in the fee-for-service program. Members of the same households as the research sample members are included.

[b]Calculated among beneficiaries with six or more months in Medicare fee-for-service in the two years before intake. (See Note, above, concerning intake date definition.)

[c]Calculated as 12 x (number of hospitalizations during two years before month of intake) / (number of months eligible). For example, if a beneficiary was in fee-for-service all 24 months and had two hospitalizations during that time, they would have one hospitalization per year [(12 x 2) / 24]. If another beneficiary was in fee-for-service eight months during the previous two years, and had two hospitalizations during those eight months, they would have [(12 x 2) / 8], or three hospitalizations per year. The estimate of the proportion with no hospitalization in the two years before the month of intake may differ slightly from the proportion with no hospitalization in the two years before the date of intake because the two measure slightly different periods. Someone enrolled on September 20, 2003, whose only hospitalization in the preenrollment period occurred on September 5, 2003, would not be counted as hospitalized during the 24 months before the month of intake. Conversely, someone hospitalized on September 25, 2001, would be captured in the measure defined by month of enrollment, but not in the measure based on the day of enrollment.

*Difference between participants and eligible nonparticipants significantly different from zero at the .10 level, two-tailed test.

**Difference between participants and eligible nonparticipants significantly different from zero at the .05 level, two-tailed test.

***Difference between participants and eligible nonparticipants significantly different from zero at the .01 level, two-tailed test.

pulmonary disease, 47 percent for congestive heart failure, 46 percent for diabetes, 38 percent for cancer, 31 percent for stroke, 23 percent for renal disease, and 22 percent for peripheral vascular disease. Nonparticipants had lower rates of all these chronic conditions and had an average of 2 of 9 chronic conditions examined, compared to 3.3 for participants.

Because of their poorer health, participants were much more likely than eligible nonparticipants to have been recently hospitalized and to have substantially higher Medicare reimbursements. About 70 percent of all participants had a hospitalization in the year before enrollment, compared to 30 percent of eligible nonparticipants. Participants had monthly Medicare expenditures of $2,697 over the year before enrollment, whereas nonparticipants' average monthly Medicare expenditures were only $787.[12] These differences are all statistically significant.

As part of the program's waiver application, MPR estimated that Medicare costs would average $909 per month for eligible beneficiaries who did not participate in the program.[13,14] Thus, it appears that the program has enrolled patients who have substantially higher costs, with average monthly costs of $2,697 before enrollment.

Satisfaction and Voluntary Disenrollment. Patients may stay in the Washington University Care Coordination Care Program for the duration of the program or until they are

[12]The evaluation uses November 15, 2002, the midpoint of the six-month enrollment period considered for this analysis, as a pseudo-enrollment date for nonparticipants. Actual enrollment dates were used for participants.

[13]Waiver cost calculations for all the demonstration programs assume that each program will reduce Medicare costs by 20 percent. According to these calculations, the Washington University Coordinated Care Program will save Medicare an average of $23 per patient per month, or approximately $745,294 over the four-year life of the demonstration, assuming 2,711 beneficiaries were randomly assigned to the treatment group over the four-year demonstration period with replacements for patients who leave the program. These estimates are net of the fees paid by CMS to the program but do not include the program's start-up costs or the costs of the evaluation.

[14]The method used in the waiver to estimate Medicare costs for eligible nonparticipants was similar to the method used to estimate Medicare costs for the participation analysis presented in this report in that it used a narrow set of diagnosis codes and claims for inpatient or emergency room service use.

clinically stable.[15] Of the 482 (treatment group) patients who enrolled during the first six months of operation, 32 percent had been enrolled for 10 weeks or less by the end of this period, 50 percent had been enrolled between 11 and 20 weeks, and 18 percent had been enrolled for 21 weeks or more (Table 3). Two patients voluntarily disenrolled during the first six months of operation—one because he felt he did not need the program, the other because he found the care manager's calls too intrusive.

In the first two years of the demonstration, the program did not have a formal process for logging and resolving patient complaints. The few complaints it has received have been verbal. One patient complained because she had misunderstood the nature of the services the program provided. (She believed the care managers would not only accompany her to physician visits, but also drive her to and from these visits.) Another, the wife of a patient, complained when the care manager involved the state social service agency after suspecting elder abuse.

The St. Louis-based care management supervisor reported that patients seem to be very satisfied with the program. The program has received many letters and telephone calls from patients and caregivers praising the care managers' efforts. She stated that patients have said that their health has improved after the care managers removed barriers to their obtaining care. She also reported that physicians have had positive comments about the program because their patients are more likely to keep their appointments, take their medications, and attend physical therapy. The program did not conduct patient or physician satisfaction surveys during its first year.[16]

[15]The care management supervisor estimates that only one to two percent of program patients have been discharged during the first two years of the program because they were clinically stable and had attained their goals.

[16]Because of a misunderstanding between the program and the evaluator, program management believed it was prohibited from conducting patient or physician satisfaction surveys.

TABLE 3

DISENROLLMENT FOR PATIENTS ENROLLED DURING FIRST SIX MONTHS

Number of Patients Enrolled[a]	482
Length of Enrollment as of October 15, 2002 (Percentage of Patients Enrolled)	
10 weeks or less	32
11 to 20 weeks	50
21 or more weeks	18
Mean Length of Enrollment (Weeks)	14
Number of Patients Who Disenrolled	22
Number Who Disenrolled Because:	
Patient died	15
Patient lost program eligibility[b]	4
Patient initiated disenrollment	2
Other reasons	1
Number Disenrolling:	
Within a week of random assignment	1
Between 1 and 4 weeks	4
Between 5 and 12 weeks	11
More than 12 weeks	6

Source: Washington University Care Coordination Program data received April 2003 and updated July 2003. Covers six-month period beginning August 16, 2002, and ending February 11, 2003.

[a]Number of patients enrolled in the treatment group as of February 11, 2003.

[b]Patients can lose program eligibility because they joined a managed care plan or no longer had Medicare as their primary payer.

TO WHAT EXTENT DOES THE PROGRAM ENGAGE PHYSICIANS?

While the importance to program success of engaging eligible beneficiaries is self-evident, engaging physicians also is critical. Care coordinators must develop trusting, collaborative relationships with primary care physicians for physicians to feel comfortable communicating important information to them about their patients (for example, medication changes, new problems identified during office visits, or areas for additional patient education). Such relationships also are necessary for physicians to feel that information the care coordinators give them is credible and warrants their attention (for example, regarding problems in the home environment that affect patients' health, functional deficits that patients do not tell physicians about, or reminders about providing preventive care). A trusting, respectful relationship also will make it easier for care coordinators to reach physicians when urgent problems arise, and it will facilitate communication and coordination across medical care providers (Chen et al. 2000). Moreover, to increase acceptance of care management among physicians in general, care coordinators naturally need to engage physicians.

Working Relationships with Physicians. The program had established relationships with WUPN physicians before the start of the demonstration. The fact that the program's medical director also is WUPN's medical director helped the program gain physician acceptance. In addition, many WUPN physicians had been involved in the demonstration's prototype, so they already were familiar with the concept of care management and with some of the program staff. Because of these existing relationships, the program's management staff had expectations regarding the WUPN physicians as partners in care management. At the start of the demonstration, they expected WUPN physicians would (1) attend patient case conferences, (2) provide advice and consultation to the care coordinators, and (3) review care plans.

The program planned four approaches to maintain and enhance its relationships with WUPN physicians. First, it planned to create a medical advisory board, made up of WUPN physicians, to provide input into the operation of the program. Second, the program planned to hold educational forums for physicians to highlight the goals of the demonstration and provide information on recent developments in clinical care. Third, it planned to send WUPN physicians bimonthly rosters of their patients enrolled in the program and quarterly summaries of their patients' care plans and progress toward meeting their goals. Finally, the program planned to pay the physicians for the time they spent in care management activities.

In the first year of the demonstration, the program implemented most of its approaches to building relationships with physicians. It created a medical advisory board consisting of six WUPN physicians, the StatusOne medical director, and the program's Washington University medical director, who served as the board's chair. The medical advisory board reviewed the program's clinical practice guidelines, identified physicians the program should approach about recruitment, and gave advice on how to establish rapport with physicians. The program held quarterly educational forums for physicians that offered continuing medical education credit. It sent physicians bimonthly rosters of their patients enrolled in the program. Also in the first year of the demonstration, physicians met many of the program's expectations regarding their participation in the demonstration. The care managers were able to consult physicians about specific patient care issues.

Based on the program's experiences in its first year of operation, however, the management staff modified its approach to building physician relationships and revised some of its expectations of physicians. For example, the program discontinued educational forums for physicians because the forums were expensive and the same 10 to 20 physicians were attending. The program's medical director decided that holding the forums was not the best use of the

program's resources. In addition, some physicians informed the program that they were being inundated with too much paper, so (at the recommendation of the advisory board), the program discontinued mailings of bimonthly patient rosters.[17] (The program never sent quarterly care plan summaries to physicians as it had planned.) The program has not paid physicians for their care management activities. Its program payment from Medicare includes $8.33 per patient per month to reimburse physicians. However, because it has not found a way to equitably distribute this money to all the physicians involved in a patient's care, it is depositing the money in an account until it decides on a method of distribution.[18] The program has not held patient case conferences with physicians, but it is trying to build the support of its medical advisory board for these conferences as a way to resolve difficult patient management issues. In a final departure from its plans, the program now does not expect physicians to review patients' care plans and does not send the care plans to them. As the demonstration progressed, the program devised a more limited role for physicians to prevent overburdening them and to increase the likelihood that they would accept care coordination.

One year into the demonstration, the care managers and the care management supervisors believed the program was successfully building relationships with physicians. The St. Louis-based care management supervisor believes the StatusOne care managers' interactions with WUPN physicians have been facilitated by the physicians' positive experiences with the program's medical director and prior experiences with the prototype program. The care managers have not had any conflicts with physicians. Moreover, some physicians have asked the

[17]As of January 2005, the program planned to restart its mailings of patient rosters to physicians because it believes the potential benefit of reminding physicians about the program outweighs the burden of additional paperwork for them to review.

[18]The program does pay honoraria to the physicians who attend its medical advisory board/quality improvement subcommittee meetings.

care managers for help (for example, to find out why patients were not showing up for their appointments or to ask if they could arrange transportation for patients to office visits). More generally, WUPN physicians have begun to call the program to find community-based services for their patients who are not enrolled in the demonstration.

Improving Practice. Improving physicians' clinical practice is not a goal of the program. The purpose of the educational forums the program sponsored was to increase the visibility of the program and present the latest advances in clinical practice. The forums were not a response to identified deficits in care or reminders to physicians of current practice standards. However, the St. Louis-based care management supervisor reported that, in a few instances, the care managers believed that physicians were not following the clinical practice guidelines the program used. The care managers reported their concerns to the program's medical director. In some cases, he was able to provide further details on the clinical management of the patients' conditions and alleviate the care managers' concerns and in other cases he has felt it necessary to intervene with the physicians.

The program would like physicians to recognize the value of care management. The staff feel they can remove barriers to patient care and help prioritize patients' questions and concerns so that physician office visits are efficient and physician burden is reduced. The program's strategy is for care managers to demonstrate the value of care management to as many physicians as possible by showing them how they can make a difference in the care of individual patients. For example, the St. Louis-based care management supervisor related an incident in which the physician called the care manager to ask her if she would take the patient's blood pressure during her home visit. Although the care managers do not provide this type of hands-on care, the program made an exception in this case because they knew this would be valuable to the physician. She also reported that another physician was very pleased when a care manager

facilitated a discussion of a patient's placement in long-term care. The St. Louis-based care management supervisor believes that the more patients a physician has in the program, the more accepting that physician is of care management.

HOW WELL IS THE PROGRAM IMPLEMENTING KEY INTERVENTION APPROACHES?

Improving Communication and Coordination. The program seeks to improve communication and coordination of care while developing patients' autonomy. To that end, the care managers encourage patients to communicate directly with their physicians and to manage their own care. For example, they prompt patients to ask their physicians about appropriate treatments and preventive care. They encourage patients to keep a list of their medications and bring it to their physician office visits. In addition, the care managers make sure that patients have scheduled appropriate appointments and then follow up to find out if they kept the appointments. The program recognizes that not all patients can manage their own care, and the care managers try to enlist the support of family and friends to help such patients.

The care managers communicate directly with patients' physicians if necessary, usually by fax or telephone. However, the care managers use letters and faxes to physicians to document their assessments, care plans, and progress notes for those patients for whom the care manager and physician have particular concerns. The St. Louis- and California-based care managers communicate with physicians in the same manner, except the St. Louis-based care managers contact physicians more frequently because their patients have more complex care needs. The St. Louis-based care management supervisor reported that the care managers have successfully set up ways to communicate with physicians about the management of individual patients. The care managers also reported that physicians have been responsive to their questions.

As another way to make communication easier, the program had planned to record all formal and informal communications with physicians in a new section of CareLink. However, StatusOne was reluctant to add this section to CareLink, so the program records communications with physicians as free text within the care plan. The St. Louis-based care management supervisor reported that, although the process is not what was originally intended, logging communications with physicians has been helpful for the care managers in managing their work flow because it allows them to document when conversations took place and what was said.

The program uses several approaches to improve coordination of care. First, it tracks hospitalizations and emergency room visits. BJC HealthCare alerts the program when a demonstration patient is admitted or seen in the emergency room. The St. Louis-based care management supervisor commented that, although this process works, BJC HealthCare's staff needs to be constantly reminded who the demonstration patients are and prompted to report when admissions have occurred. To aid recognition of demonstration patients, BJC HealthCare recently agreed to flag them in its information system.[19] (The staff report that nearly all program patients receive emergency and inpatient care in this facility, but, when they do not, the care managers must learn of adverse events from the patient or family.)

When the program learns about a hospitalization or emergency room visit, it tries to gather information from the patient, family, and physician about what caused the adverse event. The care manager revises the interventions in the patient's care plan to try to prevent a recurrence of the event. In addition, the care manager contacts the patient, family, physician, and BJC HealthCare nurses to coordinate the discharge plan.

[19]BJC HealthCare had been reluctant to do this at first because it thought that other research programs in the university would want it to flag their patients and this would create confusion and decrease the effectiveness of the flags.

As a second method of improving care coordination, the care managers identify and resolve patients' medication problems that they learn about during the initial and reassessment contacts. The St. Louis-based care management supervisor estimated that half of newly enrolled patients have medication problems. For example, patients have not been prescribed a medication they should be taking, are taking redundant medications, are not taking medication as prescribed, or are not taking a prescribed medication at all. The St. Louis-based care management supervisor reported that many program patients have difficulty affording their medications and try to stretch their prescriptions, either by skipping doses or by cutting their pills in half. When problems are identified, the care manager usually faxes a list of current medications to the physicians involved and communicates with them to resolve the problem. Then, to prevent such problems in the future, the care manager asks one of the physicians to be in charge of all medications for that patient. The care management supervisor reported that physicians have been more than willing to take on this responsibility. The care managers find pharmaceutical company-sponsored medication assistance programs for program patients or obtain free samples of medications from the patients' physicians.

As a third method of improving care coordination, the care managers try to ensure that patients receive diagnostic tests and therapeutic services at the appropriate time and in the correct order. The program sees this as a significant responsibility of the care managers. CareLink's clinical practice and preventive care guidelines do not contain automatic reminders of when tests or services are due, but the care managers use CareLink to set up reminders within patients' care plans for these tests and services.

Finally, the care managers try to resolve situations where it appears that a patient has received conflicting advice from his or her physicians. If the patient has not received a needed

service, the care manager will try to find out why and remove barriers to the patient receiving it. Often, in this type of situation, the care manager must speak to the physicians involved.

In summary, the program planned a variety of interventions to improve communication and coordination of care, and it has successfully implemented several strategies. It has established a process to learn about patient hospitalizations and emergency room visits. It also identifies and resolves patients' problems with their medications. Finally, it teaches patients to advocate for their own care (although the care managers intervene on patients' behalf when necessary). In addition, the care managers have found ways to communicate with physicians regarding urgent patient care issues. Although the program's initial attempts to develop regular communication with physicians were not successful, it continues to investigate methods to keep them informed about their patients' status.

Improving Patient Adherence. The program provides education to all patients that targets their diagnoses. Care managers provide education during every patient contact. They also look for teachable moments, when they believe patients are particularly ready to accept information. During the initial assessment, the care managers identify patient-specific teaching goals based on their clinical perception of patients' knowledge deficits, rather than by using a formal knowledge assessment tool. They document teaching goals in the "nursing goals" section of the IHS.

The program's education intervention is based on 14 disease-specific clinical practice guidelines, rather than on a formal curriculum.[20] Many of the guidelines were developed jointly by Washington University and StatusOne; others were developed by StatusOne alone. The program's guidelines are based on those of the major disease associations (such as the American

[20]The guidelines cover asthma, breast cancer, coronary artery disease, congestive heart failure, cirrhosis, colorectal cancer, chronic obstructive pulmonary disease, chronic renal failure and ESRD, cystic fibrosis, diabetes, lung cancer, lupus erythematosus, obesity, and prostate cancer.

Diabetes Association) and on information from other publicly available sources. The guidelines provide care managers with a clinical overview of the condition, questions to ask patients during their initial assessment (such as "Do you check your blood sugars?" and "What is your average blood sugar?"), potential disease-specific action steps for the care plan, references for further reading, and patient education materials.[21] The guidelines, which contain printable brochures, fact sheets, and other materials for patients, are available to care managers in CareLink. CareLink also contains links to the internet websites of other evidence-based guidelines that the care managers can use to assist them in patient education.

The care managers provide patient education on such topics as disease etiology and signs and symptoms and their relationship to patient behaviors. The care managers also teach patients how to improve their self-care skills, improve adherence to treatment recommendations, understand the availability of community resources, and, as noted earlier, improve their ability to communicate with their providers. The goal of education is to improve patients' ability to manage their own care. However, the program recognizes that not all patients can do this. Thus, if the patient has a cognitive deficit, the care manager will identify family and friends and teach them how to take part in the patient's care.

The program can adapt its education intervention for patients who have low levels of literacy or who cannot speak English. The St. Louis-based care management supervisor reported that many of the program's patients cannot read well. She stated that, for these patients, the St. Louis-based care managers supplement the patient education materials in the clinical practice guidelines with materials from their files that are written at lower reading levels or are picture-based. (Appendix C contains examples of the program's supplemental educational materials.)

[21]Because the program's clinical practice guidelines are proprietary, they could not be included in Appendix C.

The program has some patient education videotapes, but it does not use these often. Although the St. Louis-based care managers have sent copies of their supplemental patient education materials to the California-based care managers, the St. Louis-based care management supervisor is not sure how often they are used. The program also has access to an interpreter service and can translate its teaching materials for non-English-speaking patients. It has not needed to do this so far, however, because all the patients enrolled to date can communicate in English.

The care managers use three methods to determine whether their teaching has been effective. First, they gather feedback during their telephone and in-person contacts with patients. For example, a St. Louis-based care manager will look into a patient's refrigerator to determine if the food in it is consistent with the diet recommended for the patient's condition. During telephone contacts, both St. Louis- and California-based care managers listen to how patients describe their daily activities and routines. Second, the care managers will look at patients' clinical progress (for example, whether they are keeping dialysis appointments or whether they have been hospitalized or seen in the emergency room). Third, the care manager confers with the primary care physician, family and caregivers, and other ancillary providers regarding the patient's condition. If it appears that patient education has not been effective, the care managers reteach the concepts with which the patient is having difficulty. They also may refer the patients to outside education specialists, such a diabetes educator. In addition, they conduct more in-person visits and model advocacy behavior to make patients more comfortable interacting with their physicians.

The care managers provide most of the program's patient education. The program does not require care managers to have specific patient education training or experience. However, because they are all registered nurses and many have attained care manager certification, the program management believes that they have the necessary teaching skills. The program

provides frequent in-service training to keep care managers' knowledge up-to-date, but it does not train new care managers on how to teach patients.

The program also refers some patients to classes and support groups in the community, such as the Alzheimer's Association. The care managers monitor patients to ensure that they have followed up with education referrals.

Among the 482 patients enrolled in the first six months of the program, nearly 74 percent had received at least one contact for disease-specific or self-care education, 71 percent had received a contact to explain a medication, and nearly 67 percent had received at least one contact to explain a test or procedure (Table 1). Given the program's emphasis on education, one might expect that all enrolled patients would have had at least one contact in which the care manager provided education. That not all patients had such a contact can likely be attributed to the fact that, early in the program (the period described in this report), many patients were newly enrolled and were still receiving their initial assessments when the program reported care manager contact data.

In summary, although the program's education intervention appears to receive less emphasis than its efforts to coordinate the services and benefits its patients receive, it appears adequate. The intervention is based on disease-specific clinical practice guidelines, rather than on a formal curriculum. The care managers use their clinical experience to identify patients' education needs and select relevant materials for them from those listed in the program's clinical practice guidelines or from supplemental materials. Because the program hires registered nurses, some of whom are certified care managers, it assumes they have the experience needed to teach program patients. Thus, the training agenda for new care managers does not discuss teaching patients. To learn whether patients understand what is being taught, the care managers track patients' care

plan progress. They intervene if it appears that patients are not adopting self-care behaviors or lifestyle changes.

Increasing Access to Services. The program's approach to increasing access to services is to identify all the needs of a patient and the reasons why those needs are not being met. The care managers try to overcome financial barriers to care by determining whether Medicare or Medicaid will cover needed services. They also explore other options that may pay for services, such as supplemental insurance policies, state or local programs, or programs that pharmaceutical companies or nonprofit groups operate. Identifying service needs, and planning interventions to fulfill them, was a major component of the program's training agenda for care managers.

The program developed an extensive list of community resources, patient support groups, and health and fitness resources that it loaded into CareLink. The program promotes self-reliance by encouraging patients to set up these services themselves after the care manager has provided contact information. The care managers prompt patients to set up services and support them in doing so, then confirm that the service is in place and being provided as desired.

The care managers will arrange services directly for patients if they cannot set up the service themselves. If the needed service requires a physician's order for it to be covered by Medicare, the care managers will obtain the order. If the needed service is not listed in CareLink, the care manager will identify a source to provide it. The program has one St. Louis-based care manager who also is a social worker. Although all the care managers are experienced in identifying and arranging community-based services for their patients, the social worker care manager provides additional assistance if needed.

The St. Louis-based care management supervisor reported that many of the program's patients have difficulty paying for prescription medications. The state of Illinois has a

pharmaceutical assistance program, but Missouri does not, so the care managers rely on pharmaceutical assistance programs operated by pharmaceutical companies and try to obtain sample medications from patients' physicians.

Despite its emphasis on identifying service needs, the program data for the first six months of operation indicates that no program patients received help from a care manager who referred them to, or arranged for, non-Medicare-covered services. Only 11 percent of patients received help arranging for Medicare-covered services (Table 1). Even by the end of the program's first year, 5 percent of patients had contacts in which they were referred to non-Medicare-covered services, and 23 percent of patients had contacts to identify needs for Medicare-covered services (not shown). The care managers report that the services to which they most frequently refer are adult day care, meals-on-wheels, senior centers, and Medicaid benefits. In the first six months of the program, the supervisor reported that care managers probably had not yet begun to refer patients to services because they were busy conducting patient assessments and developing care plans.

The program had planned to offer an "exceptional services" benefit, under which the care manager could use program funds to pay for services, not covered by Medicare, that would help keep patients in their homes. These services were to include such items as transportation, home health aides, medications, and nutritional meals. They were to have been available if the patient could not pay for them and they were not available through any other charitable or publicly funded agency. Early in the demonstration, the program's management realized that the program payment from CMS (about $173 per member per month) would not be enough to cover these benefits as well as the costs of care coordination. Therefore, the program does not purchase these exceptional services for enrollees.

Although the program does not offer the exceptional services benefit, the St. Louis-based care management supervisor reported that the program has become "very creative" about getting services for its patients. For example, BJC HealthCare's durable medical equipment department has donated supplies to the program, Pfizer has donated scales, the St. Louis Area Agency on Aging has donated glucometers, and the local diabetes association has donated diabetes-testing supplies. In addition, the program staff have collected school supplies for the children of program patients and purchased holiday food baskets and warm pajamas for the winter. The St. Louis-based care management supervisor estimated that by the third year of the demonstration between 30 and 40 percent of program patients had benefited from these charitable donations.

WHAT WERE ENROLLEES' MEDICARE SERVICE USE AND COSTS?

This report provides preliminary estimates of the effect of the Washington University Care Coordination Program on Medicare service use and expenditures. These early estimates must be viewed with caution, as they are not likely to be reliable indicators of the true effect of the program over a longer period. Due to lags in data availability, analysis for this report included only an early cohort of enrollees (those enrolling during the first four months of program operation) and allowed observation of their experiences during their first two months in the program. Thus, the estimates include patients' experiences only during the program's first six months of operation, when staff still may have been fine-tuning the intervention. Moreover, the program may enroll patients with quite different characteristics over time.

During the first two months after random assignment, the treatment and control groups used comparable levels of Medicare services (Table 4). The sole exception was that a slightly higher proportion of the treatment group used physician and other Part B services. Nearly all treatment

TABLE 4

MEDICARE-COVERED SERVICE USE DURING THE TWO MONTHS AFTER THE MONTH OF RANDOMIZATION, FOR EARLY ENROLLEES

	Treatment Group	Control Group	Difference[a]	
Inpatient Hospital Services				
Any admission (percent)	18.5	18.2	0.3	
Mean number of admissions	0.28	0.26	0.02	
Mean number of hospital days	2.08	1.89	0.18	
Emergency Room Services				
Any emergency room encounters (percent)				
Resulting in admission	12.0	11.3	0.7	
Not resulting in admission	9.5	10.8	–1.2	
Total	20.4	20.7	–0.3	
Mean number of emergency room encounters				
Resulting in admission	0.14	0.13	0.01	
Not resulting in admission	0.11	0.14	–0.03	
Total	0.25	0.27	–0.02	
Skilled Nursing Facility Services				
Any admission (percent)	1.1	2.2	–1.1	
Mean number of admissions	0.02	0.03	–0.01	
Mean number of days	0.59	0.37	0.22	
Hospice Services				
Any admission (percent)	0.8	1.7	–0.8	
Mean number of days	0.23	0.50	–0.27	
Home Health Services				
Any use (percent)	15.5	13.3	2.3	
Mean number of visits	2.68	3.35	–0.67	
Outpatient Hospital Services[b]				
Any use (percent)	71.9	68.0	4.0	
Physician and Other Part B Services[c]				
Any use (percent)	99.7	93.1	6.6	***
Mean number of visits or claims	11.0	9.3	1.7	*
Mortality Rate (percent)	1.9	3.0	–1.1	
Total Medicare Reimbursement[d]				
Part A[e]	$3,040	$2,307	$732	
Part B	$1,820	$1,923	–$103	
Total	$4,859	$4,230	$629	
Reimbursement for Care Coordination[f]	$338	$0	$338	***
Number of Beneficiaries	**369**	**366**		

Source: Medicare National Claims History File.

TABLE 4 *(continued)*

Note: Sample includes those enrolled during the first four months of program operations. Participants were excluded from this table if they had an invalid HIC number on MPR's enrollment file, were identified as a member of the same household as a research sample member, or did not meet Medicare coverage and payer requirements (defined as having Medicare as a secondary payer, being in Medicare managed care plan, or not having Part A and Part B coverage) during the month of randomization. Patient-months were excluded if the participant did not meet the above Medicare coverage and payer requirements that month, or had died in a previous month.

"Percents with any medical encounter type" are the percent of treatment or control group members who have at least one encounter of a particular type; "mean numbers of medical encounter types" are the average number of encounters of a particular type per treatment or control group member.

[a]These estimates are based on preliminary data and will be updated in the second site-specific report.

The direction of the treatment-control difference does not by itself signify whether the program is "effective." That is, for some outcomes a statistically significant negative difference (such as lower hospitalization rates for the treatment group than for the controls) suggests that the program is working as intended. However, a positive difference for other outcomes, such as number of physician visits, does not necessarily mean the program is ineffective or having adverse effects, because the program may encourage patients to see their physician more regularly for preventative care or to obtain recommended laboratory tests for their target conditions than they would have in the absence of the demonstration.

Due to rounding, the difference column may differ slightly from the result when the control column is subtracted from the treatment column.

[b]Includes visits to outpatient hospital facilities as well as emergency room visits that do not result in an inpatient admission. Laboratory and radiology services are also included.

[c]Includes diagnostic laboratory and radiology services (including pathologist and radiologist services) from nonhospital providers, suppliers and devices, mammography, ambulance, covered medications, blood, and vaccines.

[d]Does not include reimbursement for care coordination services provided by demonstration programs.

[e]Includes reimbursement for inpatient, skilled nursing facility, hospice, and all home health care (including that paid under Medicare Part B). Excludes reimbursement for care coordination services provided by demonstration programs.

[f]This is the average amount paid to the program as recorded in the Medicare claims data for the two months following randomization. The difference between the recorded amount and two time the amount the program was allowed to charge per-member-per-month may reflect billing errors, delays, or payment adjustments for patients who disenrolled.

*Difference between treatment and control groups significantly different from zero at the .10 level, two-tailed test.

**Difference between treatment and control groups significantly different from zero at the .05 level, two-tailed test.

***Difference between treatment and control groups significantly different from zero at the .01 level, two-tailed test.

group members used such services, compared to 93 percent of control group members.[22] This greater use of physician services by the treatment group in the first few months after enrollment could potentially reduce the need for more expensive services in the future. As with service use, total Medicare Part A and B costs for the treatment and control groups were similar. Treatment group costs, exclusive of demonstration costs, were $4,859, on average, during the first two months after enrollment (or $2,729 per month), compared to $4,230 ($2,115 per month) for the control group. This treatment-control difference of $629, or 15 percent, is not statistically significant at the .10 level ($p = 0.39$). In addition, the treatment group's costs increase by $338 over the first two months (or $169 per month, on average) when one takes into account the CMS payment to the program, which increases the treatment-control difference from $629 to $967.[23]

Table 5 presents monthly trends in treatment-control differences from August 2002 through February 2003, the first six months of program operation. The sample enrolled during the first month is too small to draw reliable inferences about program effects during that month. In three of the following five months, the treatment group incurred higher total Medicare costs than the control group. However, none of these differences is statistically significant at the 10 percent level. It is too soon to tell whether the program will alter the group's Medicare costs when a longer follow-up period is observed.

CONCLUSION

Research during the past decade suggests, but is by no means conclusive, that successful care coordination programs have many features. These features include effective patient

[22]As would be expected with random assignment, the treatment and control groups had statistically similar costs and hospital use before enrollment. Thus, this small postenrollment difference in Medicare service use does not appear to be due to preexisting differences in the two groups. (See Appendix Table B.6.)

[23]The per-patient, per-month payment for this program is $173. The slightly lower mean payments in Tables 4 and 5 may have resulted from billing errors, payment delays, or payment adjustments for patients who disenrolled.

TABLE 5

MONTHLY MEDICARE SERVICE USE FOR PARTICIPANTS WHO ENROLLED DURING THE FIRST SIX MONTHS OF PROGRAM OPERATIONS

	Group	Aug 02	Sep 02	Oct 02	Nov 02	Dec 02	Jan 03
Cumulative Enrollment Through Month End	Treatment	22	109	224	333	414	460
	Control	22	107	220	329	410	458
Mean Number of Beneficiaries Enrolled Who Meet Medicare Coverage and Payer Requirements and Are Alive That Month	Treatment	21	107	218	324	401	440
	Control	21	105	212	320	396	438
Average Medicare Reimbursement During the Month[a]	Treatment	$604	$1,531	$2,073	$2,188	$2,930	$2,317
	Control	$916	$2,003	$2,848	$2,358	$2,175	$2,086
Average Reimbursement for Care Coordination During the Month[a,b]	Treatment	$124	$147	$167	$146	$159	$165
Whether Admitted to Hospital This Month[a] (Percentage)	Treatment	4.8	9.3	8.7	11.1	12.0	12.3
	Control	19.0	13.3	9.9	8.8	11.9	9.1
Treatment - Control Difference[c]							
Average Medicare Reimbursement[a]		–$312	–$472	–$775	–$170	$754	$231
Average Reimbursement for Medicare plus Care Coordination[a]		–$188	–$324	–$608	–$24	$914 *	$396
Percentage Hospitalized[a]		–14.3	–4.0	–1.2	2.4	0.1	3.1

Source: Medicare National Claims History File.

[a]Participants were excluded if they died in a previous month or failed to meet the Medicare coverage and payer requirements during the month of randomization or the month examined—that is, if they were in a Medicare managed care plan, had Medicare as a secondary payer, or did not have both Part A and Part B coverage. Participants were also excluded entirely from this table if they had an invalid HIC number on MPR's enrollment file.

[b]This is the average amount paid to the program as recorded in the Medicare claims data. The difference between the recorded amount and the program's approved per-member-per-month fee may reflect billing errors, delays, or payment adjustments for patients who disenrolled.

TABLE 5 *(continued)*

[c]These estimates are based on preliminary data and will be updated in the second site-specific report.

The direction of the treatment-control difference does not by itself signify whether the program is "effective." That is, for some outcomes a statistically significant negative difference (such as lower hospitalization rates for the treatment group than for the controls) suggests that the program is working as intended. However, a positive difference for other outcomes, such as number of physician visits, does not necessarily mean the program is ineffective or having adverse effects, because the program may encourage patients to see their physician more regularly for preventative care or to obtain recommended laboratory tests for their target conditions than they would have in the absence of the demonstration.

*Difference between treatment and control groups significantly different from zero at the .10 level, two-tailed test.
**Difference between treatment and control groups significantly different from zero at the .05 level, two-tailed test.
***Difference between treatment and control groups significantly different from zero at the .01 level, two-tailed test.

identification, a well-designed and structured intervention, highly qualified staff, physician buy-in, and financial incentives aligned with program goals.

First, to generate net savings over a short period, effective programs tend to target high-risk people. These people may include those with recognized high-cost diagnoses, such as heart failure, and those with prevalent geriatric syndromes, such as physical inactivity, falls, depression, incontinence, misuse of medications, and undernutrition (Rector and Venus 1999; Fox 2000).

Second, successful programs tend to have a comprehensive, structured intervention that can be adapted to individual patient needs. A key feature is a multifaceted assessment whose end product is a written care plan that can be used to monitor patient progress toward specific long- and short-term goals and that is updated and revised as the patient's condition changes (Chen et al. 2000). Another key feature a process for providing aggregate- and patient-level feedback to care coordinators, program leaders, and physicians about patient outcomes (Chen et al. 2000). Another critical aspect is patient education that combines the provision of factual information with techniques to help patients change self-care behavior and better manage their care, as well as addressing affective issues related to chronic illness (Williams 1999; Lorig et al. 1999; Vernarec 1999; Roter et al. 1998; Aubry 2000). Finally, successful programs tend to have structures and procedures for integrating fragmented care and facilitating communication among providers, addressing the complexities posed by patients with several comorbid conditions, and, when necessary, arranging for community services (Chen et al. 2000; Bodenheimer 1999; Hagland 2000).

The third and fourth characteristics that have been associated with successful programs are having highly trained staff and having actively involved providers. Strong programs typically have care coordinators who are baccalaureate-prepared nurses or who have case management or

community nursing experience. They also tend to have the active support and involvement of patients' physicians (Chen et al. 2000; Schore et al. 1999).

Finally, periodic feedback during the demonstration period can motivate providers and care coordinators and enable the program to modify or intensify the intervention if it appears that it is not having the expected effect on intermediate or ultimate outcome indicators. Financial incentives can help encourage physicians and program staff to look for creative ways to meet patient goals and reduce total health care costs (Schore et al. 1999).

Program Strengths and Unique Features. The Washington University Care Coordination Program has many features associated with effective care coordination programs, while also having some unique features.

- The program targets Medicare beneficiaries with high-cost diagnoses. Beneficiaries who enrolled did, in fact, have very high Medicare reimbursements during the year before enrollment. Although enrollment has been somewhat below program expectations, it has been high compared to most of the other demonstration programs.
- Based on the results of the initial assessment, the program assigns patients to one of five acuity levels that determine the frequency of follow-up monitoring and reassessment. The program uses St. Louis- or California-based care managers to contact patients by telephone or through in-person visits, depending on the complexity of their needs. The care managers conduct individualized assessments and develop care plans that target patients' unique needs.
- Both St. Louis- and California-based care managers use CareLink, an Internet-based care management information system developed by StatusOne to store data from the IHS, care plans, and ongoing patient monitoring in discrete and free-text data fields. CareLink reminds the care managers when patient contacts are due.
- Care managers identify patients' service needs and determine the extent of their coverage under Medicare, Medicaid, and supplemental insurance. Care managers also explore services available through charitable sources.
- The program has worked to enhance its acceptance by physicians. After receiving feedback from some physicians, it eliminated routine mailings to them to reduce the burden it placed on physicians' time.
- All care managers are registered nurses, most have experience in disease management or care management, and many are certified care managers.

Potential Barriers to Program Success. One aspect that warrants continued attention is the strength of the program's intervention. The care managers identify patient problems in six areas (coordination of care, self-reliance (which includes adherence to treatment recommendations), activity and fitness, community involvement, social supports, and mental challenge), but many of their patient goals, such as joining a reading group or learning to use the internet, would more directly improve patients' quality of life than their health. In addition, the program's patient education intervention, which is more directly related to improved health, appears adequate but unsystematic in the way it is presented to patients, depending largely on the skills and approach of individual care managers. In addition, in the first year of the demonstration the program referred only a small number of patients to community-based services. Although arranging services is not a primary focus of the program, program staff report that it is an important part of what they do. Thus, one would expect a higher rate of referrals to supportive services given the severity of illness of the program's patients, the high incidence of patients' psychosocial problems (as reported by staff), and patients' low income. The effect of the program's interventions on the patient outcomes measured by the evaluation is not yet known. However, the program is enrolling patients with serious health problems and high health care costs, and the cost of its intervention is relatively low. Thus, to meet demonstration budget neutrality goals, it would only need to make modest improvements in patient health and modest (eight percent) proportional reductions in Medicare costs.

Plans for the Second Site-Specific Report. A second report will be prepared on the activities of the Washington University Care Coordination Program during the second and third years of operation. That report will focus more heavily on program impacts based on survey and claims data. It also will describe changes made to the program and the reasons for those

changes, as well as staff impressions of program successes and shortcomings. The report is due in mid-2005.

REFERENCES

Aubry, Barbara. "Bolstering Disease Management Programs." *Healthplan*, July-August 2000, pp. 11–12.

Bodenheimer, Thomas. "Disease Management—Promises and Pitfalls." *New England Journal of Medicine*, vol. 340, no. 15, April 15, 1999, pp. 1202–1205.

Brown, Randall, Deborah Peikes, Eric Schone, Nazmul Khan, Arnie Aldridge, and Lucy Lu. "Waiver Cost Estimates for the Medicare Coordinated Care Demonstration." Princeton, NJ: Mathematica Policy Research, Inc., August 31, 2001.

Chen, Arnold, Randall Brown, Nancy Archibald, Sherry Aliotta, and Peter Fox. "Best Practices in Coordinated Care." Princeton, NJ: Mathematica Policy Research, Inc., February 29, 2000.

Fox, Peter. "Screening: The Key to Early Intervention for High-Risk Seniors." *Healthplan*, November-December 2000, pp. 56–61.

Hagland, Mark. "Integrating Disease Management." *Healthplan*, January-February 2000, pp. 43–46.

Lorig, Kate, David Sobel, Anita Stewart, et al. "Evidence Suggesting That a Chronic Disease Self-Management Program Can Improve Health Status While Reducing Hospitalization." *Medical Care*, vol. 37, no. 1, 1999, pp. 5–14.

Lynch, John, Samuel Forman, Sandy Graff, and Mark Gunby. "High-Risk Population Health Management—Achieving Improved Patient Outcomes and Near-Term Financial Results." *American Journal of Managed Care*, vol. 6, no. 7, July 2000, pp. 781–791.

Rector, Thomas, and Patricia Venus. "Judging the Value of Population-Based Disease Management." *Inquiry*, vol. 36, summer 1999, pp. 122–126.

Roter, Debra, Judith Hall, Rolande Merisca, et al. "Effectiveness of Interventions to Improve Patient Compliance." *Medical Care*, vol. 36, no. 8, 1998, pp. 1138–1161.

Schore, Jennifer, Randall Brown, and Valerie Cheh. "Case Management for High-Cost Medicare Beneficiaries." *Health Care Financing Review*, vol. 20, no. 4, summer 1999, pp. 87–102.

Vernarec, Emil. "Health Care Power Shifts to the People." *Business and Health: The State of Health Care in America 1999*, pp. 8–13.

Williams, Mark. "Chronic Care Clinics: Why Don't They Work?" *Journal of the American Geriatric Society*, vol. 47, no. 7, July 1999, pp. 908–909.

APPENDIX A

ADDITIONAL TABLES

TABLE A.1

DEMONSTRATION PROGRAMS PARTICIPATING IN THE EVALUATION

Host Organization	Organization Type	Service Area	Targeted Diagnoses
Avera Research Institute/Avera McKennan Hospital and University Health Center	Hospital	49 counties in South Dakota and 22 contiguous counties in Minnesota, Nebraska, and Iowa	CHF
Carle Foundation	Integrated delivery system	11 counties in east central Illinois and 2 counties in west central Indiana	Heart conditions Diabetes Chronic lung disease
CenVaNet	Provider of care coordination services owned by hospitals and physicians	Richmond, Virginia, metropolitan area	Heart conditions Diabetes Chronic lung disease Cerebrovascular disease
Charlestown Retirement Community	Part of Erickson Retirement Communities	2 retirement communities in the Baltimore, Maryland, metropolitan area[a]	Heart conditions Diabetes COPD
CorSolutions	Provider of disease management services	Harris, Fort Bend, Bruzoria, and Montgomery counties, Texas (Houston area)	CHF
Georgetown University Medical School	Academic institution in partnership with Medstar, owner of Georgetown University Hospital and Washington Hospital Center	Washington, DC, and parts of Maryland and Virginia	CHF
Health Quality Partners	Provider of quality improvement services	Four counties in eastern Pennsylvania	Heart conditions Diabetes Asthma Moderate to severe hyperlipidemia or hypertension
Hospice of the Valley	Hospice	Maricopa County, Arizona (greater Phoenix)	CHF COPD Cancer Neurological conditions

TABLE A.1 *(continued)*

Host Organization	Organization Type	Service Area	Targeted Diagnoses
Jewish Home and Hospital Lifecare System	Long-term care provider, in partnership with the medical practices of St. Luke's and Mt. Sinai hospitals as referral sources	Manhattan and the Bronx, New York City	Heart conditions Diabetes Chronic lung disease Cancer Liver disease Stroke or other cerebrovascular disease Psychotic disorder Major depressive or anxiety disorder Alzheimer's or other cognitive impairment
Lovelace Health Systems	Integrated delivery system	Albuquerque metropolitan statistical area (Bernalillo, Valencia, and Sandoval counties in New Mexico)	CHF Diabetes
Medical Care Development	Consortium of 17 Maine hospitals hosted by a health services research organization	Rural areas of Maine	Heart conditions
Mercy Medical Center/North Iowa	Hospital	Rural areas of Iowa	CHF Chronic lung disease Liver disease Stroke Vascular disease Renal failure
QMed	Provider of disease management services	2 counties in northern California	CAD
Quality Oncology, Inc.	Provider of disease management services	Broward and Dade counties, Florida	Cancer
University of Maryland Medical School	Academic institution	Baltimore, Maryland, metropolitan area, two counties in western Maryland, four in eastern Maryland, and two in Pennsylvania	CHF
Washington University School of Medicine	Academic institution in partnership with American Healthways, a disease management services provider	St. Louis, Missouri, metropolitan area	No specific diagnoses targeted[b]

TABLE A.1 *(continued)*

Note: Each program's service area and targeted diagnoses refer to its first year of operations.

Heart conditions may include congestive heart failure (CHF); coronary artery disease (CAD); atrial fibrillation; and ischemic, hypertensive, or other heart diseases. Chronic lung disease includes asthma and chronic obstructive pulmonary disease (COPD). Neurological conditions include stroke, Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis.

[a]Charlestown added a third retirement community in April 2003.

[b]Washington University uses an algorithm developed by its demonstration partner, American Healthways, to target Medicare beneficiaries who are likely to become clinically unstable and to require hospitalization during the next 12 months.

TABLE A.2

Proposal to the Health Care Financing Administration (October 2000)

Care management policies and procedures

Operating policies and procedures

Quality improvement plan

Clinical practice guidelines (asthma, breast cancer, coronary artery disease, congestive heart failure, cirrhosis, colorectal cancer, chronic obstructive pulmonary disease, chronic renal failure and ESRD, cystic fibrosis, diabetes, lung cancer, lupus erythematosus, obesity, prostate cancer)

Organizational chart

Job descriptions

Informed consent for participation in research activities*

Letters sent to treatment and control group participants after randomization

Initial health screen*

Sample care plan action items*

Care management training manual (training agenda*)

Management reports from CareLink (program- and care manager-level)*
- MCCD client administrator home page
- MCCD supervisor page
- MCCD team & client standings
- MCCD acuity levels
- MCCD functional status levels
- MCCD active care plan rate
- MCCD team summary data

Management reports from CareLink (patient level)
- Worklist
- Patient care plan summary

Supplemental patient education materials*

* Included in Appendix C of this report

APPENDIX B

METHODS USED TO ANALYZE PARTICIPATION AND PROGRAM IMPACTS

This appendix describes the methods and data sources used to analyze participation and treatment-control service use and reimbursement differences using Medicare data.

A. METHOD FOR CALCULATING PARTICIPATION RATE AND PATTERNS

We measured the proportion and types of beneficiaries attracted to the program by calculating the participation rate and patterns. The participation rate was calculated as the number of beneficiaries who met the program's eligibility criteria and actually participated during the first six months of the program's operations, divided by the number who met the eligibility criteria. The six-month window spanned 179 days, from August 16, 2002, through February 11, 2003. We explored patterns of participation by comparing eligible participants and eligible nonparticipants, noting how they differed in their demographic characteristics, reasons for Medicare eligibility, and costs and use of key Medicare services during the previous two years.

1. Approximating Program Eligibility Criteria

We began by identifying the program's eligibility criteria, reflecting CMS's insurance coverage and payer criteria for all programs and the Washington University Care Coordination Program's (Washington University's) specific criteria. CMS excluded beneficiaries from the demonstration who were not at risk for incurring full costs in the fee-for-service (FFS) setting because they (1) were enrolled in a Medicare managed care plan, (2) did not have both Part A and B coverage, or (3) did not have Medicare as the primary payer.

In addition to the Medicare coverage and payer requirements, Washington University applied program-specific criteria to identify the target population. Table B.1 summarizes these criteria, which were approved by CMS and by the Office of Management and Budget (Brown et al. 2001). The program confirmed these criteria in spring 2003. To be considered for

TABLE B.1

ELIGIBILITY CRITERIA

Inclusion Criteria	High risk patients with co-morbid conditions placing them at risk for hospitalization 12 months from identification. Some of the conditions that may be targeted include diabetes, asthma, COPD, neoplasms, CHF, CAD, chronic renal failure, or chronic degenerative diseases. These conditions maybe considered alone or as combinations of conditions, utilization and risk factors.
Exclusion Criteria	Meets any of the following criteria: 1. Under age 18 2. ESRD, evaluated individually 3. Hospice claim 4. Transplant, evaluated individually
Providers/Referral Sources	Washington University Physicians Network
Geographic location	Greater St. Louis Metropolitan area including Franklin, Jefferson, Lincoln, St. Charles, St. Francis, St. Louis, Warren, and Washington counties in Missouri and St. Louis city as well as Madison, Monroe, and St. Clair counties in Illinois

Washington University's program, beneficiaries must have co-morbid conditions placing them at risk for hospitalization within 12 months after identification. This criterion could be met with a single condition as well as by a combination of conditions, utilization and risk factors. Some of the conditions targeted by Washington University include diabetes, asthma, chronic obstructive pulmonary disease (COPD), neoplasms, congestive heart failure (CHF), coronary artery disease (CAD), chronic renal failure, and chronic degenerative diseases. StatusOne, Washington University's demonstration partner, identifies the program's target population. StatusOne uses a proprietary algorithm to identify high-risk patients. Washington University recruits predominately from the Washington University Physician Network (WUPN) where they have

access to potential participants' claims data and can run these data through the proprietary algorithm developed by StatusOne to determine if patients meet the target criteria. Along with the diagnosis criteria, at the time of enrollment beneficiaries may not be under the age of 18 or be receiving the hospice Medicare benefit. In addition, Washington University evaluates beneficiaries with end-stage renal disease (ESRD) or organ transplants on a case-by-case basis and may exclude beneficiaries with these conditions.

Washington University was unable to share StatusOne's proprietary algorithm for identifying eligible patients. Instead, they suggested that we approximate Washington University's inclusion criteria by including patients who meet any one of the following three rules: (1) has an ICD-9 or CPT code on any claim for two or more of the following six broad types of conditions: diabetes, cardiac/circulatory disease, CHF, COPD or asthma, neoplasms, or renal disease, (2) in the past year, has had two or more hospitalizations for any condition, or (3) has had two or more emergency department visits in the past year, at least one of which is for one of the six conditions described in (1) above. To determine whether a beneficiary met the first rule above, we examined whether a beneficiary had the necessary encounters at any point during the 30-month period beginning September 1, 2000, two years before enrollment began, and ending roughly six months after enrollment started (February 28, 2003). To identify whether a beneficiary met (2) or (3) above (hospitalizations or emergency department visits), we examined hospital claims over a 18-month period starting September 1, 2001 and ending February 28, 2003. We were unable to observe the complete diagnostic history for beneficiaries who had not been in FFS Medicare during the full two years before the 6-month enrollment window.[1] In addition, we did not limit eligible beneficiaries to people who had used specific

[1] Among the 940 beneficiaries who enrolled in the first six months, had valid HIC numbers reported, and met CMS's insurance requirements, 3.5 percent were not enrolled in Medicare FFS for the full year before they enrolled

hospitals or doctors who refer patients to the program, such as WUPN physicians, making our estimates potentially overstate the true number of people Washington University would have approached about participating.

Washington University decided on a case-by-case basis whether to enroll beneficiaries who had ESRD or had received a transplant. We were unable to approximate their individualized decision rules, and as a result did not exclude any of these beneficiaries. We approximated the age criteria at the start of the six-month enrollment period.

2. Identifying Health Insurance Claim (HIC) Numbers and Records of Participants and All Beneficiaries

Medicare claims and eligibility data and data submitted by the program were used to identify participants and eligible nonparticipants. For all participants, we used the Medicare enrollment database (EDB) file to confirm the HIC numbers, name, and date of birth submitted by the program when beneficiaries were randomized. We identified potentially eligible nonparticipants by identifying the HIC numbers of all Medicare beneficiaries who were alive and living in the catchment counties during the six-month enrollment window. Initially, two years of Denominator records (2000-2001) and one year of HISKEW records (2002) were used to identify people living in the catchment counties at any time in the 2000-2002 period. HIC numbers of potentially eligible nonparticipants and all participants together formed a "finder file." The finder file was used to gather data on the beneficiary's state and county of residence during the six-month enrollment period, as well as to obtain eligibility information from the EDB. Using this information, we limited the sample to people living in the catchment area at

(continued)
in the demonstration; less than one percent of participants were in FFS fewer than 6 of the 12 months before enrolling.

any point during the six-month enrollment window. This finder file was also used to make a "cross-reference" file to ensure that we obtained all possible HIC numbers the beneficiary may have been assigned. This was done using Leg 1 of CMS's Decision Support Access Facility. At the end of this step, we had a list of HIC numbers for all participants, as well as all beneficiaries living in the catchment area during the six-month enrollment period.

3. Creating Variables from Enrollment and Claims Data

We obtained eligibility information from the EDB and diagnostic and utilization data from the National Claims History (NCH).[2] All claims files were accessed through CMS's Data Extract System. At the end of June 2003, we requested Medicare claims from 2000 through 2003. We received all claims that were updated by CMS through March 2003. This allowed a minimum of a one-month lag between a patient's receipt of a Medicare-covered service in the last month we examined—February 2003—and the appearance of the claim on the Medicare files. Because of lags to when the NCH is updated, it is likely we do not have fully complete claims for January and February 2003. We therefore expect that the estimates we present in this interim report will understate the actual service use and cost for both the treatment and control groups, to a similar extent. Future analyses will allow for a longer lag time, ensuring that the data are essentially complete for the followup period examined.

Medicare claims and eligibility information were summarized as monthly variables from September 2000 through February 2003, for a total of 30 months. This enabled us to look at the eligibility status and the use of Medicare-covered services during any month in the two years

[2] Occasionally, the HIC number in the cross-reference file was not in the EDB file that we used. Because data from the EDB were needed for the analyses, such beneficiaries were dropped from the sample. One reason for differences between the HIC numbers in the EDB and cross-reference files was that the two files were updated at different times. CMS created the cross-reference file using the unloaded version of the EDB, which was updated quarterly. We extracted data using the production version of the EDB, which was updated every night.

before the program's start, analyze participation in the first six months of program operation, and analyze treatment-control differences in Medicare service use and reimbursement following enrollment.

The EDB file provided us the information with which to construct measures of beneficiaries' demographic characteristics (age, sex, race), dates of death, original reason for Medicare entitlement, Medicare managed care enrollment, Part A and B coverage, whether Medicare was the primary payer, and the state buy-in proxy measure for enrollment in Medicaid.

The Medicare claims data in the NCH files were used to construct measures of Medicare-covered service use and reimbursement by type of service (inpatient hospital, skilled nursing facility, home health, hospice, outpatient hospital, and physician and other Part B providers). When the services spanned months, the monthly variables were allocated based on the number of days served in that month, as documented in the CLAIM FROM and CLAIM THRU dates. The length of stay for a month represented actual days spent in the facility in that month; costs were prorated according to the share of days spent in each month. Ambulatory visits were defined as the unique counts of the person-provider-date, as documented in the physician/supplier and hospital outpatient claims. Durable medical equipment (DME) reimbursements were counted in other Part B reimbursement. A small number of negative values for total Part A and Part B reimbursements during the past two years occurred for some of the demonstration programs. Any negative Part A and Part B amounts were truncated to zero. The few patients with a different number of months in Part A and Part B were dropped from the analysis of reimbursement in the two years before intake.

When we examined a beneficiary's history from the month during which they were randomized, we used the actual date of randomization for participants and a simulated date of

randomization for nonparticipants, picked to be November 15, 2002, or roughly the midpoint of the six-month enrollment window.

4. Defining Eligible Nonparticipants and Eligible Participants

We used target criteria information to pare down the group of beneficiaries who lived in the catchment area down to those who met the program's eligibility criteria, which we could measure using the Medicare data. Tables B.2 and B.3 illustrate the exclusions used to identify the sample of eligible participants and nonparticipants used to analyze participation patterns.

We identified 296,749 beneficiaries who lived in Washington University's catchment area at some point during the first six months of enrollment (Table B.2). We then excluded 100,309 people (33.8 percent) who did not meet the insurance requirements set by CMS for participation in the program during one or more months during the six-month enrollment window. Another 73,884 of the remaining people (24.9 percent of all area beneficiaries) were dropped from the sample, because they did not meet any of the three criteria we used to approximate Washington University's target criteria. Finally, 4,516 people were identified as having at least one of Washington University's exclusion criteria, leaving us with a sample of 118,040 beneficiaries we estimated would have been eligible to participate in Washington University's program.

Washington University randomized 972 beneficiaries who enrolled in the demonstration program during the first six months of operation (Table B.3). Of these, 11 people could not be matched to their Medicare claims data due to problems with their reported HIC numbers and were therefore excluded from the participation sample.[3] Washington University randomized 204

[3]This number includes both beneficiaries with invalid HIC numbers reported and those whose claims we could not obtain when we extracted the files due to the way the Medicare files are created (described in footnote 2). Those with incorrect HIC numbers may well be eligible, but we could not obtain the Medicare data for them to assess that; so they were excluded. HIC numbers have since been corrected, and those beneficiaries will be included in the final report.

TABLE B.2

SAMPLE OF ALL ELIGIBLE BENEFICIARIES FOR PARTICIPATION ANALYSIS

Sample	Number
Full Sample of Eligible Beneficiaries Who Live in Catchment Area One or More Months During the First Six Months of Enrollment	296,749
Minus those who:	
During 6-month enrollment period, either (1) were always in a Medicare managed care plan, or (2) never had Medicare Part A coverage, or (3) never had Medicare Part B coverage, or (4) Medicare was not primary payer during one or more months	–100,309
Did not meet the target criteria in the two years before the program started or during the six-month enrollment window	–73,884
Met at least one of the exclusion criteria during the enrollment month (November 15, 2002 for nonparticipants)	–4,516
Eligible Sample	**118,040**

TABLE B.3

SAMPLE OF ELIGIBLE PARTICIPANTS FOR PARTICIPATION ANALYSIS

Sample	Treatment Group	Control Group	All
Full Sample of Participants Randomized During the First Six Months of Enrollment	488	484	972
Minus those who:			
Had an invalid HIC number on MPR's enrollment file	–4	–7	–11
Not in geographic catchment area during the month of intake	–99	–105	–204
In a Medicare managed care plan, or did not have Medicare Part A and B coverage, or Medicare is not primary payer during the month of intake	–8	–4	–12
Did not meet the target criteria in the two years before the program started or during the six-month enrollment window	–12	–11	–23
Met at least one of the exclusion criteria during the enrollment month (November 15, 2002 for nonparticipants)	–2	–2	–4
Eligible Sample	**363**	**355**	**718**

Note: The number of sample members reported as excluded at each point reflects *people in the previous line* who did not meet the additional eligibility criteria according to Medicare data. Thus, the table applied sequential criteria. The program actually used patient self-reports of diagnosis and service use.

beneficiaries who had an address on the EDB that was outside its catchment area. We excluded these cases from the participation analysis to maintain comparability to the eligible nonparticipant sample. We also excluded 12 participants who did not meet CMS's insurance requirements for participation in the program during the month of intake. We also dropped 23 beneficiaries from the participation analyses for not meeting one of the three criteria and four beneficiaries because they were in hospice during the enrollment month. Thus, among the 972 participants randomized by Washington University into the program, after exclusions, 718 people are included in the participation analyses as eligible participants.

Washington University's participation rate for the first six months of enrollment is therefore calculated as the number of participants who met the eligibility requirements (718), divided by the number of eligibles who live in the catchment area (118,040), or 0.6 percent.

Table B.4 describes the characteristics of the 718 participants who were enrolled by Washington University during the first six months and who appear to meet Washington University's eligibility requirements, as measured in Medicare data, and the 117,322 eligible nonparticipants. This table is identical to Table 2 in the text, except that the participant sample has been restricted to the beneficiaries who meet the eligibility criteria according to Medicare claims data. The results are similar to those in Table 2, except that a smaller proportion of eligible participants were age 65 to 74 and a larger proportion of eligible participants were non-white than all demonstration participants.

B. METHOD FOR CALCULATING TREATMENT-CONTROL DIFFERENCES

Sample sizes are too small, and the follow-up period too short, to estimate program impacts. Comparing the treatment and control groups on mean outcomes, however, provides an early indication of potential effects. The analysis draws on the data and the variables constructed for the participation analysis but is restricted to the program's participants (treatments and controls).

TABLE B.4

CHARACTERISTICS OF ELIGIBLE PARTICIPANTS AND ELIGIBLE NONPARTICIPANTS DURING THE FIRST SIX MONTHS OF PROGRAM ENROLLMENT
(Percentages, Unless Otherwise Noted)

	Eligible Demonstration Participants (Treatments and Controls)[a]	Eligible Nonparticipants	
Age at Intake			
Average age (in years)	69.1	73.5	***
Younger than 65	29.8	12.9	***
65 to 74	31.8	37.1	***
75 to 84	27.7	35.7	***
85 or older	10.7	14.3	***
Male	45.7	42.2	*
Nonwhite	45.5	16.6	***
Original Reason for Medicare: Disabled or ESRD	41.8	19.0	***
State Buy-In for Medicare Part A or B	22.3	10.8	***
Newly Eligible for Medicare (Eligible Less than Six Months)	0.56	1.56	**
Enrolled in Fee-for-Service Medicare 6 or More Months During Two Years Before Intake	99.2	97.5	***
Medical Conditions Treated During Two Years Before Month of Intake[b]			
Coronary artery disease	67.3	42.5	***
Congestive heart failure	46.9	22.6	***
Stroke	31.5	19.5	***
Diabetes	47.9	32.6	***
Cancer	37.9	28.0	***
Chronic obstructive pulmonary disease	50.1	32.2	***
Dementia (including Alzheimer's disease)	6.2	5.9	
Peripheral vascular disease	23.9	12.3	***
Renal disease	24.9	7.1	***
Total Number of Diagnoses	3.4	2.0	***
Days Between Last Hospital Admission and Intake Date[b]			
No hospitalization in past two years	17.0	55.8	***
0 to 30	10.0	4.8	***
31 to 60	12.6	3.6	***
61 to 180	28.9	10.2	***
181 to 365	19.5	11.5	***
366 to 730	11.9	14.1	*

TABLE B.4 *(continued)*

	Eligible Demonstration Participants (Treatments and Controls)[a]	Eligible Nonparticipants	
Annualized Number of Hospitalizations During Two Years Before Month of Intake[b,c]			
0	17.4	56.2	***
0.1 to 1.0	36.8	30.1	***
1.1 to 2.0	23.0	8.7	***
2.1 to 3.0	11.1	2.7	***
3.1 or more	11.7	2.2	***
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]			
Part A	$1,735	$425	***
Part B	$1,070	$362	***
Total	$2,805	$787	***
Distribution of Total Medicare Reimbursement per Month Fee-for-Service During One Year Before Intake[b]			
$0	0.1	1.3	***
$1 to 500	21.8	68.1	***
$501 to 1,000	14.8	10.1	***
$1,001 to 2,000	18.9	8.9	***
More than $2,000	44.4	11.5	***
Number of Beneficiaries	**718**	**117,322**	

Source: Medicare Enrollment Database and National Claims History File.

Note: The intake date used in this table is the date of enrollment for participants. For eligible nonparticipants, the intake date is November 15, 2002, roughly the midpoint of the six-month enrollment period examined.

[a]Participants who do not meet CMS's demonstration-wide requirements for the demonstration, or who had an invalid HIC number on MPR's enrollment file, are excluded from this table because we do not have Medicare data showing their reimbursement in the fee-for-service program. Members of the same households as the research sample members are included.

[b]Calculated among beneficiaries with six or more months in Medicare fee-for-service in the two years before intake. (See Note, above, concerning intake date definition.)

[c]Calculated as 12 x (number of hospitalizations during two years before month of intake) / (number of months eligible). For example, if a beneficiary was in fee-for-service all 24 months and had two hospitalizations during that time, they would have one hospitalization per year [(12 x 2) / 24]. If another beneficiary was in fee-for-service eight months during the previous two years, and had two hospitalizations during those eight months, they would have [(12 x 2) / 8], or three hospitalizations per year. The estimate of the proportion with no hospitalization in the two years before the month of intake may differ slightly from the proportion with no hospitalization in the two years before the date of intake because the two measure slightly different periods. Someone enrolled on September 20, 2003, whose only hospitalization in the preenrollment period occurred on September 5, 2003, would not be counted as hospitalized during the 24 months before the month of intake. Conversely, someone hospitalized on September 25, 2001, would be captured in the measure defined by month of enrollment but not in the measure based on the day of enrollment.

*Difference between eligible participants and eligible nonparticipants significantly different from zero at the .10 level, two-tailed test.

**Difference between eligible participants and eligible nonparticipants significantly different from zero at the .05 level, two-tailed test.

***Difference between eligible participants and eligible nonparticipants significantly different from zero at the .01 level, two-tailed test.

The cost of the intervention was estimated as the amount CMS paid to Washington University for the treatment group patients, using G-coded claims in the physician claims file.

1. Treatment – Control Differences

We used two approaches to estimate treatment-control differences in Medicare-covered service use and cost outcomes. First, we estimated differences over a two-month follow-up period for all people Washington University randomized during the first four months of enrollment. The four-month enrollment window covers August 16, 2002 through December 13, 2002. The follow-up time covered the two calendar months after the month of randomization. For example, for a beneficiary randomized on August 30th, we examined outcomes in September and October.

Second, we estimated treatment – control differences by calendar month over the first six months of Washington University's enrollment to look at how cost-effectiveness might vary over the life of a program. One might expect programs to have little effect at first, since it takes time for patients to be assessed, the program to become fully functional, the patients to adopt case managers' recommendations, and these behavior changes to affect the need for health care. Analyzing costs by program month will allow us to examine such patterns. For each month from August 2002 through January 2003, we identified the patients who were enrolled in Washington University's coordinated care program and analyzed their Medicare-covered service use. For example, a person randomized in August would be present in August through January, provided that person is eligible and alive in each month.[4] Someone randomized in September would not

[4]Patients were excluded as ineligible during months when we could not observe their full costs (when they were enrolled in a Medicare managed care plan for the full month).

be part of the calculations for August but would be included in September through January, again provided that the person is eligible during those months.

The sample used to analyze treatment – control differences in outcomes differs from that used to analyze participation. Like the participation analyses, we excluded from the analysis sample randomized individuals for whom we have an invalid HIC number, because we could not obtain their Medicare claims data. We also excluded those people who enrolled but were ineligible for the demonstration according to CMS's insurance criteria (as determined from data on the EDB). However, we also excluded beneficiaries flagged as a household member of a participant, since they were not part of the research sample and thus were not used for the outcomes analysis.[5] Also, in contrast to the participation analyses, participants who did not meet the program's target criteria according to the claims and EDB data were included in the outcomes analyses. Given this, of the 769 people randomized in the first four months of Washington University's demonstration, the sample for analyzing treatment-control differences contained 735 people. For the six-month sample, 931, or 96 percent of the 972 randomized people, were included in the final sample (Table B.5). In addition to excluding beneficiaries, we excluded months during which we could not observe the beneficiaries' full costs in fee-for-service (described in footnote 4).

[5]Household members were excluded from treatment-control comparisons to keep the two groups balanced. Household members were assigned to the same experimental status to avoid the contamination that might occur if one person in the household was in the treatment group and another was in the control group. As a result, we expected to find fewer household members in the control group than in the treatment group, since household members have less incentive to join the demonstration if they know a household member has already been assigned to the control group and they will not receive care coordination.

TABLE B.5

SAMPLES FOR TREATMENT-CONTROL COMPARISONS

	First Four Months	First Six Months
Number of beneficiaries who were randomized	769	972
Minus those who:		
Were members of the same household as research sample members	–8	–10
Had invalid HIC numbers on MPR's enrollment file	–9	–10
In a Medicare managed care plan, or did not have Medicare Part A and B coverage, or Medicare is not primary payer during the month of intake	–17	–21
Number of usable sample members	**735**	**931**

2. Integrity of Random Assignment

Eligible applicants to the program were randomly assigned to the treatment or control group. To assess whether random assignment successfully produced treatment and control groups with similar baseline characteristics, we used two-tailed t-tests and chi-squared tests to compare the two research groups. Table B.6 presents the baseline characteristics for both the four-month and the six-month sample.

As expected under random assignment, the treatment and control groups had similar characteristics in both the four- and six-month samples. There were statistically significant differences in six baseline characteristics for the four-month sample: (1) the proportion of beneficiaries who were between age 65 to 74, (2) the proportion who were age 75 to 84, (3) the proportion of beneficiaries who were treated for CAD in the previous two years, (4) the proportion who were treated for COPD in the previous two years, (5) the total number of nine common diagnoses treated during the two years before the month of intake, and (6) the proportion of beneficiaries who resided in Lincoln county. For the six-month sample, there were only two statistically significant differences: (1) the proportion of beneficiaries who were between the age of 65 to 74 and (2) the proportion of beneficiaries who were treated for CAD in the previous two years. We would expect this number of false-positive differences to occur by chance, given the number of characteristics examined. Thus, none of the differences in this small, early sample create any cause for concern.

3. Sensitivity Tests

To assess outcomes, we calculated Medicare-covered service use and cost in the first two full months after the month of randomization. For example, for an individual who was randomized in the month of August, we tabulated the individual's outcomes in September and October. To examine whether our results were affected by not including costs and services that

TABLE B.6

CHARACTERISTICS OF TREATMENT AND CONTROL GROUPS
IN THE RESEARCH SAMPLE ENROLLED DURING
THE FIRST FOUR MONTHS AND SIX MONTHS
OF PROGRAM ENROLLMENT

	Four-Month Sample				Six-Month Sample			
	Treatment Group	Control Group		Total Research Sample	Treatment Group	Control Group		Total Research Sample
Age at Intake								
Average age (in years)	69.9	69.3		69.6	69.7	69.0		69.3
Younger than 65	25.5	24.9		25.2	27.7	26.9		27.3
65 to 74	34.4	40.7	*	37.6	32.4	38.7	**	35.6
75 to 84	31.2	25.4	*	28.3	29.6	25.0		27.3
85 or older	8.9	9.0		9.0	10.3	9.5		9.9
Male	47.2	47.0		47.1	45.1	47.7		46.4
Nonwhite	38.8	37.7		38.2	39.5	38.7		39.1
Original Reason for Medicare: Disabled or ESRD	39.3	39.3		39.3	40.8	40.7		40.7
State Buy-In for Medicare Part A or B	23.0	19.7		21.4	21.7	20.0		20.8
Newly Eligible for Medicare (Eligible Less than Six Months)	0.0	0.3		0.1	0.9	0.4		0.6
Enrolled in Fee-for-Service Medicare Six or More Months During Two Years Before Intake	100.0	100.0		100.0	98.7	99.6		99.1
Medical Conditions Treated During Two Years Before Month of Intake[a]								
Coronary artery disease	73.9	64.1	***	69.0	72.2	63.7	***	67.9
Congestive heart failure	50.0	47.1		48.6	48.9	45.8		47.3
Stroke	31.5	31.0		31.2	32.6	30.5		31.5
Diabetes	47.6	46.0		46.8	45.7	45.8		45.7
Cancer	39.1	38.9		39.0	37.4	37.8		37.6
Chronic obstructive pulmonary disease	50.8	44.4	*	47.6	50.2	45.6		47.9
Dementia (including Alzheimer's disease)	5.7	6.6		6.1	6.7	6.7		6.7
Peripheral vascular disease	22.0	22.5		22.2	22.8	21.4		22.1
Renal disease	24.7	25.2		25.0	22.0	24.4		23.2
Total Number of Diagnoses (number)	3.5	3.3	*	3.4	3.4	3.2		3.3

TABLE B.6 *(continued)*

	Four-Month Sample			Six-Month Sample		
	Treatment Group	Control Group	Total Research Sample	Treatment Group	Control Group	Total Research Sample
Days Between Last Hospital Admission and Intake Date[a]						
No hospitalization in past two years	16.9	18.4	17.6	16.5	17.7	17.1
0 to 30	9.2	10.4	9.8	10.4	9.5	10.0
31 to 60	10.9	11.2	11.1	12.6	13.6	13.1
61 to 180	29.1	27.4	28.2	29.1	27.9	28.5
181 to 365	18.5	20.6	19.5	17.6	19.9	18.7
366 to 730	15.5	12.1	13.8	13.7	11.5	12.6
Annualized Number of Hospitalizations During Two Years Before Month of Intake[a,b]						
0	17.1	18.6	17.9	17.2	17.9	17.6
0.1 to 1.0	35.1	37.5	36.3	36.1	38.4	37.3
1.1 to 2.0	24.2	20.8	22.5	25.2	21.2	23.2
2.1 to 3.0	11.4	11.5	11.5	10.4	11.5	10.9
3.1 or more	12.2	11.5	11.9	11.1	11.0	11.1
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[a]						
Part A	$1,639	$1,720	$1,679	$1,663	$1,693	$1,678
Part B	$1,058	$1,049	$1,054	$1,023	$1,013	$1,018
Total	$2,697	$2,769	$2,733	$2,685	$2,705	$2,695
Distribution of Total Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[a]						
$0	0.3	0.3	0.3	0.2	0.2	0.2
$1 to 500	23.2	24.2	23.7	22.1	23.1	22.6
$501 to 1,000	14.7	12.1	13.4	15.1	13.7	14.4
$1,001 to 2,000	19.9	19.5	19.7	20.1	18.7	19.4
More than $2,000	42.0	44.0	43.0	42.6	44.2	43.4
Location During Program Intake Period						
Missouri						
Franklin	0.5	1.4	1.0	0.9	1.1	1.0
Jefferson	1.9	2.7	2.3	2.2	2.6	2.4
Lincoln	0.8	0.0 *	0.4	0.6	0.4	0.5
St. Charles	1.9	3.0	2.4	2.4	2.6	2.5
St. Louis	39.0	35.0	37.0	38.0	34.6	36.3
Warren	0.0	0.6	0.3	0.0	0.4	0.2
St. Louis City	35.5	38.3	36.9	36.3	38.7	37.5
Outside catchment area	20.9	20.8	20.8	20.2	21.1	20.6

TABLE B.6 *(continued)*

	Four-Month Sample			Six-Month Sample		
	Treatment Group	Control Group	Total Research Sample	Treatment Group	Control Group	Total Research Sample
Number of Beneficiaries	**369**	**366**	**735**	**466**	**465**	**931**

Source: Medicare Enrollment Database and National Claims History File.

Notes: The intake date used in this table is the date of enrollment for participants. For eligible nonparticipants, the intake date is November 15, 2002, roughly the midpoint of the six-month enrollment period examined.

Participants who do not meet CMS's demonstration-wide requirements, had an invalid HIC number on MPR's enrollment file, or were identified as a member of the same household as a research sample member were excluded from this table.

[a]Calculated among beneficiaries with six or more months in Medicare fee-for-service in the two years before intake. (See Note, above, concerning intake date definition.)

[b]Calculated as 12 x (number of hospitalizations during two years before month of intake) / (number of months eligible). For example, if a beneficiary was in fee-for-service all 24 months and had two hospitalizations during that time, they would have one hospitalization per year [(12 x 2) / 24]. If another beneficiary was in fee-for-service eight months during the previous two years, and had two hospitalizations during those eight months, they would have [(12 x 2) / 8], or three hospitalizations per year. The estimate of the proportion with no hospitalization in the two years before the month of intake may differ slightly from the proportion with no hospitalization in the two years before the date of intake because the two measure slightly different periods. Someone enrolled on September 20, 2003, whose only hospitalization in the preenrollment period occurred on September 5, 2003, would not be counted as hospitalized during the 24 months before the month of intake. Conversely, someone hospitalized on September 25, 2001, would be captured in the measure defined by month of enrollment, but not in the measure based on the day of enrollment.

ESRD = end-stage renal disease.

*Difference between treatment and control groups significantly different from zero at the .10 level, two-tailed test.

**Difference between treatment and control groups significantly different from zero at the .05 level, two-tailed test.

***Difference between treatment and control groups significantly different from zero at the .01 level, two-tailed test.

occurred closer to the randomization date, we conducted a sensitivity analysis examining outcomes for three months—during the month the individual was randomized, as well as the two months after randomization (Table B.7). While Table B.7 shows that the estimated impacts on inpatient hospital services, emergency room services, and skilled nursing facility services change slightly, these results are not statistically significant and, overall, the results are similar to those for outcomes measured over the two-month period (text Table 5). Thus, the results do not appear to be sensitive to how the month of randomization is treated.

TABLE B.7

MEDICARE-COVERED SERVICE USE DURING THE MONTH OF RANDOMIZATION AND THE FOLLOWING TWO MONTHS FOR EARLY ENROLLEES

	Treatment Group	Control Group	Difference[a]	
Inpatient Hospital Services				
Any admission (percent)	24.9	26.2	–1.3	
Mean number of admissions	0.41	0.40	0.01	
Mean number of hospital days	3.05	2.77	0.28	
Emergency Room Services				
Any emergency room encounters (percent)				
Resulting in admission	15.5	16.7	–1.2	
Not resulting in admission	13.3	15.3	–2.0	
Total	25.5	28.1	–2.7	
Mean number of emergency room encounters				
Resulting in admission	0.21	0.19	0.02	
Not resulting in admission	0.16	0.23	–0.07	
Total	0.37	0.42	–0.05	
Skilled Nursing Facility Services				
Any admission (percent)	2.4	2.2	0.3	
Mean number of admissions	0.04	0.04	0.00	
Mean number of days	0.75	0.59	0.16	
Hospice Services				
Any admission (percent)	0.8	1.6	–0.8	
Mean number of days	0.26	0.50	–0.24	
Home Health Services				
Any use (percent)	17.9	16.9	1.0	
Mean number of visits	4.32	5.25	–0.93	
Outpatient Hospital Services[b]				
Any services (percent)	78.3	77.3	1.0	
Physician and Other Part B Services[c]				
Any use (percent)	99.7	97.3	2.5	***
Mean number of visits or claims	16.3	14.1	2.2	*
Mortality Rate (percent)	2.4	3.8	–1.4	
Total Medicare Reimbursement[d]				
Part A[e]	$4,157	$3,757	$400	
Part B	$3,016	$2,951	$65	
Total	$7,173	$6,708	$465	
Reimbursements for Care Coordination[f]	$473	$0	$473	***
Number of Beneficiaries	**369**	**366**		

Source: Medicare National Claims History File.

TABLE B.7 *(continued)*

Note: Sample includes those enrolled during the first four months of program operations. Participants were excluded from this table if they had an invalid HIC number on MPR's enrollment file, were identified as a member of the same household as a research sample member, or did not meet Medicare coverage and payer requirements (defined as having Medicare as a secondary payer, being in Medicare managed care plan, or not having Part A and Part B coverage) during the month of randomization. Patient-months were excluded if the participant did not meet the above Medicare coverage and payer requirements that month or had died in a previous month.

"Percents with any medical encounter type" are the percent of treatment or control group members who have at least one encounter of a particular type; "mean numbers of medical encounter types" are the average number of encounters of a particular type per treatment or control group member.

[a]These estimates are based on preliminary data and will be updated in the second site-specific report.

The direction of the treatment-control difference does not by itself signify whether the program is "effective." That is, for some outcomes a statistically significant negative difference (such as lower hospitalization rates for the treatment group than for the controls) suggests that the program is working as intended. However, a positive difference for other outcomes, such as number of physician visits, does not necessarily mean the program is ineffective or having adverse effects, because the program may encourage patients to see their physician more regularly for preventative care or to obtain recommended laboratory tests for their target conditions than they would have in the absence of the demonstration.

Due to rounding, the difference column may differ slightly from the result when the control column is subtracted from the treatment column.

[b]Includes visits to outpatient hospital facilities as well as emergency room visits that do not result in an inpatient admission. Laboratory and radiology services are also included.

[c]Includes diagnostic laboratory and radiology services (including pathologist and radiologist services) from nonhospital providers, suppliers and devices, mammography, ambulance, covered medications, blood, and vaccines.

[d]Does not include reimbursement for care coordination services provided by demonstration programs.

[e]Includes reimbursement for inpatient, skilled nursing facility, hospice, and all home health care (including that paid under Medicare Part B). Excludes reimbursement for care coordination services provided by demonstration programs.

[f]This is the average amount paid to the program as recorded in the Medicare claims data for the month of randomization and the two following months. The difference between the recorded amount and three times the amount the program was allowed to charge per-member-per-month may reflect billing errors, delays, or payment adjustments for patients who disenrolled.

*Difference between treatment and control groups significantly different from zero at the .10 level, two-tailed test.
**Difference between treatment and control groups significantly different from zero at the .05 level, two-tailed test.
***Difference between treatment and control groups significantly different from zero at the .01 level, two-tailed test.

APPENDIX C

SELECTED PROGRAM DOCUMENTS

APPENDIX C

SELECTED PROGRAM DOCUMENTS

Informed consent for participation in research activities

Initial health screen

Sample care plan action items

Care management training agenda

Management reports from CareLink
- MCCD client administrator home page
- MCCD supervisor page
- MCCD team & client standings
- MCCD acuity levels
- MCCD functional status levels
- MCCD active care plan rate
- MCCD team summary data

Supplemental patient education materials

WUMC
WASHINGTON UNIVERSITY MEDICAL CENTER

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

Participant _____ HSC Approval Number _____

Principal Investigator **John Lynch MD** PI's Phone Number **314-747-1617**

Title of Project: **Medicare Coordinated Care Demonstration**

This consent form may contain words that you do not understand. Please ask the study doctor or his staff to explain any words or information that you do not clearly understand.

1. **PURPOSE:** You are invited to take part in a study by Dr. John Lynch and his staff. The main reason for this study is to test a new service called Medicare Coordinated Care. This new service may help patients with long term illnesses add to their understanding of the care planned for them. It may also help cut hospital stays and improve the quality of their lives. Coordinated care services are actions taken by a Registered Nurse (RN) Care Manager to help your doctor(s) determine your care. The RN Care Manager will study your health record and help plan your care. Your RN Care Manager will also check on you at regular times and help set up the care you need. The RN Care Manager will help with sharing facts about your health care and needs with your doctor(s). This study is paid for by the Centers for Medicare and Medicaid Services, the Federal agency that runs the Medicare program. The Centers for Medicare and Medicaid Services have paid a private company, Mathematica Policy Research, Inc. (MPR), to judge the results of the Washington University Physicians Medicare Coordinated Care study.

2. **PARTICIPATION:** If you agree to take part in this study, you may get help from the Washington University Physicians Medicare Coordinated Care staff in getting the care you need. This study will assign patients by chance, like the flip of a coin, to two groups. One group will get the extra services explained above, as well as the care for which Medicare usually pays. The other group will get all of their usual care paid for by Medicare, but not the extra services. When you return this signed consent form, the staff will make sure all conditions for you to take part in the study are met. You will then be assigned to one of the two groups. If you are assigned to the extra services group, you will have the extra services as long as you need them and stay enrolled in Medicare Part A and B. When your health gets better and you do not require the extra services, they will be stopped. Remember that you will still get all healthcare services for which Medicare usually pays. It will only be the extra services that will stop. However, if you need the extra services in the future, you will be included in the same group. You will not get any untested drugs, tests, or treatments while you are taking part in this study. Six months from now, someone from Mathematica Policy

Research will call you to ask you questions about how you are feeling and recent visits to the doctor. You will be asked what you know about your illness and if you are happy with the health care and extra services you are getting. Everyone taking part in the study will be asked questions. The questions will take about 20 minutes. If you can not talk on the phone, a family member or friend may answer the questions for you.

Mathematica Policy Research will get more details from the Centers for Medicare and Medicaid Services about the Medicare services you use during the study. Mathematica will use these facts together with your answers to see if the extra services given by Washington University Physicians Medicare Coordinated Care resulted in better care for patients in the study and lowered Medicare costs.

3. **COSTS AND PAYMENTS TO PARTICIPANTS:** There are **no costs to you** for participating in the study. You will not be paid for your participation in this study.

4. **RISKS:** This study has no known risks. However, you may feel some questions that are asked are personal and may embarrass you. You may choose not to answer these questions. All of the care and goods for which Medicare usually pays will still be covered during and after the study.

5. **STUDY DURATION:** This study is scheduled to end on May 31, 2006. The extra services you may get while you take part in the study will end at that time also. Medicare will continue to pay for all medical services usually covered.

6. **BENEFITS:** This study will look at things important to the future of the Medicare program. This includes improving the health care you get and holding down costs. Patients in both groups will not at any time be asked to change their doctor(s) or others who give them care. Patients in the extra services group will get help that may improve their health and life. The patients in the usual care group will not get the extra services, but will help to decide if the extra services are helpful to patients. If the study finds that the extra help given makes a difference, it may be added as a regular service for which Medicare will pay. **Your decision to not take part in or to leave the study will not change the care for which Medicare usually pays.**

7. **ALTERNATIVES:** Taking part in this study is your choice. You may choose not to take part or decide to stop at any time. Your choice will not change the commitment of those who provide health care to you. There will be no charge or fee for taking part in this study. Medicare will continue to pay for the care you would normally get. Signing this consent form does not take away any of your legal rights.

8. **CONFIDENTIALITY:** If you would like to take part in this study, please sign this consent form. When you sign this consent, you are saying you will let Mathematica and the RN Care Manager know private and medical facts about you. The people doing the study will take all reasonable steps to protect you and your privacy. You will not be identified in any report that comes from this study. There is a chance that the government and/or the University's Human Studies Committee will review and copy some personal facts about you. These could be facts you tell Washington University Physicians Medicare Coordinated Care staff while you are taking part in this study. The facts gathered by Mathematica Policy Research will be used for study reasons only. These facts will not be shared with Washington University Physicians

Medicare Coordinated Care study or the Centers for Medicare and Medicaid Services in a way that will identify who you are. Nor will they identify you in any reports written about the study.

9. **CONTACTS:** You may call the Principal Investigator (the person who leads the study) Dr. John Lynch, at 1-(314)-747-1617 if you have any questions or are worried about anything that you have read or been told about this study. You may also call him if any problems come up while you are taking part in this study.

   You may call Dr. Philip Ludbrook, Chairman of the University's Human Studies Committee, at 1-(314)-633-7400 or 1-(800) 438-0445 to ask questions or talk about any concerns you may have about your rights while you are taking part in this study. You may also contact Dr. Ludbrook if you feel you have been forced to take part in this study.

9. The study staff will do everything within reason to limit, control and care for any problems that may come up because of this study. If you believe that you are hurt mainly because of a questions being asked in the study, please contact the Principal Investigator and/or the Chairman of the Human Studies Committee. Washington University reserves the right to make choices about payment for medical treatment for harm that is only as a result of taking part in human or human behavior studies.

11. You will be told of any important new findings while you are taking part in this study that may affect your choice to go on with the study. The doctor in charge may withdraw you from this study if conditions come up which warrant doing so.

12. **This research is not intended for the purpose of diagnosing or treating any medical problems not stated in the purpose of the research. Taking part in this study does not take the place of regular physical check ups or visits to your own doctor.**

I have read and understand this entire consent form. I have been given the chance to ask questions about the study. All of my questions have been answered sufficiently. I understand that questions about this study or my rights as a patient in this study may come up. I understand that I can ask the people named in Section 9 of this form. I will be given a copy of this consent form to keep for my own records.

I will take part in the study explained above and called: Washington University Physicians Medicare Coordinated Care Demonstration. I will answer the questions Mathematica Policy Research (MPR) will ask me in about six months. MPR is the private company paid by the Centers for Medicare and Medicaid Services to judge the results of the study.

_____

Patient's Signature Date

If a patient is unable to sign this consent for him/herself, the identified surrogate will be required to sign below.

_____

Patient's Surrogate Signature Date

[ ]African-American [ ]Asian [ ]Caucasian [ ]Hispanic/ Latino [ ]Native American [ ] Pacific Islander [ ]Other

The National Institute of Health, in an effort to make sure there is a mixture of race in research, requests that you report your race. However, if you do not want to answer this part your place in this study and the care given to you will not be changed in any way.
(http://grants.nih.gov/grants/funding/women_min/women_min.htm)

Informed Consent provided by:

_____

Signature of Principal Investigator or Designee
Date

_____

Signature of Principal Investigator
Date _____when informed consent responsibility is entrusted to a designee. (See HSC Guidelines on *Who May Obtain Consent to Participate in Research Activities*.)

This form is valid only if the Human Studies Committee's current stamp of approval is shown below.

Please print the following information:

1) Patient's Medicare identification number: _____

2) Patient's Sex: ☐ Female ☐ Male

3) Patient's date of birth: _____ /_____ /_____ (Month/Day/Year)

4) Patient's mailing address: _____

_____

5) Patient's telephone number: (_____) _____ - _____

6) Name, address, and phone number of proxy decision-maker or someone who will know how to reach the patient:

Name: _____

Address: _____

_____

Telephone number: (_____) _____ - _____

7) Patient's personal physician (that is, the doctor the patient usually goes to when he or she is sick or needs advice about his or her health):

Name: _____

Address: _____

_____

Telephone number: (_____) _____ - _____

Patient Name (Please Print): _____

First M.I. Last

Please check all that apply to you:

____ I have had three or more doctors visits in the last 12 months (visits with all types of doctors or nurses).

____ I have been in the hospital in the last 12 months (including one day surgeries or overnight care).

____ I have end stage renal disease.

____ I currently live in a nursing home.

____ I have both Medicare Parts A & B.

____ I am enrolled in a Medicare HMO.

____ I have insurance in addition to Medicare.

____ I am using hospice services.

THIS SECTION FOR PROGRAM USE ONLY:

Eligibility criteria met: Yes No

Initial Health Screen

If there is no answer at the patient's number, or they are not available, click here.
(The patient will remain listed as unscreened, but the attempt to make contact will be recorded.)

General Information

According to our records, your main physician is...

Unknown Provider

If the above is not accurate, then select their physician's name.
(If their name is not in the list, then type it here...)

When is your next doctor's appointment?

Which physician will you be seeing?

Do you have a computer?

- ○ Yes
- ◉ No

Do you have access to the internet?

- ○ Yes
- ◉ No

Do you have an email address?

- ○ Yes
- ◉ No

Can I contact you by email?

- ○ Yes
- ◉ No

What is your email address?

Save progress...

StatusOne Initial Health Screen_CareLink_2001

In general, how are you doing?

(Let the patient talk, noting answers that most closely correspond to these questions. Ask only the questions that have not already been talked about.)

Save progress...

2.

In the last 3 months, how has your health been?

- ○ Declining
- ○ About the same
- ○ Improving/Good

Save progress...

3.

In the past 3 months, have you used any of these?

(Mark X next to any item below that applies)

- ☐ Home/visiting nurses or aides
- ☐ Ambulance

- [ ] Emergency room
- [ ] Stayed in a nursing home or rehabilitation facility?
- [ ] Kidney dialysis
- [ ] Oxygen at home
- [ ] Been a patient in a hospital

Comments:

Save progress...

4.

Are you as active as you would like to be?

- ( ) Yes
- ( ) No

Save progress...

5.

Do you have concerns about your health?

- ( ) Yes
- ( ) No

Save progress...

6.

Are you having problems getting the support you need?

- ○ Yes
- ○ No

Save progress...

7.

Diagnosis

Save progress...

8.

Current Situation or Unstable Condition

Save progress...

9.

Medications

Save progress...

10.

Activities of Daily Living

Save progress...

11.

Social status

Save progress...

12.

Patient Goals

Save progress...

13.

Nursing Goals

Save progress...

14.

Considering everything, how would you rate your health?

- ○ Poor (1)
- ○ Fair (2)
- ○ Good (3)
- ○ Very Good (4)
- ○ Excellent (5)

Save progress...

15.

(User, please rate this patient's "Acuity Level")

- ○ Level 1: within 3 months
- ○ Level 2: 3-6 months
- ○ Level 3: 6-12 months
- ○ Level 4: 12-24 months
- ○ Level 5: 24+ months

Save progress...

If you are completely done with this Initial Health Screen, click this button to permanently save your work.

Health Screening Complete

Health Assessment Questionnaire

INSTRUCTIONS

Your health and well-being is important to you and to us! This questionnaire will help us to better understand how we may help you to manage your health. Some questions may look like others, but each one is different. Please take the time to read and answer each question carefully and return it in the pre-addressed, stamped envelope. This questionnaire is voluntary. Please call _____ at _____, if you have questions about it.

Name: _____

Date Questionnaire completed: _____

Who is the physician you consider most responsible for your overall care? _____

How can we contact you?

Home telephone: _____

Work telephone: _____

Best time to call: _____

E-mail address: _____

OVERALL

1. In general, would you say your health is:
   ☐ excellent ☐ very good ☐ good ☐ fair ☐ poor

2. The following items are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so, how much?

a) **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ yes, limited a lot	☐ yes, limited a little	☐ no, not limited at all
b) Climbing **several** flights of stairs	☐ yes, limited a lot	☐ yes, limited a little	☐ no, not limited at all

3. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

a) **Accomplished less** than you would like	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time
b) Were limited in the **kind** of work or other activities	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time

4. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

a) **Accomplished less** than you would like	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time

b) Did work or other activities **less carefully than usual**	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time

5. During the **past 4 weeks**, how much did pain interfere with your normal work (including both work outside the home and housework)?
   ☐ not at all ☐ a little bit ☐ moderately ☐ quite a bit ☐ extremely

6. These questions are about how you feel and how things have been with you during the **past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the **past 4 weeks**...

a) have you felt calm and peaceful	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time
b) did you have a lot of energy	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time
c) have you felt downhearted and depressed	☐ all of the time	☐ most of the time	☐ some of the time	☐ a little of the time	☐ none of the time

7. During the **past 4 weeks**, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)
   ☐ all of the time ☐ most of the time ☐ some of the time ☐ a little of the time ☐ none of the time

8. Compared to a year ago, how do you rate your overall health?
   ☐ much better ☐ somewhat better ☐ about the same ☐ somewhat worse ☐ much worse

9. Have you had a major life change in the past 6 months (for example, death of a loved one, job loss, move, loss of drivers' license)?
   ☐ Yes ☐ No
   If yes, please tell us: _____

MEDICAL CARE

10. What health problems do you have? (Please list) _____

11. Have you needed emergency care in the last 6 months?
    ☐ Yes ☐ No
    If yes, for what? _____

12. Have you been hospitalized in the last 6 months?
    ☐ Yes ☐ No
    If yes, for what? _____
    Please provide hospital name: _____

13. Please list the prescription drugs and over-the-counter medications you are currently taking:

_____

_____

14. Please list any alternative medicines/therapies you are currently using (for example, chiropractor, acupuncture, massage therapy, herbal medicines/remedies, vitamins).

_____

15. Do you receive medical services in your home (for example, physical therapy, nurse, home health aid or medical equipment)?
☐ Yes ☐ No
Please list: _____

16. During the past year, have you had any serious falls?
☐ Yes ☐ No
17. How could we better coordinate your medical care?

_____

LIFESTYLE

18. Do you work outside the home?
☐ Yes ☐ No
19. Do you shop for your groceries and cook?
☐ Yes ☐ No
20. Do you receive help with daily tasks/responsibilities?
☐ Yes ☐ No
21. Do you live alone?
☐ Yes ☐ No
22. Do you drive?
☐ Yes ☐ No
23. Do you test your own health at home (blood pressure, temperature, weight, blood sugar)?
☐ Yes ☐ No
If Yes, for what? _____
24. Do you have supportive family/friends nearby?
☐ Yes ☐ No
Key Contact: _____ Phone Number: _____
25. The following is a list of statements about exercise. Check off the ONE statement that best describes your CURRENT level of physical activity.

_____ I do not exercise or walk regularly now, and I do not intend to start in the future.
_____ I do not exercise or walk regularly, but I have been thinking of starting.
_____ I am trying to start to exercise or walk. (OR) During the last month I have started to exercise or walk on occasions (or on weekends only).
_____ I have exercised or walked infrequently (or on weekends only) for over one month.
_____ I am doing vigorous or moderate exercise, less than 3 times per week.
_____ I am doing moderate or vigorous exercise, 3 or more times per week for the last 1 to 6 months.
_____ I am doing moderate or vigorous exercise, 3 or more times per week for 7 months or more.

26. Do you do volunteer work or participate in groups or activities in your community?
☐ Yes ☐ No
27. Do you enjoy reading?
☐ Yes ☐ No
28. Do you have hobbies?
☐ Yes ☐ No
If Yes, what hobbies?

_____

29. Do you prefer to stay at home rather than going out?
☐ Yes ☐ No
30. Do you smoke cigarettes?
☐ Yes ☐ No
31. Do you have 3 or more alcoholic drinks most days?
☐ Yes ☐ No
32. Do you use drugs other than prescribed?
☐ Yes ☐ No
33. Do you eat fewer than 2 full meals a day?
☐ Yes ☐ No
34. Have you gained or lost 10 pounds in the last 6 months?
☐ Yes ☐ No

GOAL

35. Which of these statements best describes what you'd like to accomplish in the near future? (select up to 3)
a. ☐ Improve the coordination of my medical care
b. ☐ Increase my independence and self-reliance
c. ☐ Increase my daily activity and fitness
d. ☐ Build on relationships with family and friends
e. ☐ Stimulate my mind
f. ☐ Get more involved in community and/or church

36. What could you personally do to improve or better manage your health?

_____

_____

37. Please tell me about anything else you would like me to know about you and your health.

_____

_____

38. Are you the primary care taker for a spouse, family member, or friend?
☐ Yes ☐ No

Thank you for sharing this information. It will be kept strictly confidential.

WASHINGTON UNIVERSISTY PHYSICIAN NETWORK(WUPN)/STATUSONE (SO) MEDICARE COORDINATED CARE DEMONSTRATION PROJECT (MCCDP)

SAMPLE CARE PLAN ACTION ITEMS

Aim: **Family and Friends**

Actions:
Accept offers of help
Accept social invitations
Ask for help
Get on-line and use e-mail
Help others
Invite others to visit
Offer to babysit
Reach out to family and friends over the phone/e-mail
Write letters
Or, create your own action:

Aim: **Self-Reliance**

Actions:
Attend AA
Attend class on living with chronic illness
Attend smoking cessation group
Attend Weight Watchers
Call Care Manager when self-monitoring indicates results outside parameters
Call Care Manager with vitals (e.g. weight)
Call the Care Manager to obtain advice
Check feet (diabetics)
Clear clutter, wires, rugs, etc.
Follow prescribed diet
Identify walking group
Join reading group
Keep journal: e.g. weight, nutrition, blood pressure, glucose
Maintain notebook on living with chronic illness-keep notes, questions
Order groceries on-line
Practice relaxation techniques
Purchase and maintain "medi-planner" (for organizing drugs)

Aim: **Self-Reliance (continued)**

Actions:
Report dissatisfaction with healthcare
Take prescribed medication
Use a pill, box assure compliance with drug regimen
Purchase and maintain "medi-planner" (for organizing drugs)
Test blood sugars daily
Track appointments, referrals (end dates) in calendar or appointment book
Or, create your own action:

Aim: **Daily Activity and Fitness**

Actions:
Babysit grandchildren
Care for a pet
Clean the house
Cook "real" meals – avoid frozen foods
Do muscle strengthening exercises
Do the laundry
Drink plenty of water
Eat regular, balanced meals
Exercise with a TV program
Get a hobby
Get dressed every day
Get out of bed every day
Have sex
Increase fiber in diet
Invite a friend over
Join a walking program (e.g. the mall)
Join the YMCA or a health club
Maintain personal hygiene
Make the bed
Manage personal finances
Meditate
Participate in weight training
Put away the remote control
Sleep and rest
Surf the Net
Swim
Take a class
Take Yoga or Tai chi classes
Talk to or meet someone

Aim: **Daily Activity and Fitness (continued)**

Use exercise equipment (e.g. treadmill)
Volunteer
Work in the yard
Write something positive about yourself each day
Or, create your own Action:

Aim: **Mental Challenge**

Actions:
Decorate the house
Do crossword puzzles
Go to the art museum
Learn a new skill
Paint
Play cards
Put together a jigsaw puzzle
Read a book
Read the newspaper
Surf the Net
Take an adult education course
Try a new hobby
Watch educational TV programs
Watch the news
Or, create your own Action:

Aim: **Community and Purpose**

Actions:
Attend church
Campaign for a candidate
Do volunteer work
Join a church group
Join a civic organization
Pray
Run for local office
Serve on a town committee
Visit the community center
Visit the library
Or, create your own Action:

Aim: **Coordinate Medical Care**

Actions:

Arrange an interdisciplinary team meeting/case conferences
Arrange for child care
Arrange transportation for office visit
Call the PCP's office
Call the pharmacist
Call the specialist's office
Confirm patient's eligibility for benefits
Confirm the next call between patient and Care Manager
Describe the after hours process for quickly getting back to the patient
Determine patient's functional status
Develop a home care plan
Discuss proxy/advance directives with the patient
Establish a call back schedule
Evaluate the patient's medication regimen
Explain clinical guidelines available on the internet
Explain how to reach Care Manager
Identify barriers to access to care
Obtain a referral
Order durable medical equipment
Order home assessment and equipment
Schedule laboratory tests
Send a letter to the Primary Care Physician
Set up patient education classes on clinical topics
Set up transportation
Or, create your own Action:

Care Management Training Agenda

Washington University Physician Network (WUPN) and StatusOne (SO)
Medicare Coordinated Care Demonstration Project (MCCDP)

MCCD Training Agenda – Day 1 – September 4, 2002

Time	Topic	Instructor
8:30 – 8:45	Introductions and Warm Up	Maris May
8:45 – 9:30	***Section 1:*** *Overview of the Medicare Coordinated Care Project (MCCDP):* ⇒ Purpose ⇒ National and Site Perspective ⇒ Key Contacts ⇒ Highlights of Study Design ⇒ Overview of the Study Evaluation Strategy ⇒ Tips on adhering to Study Design ⇒ Eligible participants	Sandy Graff
9:30 – 9:50	Introduction to MCCD "Lingo"	Rosemary Kaschyk
9:50 – 10:00	Break	
10:00 – 10:30	*Exercise: MCCDP Alphabet Soup*	Rosemary
10:30 – 11:15	***Section 2:*** *MCCDP Care Management Process: Patient Identification and Assignment* ⇒ Patient Identification ⇒ Verification of Eligibility ⇒ Patient Consent ⇒ Randomization ⇒ Care Manager Assignment	Sandy
11:15 – 12:00	*Exercise: Applying the guidelines for assigning and/or transferring participants*	Anne-Marie Duquette
12:00 – 1:00	Lunch	
1:00 – 1:30	***Section 3:*** *MCCDP Care Management Process: Tools for Assessment* ⇒ Initial Health Screen ⇒ Limited Utilization History ⇒ Functional Status and Acuity ⇒ Modified HAQ application ⇒ Opportunities for local intervention	Anne-Marie

MCCD Training Agenda - Day 2 – September 5, 2002

Time	Topic	Instructor
8:30 – 9:00	Warm up and Exercise about Day 1	Anne-Marie
9:00 – 10:00	***Section 5:*** CareLink Modifications: ⇒ Apply study designated definitions in the completion of an MCCDP patient contact form within CareLink	Anne-Marie
10:00 – 10:15	Break	
10:15 – 11:15	*Exercise: Completing an MCCD Contact Form*	Anne-Marie
11:15 – 12:15	***Section 6:*** *MCCDP Care Management Workflows* ⇒ Exception to Benefits ⇒ Role of CMs for hospitalized patients ⇒ Strategy to manage patients in SNF and Rehab ⇒ Obtaining services ▫ DME ▫ Diabetic Services ▫ Home Health ▫ Cardiac and Pulmonary Rehab ▫ Orthodics	Sandy
12:15 – 1:15	Lunch	
1:15 – 2:15	***Section 7:*** MCCDP Care Management Resources: ⇒ WUPN Provider Directory ⇒ Resource Directory ⇒ Education and Fitness Directory *Exercise: Searching for Resources*	Sandy
2:15 – 2:30	Break	
2:30 – 3:30	***Section 8:*** *MCCDP Care Management Process: Discharge* ⇒ Discharge criteria ⇒ Workflow and procedure ⇒ Categorizing and recording patient discharges	Anne-Marie
3:30 – 4:00	Wrap up and Day 2 Evaluation	Anne-Marie

Total Active Patients in the StatusOne registry: 858

View Patients:
Unassigned (0)
Discharged (247)
Members at Same Address
Incorrect Phone Numbers
(28 of 856 pts. contacted/contact attempted)

Check Eligibility (0)
No Longer Meet Criteria (0)
Marked for Reactivation (0)
All current patients
Sorted by: Name

Care Managers List

"Unc." = "Uncontacted" "Att." = "Attempted Contact" "ICP" = "Inactive Care Plan"

Name	Patients	Acuity						New Patients		
	Total	1	2	3	4	5	U	Unc.	Att.	ICP
[redacted]	98	2	6	22	50	18	0	0	0	0
[redacted]	97	4	3	19	68	3	0	0	0	0
[redacted]	60	2	10	22	21	4	1	1	0	12
[redacted]	69	16	2	11	36	3	1	1	0	18
[redacted]	42	11	8	18	2	2	1	0	1	6
[redacted]	98	3	12	18	43	22	0	0	0	0
[redacted]	57	1	2	20	18	16	0	0	0	2
[redacted]	28	0	2	14	10	2	0	0	0	0
[redacted]	71	2	7	23	27	12	0	0	0	0
[redacted]	60	5	3	12	12	28	0	0	0	0
[redacted]	80	8	7	18	23	24	0	0	0	0
[redacted]	98	1	13	28	40	16	0	0	0	5
Totals	858	55	75	225	350	150	3	2	1	43

Totals in this table do **not** include unassigned patients.

This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent.

MCCD Team & Client Standings

Team	Active Pts.	% Acuity 4 & 5	Active Care Plan Rate	Unscreened	Screened	Screened w/i 14 Days	Can't Contact Rate	Pt. Refused Rate
Carol Ann Plain's Team	659	63.7%	98.9%	0	100.0%	100.0%	0.0%	0.0%
Average:	659.0	63.7%	98.9%	0.0	100.0%	100.0%	0.0%	0.0%
Range:	659.0 to 659.0	63.7% to 63.7%	98.9% to 98.9%	0.0 to 0.0	100.0% to 100.0%	100.0% to 100.0%	0.0% to 0.0%	0.0% to 0.0%
Median:	659.0	63.7%	98.9%	0.0	100.0%	100.0%	0.0%	0.0%
MCCD	199	40.2%	81.9%	3	98.9%	0.0%	0.0%	0.0%

Accurate as of 1/22/2005 8:02:21 AM EST

This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent

01/27/2005 10:40 5089486095 STATUSONE HEALTH PAGE 07

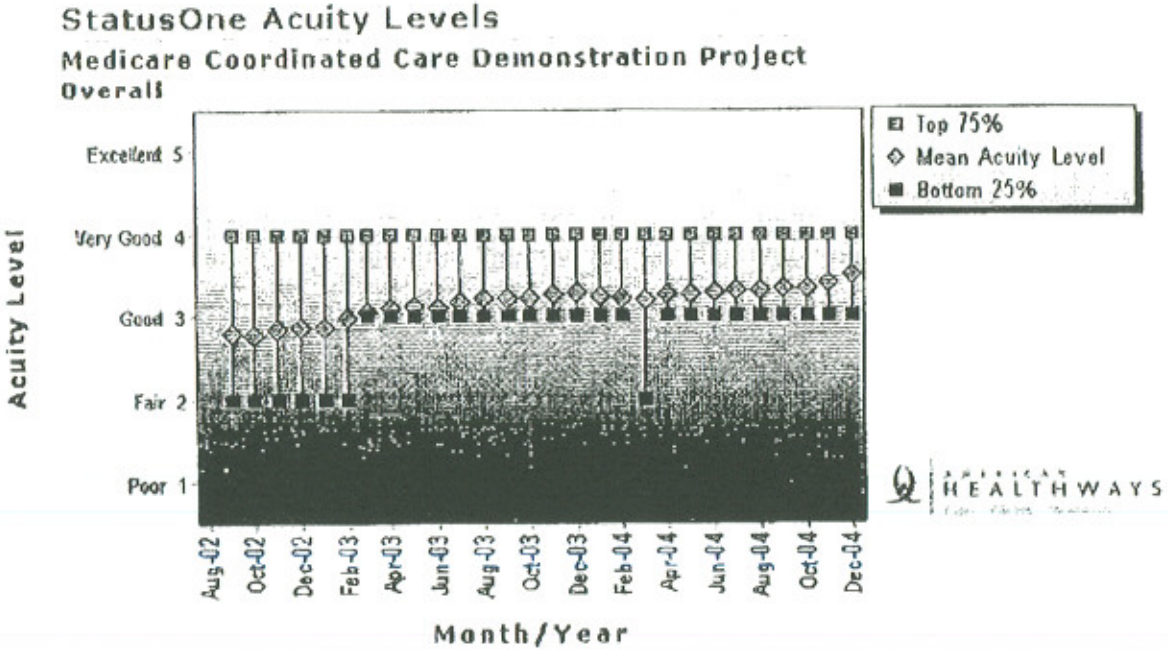
MCCD Acuity Levels

AMERICAN HEALTHWAYS CARELINK

What's New | Chat | Options | WebMD
Forums | Metrics | Hotlinks | Guidelines
Intranet | Change clients

Medicare Coordinated Care Demonstration Project

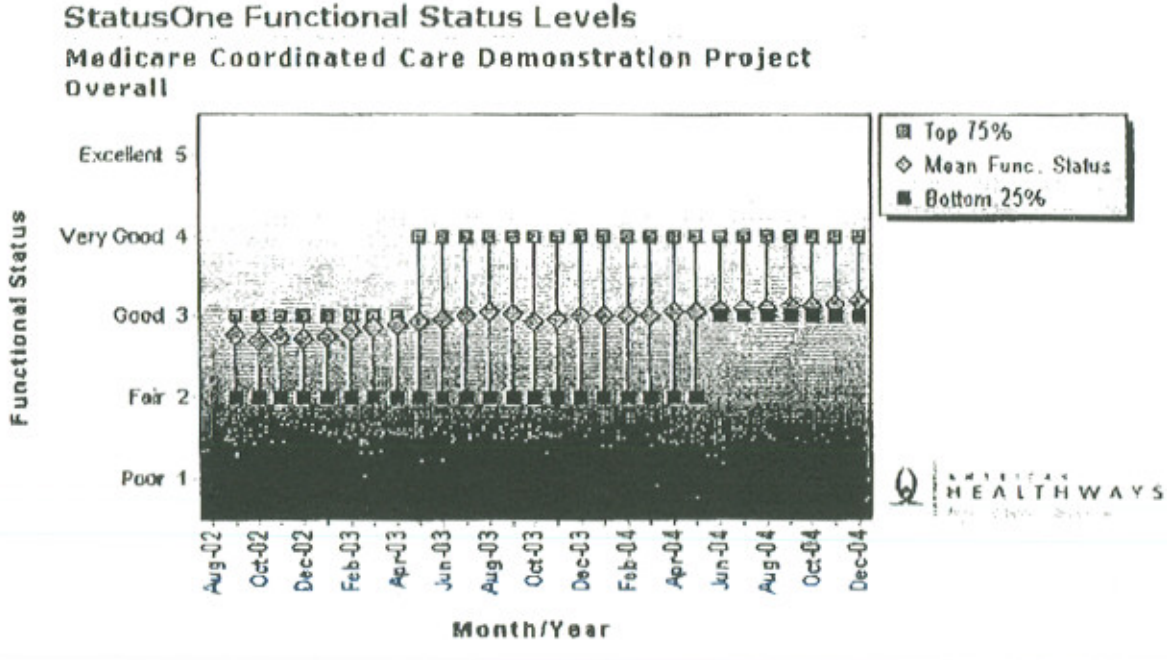
Home | Supervisor | Registry History | Client Summary | Client Admin | Team Client Standings | Team Maint. | Switch View | Search +



This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent

01/27/2005 10:40 5089486095 STATUSONE HEALTH PAGE 03

MCCD Functional Status Levels



This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent

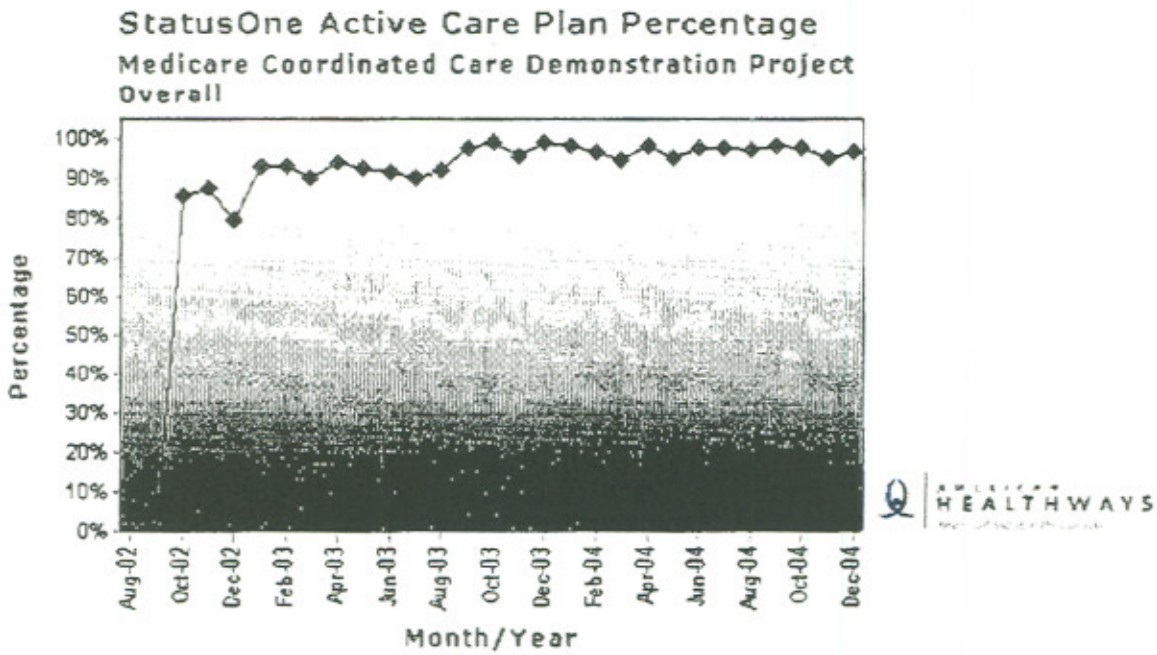
01/27/2005 10:40 5089486095 STATUSONE HEALTH PAGE 05

MCCD Active Care Plan Rate

AMERICAN HEALTHWAYS CARELINK

What's New | Chat | Options | WebMD
Forums | Metrics | Hotlinks | Guidelines
Intranet | Change clients

Medicare Coordinated Care Demonstration Project



This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent.

MCCD Team Summary Data

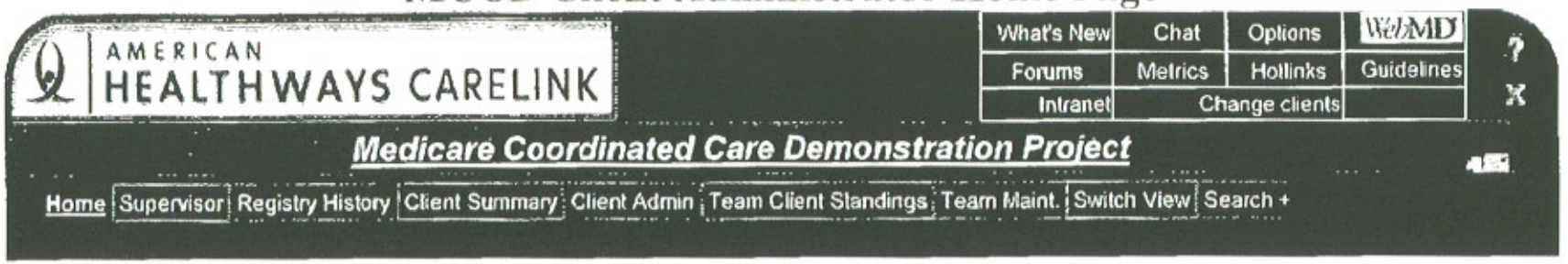
Team	Pts.	Active Care Plan Rate	% Acuity 4 & 5	Client	Pts.	Unscreened	Registry	New Registry	New Unscreened	% New Screened	Screening Deadline
[redacted]	98	100.0%	69.4%	MCCD	98	0	-	-	-	-	-
[redacted]	97	100.0%	73.2%	MCCD	97	0	-	-	-	-	-
[redacted]	98	100.0%	66.3%	MCCD	98	0	-	-	-	-	-
[redacted]	57	96.5%	59.6%	MCCD	57	0	-	-	-	-	-
[redacted]	102	100.0%	50.0%	MCCD	71	0	-	-	-	-	-
[redacted]				Other	31						
[redacted]	60	100.0%	66.7%	MCCD	60	0	-	-	-	-	-
[redacted]	80	100.0%	58.8%	MCCD	80	0	-	-	-	-	-
[redacted]	98	94.9%	57.1%	MCCD	98	0	-	-	-	-	-
Team Totals	690	99.0%	62.6%	-	690	0	-			0	-

Accurate as of 1/22/2005 7:02:21 AM EST

This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent

01/27/2005 10:40 5089486095 STATUSONE HEALTH PAGE 04

MCCD Client Administrator Home Page



Edit Resources Directory

Edit Education/Fitness Programs Directory

Edit Consultant Directory

Review/Reassign CM assignments for new registry

MCCD Functions

- Contact Details Report
- Disenrollment Reason Log
- Exceptional Benefits Report
- Contacts Aggregate Report
- Enrollment/Disenrollment Log
- Non-Medicare Aggregate Report
- Exceptional Services Details Report
- Report Run Log
- MCCD Recruitment Tracking Performance Profile
- MCCD Patient Recruitment Management System
- MCCD Patient Search Form

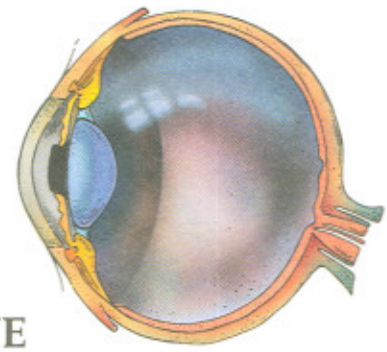
This copy contains certain material created and published by American Healthways under its StatusOne™ trademark. American Healthways is and will remain the sole owner of any copyrights, patents and trade secrets in such material and the StatusOne Intranet Applications and the good will symbolized by the respective system trademarks. Notice is hereby given to any person receiving a copy of this document that no portion of such material may be copied, reproduced or incorporated into any other media without American Healthways' express prior written consent.

01/27/2005 10:40 5089486095 STATUSONE HEALTH PAGE 02

Patient Education Materials

Help Yourself . . . Prevent the Complications of Diabetes

Diabetes Can Affect All These Body Parts

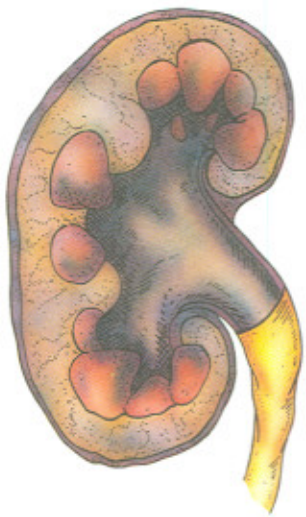


EYE

Watch for change in vision

Recommendations:

- See your doctor
- Control your blood sugar
- Control your blood pressure

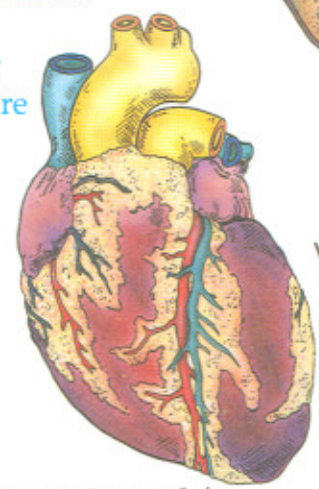


KIDNEY

Watch for protein in urine and/or increase in blood pressure

Recommendations:

- See your doctor
- Control your blood sugar
- Control your blood pressure
- Limit protein intake

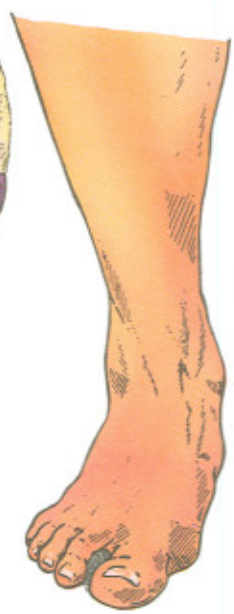


HEART

Watch for chest pain and/or shortness of breath

Recommendations:

- See your doctor
- Control your blood sugar
- Limit cholesterol
- Control your blood pressure
- Avoid smoking
- Exercise as directed



FOOT

Watch for pain, numbness, and/or wounds that won't heal

Recommendations:

- See your doctor
- Control your blood sugar
- Limit cholesterol
- Control your blood pressure
- Avoid smoking
- Exercise as directed
- Seek proper foot care

Specific Recommendations: _____

Novo Nordisk DIABETES Care SERVICE PROGRAMS THAT EDUCATE AND SUPPORT

For Product Information, please call 1-800-727-6500.

© 1992 Novo Nordisk Pharmaceuticals Inc.

Novo Nordisk Pharmaceuticals Inc.
The worldwide leader in diabetes care

000-109A Jan 1992 Printed in the USA

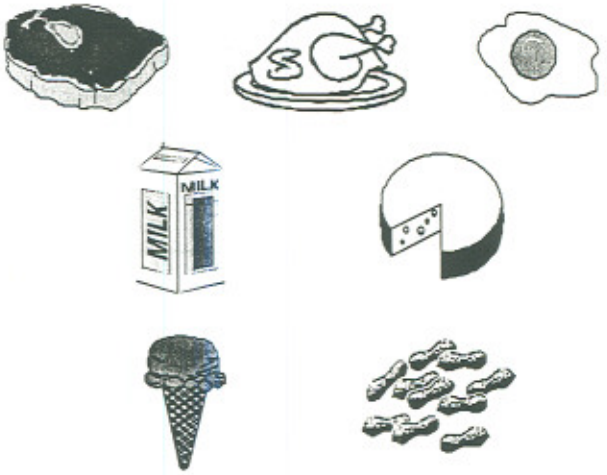
Patient Education Materials

UTMB
FACTS
About...

High Calorie/ High Protein Diet

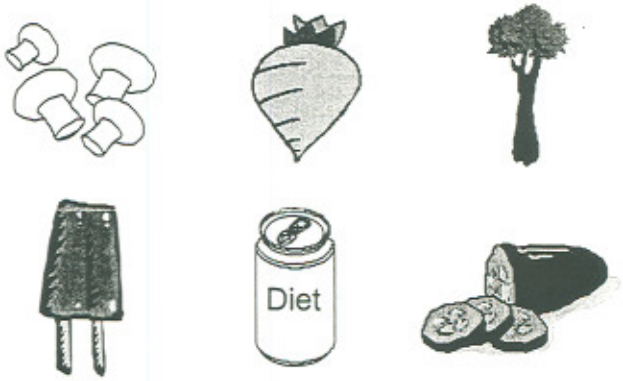
Eat More

- Beef, chicken, fish, pork, eggs
- Whole milk, cheese
- Salad dressing, mayonnaise
- Sour cream, butter, margarine
- Ice cream, cake, pie, cookies, pastries
- Instant breakfast mixes
- Peanut butter, granola
- Nuts, seeds



Eat Less

- Sugar-free foods
- Fat-free foods and low-fat foods
- Low calorie foods
- Green salads
- Cucumbers
- Celery



FACTS About...

Tips to Add Protein and Calories to the Diet

For Added Protein

- Add skim milk powder to milk to make double strength milk. Chill well before serving.
- Use double strength milk on hot or cold cereals. Add to scrambled eggs, soups, gravies, casseroles, milkshakes, and milk based desserts.
- Substitute whole milk or evaporated milk for water in recipes.
- Add grated cheese to soups, casseroles, vegetable dishes, rice, and noodles.
- Use peanut butter as a spread on slices of apples, banana, or pears, crackers or waffles. Use it as a filling for celery.
- Add finely chopped, hard-boiled eggs to sauces, soups, and casseroles.
- Choose desserts made with eggs or milk, like sponge cake, angel food cake, custard, or pudding.
- Dip meat, poultry, and fish in eggs or milk, and coat them with bread or cereal crumbs before baking, broiling or pan-frying.
- Use yogurt as a topping for fruits, plain cakes, or other desserts. Use it in gravies and dips.

For Added Calories

- Mix cream cheese with butter, and spread it on hot bread and rolls.
- Whenever possible, add butter to hot foods such as breads, pancakes, waffles, soups, vegetables, potatoes, cooked cereal, rice, and pasta.
- Substitute mayonnaise for mustard or salad dressing in salads, eggs, casseroles, and sandwiches.
- Add dried fruit, nuts, or granola to desserts and cereals.
- Use whipped cream on pies, fruits, pudding, gelatin, ice cream and other desserts, and to lighten coffee and tea, and in hot chocolate.
- Use marshmallows in hot chocolate, on fruits, and with sour cream
- Snack frequently on nuts, dried fruits, candy, buttered popcorn, cheese, granola, and ice cream.
- Use honey on toast, cereal, fruits, and in coffee or tea

F-4003/1102
Produced by: Health Education Office