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The Medical Care Development Medicare Coordinated Care Demonstration Program After One Year

Final Report

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EXECUTIVE SUMMARY

The Medicare Coordinated Care Demonstration, mandated by the Balanced Budget Act of 1997, is testing a range of models aimed at improving the care of chronically ill beneficiaries with Medicare fee-for-service (FFS) 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 program operation.

Research over 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 program goals. Successful programs also offer a well-designed, structured intervention that 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, program 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 describe early enrollees in the program 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 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 Medical Care Development's Medicare Coordinated Care Demonstration (MCCD) Project. After an overview of the Medical Care Development's MCCD has been presented, the following four questions are addressed: (1) Who enrolls in the program? (2) To what extent does the program engage physicians? (3) How well is the program implementing its approaches to improving patient health and reducing health care costs? (4) What were enrollees' Medicare service use and costs during its first months of operation? Thereafter follows a discussion of the program's strengths and unique features, as well as potential barriers to program success.

Program Organization and Approaches. Medical Care Development's MCCD has expanded an ongoing cardiac disease management program called ME Cares (pronounced "Maine Cares") that had mainly served non-elderly adults, by including Medicare FFS beneficiaries. The report first describes ME Cares, then focuses on Medical Care Development's MCCD.

ME Cares is a voluntary consortium of Maine hospitals offering disease management programs for congestive heart failure (CHF) and coronary heart disease (CHD), and Medical Care Development, Inc., is a large, not-for-profit corporation based in Augusta, Maine that plans, develops, and operates health care programs. It collaborates with many other organizations on statewide public health projects. Maine physicians were frustrated by having to deal with multiple disease management programs across different managed care plans. A group of Maine hospitals and Medical Care Development, which became the ME Cares coalition, hoped to solve this problem by developing a statewide, yet locally based program to which health insurers would be willing to delegate disease management responsibilities. There is evidence that ME Cares, which started its disease management programs in early 2000, has improved symptoms, self-monitoring, medication adherence, and mental health for CHF patients, as well as improved mental and physical health, medication adherence, control of diabetes, and cholesterol levels for coronary heart disease (CHD) patients.

ME Cares has established a set of guidelines called "Key Elements" on how each hospital is to staff, organize, and implement its disease management program; like participation in ME Cares, however, adherence to these guidelines is voluntary, and hospitals have considerable latitude in running their programs. Although there are a few sources of reimbursement for ME Cares services—one commercial managed care plan, the state Medicaid agency, and, most recently, the MCCD—for the most part, the programs are heavily subsidized by participating hospitals, who are providing services as part of their community service mission. Each hospital has provided one or a few nurses part-time from its internal nursing staff to perform the ME Cares care management activities, but all the nurse care managers still have other non-ME Cares responsibilities. Nearly all the nurse care managers are long-standing hospital employees drawn from cardiology, cardiac rehabilitation, and discharge planning staff, and who are well-known to local community physicians from having worked with them for years. Each hospital is also supposed to identify a local practicing physician willing to volunteer as the local ME Cares medical director, and a local person to serve as the ME Cares nurse care manager supervisor. This supervisor can either be the nurse care manager's regular hospital supervisor or the local ME Cares medical director.

The ME Cares hospitals have agreed that nurse care managers will use a commercial disease management software and electronic medical record system developed by Pfizer Health Systems and will collect and annually transmit a uniform "Minimum Data Set" of de-identified patient-level clinical data (described further below) to a central data repository. These data can then be fed back to hospitals for quality improvement purposes and used for overall assessment of program performance.

The remainder of this report discusses Medical Care Development's MCCD rather than ME Cares, even though the MCCD is merely the ME Cares program as applied to Medicare FFS beneficiaries. The reader should keep in mind, though, that the MCCD hospitals and staff and

Medical Care Development MCCD personnel are actually ME Cares organizations and staff who also work with non-Medicare FFS enrollees and who are thus subject to a variety of factors and pressures affecting the larger ME Cares effort. Furthermore, only 20 of the 32 ME Cares hospitals have agreed to participate in the MCCD, and some hospitals have chosen to participate only for CHF patients, others only for CHD patients, and others for both types of patients.

Medical Care Development coordinates several administrative tasks on behalf of hospitals participating in the MCCD. Participating hospitals have agreed to random assignment for demonstration participants. The hospitals fax informed-consent forms and patient intake information to Medical Care Development, which forwards the information to the evaluator for random assignment. Based on the hospital enrollment tracking data that it maintains, Medical Care Development submits claims for the monthly per-patient demonstration payment to the Medicare carrier. Medical Care Development then pays each hospital $124 per MCCD enrollee per month, and enrollees' primary care physicians $20 per enrollee per month.

The Medical Care Development staff working on the MCCD include the program director/medical director, the care coordination supervisor, and financial staff—all located at Medical Care Development's office in Augusta, Maine. The program director/medical director, who has overall responsibility for the demonstration, works with local hospital medical directors to educate local primary physicians on the project and encourage them to cooperate with the local nurse care manager.[1] The full-time care coordination supervisor is responsible for training the nurse care managers; assisting them with individual problems with enrollment, care management, and using the Pfizer software; encouraging them to collect the minimum data set; and trying to maintain a consistent approach to disease management across the hospitals. Both the project director and care coordination supervisor also encourage and negotiate with hospital administrators to maintain their support of the program (by continuing to provide nurse care manager time for the project). A year after the Medical Care Development MCCD had started, there were 27 nurse care managers across the 20 ME Cares hospitals participating in the MCCD, all working part-time on ME Cares and the MCCD.

Medical Care Development's MCCD project staff must rely on reports from the nurse care managers at participating hospitals or on informal polls to learn how the program is being implemented and whether any problems have been encountered. Frequent visits to the hospitals by the Medical Care Development staff are impractical because of Maine's large size and rural character, the widely dispersed hospitals, and the small number of Medical Care Development staff on the project.

Medical Care Development's MCCD has adopted three main approaches to improving patient health and reducing health care costs: (1) improving patient adherence to treatment recommendations by educating patients about their disease and how to take better care of themselves; (2) improving communication and coordination among patients and physicians by teaching patients to better navigate the health care system—for example, by keeping track of and making appointments for recommended clinical testing and preventive care—and by more

[1] The program director/medical director left the project in June 2004 and the program has since been directed by Medical Care Development's President, Dr. John LaCasse.

effectively raising their concerns and getting answers when talking with their doctors; and (3) increasing patients' access to community resources.

Patient Identification. Medical Care Development began enrolling patients in April 2002. The program targets Medicare beneficiaries living in Maine with CHD or CHF. Patients with CHD must have been hospitalized within the past 30 days at a participating hospital for a specific CHD diagnosis or procedure. Patients with CHF must have had a hospital or emergency room (ER) discharge for CHF within the past 30 days at a participating hospital. During its first year, nurse care managers identified 90 percent of the program's enrollees by reviewing inpatient and ER lists. Once the nurse care manager identifies a potentially eligible patient, she checks the patient's hospital record to confirm all eligibility criteria. If the patient is still in the hospital, which typically is the case, the nurse care manager approaches the patient in person to explain the program and solicit participation. If the patient is interested, the nurse care manager then approaches the patient's physician and asks him or her to approve of the patient's participation. Once the physician consents, the nurse care manager meets with the patient to obtain informed consent.

Assessment, Care Planning, and Monitoring. All treatment group members receive an in-person assessment conducted by the nurse care manager after random assignment. Most assessments are begun in the hospital, since the majority of patients are identified during a hospitalization; but the assessment can be conducted post-discharge during an outpatient visit to the hospital or in the patient's home. The program's disease management software contains sets of questions for the nurse care managers to ask patients on disease-specific topics—details of the primary illness (CHF or CHD), self-care (such as monitoring weight or blood pressure), health knowledge, diet and exercise, adherence to medications and diet—and for a range of general topics—for example, functioning, mental health, smoking and alcohol use, and general preventive health. Most nurse care managers also extract information from the patient's hospital medical records, such as laboratory test results and procedures. At many hospitals the nurse care managers speak to other hospital staff, the primary physician, and the physician's office staff. At some hospitals nurse care managers have access to primary physicians' office records. Nurse care managers who do not have access to laptop computers record all these data manually and enter them into the software later. Any worrisome symptoms reported by patient or abnormal laboratory values entered into the assessment data will cause the software to trigger "red flags," prompts for the nurse care manager to call the physician or have the patient go to the emergency room. Otherwise, the software suggests care plan actions with goals and interventions for the patient's target condition—for example, assessing the patient's "readiness to change" for diet, weight and blood pressure goals, and recommendations for teaching topics and monitoring frequency. The software also suggests appropriate educational materials that may be printed out.

The Pfizer Health Systems software appears to have been designed for disease management programs in commercial managed care plans, and thus for younger enrollees. The software's question sets and care plan actions are heavily focused on either CHD or CHF, or on such general topics as alcohol use or physical activity. There are no question sets dealing specifically with common comorbidities among the elderly such as diabetes or chronic lung disease, and no specific modules dealing with common geriatric issues such as cognitive deficits, medication interactions, or falling. However, nurse care managers are free to enter their own assessment information using free text fields, and to add tasks or problems to the care plan using free text.

They can also use their own assessment or care planning tools in addition to those provided by the software, or to even maintain their own paper or electronic records. The nurse care manager contacts the patient's primary physician to review the care plan, determine his or her preferred methods of communication, and to set or confirm the goals for the physiologic measures, such as blood pressure, cholesterol levels, and weight.

Medical Care Development's guidelines for the MCCD specify that nurse care managers contact patients by telephone at least three to four times within the first month, and monthly thereafter. The software has a task list feature that allows the nurse care managers to set reminders for these contacts. Nurse care managers assess patients' progress toward care plan goals during each contact. During the contact, the nurse care manager performs a brief assessment of patient symptoms using a clinical question set embedded in the software. Using the care plan as a guide, the nurse care manager also provides education during these contacts. Although most contact is by telephone, a few nurse care managers make rare home visits when the patient lives alone, has a complex treatment regimen, or when the nurse care manager feels that the patient's problems are too difficult to handle over the telephone.

Staffing and Management of Program Quality. Effective programs require (1) qualified, well-trained staff; (2) periodic evaluations of staff performance; and (3) collection and use of performance data for quality improvement. MCCD nurse care managers must be registered nurses, nurse practitioners, or physician's assistants licensed in Maine with cardiac care or home care experience. All new nurse care managers undergo basic training on telephonic care management, ME Cares/MCCD, and the disease management software, either through a two-day orientation provided by Medical Care Development and Pfizer Health Solutions, a live web-based training by Pfizer, self-study software, or instruction by a fellow experienced nurse care manager. Medical Care Development also offers additional training on topics such as health counseling skills, clinical cardiology, advanced features of the disease management software, and using Minimum Data Set data for quality improvement, through in-person conferences and web-based trainings. Web-based training has proved popular with the nurse care managers as Maine is a large rural state and travel is difficult, and the lack of money and time for nurse care manager education.

It is noteworthy that although most of the nurse care managers are seasoned nurses, they may have had little specific experience in telephonic care management and health behavioral counseling before starting with the MCCD (although this is also true for a number of other MCCD sites). The introductory trainings and additional trainings may not provide much practical learning in these nurse care management skills, and nurse care managers at smaller hospitals, who may be the only MCCD person, have no opportunity to learn from more experienced nurse care managers.

Nurse care managers' performance is evaluated both by their local hospital supervisors and by Medical Care Development. The program Key Elements require each nurse care manager to meet with her local hospital supervisor on a "regular" basis to discuss program issues, problem cases, care plan development, clinical guidelines, and coordination with physicians, but the

frequency is not specified.[2] The supervisors are also supposed to perform annual evaluations of the nurse care managers. Whether supervisors in each hospital are meeting on a regular basis with the nurse care managers or not is uncertain, as is the content of such meetings or of the annual evaluations.

Medical Care Development staff also evaluate the nurse care managers on the completeness of their Minimum Data Set collection and submissions, and on average frequency of contacts with enrollees. Some of the nurse care managers have not been collecting and submitting Minimum Data Set data, possibly because they lack enough time. Medical Care Development also provides feedback report to the nurse care managers on the frequency of their contacts with enrollees.

Medical Care Development also evaluates the nurse care managers and the hospitals on their patients' improvements in the clinical outcome measures measured in the Minimum Data Set (such as percent prescribed recommended drugs, percent weighing themselves daily, or percent with desirable cholesterol levels). The program recently developed a "Best in Class" report presenting the hospital sites (with identities masked) with the best performance in improving clinical measures compared to their baseline, pre-ME Cares period.

It should be pointed out that since the nurse care managers are not Medical Care Development employees and Medical Care Development has no leverage over their evaluation and performance. The Medical Care Development care coordination supervisor is in frequent e-mail or phone contact with individual nurse care managers and their supervisors, and through "gentle probing" has a good sense of how the nurse care managers are doing. To maintain the nurse care managers' enthusiasm and motivation, she uses a combination of persuasion and "cheerleading," in conjunction with the nurse care managers' innate pride in their performance. She also uses encouraging weekly e-mail updates that contain enrollment figures, answers to frequently asked questions, and care management or software tips, and similar monthly newsletters and conference calls. She has run contests in which nurse care managers e-mail problems and suggestions and become eligible for gift certificate drawings.

Minimum Data Set can also be used to inform nurse care management and quality improvement at all levels of the program. As noted, Medical Care Development produces annual hospital-level reports on the various clinical outcome measures. Nurse care managers have the option of using the software to generate their own patient-, nurse care manager-, and physician-level trend reports. The number of nurse care managers who are actually taking advantage of these features of the software in uncertain, however. If some are generating reports, it is unknown how they are being used, or their usefulness for the nurse care managers and patients' primary physicians.

[2] Recall that the local hospital supervisros are most often hospital employees (usually the nurse care manager's regular supervisors) whose time the hospitals have agreed to provide to serve as supervisors for the ME Cares and MCCD projects. The local hospital supervisors can also be the local medical director or the local community physicians who are willing to take on this role. The key elements are voluntary guidelines the participating hospitals have agreed to abide by.

One potential shortcoming of the quality monitoring reports is that they combine non-MCCD and MCCD patients together into a single ME Cares report. Medicare beneficiaries may respond differently to the intervention than other patients, but without separately reported data for MCCD enrollees, the program cannot tell how they are faring.

Medical Care Development reviews the operational aspects of the MCCD program during weekly staff meetings of the program director and care coordination supervisor. Other members of Medical Care Development's staff, for example, financial officers, attend as needed. In the meetings, staff discuss enrollment, issues around hospital start-up with the MCCD, operational difficulties, financial issues, training and reporting procedures, and hospital-level reports on the outcome measures.

WHO ENROLLS IN THE PROGRAM?

Program enrollment has been much lower than anticipated. After one year of operation, the Medical Care Development MCCD had enrolled 196 patients in both the treatment and control groups. This falls far short of the program's first-year target of 1,048 in treatment and control groups. Staff attribute the enrollment shortfall to underestimation of the nurse care managers' time needed to obtain informed consent for a random assignment study, a higher than expected patient refusal rate (70 percent at one large hospital), restrictiveness of the program's eligibility criteria, and delay in participation by larger hospitals, in part because of review by institutional review boards (IRBs).[3] At some hospitals, startup of the MCCD has also been slowed by lack of physicians support for the MCCD. Physicians support the program intervention itself (that is, the ME Cares program), to the point that some have objected to random assignment of participants to a control group. The slow initial enrollment then made participating hospitals reluctant to allocate additional nurse care manager time to the project, further exacerbating the enrollment difficulties

To estimate the proportion of eligible beneficiaries enrolling in the program and to describe their characteristics, the evaluation simulated Medical Care Development's eligibility criteria using Medicare enrollment and claims data. This simulation showed that during the program's first six months of operation, less than 1 percent of an estimated 11,966 eligible beneficiaries enrolled in the program. This analysis did not distinguish between beneficiaries receiving care from hospitals participating in the demonstration in its first year and other Maine beneficiaries who met the program's clinical criteria. Thus, the number of eligible beneficiaries who might truly have had access to the demonstration is probably smaller. (The time lag associated with processing Medicare claims data precluded the use of a longer reference period for this report.)

Demographically, program participants and eligible nonparticipants were similar, except for age. Participants were less likely to be age 85 or older (16 percent of participants versus 26 percent of nonparticipant) (Table 1). About 40 percent of both participants and nonparticipants

[3] Medical Care Development had originally projected a patient refusal rate of only 50 percent. A 70 percent refusal rate is, in fact, comparable to previous CMS sponsored care coordination demonstrations.

TABLE 1

CHARACTERISTICS OF MCCD PARTICIPANTS AND ELIGIBLE NONPARTICIPANTS
DURING FIRST SIX MONTHS OF PROGRAM INTAKE
(Percent, Except As Noted)

	Participants[a]	Eligible Nonparticipants
Age		
Younger than 65	7.3	7.7
65 to 84	77.3	73.8
85 or older	15.5	26.2
Male	40.9	39.6
Non-White	0.9	0.7
Medicaid Buy-In for Medicare A or B	20.0	26.7
Medical conditions treated in last two years		
Coronary artery disease	82.7	76.2
Congestive heart failure	77.3	98.3
Hospital admission in last year	93.6	59.8
Hospital admission in last month	70.9	9.1
Total Medicare reimbursement per month (dollars)	$1,816	$1,274
Number of beneficiaries	**110**	**10,655**

Source: Medicare Enrollment Database and National Claims History.

[a] Participants who do not meet Medicare requirements for the demonstration or who had invalid Health Insurance Claim (HIC) numbers on MPR's enrollment file are excluded from this table because Medicare service use data were not available for them. Participants who are members of the same household as a research sample member are included.

were males and 99 percent were white. Between one-quarter and one-fifth of both groups were dually eligible for Medicare and Medicaid.

Participants were more likely to be hospitalized and had higher Medicare costs than eligible nonparticipants. Nearly all (94 percent) participants had been hospitalized in the year prior to enrolling, compared to a much lower 60 percent of nonparticipants. In addition, a considerably larger share of participants (71 percent) were hospitalized in the month before intake than nonparticipants (9 percent). As a result, Medicare expenditures during the year prior to enrollment for participants averaged $1,816 per month, compared to $1,274 per month for nonparticipants. (September 15, 2002, the midpoint of the six-month enrollment period for this analysis, was used as a pseudo-enrollment date for nonparticipants.)

When developing the cost estimate for this program's Medicare waiver application, MPR estimated that Medicare costs would average $2,390 per month for control group members during the demonstration period. Actual program enrollees were less costly during the year prior to enrollment, averaging $1,816 per month, despite having met MCD's eligibility criteria. This is likely due to two reasons. First, the waiver assumed that MCD would enroll a mix of 62

percent patients with CHF and 38 percent with CAD. As determined by nurse care managers and patients' physicians, however, the active problem requiring disease management for about 75 percent of enrollees in the first six months was CHF, and eligible CHF beneficiaries had waiver costs that were, on average, about one-fifth lower than costs for eligible CAD beneficiaries (the active problem requiring disease management as determined by the program is different than the diagnoses appearing in claims data over the past two years shown in Table 1).

These differences are not a cause for concern. Second, estimates of waiver costs are based on spending over the year immediately following a hospitalization or ER visit, consistent with Medical Care Development's original intent to enroll patients with recent use of hospital or ER services, whereas the participant costs are measured over the year prior to enrollment. Because the waiver estimates are projected future costs, they include costs associated with deaths, while the participant costs are measured before enrollment, and thus do not include any beneficiaries who died during the period for which costs are measured.

Anecdotally, staff believe that patients are very satisfied with the program. One 79-year-old male CHF patient, for example, sent his nurse care manager anniversary cards with such messages as, "I made it another month. Thank you for keeping me out of the hospital," and, "It's been six months! Thank you! Thank you! Thank you!" (As part of its evaluation, the evaluation contractor is conducting a patient survey which includes measurements of patient satisfaction. The program will not be doing its own survey.) Voluntary disenrollment during the first six months was extremely low. Only one patient disenrolled (neither the patient nor the caregiver wanted to be bothered with the nurse case manager contacts).

TO WHAT EXTENT DOES THE PROGRAM ENGAGE PHYSICIANS?

Medical Care Development's MCCD recognizes that physicians are very busy and thus has limited expectations of them. The program expects physicians to (1) approve patient participation, (2) review patient progress reports and an occasional updated care plan, and (3) respond to nurse care managers' concerns about specific patients.

To engage physicians, the Medical Care Development MCCD promotes itself to physicians as "a program that helps your patients, saves you time, and provides reimbursement for your supervision of care and time on the phone" (Medical Care Development 2004). As mentioned above, the MCCD pays physicians a monthly stipend of $20 per treatment group member to review the patient-monitoring reports and work with the nurse care managers. The program promises physicians help in teaching patients, an extra set of eyes and ears to monitor patients, and concise, useful patient reports. It reassures physicians that they will remain in control of patients' care and work with local nurses they probably already know (as opposed to far away call center nurses characteristic of commercial disease management vendors). Basing the program in local hospitals takes advantage of existing physician-nurse relationships; as physicians make hospital rounds they may run into nurse care managers. Nurse care managers typically will have three or more face-to-face or phone contacts with a primary physician per month about specific patients, depending on patients' problems, and Medical Care Development has held workshops to teach the nurse care managers how to communicate with physicians most effectively. There are still some hospitals, however, where the nurse care managers face barriers

in gaining access to the primary physicians. Primary physicians were not reading the three-page clinical updates from the program, so a number of nurse care managers designed a new one-page update which the primary physicians like much better.

It is not a major focus of the MCCD to change physician practice through systematic education or feeding back data on outcomes, costs, or adherence to practice guidelines. Enrollees' physicians are independent, private physicians in communities with little history of scrutiny of practice patterns; given physicians' previous unhappy experiences with managed care plans' commercial disease management vendors, and the program's limited resources and voluntary nature, efforts to reform physician practice would be difficult. Nurse care managers do, however, make suggestions to physicians for tests and treatments based on evidence-based clinical practice guidelines, on a case-by-case basis.

After a year of operation, staff believe that physicians were highly satisfied with the program, based primarily on anecdotal evidence. The majority of physicians are communicating regularly with the nurse care managers, with the remaining minority unresponsive to nurse care managers' calls. Physicians have actively encouraged their patients to enroll in the program or directly referred patients to the program, even those who clearly are ineligible (physicians may perceive the care coordination programs as all "ME Cares," forgetting that Medicare FFS patients have different eligibility requirements for the MCCD than other potential ME Cares patients). A number of physicians participated in a video to promote ME Cares and the MCCD.

HOW WELL IS THE PROGRAM IMPLEMENTING KEY INTERVENTION APPROACHES?

Improving Patient Adherence. The program views patient education as a key component of the intervention. The disease management software offers a list of several possible educational topics and materials. For CHF, for example, topics include Heart Failure Knowledge, Heart Failure Self-Monitoring, and Nutrition and Diet. After reviewing the results of a patient's question set responses, the nurse care manager may select several topics from the list to add to that patient's care plan. The nurse care managers are free to add other topics they feel are important but are not listed by the software.

Although the disease management software may provide some uniformity across the nurse care managers in the selection of health education topics, there may be considerable variation in how these topics are taught. There is no formal program-wide patient education curriculum to guide the teaching of health topics, and individual nurse care managers design their own approaches to patient education. They can use any learning aids they find helpful, often adapting materials developed or used at their own hospitals. Medical Care Development staff described many of the nurse care managers as quite creative in their approaches to patient education. Medical Care Development has sponsored workshops and trainings on patient education skills. If a patient is not learning, the nurse care manager will identify learning barriers and revise their educational approach, sometimes brainstorming with other nurse care managers and the Medical Care Development care coordination supervisor to devise new strategies. The evaluation's future analyses of patient and physician surveys, and of Medicare claims data will provide evidence on the effectiveness of the nurse care managers' educational approaches. Nurse care

managers also refer patients to local community-based health education resources, such as diabetes education programs, smoking cessation programs, and stress management classes.

Seventy-one percent of the 58 enrollees in Medical Care Development's MCCD in its first six months had one or more contacts that included education on self-care or disease-specific topics. The percentage of enrollees receiving any education contacts may seem relatively low for a program that stresses patient education, but this number may be the result of other factors. The six-month total does not take into account the timing of individual enrollees' entry into the MCCD or their distribution across the participating hospitals. If the enrollees were concentrated at one or a few hospitals, or enrolled toward the end of the six-month period, nurse care managers might not have been able to complete the initial assessments that should precede any education contacts. The nurse care managers also had non-MCCD ME Cares patients to manage, as well as their other non-ME Cares hospital duties. Indeed, only two-thirds of the enrollees in the program's first six months had received an assessment contact even though the patients in this early cohort had been in the program for just under three months, on average.

Improving Communication and Coordination. One approach to improving communication is to empower patients to communicate more effectively with their physicians and to take better charge of their own care. With input from the nurse care managers, for example, Medical Care Development recently developed a small checkbook-sized notebook called the Health Checkbook for nurse care managers to give to enrollees. The Health Checkbook has spaces for patients to record such data as their weight, blood pressure, immunizations, medications, ejection fractions (a cardiac function test), and cholesterol and lipid profile results. Checkbooks can be customized to the preferences of each participating hospital and nurse care manager. The intent of the Health Checkbook is to get patients to take responsibility for asking their physicians for their lab test results and for tracking vital signs, preventive care, medications, and lab results. Nurse care managers might remind patients that certain follow-up care is due, but would expect patients to make arrangements for themselves.

The familiarity of nurse care managers and physicians with each other helps to facilitate communication between them. Nurse care managers regularly communicate with patients' physicians through face to face encounters in the hospital, and by telephone, fax, mail, and hand-delivered notes.

Many nurse care managers also try to strengthen care coordination by visiting patients during hospitalizations and tracking ER visits. They are in fact supposed to record hospitalizations and ER visits as part of the Minimum Data Set. Most find out about these events by checking with their hospital's medical records or utilization review departments and by reviewing inpatient and ER census lists. Nurse care managers have no set protocol or guidelines on how to respond to patients' hospitalizations or ER visits, relying on their assessment of each individual situation and their clinical judgment, performing whatever teaching they feel is needed.

Increasing Access to Services. Increasing access to services is another stated goal of the program. One specific service offered by most of the participating hospitals is cardiac rehabilitation not covered by traditional Medicare. Medicare Part B does cover physician prescribed, monitored cardiac exercise sessions performed in hospital cardiac rehabilitation

departments for CHD patients with an acute myocardial infarction in the past year, stable angina, or coronary artery bypass surgery. It does not, however, cover such services for CHD patients with unstable angina or for CHF patients. Medical Care Development's MCCD will cover cardiac rehabilitation for these two situations (that is, unstable angina and CHF), as long as it is ordered by the primary physician. Since many of the nurse care managers are also cardiac rehab nurses, they can see their patients at these sessions.

Coverage of other non-Medicare covered services varies by the participating hospital and the local community. Some hospital social work and nutrition departments are willing to provide some "free" support to the nurse care managers through consultations and making of referrals. Some hospital community-education programs or community-based organizations will provide free scales for CHF patients to monitor their weight.

The nurse care managers also refer patients to community services as needed. Medical Care Development provided all the nurse care managers with lists of community resources and encouraged them to active in community efforts to expand supportive services. Nurse care managers have referred patients to programs for transportation services, home-delivered meals, assistance with fuel costs, and assistance with prescription drug costs. Nurse care managers report that arranging social support services has been particularly beneficial to isolated, depressed patients.

WHAT WERE ENROLLEES' MEDICARE SERVICE USE AND COSTS?

There are too few enrollees on whom data were available to develop even preliminary estimates of the short-term effect of the Medical Care Development MCCD on Medicare service use and costs (31 treatment patients and 33 control patients during the first four months of intake). Average Medicare reimbursements for the 31 treatment group patients, exclusive of demonstration costs, were $3,314 ($1,657 per month) during the first two months after enrollment. Reimbursement was higher over this period—$5,019 ($2,510 per month) for the 33 control group patients, reflecting the unusually high costs of two patients. The control group mean dropped to $1,478 over the two-month period ($739 per month) when the two patients were excluded.

CONCLUSIONS

Medical Care Development's MCCD has two unique features that affect both the evaluation of the program, and its potential for effectiveness. A discussion of these features and their implications is presented next, followed by consideration of the extent to which the program possesses features that earlier research has shown to be associated with effective care coordination.

First, unlike the other MCCD demonstration awardees who are providing the demonstration intervention themselves, the actual providers of the demonstration services (the voluntary hospital consortium) are one step removed from Medical Care Development, the nominal "host organization." Rather than a single care coordination intervention and its implementation, then,

the evaluation is of a chronic care delivery *model* implemented by a loose-knit voluntary group of hospitals and coordinated by an external organization.

The two-layer structure and voluntary nature of Medical Care Development's MCCD make it difficult to offer definitive statements about the intervention being delivered. Even though the "standard elements of care" to which the participating hospitals agreed do provide some degree of uniformity in the approach each hospital takes to care coordination, there is considerable room for individual hospital and nurse care manager variation. Medical Care Development keeps in close touch with the nurse care managers and has a good idea of what they are doing in general, but still must rely on polls of the nurse care managers to learn the specifics of their approaches. While this variability allows the nurse care managers flexibility in dealing with the unique needs of their individual patients and resources of their hospitals and communities, the variability may make it difficult for the evaluation to thoroughly describe the interventions being delivered in the hospitals, and thus "tease out" the reasons for the program's ultimate success or failure.

Second, unlike most of the other MCCD programs, the demonstration intervention, which is essentially the ongoing ME Cares program applied to Medicare fee-for-service beneficiaries, was not developed specifically for Medicare beneficiaries. The program's disease management software was designed for use with a younger, commercially or Medicaid insured population, and does not address issues of comorbidity, polypharmacy, functional and cognitive impairment, frailty, and social support—all of which tend to assume greater importance among Medicare beneficiaries than among younger patients.[4] As noted, the nurse care managers are free to exercise their clinical judgment and supplement the software with their own documentation and care planning tools or strategies to problems. The nurse care managers have undergone little formal training in care management, however. Time will tell whether their approaches will be able to handle any problems the elderly MCCD beneficiaries present beyond the basic disease management framework of the program, but again, these ad hoc approaches will not be part of the intervention and will be difficult to describe systematically. Medical Care Development's MCCD has a relatively well-developed outcomes reporting and feedback system, but it has not so far examined the experiences of the MCCD enrollees separately, even though there is good reason to suspect that their response to the program may not be the same as other non-elderly ME Cares enrollees.

Medical Care Development's MCCD does appear to have features shown in previous research to be associated with program effectiveness:

- The program has ***targeted and enrolled high-risk patients***, those hospitalized for the high-cost diagnoses of CHF and CHD. The program has indeed enrolled patients with relatively high health care costs in the year prior to enrollment.

[4] Nonetheless, the ME Cares program enrolled an elderly group of patients, even before the MCCD. According to the program, the mean age of enrollees in its own March 2002 analysis of program data was 72, with a median age of 74.

- Using nurse care managers who have worked with patients' physicians before has helped in ***facilitating communication.*** The ease of communication contributes to ***integration of care fragmentation.*** Using nurse care managers who are employees of the local hospitals and residents of the same communities as the enrollees means they are more familiar with and connected to ***community services.***

- The program appears to have the ***active support and involvement of patients' physicians.*** Besides using nurse care managers known to physicians, adding the MCCD to the already existing ME Cares program meant that the concept of care coordination was already familiar to physicians, their office staff, and patients.

- The MCCD offers physicians modest ***financial incentives*** for program participation—the monthly stipends of $20 per treatment group member for time spent working with the nurse care managers and reviewing program information on patients.

The extent to which Medical Care Development's MCCD possesses other features associated with care coordination effectiveness is less clear, however. The relative freedom of the nurse care managers to implement individual approaches to care management, coupled with the lack of systematic, detailed descriptions of these different approaches, makes it difficult to characterize the exact services that participating hospitals and nurse care managers are providing.

- The disease management software's assessments and care plans may not capture problems that may be more prevalent among the elderly MCCD enrollees. The extent to which the nurse care managers are successfully supplementing the software with their own tools to address these problems and create ***assessments, care plans, and monitoring that can be tailored to specific patient needs and updated over time as patient conditions change*** is unknown.

- Compared to some of the other MCCD sites nationwide, the Minimum Data Set of Medical Care Development's MCCD is a relatively sophisticated system to ***provide feedback to program staff*** (nurse care managers). The extent to which the nurse care managers use these results to improve their care management practice is unclear, however. It is also unclear whether and how often the nurse care managers produce ***feedback data for enrollees' physicians*** and, if so, whether these reports are being used. Furthermore, Medical Care Development currently produces no separate reports for the MCCD enrollees

- The nurse care managers are ***providing patient education that combines factual information with help changing behavior and improving self-care skills*** on the basic set of CHD and CHF topics suggested by the software, but nurse care managers may be approaching the education in highly disparate ways. Whether they also teach patients about problems beyond the narrow set of CHD and CHF topics in the software, and how they do this, cannot be ascertained because of the project's two layered structure and the potential for inter-hospital variation in nurse care manager practice.

- Most of the nurse care managers are experienced, registered nurses, but how many are ***experienced care coordinators*** is unclear. It is not known how well trained the nurse care managers become in the special skills needed for care coordination—such as telephonic assessment and monitoring, health behavior modification, use of care management software, and use of feedback data for quality improvement.

Potential barriers to program success. One major potential barrier to program success is the program's reliance on hospitals to provide the labor and resources for the intervention, and the program's resultant vulnerability to hospitals' larger agendas, as evidenced by the competing demands on nurse care managers, and the constant pressure placed on their time allocation for the project. There is also the risk of hospitals choosing to withdraw from the consortium completely. The voluntary nature of the consortium is a major barrier to ensuring fidelity to the intervention across the participating hospitals, and to implementing quality assurance and quality improvement efforts.

Another potential barrier to success is extending an intervention not designed primarily for older participants to elderly Medicare beneficiaries, and the lack of systematic intervention components to deal with the special problems prevalent in elderly patients. Nurses may well be able to handle these problems with their own skill and judgment, but not as part of the intervention, per se.

The potential for interhospital variation may present problems for the evaluation as well. The lack of a relatively uniform intervention for many aspects of care management coupled with the lack of detailed descriptions of individual nurse care managers' approaches may make it difficult to identify program components responsible for the program's success or failure.

Obviously, it is too early, and samples too small, to draw any inferences about program impacts. For all demonstration programs, savings in hospitalizations and other expensive Medicare services will have to be large enough, not only to cover direct program fees, but also any higher Part B expenses incurred as nurse care managers refer treatment group patients for Medicare-covered services that may contribute to better short-term or long-term outcomes for enrollees.

INTRODUCTION

The Medicare Coordinated Care Demonstration, mandated by the Balanced Budget Act of 1997, is testing a range of 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—hosted by organizations as diverse as hospital systems, disease management providers, and retirement communities—are serving patients in 17 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 Medical Care Development's Medicare Coordinated Care Demonstration (MCCD) Project.[2] Medical Care Development, Inc., is a large, nonprofit, health

[1] The CMS Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus is also part of the MPR evaluation. Appendix Table A.1 lists all demonstration programs and locations.

[2] For a more detailed description of Medical Care Development demonstration's implementation plans and early experiences, see Chen (2003).

care organization based in Augusta, Maine. Medical Care Development coordinates the demonstration for the ME Cares Consortium, a voluntary, statewide coalition whose member hospitals are the actual clinical sites for the demonstration. Medical Care Development's MCCD began enrollment in April 2002 and enrolls Medicare beneficiaries with congestive heart failure (CHF) and coronary heart disease (CHD).

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, as well as in-person interviews conducted about six months later. For each program, one of three MPR implementation team members conducted the telephone and in-person interviews using semi-structured protocols covering the following topics: organization and staffing; targeting and patient identification; program goals; care coordination activities (such as assessment, patient education, and service arranging); physician attitudes toward the program and program 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 also allowing the interviewer to explore specific issues of importance to each program. The structure of the protocols will also make more efficient the synthesizing of findings across programs. MPR staff reviewed written materials each program provided, including the program's proposal to CMS, its operational protocol, materials it provided to patients and physicians, and the forms used in its operation. (Appendix Table A.2 contains a complete list of the documents reviewed for this report.) This analysis also includes an examination of data each program collected specifically for the evaluation, describing care coordinator contacts with patients, patient

disenrollment, and any goods and services the program purchased for patients during its first six months of operation.

As will be described in greater detail, Medicare Care Development's MCCD has a unique structure among the 15 demonstration programs, with Medical Care Development staff coordinating the activities of some 30 nurse care managers employed by hospitals throughout the State of Maine. For the six-month in-person interviews, in addition to the Medical Care Development staff, the MPR implementation team interviewed three nurse care managers from three different hospitals. The MPR evaluation team also asked the Medical Care Development staff to solicit from all the nurse care managers across the state examples of when the MCCD appeared to have made a difference in patient or physician satisfaction, or patient outcomes.

Participation Analysis. The evaluation uses Medicare claims and eligibility data to estimate the number of beneficiaries in the Medical Care Development's *s*ervice area who were eligible for the program, as well as the percentage who actually enrolled during the program's first six months of operations. Beneficiaries are identified as eligible if, for any month between April and October 2002, 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). The midpoint of the six-month enrollment period examined in this analysis—July, 15, 2002—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.

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 either receive the program intervention in addition to their regular Medicare benefits or to receive only their regular Medicare benefits as usual. 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 over time.

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 to adjust for any chance baseline differences between the two groups that arose despite random assignment. (Appendix B describes in greater 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 relatively small sample (only patients enrolling during the first four months of program operations). 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 over time as staff gain more experience with the specific 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 over time.

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 period and will include all enrollees enrolled during the program's first 12 months. These analyses will also 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 MEDICAL CARE DEVELOPMENT MCCD

Unlike several of the other programs in the MCCD demonstration, the Medical Care Development MCCD expanded an existing—and ongoing—cardiac disease management program called ME Cares (pronounced "Maine Cares") for enrollees in commercial, Medicare, and Medicaid managed care plans, to include Medicare beneficiaries in the fee-for-service (FFS) program. The report thus begins with a brief history and description of the ME Cares program, then focuses on the MCCD.

The ME Cares Program and Medical Care Development, Inc. By the late 1990s, Maine physicians had become somewhat frustrated by having to deal with multiple disease management programs sponsored by different commercial managed care plans. Around the same time, two

Maine hospitals had, separately, developed apparently successful disease management programs for CHD and CHF. In 1998, a group of state health care leaders, motivated by the success of these two hospitals and by the threat of a multitude of separate health plan-based disease management programs, gathered at a meeting moderated by Medical Care Development, Inc. to study disseminating the successful hospital models statewide. Medical Care Development is a 600-employee, not-for-profit corporation founded in 1966 that plans, develops, and operates health care programs. It collaborates with state agencies, providers, community based organizations, and foundations on initiatives to improve public health in Maine. Representatives of managed care organizations, state agencies, medical societies, and hospital associations also attended this meeting (Wexler et al. 2004).

The meeting eventually resulted in a coalition of hospitals that became ME Cares and which, in early 2000, began implementing CHF and CHD disease management programs *sponsored locally by each participating hospital.* A handful of payers agreed to provide some reimbursement for the services (one commercial managed care plan and the state Medicaid agency), but it was clear that the hospitals would be heavily subsidizing the programs. Participating hospitals were reportedly motivated by "doing the right thing." Participating hospitals were free to choose their own names for the programs ("Healing Hearts," "HeartWarmers," or "The Turning Point," for example) and to offer the programs to any patients they wished to. Some of the larger hospitals, in fact, began providing these services to Medicare FFS beneficiaries despite the lack of coverage under traditional Medicare. As of January 2002, the number of hospitals participating in ME Cares had grown from an original 17 to 32 (about 90 percent of the acute care hospitals in Maine).

A steering committee of representatives from each member hospital was formed to oversee Maine Cares, which then created five workgroups: Clinical Oversight, Evaluation/Quality Improvement, Data Management, Medical Advisory, and Reimbursement.

The Clinical Oversight workgroup and the Steering Committee formulated a set of suggested standards, called "Key Elements" for hospitals wishing to participate in ME Cares (Appendix C). For example, each hospital is to provide nurse care coordinators (called "nurse care managers") who meet certain criteria for training and background, and to appoint a volunteer local practicing physician as the ME Cares medical director. In addition, each hospital is to have its own nurse care manager supervisor, either a senior nurse on the hospital staff or the ME Cares medical director.

Hospital participation in the ME Cares coalition and adherence to the Key Elements are entirely voluntary. Organizational adherence to these standards is reassessed every two years (in part by hospital self-report) and reviewed by the coalition's governing and oversight committees, but there is no independent verifying or enforcing body. For example, the Key Elements suggest the establishment of a hospital advisory committee for ME Cares, which is supposed to consist of the local ME Cares medical director, the nurse care managers, the nurse care manager supervisor, hospital social workers, discharge planners, financial personnel, and information systems personnel. The committee's functions are to develop local policies and procedures, facilitate physician buy-in, determine reporting needs, contribute to quality improvement, participate in program evaluation, review staffing needs, and address any other operational issues. Some, but not all, of the ME Cares hospitals have established such committees.

The ME Cares Steering Committee also selected a common disease management software system for the nurse care managers at all ME Cares participating hospitals to use, Pfizer Health

Solutions' Clinical Management System® (CMS®).[3] The Steering Committee and Medical Care Development specified a uniform set of patient-level data collected in the Pfizer software (which ME Cares calls the Minimum Dataset, or MDS) to be routinely transmitted by the participating hospitals (after deidentification) to a data processing contractor for purposes of program-wide evaluation and quality improvement (Appendix C).

There are two main reasons the ME Cares program is based in local hospitals. First, Medical Care Development and the ME Cares coalition hoped to develop a statewide, yet locally based program to which health insurers would be comfortable delegating disease management responsibilities. ME Cares thus sought within each community a single respected and well-known health care organization with the infrastructure and expertise to deal with multiple types of patients, and local hospitals seemed to best fit that description. Second, a hospital-based program takes advantage of, and builds on, the relationships between hospital nursing staff and local physicians developed after working together for years. Nearly all the ME Cares nurse care managers are long-time hospital employees—cardiac rehabilitation nurses, cardiac care unit nurses, and hospital discharge planners. Given the minimal external funding and reimbursement available to the hospitals, all the nurse care managers are working only part-time on the ME Care project. They are assuming the ME Cares responsibilities in addition to their preexisting responsibilities.

Medical Care Development's Medicare Coordinated Care Demonstration. When CMS issued its solicitation for MCCD sites in July 2000, Medical Care Development staff saw it as a natural opportunity to extend the ME Cares program to Medicare FFS beneficiaries. They saw the goals of the national MCCD to be consonant with ME Cares' missions to improve the quality

[3] The latest version of this product is now marketed by Pfizer Health Solutions as InformaCare®.

and efficiency of chronic illness care, foster the development of community health resources, seek funding for care coordination services, and influence public and private insurer reimbursement policies for such services. Furthermore, selection as a demonstration site would add another source of payment for the program which, despite reimbursements from some insurers, was still heavily dependent for support from participating hospitals.

Given the consortium's voluntary nature, ME Cares hospitals could choose to participate in the MCCD for both CHF and CHD, for one or the other condition only, or not at all. To participate in the MCCD, a ME Cares hospital had to agree not to provide any ME Cares services to Medicare beneficiaries assigned to the control group. For example, a hospital that had already made its ME Cares CHF program available to Medicare FFS beneficiaries and did not want them possibly foregoing the program, might choose to participate only in the CHD portion of the MCCD. By the end of January 2003, about eight months after the MCCD had begun, 16 of the 32 ME Cares hospitals were participating in the MCCD. In May of 2004, 20 hospitals were participating. For a variety of reasons, some of the larger hospitals joined the MCCD late or chose not to participate at all. Reasons included the need for IRB approval, medical staff opposition to denying services to control group members, and hospital financial constraints.

Since Medical Care Development's MCCD arose from—and is embedded within—the larger ME Cares program, the report has thus far been describing ME Cares. The current evaluation is of the MCCD, however; from this point forward, the report will focus discussion on *Medical Care Development's MCCD*, even if many the features of the MCCD under discussion are identical to those of the larger ME Cares program. The reader should keep in mind, though, that the MCCD hospitals and staff and Medical Care Development's MCCD personnel actually are ME Cares organizations and staff who also work with non-Medicare FFS enrollees and who are thus subject to a variety of factors and pressures affecting the larger ME Cares effort.

Furthermore, only 20 of the 32 ME Cares hospitals have agreed to participate in the MCCD, and some hospitals have chosen to participate in the MCCD only for CHF patients, while others participate only for CHD patients, and still others for both types of patients.

The two-tiered structure of ME Cares (and thus its MCCD), unique among the MCCD demonstration sites, limited the ability of the evaluator to learn some features of the intervention with certainty. Many intervention details are up to the discretion of the individual participating hospitals, and, beyond the voluntary review of organizational adherence every two years, Medical Care Development does not frequently track or enforce uniform program implementation at each hospital. The evaluation included only interviews of Medical Care Development staff, and not of staff at all participating hospitals.

A year after the Medical Care Development MCCD began, there were 27 part-time nurse care managers across the hospitals participating in the MCCD (very roughly estimated by the Medical Care Development staff to be 7.9 full-time equivalents). Ultimately, the program anticipates case loads of 40 to 100 patients per full-time equivalent (FTE) nurse care manager (ME Cares and MCCD patients combined), depending on the nurse care manager's mix of CHF and CHD patients. Because CHF patients tend to be older and more fragile than those with CHD, nurse care managers with a larger proportion of CHF patients would have smaller case loads.

Medical Care Development serves multiple central functions for the demonstration. Specific functions include: collection of monthly recruitment and enrollment information from hospitals, submission of claims for demonstration enrollees, payment of monthly demonstration reimbursements to hospitals and primary physicians, collection of disease management data from the hospitals, and provision of aggregate data to the hospitals for feedback and quality improvement. Medical Care Development pays the hospitals $123.83 per enrollee per month,

and enrollees' primary care physicians $20 per enrollee per month. The hospitals are encouraged to pay the local MCCD medical directors $8 per enrollee per month out of the hospitals' monthly payment, but it is unclear how many hospitals are following this recommendation.

Medical Care Development also serves several important general functions for the MCCD. The organization provides formal group training sessions to the nurse care managers on both MCCD logistical matters and clinical disease management topics, as well as providing individual assistance to the nurse care managers on patient recruitment, the disease management software and MDS data collection, quality improvement, and care management issues. Medical Care Development also advocates for the MCCD. With many other pressing matters completely unrelated to the demonstration vying for the attention of the nurse care managers and hospital administrators, the MCCD sometimes "slips off their radar," and Medical Care Development's job is to coax them to attend to it again. Medical Care Development also encourages local hospitals to not reduce the percentage of nurse care managers' time devoted to the project.

Specific Medical Care Development staff working on the MCCD include the program director/medical director, the care coordination supervisor, and financial staff, all of whom are located at Medical Care Development's office in Augusta, Maine. The program director/medical director, who has overall responsibility for the demonstration, works with the local hospital medical directors to educate primary physicians about the project and encourage them to cooperate with the nurse care managers, and works with the care coordination supervisor in supporting and educating the hospital nurse care managers.[4] The full-time care coordination supervisor works directly with the nurse care managers through formal group training sessions,

[4] The program director/medical director left the project in June 2004 and the program has since been directed by Medical Care Development's President, Dr. John LaCasse.

regular telephone conference calls, newsletters, weekly email updates, and individualized assistance.

Primary Approaches. Medical Care Development's MCCD is pursuing three main approaches to improving patient health and reducing health care costs: (1) improving patient adherence to treatment recommendations, (2) improving communication and coordination among patients and physicians, and (3) increasing access to community services and resources.

Target Criteria and Patient Identification. Medical Care Development's MCCD targets Medicare beneficiaries living in Maine with CHD or CHF. Patients with CHD must have been hospitalized within the past 30 days at a participating hospital with a specific CHD diagnosis or procedure code, including acute myocardial infarction, coronary artery bypass graft surgery, percutaneous transluminal coronary angioplasty, stent placement, or atherectomy.[5] Patients with CHF must have had a hospital or emergency room discharge within the past 60 days at a participating hospital with a primary or secondary diagnosis of CHF. Patients with CHF who were discharged in the two years before the hospital began participating in the demonstration are also eligible. As in all 15 demonstration programs, beneficiaries must meet CMS's requirements for the demonstration: (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 excludes those patients who have dementia, have a terminal illness other than CHF or CHD with a life expectancy of less than six months, reside outside of Maine for more than half of the year, participate in any other care coordination program similar to the MCCD, or have end-stage renal disease. Finally, patients' primary care physicians must consent to their participation. (Appendix B contains a more detailed description of Medical Care Development's MCCD eligibility criteria.)

[5] The 30-day requirement was in place for the first 10 months of the demonstration's first year (April 2002 to February 2003); because of slow enrollment, the requirement was changed to 60 days, in order to increase the number of eligible patients.

Nurse care managers primarily identify potential MCCD patients through daily review of their hospital's inpatient or emergency room lists for patients with the appropriate diagnoses. Once the nurse care manager identifies a potentially eligible patient, she checks the patient's hospital record to confirm all eligibility criteria. Since the patient typically is still in the hospital when identified, the nurse care manager explains the program in person and solicits the patient's interest in the program. If the patient is interested, the nurse care manager then asks the patient's physician to approve of the patient's participation. Once the physician consents, the nurse care manager meets with the patient to obtain informed consent. This contact may also include discussion with the patient's family or caregiver if they are available. Patients are usually randomized within 48 hours of giving informed consent.

Medical Care Development's MCCD has identified 90 percent of its enrollees through a review of the inpatient and emergency room lists. At some of the hospitals, physicians and nurse care managers make hospital rounds together, and most of the remaining 10 percent of enrollees have come from physician referrals of patients identified during these rounds. The program also has received a handful of self-referrals, but none of these patients were eligible for the program. Medical Care Development has given each hospital a media release to announce and explain the demonstration to the local community, but does not encourage the hospitals to directly market the program to beneficiaries, given the program's relatively restrictive eligibility criterion of recent hospitalization.

Assessment, Care Planning, and Monitoring. After random assignment of the treatment group members, nurse case managers assess all of them in person. Most assessments begin in the hospital since the majority of patients are identified during a hospitalization, but they can be completed post-discharge during outpatient visits to the hospital or by telephone calls to patients' homes. Nurse care managers follow a series of question sets from the program's disease

management software to ask patients about several areas: the details of the primary illness (CHF or CHD), disease-specific self-care (such as monitoring weight and blood pressure), smoking and alcohol use, diet and exercise, adherence to medications and diet, functioning, mental health, general preventive health, and both disease-specific and general health knowledge (Appendix C). Most of the nurse care managers also gather information from the patient's hospital medical records, including results and dates of tests (such as cardiac function tests or laboratory blood tests). Depending on their hospital, nurse care managers may or may not have access to laptop computers; those who do not record all the assessment information using pen and paper and enter the data into the software later (the disease management software does not interface with any of the hospital or hospital cardiac rehabilitation department software systems).

Other sources of information for the assessment vary by the hospital and the patient's primary physician. At many of the hospitals, the nurse care managers speak with the primary physicians as they makes inpatient rounds and talk to hospital nurses and social workers and to physicians' office staff. Some of the hospitals have hospital-owned physician practices and integrated electronic medical records; for patients of these practices, nurse care managers have access to the entire outpatient record. The program standards also require that nurse care managers confirm patients' medications with the physician.

The program's disease management software appears to have been geared to younger enrollees in commercial health plan-based disease management programs. The software's question sets and care plans are heavily focused on either CHD or CHF, or on such general topics as alcohol use or physical activity. There are no question sets dealing specifically with common comorbidities among the elderly, such as diabetes or chronic lung disease, and no specific modules dealing with such common geriatric issues as cognitive deficits, medication interactions, or falling. Nurse care managers are free to enter their own documentation using

free text fields, however. They can also use their own assessment tools in addition to those provided by the software, or even to maintain their own paper or electronic records. For example, the three nurse care managers interviewed for this report all used additional forms developed at their own hospitals—one uses a social services data form, another a physical assessment intake tool, and the third a form for screening heart and lung patients.

Certain values entered into assessment data will trigger the software to generate "red flags," or recommended actions for the nurse care manager, of varying urgency. For example, entering that the patient is extremely short of breath will trigger a recommendation for emergency care and immediate evaluation, entering an abnormal laboratory test or abnormal blood pressure will trigger a recommendation for same-day assessment for urgent or emergency care, and entering that the patient has gained four pounds while on a submaximum dose of diuretic medication will trigger a recommendation for physician contact for possible authorization of a medication adjustment.

The entire assessment process usually takes about two hours to complete. According to program-wide standards, the entire assessment and care plan should be completed and recorded in the program's disease management software within 30 days of the patient's date of random assignment to the program. The program standards also recommend reassessment of patients' goals at 6 and 12 months, and the Minimum Data Set requires collection of data at these time points as well, but some individual nurse care managers may reassess more frequently. One nurse care manager interviewed reassessed patients at 3, 4, 6, 9, and 12 months, with the six-month assessment a more in-depth one. The other two nurse care managers performed additional reassessments as needed, based on their judgment. Most nurse care managers also reassess patients after "trigger events," such as a hospitalization, an emergency room visit, the

development of acute symptoms (such as shortness of breath or weight gain), a medication adjustment, or abnormal lab results.

Between April and October 2002, the first six months of program operation, 58 patients enrolled and were randomly assigned to Medical Care Development's treatment group (Table 1). Among those patients, 67 percent (39 patients) had at least one contact for assessment. Among those patients contacted for an assessment just under half (46 percent) had their first contact two weeks after random assignment. The delays in starting assessments and the number of enrollees without assessments are due to several factors. First, as mentioned, nurse care managers were dividing their limited time allocation on ME Cares and MCCD between patient recruitment and assessment and care management of enrolled patients, and had numerous other non-ME Cares hospitals duties, as well. Nurse care managers sometimes had difficulty initiating assessments in the hospital because of their own time commitments, patient fatigue, or patients being out of their rooms for tests. Second, the weekly number of enrollees increased sharply starting the last week of September from roughly two per week to five to six per week; thus a number of the patients in Table 1 without assessments had just enrolled toward the end of the observation period. Finally, new enrollees were generally not distributed evenly across all participating hospitals, and periodic concentrations of new enrollees in a few hospitals meant that those nurse care managers had to handle all the initial assessments.

Results from the assessment and the disease management software guide the nurse care manager in developing care plans for patients. As noted, the program expects nurse care managers to complete the care plan within 30 days of randomization. Based on the patient's target condition, the software suggests "care plan actions"—such as clinical guidelines, weight and blood pressure goals, educational topics, recommendations for initial and follow-up contacts, and monitoring frequency—that the nurse care manager can select for inclusion in the care plan

TABLE 1

NURSE CARE MANAGER CONTACTS WITH PATIENTS
DURING FIRST SIX MONTHS

Number of Patients Enrolled[a]	58
Number of Patients with at Least One Nurse Care Manager Contact	51
Total Number of Contacts for All Patients	332
Average Number of Contacts per Patient, Among Those Contacted	6
Number of Nurse Care Managers Contacting Patients	14
Among Those Patients with at Least One Contact:	
Percentage of contacts nurse care manager initiated	99.1
Percentage of contacts in person at patient's residence	0.9
Percentage of contacts in person elsewhere[b]	48.2
Percentage of contacts by telephone	50.9
Of all Patients Enrolled, Percentage with Assessment Contact	67.2
Among Those Patients with an Assessment, Percentage of Patients Whose First Assessment Contact Is:	
Within a week of random assignment	38.5
Between one and two weeks of random assignment	15.4
More than two weeks after random assignment	46.2
Of All Patients Enrolled, Percentage of Patients with Contacts for:	
Routine patient monitoring	37.9
Providing emotional support	50.0
Providing disease-specific or self-care education	70.7
Explaining tests or procedures	32.8
Explaining medications	32.8
Monitoring abnormal results	13.8
Identifying need for non-Medicare service	13.8
Identifying need for Medicare service	29.3
Monitoring services	12.1
Average Number of Patients Contacted per Nurse Care Manager	3.6
Average Number of Patient Contacts per Nurse Care Manager	25.1

Source: Medical Care Development program data received November 2002 and updated July 2003. Covers six-month period beginning April 17, 2002 and ending October 13, 2002.

[a]Number of patients enrolled in the treatment group as of October 13, 2002.

[b]Primarily hospital (see text).

(Appendix C). For educational topics, the software also brings up patient education materials that may be printed. Depending on the action, care plan actions can be assigned to the patient, the nurse care manager, or the physician. A care plan action of keeping a weekly log of weights and blood pressures might be assigned to the patient, for example, while one of instruction in sodium intake might be assigned to the nurse care manager (Appendix C).

The software also has a "tasks" function with which nurse care managers can schedule reminders for themselves, such as for patient or physician contacts, question sets, referrals, and laboratory tests. The software offers predefined tasks, but nurse care managers can create new tasks as well, with free text notes on what issues to address or steps to complete. Care plan actions can be turned into tasks by attaching dates.

As noted earlier, the software's care plan actions focus on CHD and CHF disease management and overlook common geriatric issues. However, the software does allow nurse care managers to add items to the care plan beyond those defined within the software by naming new care plan actions or annotating predefined care plan actions with free text notes. As noted, nurse care managers can also create their own tasks (Appendix C).

The nurse care manager telephones or meets in person with the physician to review the care plan, determine his or her preferred methods of communication, and set goals for physiologic measures such as blood pressure, cholesterol levels, and weight. The nurse care manager then discusses the care plan with the patient and members of the family to reach agreement on the goals. The software can generate care plan and assessment summaries for both patients and primary physicians, and some of the nurse care managers use these.

Medical Care Development's guidelines for the MCCD specify that nurse care managers attempt to contact patients four times within the first month, at a minimum, and monthly thereafter. The frequency of contact, however, can be higher or lower depending on the nurse

care manager's judgment and the patient's clinical status. Nurse care managers can choose to use question sets on symptoms and self-care behaviors suggested by the software for each contact; but the Minimum Data Set requires use of the question sets for the 6- and 12-month contacts. Most contacts are by telephone. Many nurse care managers are also cardiac rehab nurses and will see the MCCD patients receiving cardiac rehab at their scheduled sessions in the hospital's cardiac rehab department. A few nurse care managers choose to make rare home visits; but these are difficult, given Maine's rural nature and the time required, and the nurse care managers generally make them only for patients with complex problems who live without caregiver support and whose problems the nurse care manager feels unable to handle over the telephone.

Of the 58 patients enrolled during the first six months of operation, 51 patients had at least one contact with a case manager (Table 1). These patients averaged more than 6 contacts during this period. Nurse care managers initiated almost all contacts (99 percent). About half were conducted in the hospital as part of the assessment process (48 percent) and half by telephone (51 percent). Only 38 percent of enrollees had a contact for routine monitoring during the period, but half had a contact in which they received emotional support.

Staffing and Management of Program Quality. Effective programs require (1) qualified, well-trained staff; (2) periodic evaluations of staff performance, and (3) collection and use of program-level performance data for program management and quality improvement. ME Cares nurse care managers must be registered nurses, nurse practitioners, or physician's assistants licensed in Maine with cardiac care or home care experience. Experience with care management and comfort with computers are desirable but not required. Training in monitored exercise is also necessary for nurse case managers at hospitals that offer monitored exercise as part of the MCCD.

Training for the nurse care managers includes a basic introduction to telephonic care management, ME Cares/MCCD, and the disease management software; and more advanced sessions on a wide variety of topics. The latter have been on such subjects as counseling for health behavior modification, diabetes and heart disease, depression in heart disease, advanced features of the disease management software, and submitting clean Minimum Data Set data and using outcomes data for quality improvement (see Appendix C for a list of the trainings that have been held).

For the introductory training, many of the nurse care managers attended two day training sessions sponsored by Medical Care Development and Pfizer Health Solutions. These sessions introduced the nurse care managers to the concept of telephonic care management, provided a clinical review of CHD and CHF, and showed the nurse care managers how to use the disease management software and collect the Minimum Data Set (Appendix C). A few of the more recent nurse care managers may have received some of their introductory training through self-study software, and at the larger hospitals, on the job from experienced predecessor nurse care managers.

Medical Care Development and Pfizer Health Solutions have recently started furnishing some trainings through web-based software that allows the nurse care managers to view a presenter's computer screen on their own computers while listening to the presenter on the phone. These web-based distance trainings have proven extremely popular with the nurse care managers, since travel in Maine can be difficult, and there are no educational funds for the nurse care managers' to attend in-person training. Most of the web-based training has been on the disease management software or the Minimum Data Set, since the web-training software lends itself well to instruction on computer topics, although the web-training software also permits

remote audiences to view PowerPoint slides while listening to a lecturer, and a web session on a clinical topic that Medical Care Development recently tried went well.

Many of the workshops and trainings have been traditional in-person conferences, however, with attendance ranging from 10 to 77.[6] Medical Care Development organizes two in-person meetings per year for the nurse care managers to get together and share educational resources and care management techniques. Several of the participating hospitals only have one nurse care manager, and these meetings help nurse care managers overcome isolation and learn from their peers. As mentioned, nurse care managers must use their own time and personal funds to travel to the meetings.

It is noteworthy that although most of the nurse care managers are seasoned nurses, they may have had little specific experience in telephonic care management and health behavioral counseling before starting with the MCCD. The introductory trainings and additional trainings may not provide much practical learning in these nurse care management skills, and nurse care managers at smaller hospitals, who may be the only MCCD person, have no opportunity to learn from more experienced nurse care managers.

MCCD nurse care manager performance is evaluated both by their local hospital supervisors and by Medical Care Development staff. The program Key Elements require that nurse care managers meet with their local hospital supervisor on a "regular basis" to discuss program issues, problem cases, care plan development, and coordination with primary physicians, but the frequency of meetings is not further specified. In addition, local supervisors are supposed to conduct annual evaluations of the nurse care managers. Because the frequency with which the 20 local hospital supervisors meet is up to each individual hospital, and Medical Care

[6] Medical Care Development provided figures for total attendance at trainings, but not all attendees were nurse care managers. It is uncertain exactly how many nurse care managers have received which trainings.

Development does not systematically collect this information, the actual timing of these meetings is uncertain, as is the content of these periodic meetings and of the annual evaluations.

Medical Care Development evaluates the nurse care managers on the completeness of their Minimum Data Set collection and submissions, and on average frequency of contacts with enrollees. A recently published description of the ME Cares experience notes that the nurse care managers often fail to collect complete Minimum Data Set data (Wexler et al. 2004). The article suggests that nurse care managers face too many competing responsibilities with too little time in which to record and enter data. Medical Care Development also provides feedback to the nurse care managers on the frequency of their contacts with enrollees. A recent report to the hospitals showed, at the hospital level (with hospital identities concealed), average numbers of contacts per month for all enrollees, and average numbers of contacts per month for enrollees with any contacts (Appendix C).

Medical Care Development also evaluates the nurse care managers and hospitals through annual reports on patient clinical outcomes in the Minimum Data Set, aggregated to the hospital level. Medical Care Development recently circulated one such report to the nurse care managers and hospitals, a "Best in Class" report. With individual hospital identities concealed, this report showed the largest hospital-level improvements in clinical measures, compared to the pre-ME Cares baseline. For example, at one high-performing hospital, the percentage of heart failure patients prescribed beta blocker medications in the post-ME Cares period had increased to 77 percent, compared to only 37 percent of patients at baseline. The report also presented highest absolute rates for the various clinical outcomes (for example, three hospitals achieved 100 percent of CHF patients performing self-monitoring of weight in the post-ME Cares period). Appendix C contains copies of the Nurse/Patient Contact and "Best in Class" reports.

Finally, the annual program level data are reviewed by various ME Cares governing and oversight committees. The committees use the data to improve training, revise the Minimum Data Set, and develop new tools or features for the intervention.

Medical Care Development's "evaluations" of nurse care managers are different from typical annual evaluations of a staff member. The nurse care managers are not Medical Care Development employees, and Medical Care Development has no real leverage over their behavior. The Medical Care Development care coordination supervisor is in email or telephone contact with each nurse care manager and local hospital supervisor at least once every week or every two weeks. Through gently probing questions, she feels she has a very good sense of the nurse care managers' performance.

To maintain the nurse care managers' enthusiasm and motivation, the Medical Care Development care coordination supervisor has had to rely on a combination of persuasion and "cheerleading," and on the nurse care managers' innate pride in their performance. The supervisor has also implemented a variety of creative activities to keep the nurse care managers engaged. For example, she emails weekly encouraging updates to the nurse care managers with enrollment figures, answers to frequently asked questions and care management or software tips, and has circulated a monthly newsletter and held monthly conference calls. She has run contests in which nurse care managers email in barriers to recruitment and care management along with possible solutions, and each nurse care manager submitting a response is entered into a drawing for a $50 L.L. Bean gift certificate.

Minimum Data Set data can also be used to inform nurse care management and quality improvement at all different levels. As mentioned, there are annual hospital-level reports, and data are further aggregated annually to program-level results. The disease management software also offers the nurse care managers the capability of generating a variety of reports on their own

patients, and on individual physicians. These reports include values of individual responses to the question sets (such as self-care knowledge or symptoms), summed scores for multi-question functional status scales, and trend graphs of such physiologic values as blood pressure and cholesterol levels. The software can also create, on individual patients, "Physician Update Reports" that summarize the most recent clinical information and list the care plan goals, and can aggregate patient-level data up to the physician-level to produce, for example, the percentage of a physician's CHF patients taking a beta blocker. However, the number of nurse care managers actually taking advantage of these features of the software is uncertain. If some of the nurse care managers are indeed generating such reports, it is unknown whether or how they are being used, and what effect, if any, they are having on either the nurse care managers themselves or patients' primary physicians.

A potential shortcoming of all these outcomes reports is that there are no separate reports for MCCD enrollees. Data for MCCD enrollees and non-MCCD patients are pooled together into combined ME Cares reports. MCCD enrollees may respond differently to the intervention than non-MCCD enrollees, but without separately reported results for MCCD enrollees, the program cannot tell how they are faring.

Medical Care Development reviews the operational performance of the MCCD program at weekly staff meetings of the program director and care coordination supervisor. Other members of Medical Care Development's staff (for example, financial staff) may occasionally attend as well. At these meetings, staff discuss enrollment, issues pertaining to hospital start-up or operational difficulties, financial issues, and training and reporting procedures. Minutes of these meetings are formally documented. Medical Care Development also sends each hospital a tabular update every two weeks that includes—for example, numbers of enrollees, enrollment

and care management barriers reported by the nurse care manager, and concerns about the nurse care managers' MCCD time allocation.

WHO ENROLLS IN THE PROGRAM?

Program enrollment has been much lower than anticipated. Staff attribute the enrollment shortfall to underestimation of the nurse care managers' time needed for enrollment, a high patient refusal rate, restrictiveness of the program's eligibility criteria, and lack of participation by larger hospitals. As detailed below, Medical Care Development's MCCD appears to have enrolled patients with the desired rate of prior hospitalization, but whose care is nevertheless not quite as expensive as assumed in the program's demonstration waiver application. Staff report that patients are satisfied with the program; program data show only one voluntary disenrollment among the 58 enrollees during its first six months.

Enrollment After One Year. After one year of operation, the Medical Care Development MCCD had enrolled 196 patients in both the treatment and control groups (MPR weekly enrollment report, week ending April 20, 2003). This falls far short of the program's first-year target of between 488 and 610 beneficiaries in the treatment group.

Staff reported that actual enrollment fell short of program expectations for several reasons. First, the program underestimated the time and effort that case-finding would take nurse care managers—reviewing patient records, getting physician approval, explaining random assignment, and obtaining informed consent all took far more time than anticipated. Nurse care managers' "regular" (non-MCCD/non-ME Cares) work has increased, on average, due to hospital cutbacks, and the amount of their time allocated to ME Cares and the MCCD has in general been reduced, with their time for conducting program enrollment being quite limited.

A second factor involved in the program's low enrollment is the patient consent rate. Medical Care Development anticipated about 50 percent of patients approached would consent to

be randomized, but the actual rate appears to be much lower. One of the larger participating hospitals reported its participation rate at 30 percent (which, in fact, is comparable to those of other demonstration programs). Other participating hospitals did not have the resources to track their participation rates.

A third factor reported by staff was that the program's original target of a 30-day window for hospitalization was too narrow for the nurse care managers at tertiary care hospitals participating in the MCCD to catch CHD patients transferred in from smaller hospitals for cardiac procedures. These patients would initially be admitted to a local hospital and stabilized, transferred to the tertiary care hospital for a procedure, and then, once stable, transferred back to the referring hospital. Ten months after the demonstration started, Medical Care Development expanded the window to 60 days and instituted a two-year retrospective "look-back" at patients who had been discharged from participating hospitals. These two changes have helped boost enrollment modestly.

Finally, only the relatively smaller ME Cares hospitals initially agreed to participate in the MCCD. The program's smaller hospitals discharged about 75 eligible patients a month on average, whereas the larger hospitals averaged a combined 360 eligible patients a month. There was delayed startup among the larger hospitals early on, in part because the MCCD had to be reviewed by the hospitals' institutional review boards. In addition, some of the larger hospitals were already offering ME Cares services to Medicare FFS beneficiaries, and nurses and physicians, already convinced of the program's efficacy, were reluctant to allow random assignment because they did not wish any patients to be denied the program. The entry of the larger hospitals into the demonstration also helped enrollment.

Percent of Eligible Beneficiaries Participating. To estimate the size of the eligible population and the percent who chose to participate, the evaluation simulated the program's

eligibility criteria using Medicare enrollment and claims data. (Appendix B contains a detailed description of the simulation.) This simulation identified 11,966 beneficiaries eligible for the program between April and October 2002, the program's first six months of operation. That is, they met CMS's three criteria for all demonstration programs, lived in the program's service area, and met the program's clinical eligibility criteria.[7] During the same six months, 86 "eligible" beneficiaries enrolled in the demonstration (about 0.7 percent of the 11,966 eligible beneficiaries).[8] (See Tables B.2 and B.3.)

Comparison of Participants and Nonparticipants. Program participants differed from eligible nonparticipants in terms of age but otherwise were demographically similar (Table 2). Compared to eligible nonparticipants, more program participants were in the 65-to-74-age category (45 versus 26 percent) and fewer in the age 85 or older category (16 versus 26 percent), and program participants' mean age was 3 years less than eligible nonparticipants' (75, as compared with 78). Among both groups, about 40 percent were male, and almost all (99 percent) were white. About a quarter to a fifth of both groups were dually eligible for Medicare and Medicaid, and similar proportions were originally entitled to Medicare due to disability or ESRD.

[7]Between April and October 2002, 219,696 beneficiaries were living in the State of Maine. Of those, 20,495 (9 percent) would have been ineligible because they did not meet one of CMS's demonstration-wide criteria. Of the remaining 199,201 beneficiaries who met the insurance criteria, 11,966 (6 percent) also met the program's diagnostic and service use criteria 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 2).

[8]In fact, 115 beneficiaries actually enrolled in the program during its first six months. When estimating the participation rate, the evaluation excluded enrollees with invalid Health Insurance Claim (HIC) numbers on MPR's enrollment file, as well as those who did not meet CMS's demonstration-wide criteria or who did not meet the program's geographic or clinical criteria (as measured using Medicare data). So that the same definition of eligibility was used for the numerator and denominator of the ratio, these enrollees were excluded from the participation analysis. (Beneficiaries with invalid HIC numbers may well be eligible, but the beneficiaries' Medicare data could not be obtained to assess that, so they were excluded. HIC numbers for them have since been corrected.). This leaves 86 known *eligible* participants. Most of the reduction was due to beneficiaries meeting one of the exclusion criteria according to the Medicare data. The comparison of participants to eligible nonparticipants in Table 2, however, excludes only participants with invalid HIC numbers and those who did not meet CMS's demonstration-wide requirements, leaving 110 participants. Thus, the comparison more closely reflects differences between all actual participants and those who were eligible to participate but did not.

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)	74.8	77.9	***
Younger than 65	7.3	7.7	
65 to 74	44.6	25.9	***
75 to 84	32.7	40.2	
85 or older	15.5	26.2	**
Male	40.9	39.6	
Nonwhite	0.9	0.7	
Original Reason for Medicare: Disabled or ESRD	25.5	20.2	
State Buy-In for Medicare Part A or B	20.0	26.7	
Newly Eligible for Medicare (Eligible Less than Six Months)	0.0	0.0	
Enrolled in Fee-for-Service Medicare Six or More Months During Two Years Before Intake	100.0	100.0	
Medical Conditions Treated During Two Years Before Month of Intake[b]			
Coronary artery disease	82.7	76.2	
Congestive heart failure	77.3	98.3	***
Stroke	25.5	30.2	
Diabetes	51.8	43.9	*
Cancer	20.0	14.3	*
Chronic obstructive pulmonary disease	55.5	56.8	
Dementia (including Alzheimer's disease)	0.0	4.2	**
Peripheral vascular disease	20.9	19.8	
Renal disease	17.3	16.8	
Total Number of Diagnoses (number)	3.5	3.6	
Days Between Last Hospital Admission and Intake Date[b]			
0 to 30	70.9	9.1	***
31 to 60	9.1	7.0	
61 to 180	10.9	22.5	***
181 to 365	2.7	21.2	***
366 to 730	1.8	24.8	***
No hospitalization in past two years	4.6	15.4	***
Annualized Number of Hospitalizations During Two Years Before Month of Intake[b,c]			
0	23.6	16.1	**
0.1 to 1.0	38.2	49.2	**
1.1 to 2.0	15.5	21.9	
2.1 to 3.0	11.8	8.2	
3.1 or more	10.9	4.7	***

TABLE 2 *(continued)*

	Demonstration Participants (Treatments and Controls)[a]	Eligible Nonparticipants
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]		
Part A	$1,298	$877 ***
Part B	$518	$397 ***
Total	$1,816	$1,274 ***
Distribution of Total Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]		
$0	0.0	0.2
$1 to 500	13.6	42.2 ***
$501 to 1,000	26.4	18.3 **
$1,001 to 2,000	30.9	18.2 ***
More than $2,000	29.1	21.1 **
Number of Beneficiaries	**110**	**10,655**

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 July 15, 2002, the midpoint of the six-month enrollment period examined.

[a]Participants who do not meet Medicare coverage and payer 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.

[c]Calculated as 12 × (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 × 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 × 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.

The proportions of participants and eligible nonparticipants treated for certain diagnoses in the two years before intake were different. For example, fewer participants than nonparticipants had been treated for CHF, one of Medical Care Development's target diagnoses (77 versus 98 percent). However, similar proportions of participants and nonparticipants had been treated for coronary heart disease (roughly 80 percent), Medical Care Development's other target diagnosis. Substantial proportions of both groups had been treated for diabetes, COPD, stroke, and cancer.

During the year prior to enrollment, 94 percent of participants had a hospitalization, and participants had monthly Medicare reimbursements of $1,816. Substantially fewer eligible nonparticipants than participants had a hospitalization (60 percent). In addition, fewer nonparticipants had a hospitalization in the month before intake (9 versus 71 percent).[9] As a result, monthly Medicare spending was also lower for nonparticipants ($1,274).

In developing the cost estimate for Medical Care Development's waiver application, MPR estimated that Medicare reimbursements would average $2,390 per month for eligible beneficiaries who did not participate in the program. Actual program enrollees had substantially lower costs during the year prior to enrollment ($1,816 per month, as noted above), despite their having the target diagnoses and service use criteria.[10] The difference between the actual costs of the enrollees and the waiver estimates appears to be due to two reasons. First, the waiver calculations assumed a case mix of 62 percent CHF patients and 38 percent CHD patients. However, the mix of enrollees' diagnoses as determined by the program at the time of randomization was about 75 percent CHF patients and 25 percent CHD patients, and waiver

[9] We use July 2002 as the comparison month for nonparticipants because it is the midpoint of the six-month intake period we examine.

[10] The costs of the 86 participants who met all the eligibility criteria (according to claims data) are comparable to 110 patients with data.

costs for eligible CHF beneficiaries averaged about one-fifth lower than costs for eligible CHD beneficiaries.[11]

Second, the waiver cost estimates were based on spending over the year immediately *following* a hospitalization (to reflect Medical Care Development's original plan to enroll patients within 30 days of admission), whereas the participant costs are measured over the year prior to enrollment. The average Medicare costs for a patient during the first few months immediately after a hospitalization are substantially greater than those later in the year, due to complications and readmissions. This difference in timing leads to waiver cost estimates that exceed the actual preenrollment costs of patients who enrolled. Furthermore, because the waiver cost follows people prospectively, it includes costs associated with deaths, while the participant costs are measured before enrollment and thus do not include any beneficiaries who died during the interval over which costs were measured. Costs for beneficiaries who die, during the period leading up to death, typically are far greater than those for other beneficiaries.

Satisfaction and Voluntary Disenrollment. The program assumes that patients with CHD will stay in the program for one year because most patients can learn to bring under control their CHD risk factors (for example, weight, smoking, and cholesterol) and have their CHD symptoms stabilized within that period of time. In contrast, CHF patients are expected to stay for the duration of the demonstration, since CHF frequently is a progressive illness that is difficult to stabilize completely.

Among the 58 patients enrolled in the Medical Care Development MCCD over the first six months of operation, half were enrolled 10 weeks or less (Table 3). Only one patient voluntarily

[11] At the time of a patient's random assignment, the nurse care managers and the patient's primary physician determined the diagnosis for which the patient would receive disease management, either CHF or CHD. The mix of diagnoses among enrollees determined by the program thus differs from the mix of medical conditions appearing in Medicare claims shown in Table 2.

TABLE 3

DISENROLLMENT FOR PATIENTS ENROLLED DURING FIRST SIX MONTHS

Number of Patients Enrolled[a]	58
Length of Enrollment as of October 13, 2002 (Percentage of Patients Enrolled)	
10 weeks or less	50.0
11 to 20 weeks	27.6
21 or more weeks	22.4
Mean Length of Enrollment (Weeks)	11.2
Number of Patients Who Disenrolled	4
Number Who Disenrolled Because:	
Patient died	2
Patient lost program eligibility[b]	1
Patient initiated disenrollment	1
Number Disenrolling:	
Within a week of random assignment	0
Between 1 and 4 weeks	1
Between 5 and 12 weeks	1
More than 12 weeks	2

Source: Medical Care Development program data received November 2002 and updated July 2003. Covers six-month period beginning April 17, 2002 and ending October 13, 2002.

[a]Number of patients ever enrolled in the treatment group through October 13, 2002.

[b]Patients can lose program eligibility for the following reasons: joined a managed care plan; returned to employment that included health insurance so Medicare no longer primary payer; developed end-stage renal disease, dementia, or a terminal disease with a life expectancy of less than six months; moved out of the program's service area; or patient's physician disapproves participation.

disenrolled, because neither the patient nor the caregiver "wished to be bothered with phone contact." Another two patients died, and one patient lost program eligibility.

Anecdotally, staff believe that patients are very satisfied with the program. One 79 year-old male CHF patient, for example, sent his nurse care manager anniversary cards with such messages as, "I made it another month. Thank you for keeping me out of the hospital," and, "It's been six months! Thank you! Thank you! Thank you!" The program has no plans, however, to conduct a patient satisfaction survey.

TO WHAT EXTENT DOES THE PROGRAM ENGAGE PHYSICIANS?

Physician engagement is an important feature of successful care coordination programs (Schore et al. 1999; Chen et al. 2000).

Relationship Between Physicians and Nurse Care Managers. Medical Care Development's MCCD knows that physicians are very busy and thus has limited expectations of them. The program expects that physicians will approve patient participation, answer nurse care managers requests for patient information, meet with nurse care managers to review care plans and set care plan goals, review patient progress reports, and respond to nurse care managers' concerns about specific patients' conditions and problems.

To engage physicians, the Medical Care Development MCCD promotes itself to physicians as "a program that helps your patients, saves you time, and provides reimbursement for your supervision of care and time on the phone" (Medical Care Development 2004). As mentioned above, the MCCD pays physicians a monthly stipend of $20 per treatment group member to review the patient-monitoring reports and work with the nurse care managers. The program promises physicians help in teaching patients, an extra set of eyes and ears to monitor patients, and concise useful patient reports. The program also reassures physicians that they will remain

in control of patients' care and work with local nurses they probably already know (as opposed to faraway call center nurses characteristic of commercial disease management vendors).

Basing the program in local hospitals takes advantage of existing physician-nurse relationships; as physicians make hospital rounds they will run into nurse care managers. In one hospital, the nurse care managers make rounds every day with the physicians, and in another small hospital, the nurse care manager regularly walks over to the main internal medicine practice attached to the hospital to speak with office staff or to check records. Although frequency of contact between nurse care managers and physicians varies from hospital to hospital, nurse care managers typically will have three or more face-to-face or phone contacts with a primary physician per month about specific patients, depending on patients' problems. Medical Care Development has held workshops to teach the nurse care managers how to communicate with physicians most effectively. One of the nurse care managers relayed a story about a patient with CHD in whom the nurse care manager detected severe depression, which had caused the patient to discontinue all of her medications. The nurse care manager and the patient's primary care physician collaborated to get the patient's depression treated, and the primary care physician was very grateful for the nurse care manager's input and help.

Easy and open communication between nurse care managers and physicians is apparently not the rule across all hospitals, however. At some hospitals, the hospital-based nurse care managers reportedly have faced significant barriers in gaining access to the community physicians (Wexler et al. 2004).

Some of the nurse care managers have tried sending the physicians the "physician update reports" that the program's disease management software generates. These three- to six-page updates summarize all of the considerable data in the software—patients' problems, medications, comorbidities, knowledge levels, adherence assessments, laboratory values, functional status,

vital signs, health care utilization, care plan goals, health behaviors. Primary physicians found these updates overly long and of little use, so a number of nurse care managers designed a new one-page update that the primary physicians like much better (Appendix C). It is unclear, however, how many of the nurse care managers are sending physicians any sort of regular update reports, and at what frequency.

After one year of operation, the Medical Care Development staff believe that physicians are highly satisfied with the program. Although the program has not surveyed physicians about their satisfaction with the program, staff provide anecdotal evidence. Reportedly, more than 80 percent of physicians are regularly communicating with the nurse care managers, with the remaining minority unresponsive to nurse care managers' calls. Physicians have actively encouraged their patients to enroll in the program or have directly referred patients to the program, even those who clearly are ineligible (physicians may perceive the care coordination programs as all "ME Cares," forgetting that Medicare FFS patients have different eligibility requirements for the MCCD than other potential ME Cares patients). Part of the delay in larger hospitals joining the MCCD was due to physicians' hesitation in agreeing to random assignment, in which control patients would not receive services the physicians believed to be beneficial. A number of physicians participated in a video to promote ME Cares and the MCCD.

Improving Practice. It is not a major focus of Medical Care Development's MCCD to change physician practice through systematic educational programs or feeding back data on outcomes, costs, or adherence to practice guidelines. Enrollees' physicians are independent, private physicians in communities with little history of scrutiny of practice patterns, and given physicians' previous unhappy experiences with managed care plans' disease management programs, and the program's limited resources and voluntary nature, efforts to effect wholesale changes in physician practice would be difficult. Nurse care managers do, however, make

suggestions to physicians for tests and treatments based on evidence-based clinical practice guidelines, on a case-by-case basis.

HOW WELL IS THE PROGRAM IMPLEMENTING KEY INTERVENTION APPROACHES?

The program emphasizes patient education (improving patient adherence to treatment recommendations), improving communication and coordination, and increasing access to services. The approach of Medical Care Development's MCCD to each of these care coordination components is discussed further below.

Improving Patient Adherence. The disease management software offers a list of several possible educational topics. For CHF, for example, topics include Heart Failure Knowledge, Heart Failure Self-Monitoring, and Nutrition and Diet. After reviewing the results of a patient's question set responses, the nurse care manager may select several topics from the list to include as care plan actions in the patient's care plan. Assessments of the patient's "readiness to change" (a concept from Prochaska's Stages of Change model of health behavior) are also among the list of potential care plan actions. The nurse care managers are free to add other topics they feel are important but are not listed by the software.

Although the disease management software may provide some uniformity across the nurse care managers in the selection of health educational topics, there may be considerable variation in how these topics are taught. There is no formal program-wide curriculum to guide the teaching of health topics; individual nurse care managers design their own approaches to patient education. They can use any learning aids they find helpful, often adapting materials developed or used at their own hospitals. Medical Care Development staff described many of the nurse care managers as quite creative in their approaches to patient education. Medical Care Development has sponsored workshops and trainings on patient education skills.

For topics listed by the disease management software, nurse care managers can reassess patients' understanding by repeating the original knowledge questions. Some of the nurse care managers have created their own knowledge assessments as well. If a patient is not learning, the nurse care manager will identify learning barriers and revise her educational approach, sometimes brainstorming with nurse care managers at other hospitals and with the Medical Care Development care coordination supervisor to devise new strategies. Whether patients are actually taking in educational messages and changing their behavior across all the MCCD hospital sites will be more evident from the evaluation's analyses of patient and physician surveys and of Medicare claims data.

Since many patients with heart disease also have diabetes, nurse care managers frequently refer patients to the local Ambulatory Diabetes Education and Follow-Up Program (a community initiative funded by the Centers for Disease Control and Prevention). The program also refers patients to dietitians or community education resources, such as smoking cessation programs and stress management classes.

The nurse care managers also help patients overcome other barriers besides those related to lack of knowledge. One of the nurse care managers submitted an anecdote about a patient with poor medication compliance. After further investigation, the nurse care manager discovered that the patient was worried about the cost of the medications, so the nurse care manager arranged for his cardiologist's office to provide him with free medication samples. Often the nurse care managers, residents of the same communities as their patients, can direct patients to specific items on the menus of local restaurants that are heart healthy or have lower sodium content, or to good places to walk for exercise.

Among the 58 patients enrolled in Medical Care Development's MCCD during its first six months, the majority (71 percent) had received at least one contact for self-care or disease-

specific education of patients (Table 1). Less than 100 percent of enrollees received education because, as discussed above, not all of them had received initial assessments by the cutoff date of the data presented in Table 1. A third of the patients enrolled had at least one contact during which the nurse care manager explained medications, and a third had at least one contact during which the nurse care manager explained tests or procedures.

Improving Communication and Coordination. One approach to improving communication is to empower patients themselves to communicate more effectively with their physicians and to take better charge of their own care. Nurse care managers remind patients of issues they need to discuss with their physician during the patients' next office visit. With input from the nurse care managers, Medical Care Development recently developed a small checkbook-sized notebook called the Health Checkbook for nurse care managers to give to enrollees (Appendix C). The Health Checkbook has spaces for patients to record such data as their weight, blood pressure, immunizations, medications, ejection fractions (a cardiac function test), and cholesterol and lipid profile results. The checkbooks can be customized to the preferences of each participating hospital and nurse care manager. The intent of the Health Checkbook is to get patients to take responsibility for asking their physicians for their lab test results and for tracking their own health information. Nurse care managers might remind patients of follow-up care being due, but would expect patients to make arrangements for themselves.

The familiarity of nurse care managers and physicians with each other described earlier also helps strengthen communication and coordination between them. Nurse care managers communicate regularly with patients' physicians through in-person encounters in the hospital and through telephone calls, or via faxed, mailed, or hand-delivered notes.

To strengthen care coordination, many nurse care managers will visit patients during hospitalizations to find out what happened and to perform whatever teaching they feel is needed. The nurse care managers learn about patients' hospital admissions and ER visits because they are supposed to track these events in the Minimum Data Set, which most do by checking with their hospital's medical records or utilization review departments, or by reviewing inpatient and ER Census lists. Nurse care managers have no set protocol or guidelines for responding to patients' hospitalizations or ER visits, relying on their clinical judgment of each individual situation.

Increasing Access to Services. Increased access to community services and resources is another stated goal of the program. A specific service offered at most of the hospitals is cardiac rehabilitation not covered by traditional Medicare. Medicare Part B does cover physician prescribed, monitored cardiac exercise sessions performed in hospital cardiac rehabilitation departments for CHD patients with an acute myocardial infarction in the past year, stable angina, or coronary artery bypass surgery. It does not, however, cover such services for CHD patients with unstable angina or for CHF patients. Medical Care Development's MCCD will cover cardiac rehabilitation for these two situations (that is, unstable angina and CHF), as long as it is ordered by the primary physician. Since many of the nurse care managers are cardiac rehab nurses as well, they can see their patients at these sessions.

Coverage of other non-Medicare services varies by participating hospital and local community. Some hospital social work departments are willing to provide "free" support to the nurse care managers through consultations and making of referrals. Similarly, some hospital dietitians are willing to provide services to MCCD patients. Some hospitals have community education programs that will provide free scales for CHF patients to monitor their weight, or there may be community-based organizations that provide scales. After working with its MCCD enrollees for awhile, one small hospital even developed two health education programs—Cardiac

Yoga and Stretching, and Balance—targeted to frail, elderly patients recently discharged for CHF. All elderly residents in the community are welcome, and the classes are free. Participants reported benefits from these classes such as the increased ability to turn their heads while driving and overall increased flexibility.

Nurse care managers also refer patients to community services as needed. Medical Care Development provided all the nurse care managers with lists of community resources and encouraged them to be active in their local communities and community coalitions, both to be aware of the available resources and to advocate for an increased supply of community resources. Nurse care managers have referred patients to programs for transportation services, home-delivered meals, assistance with fuel costs, and assistance with prescription drug costs. Nurse care manager referrals to other resources such as smoking cessation and stress management classes were mentioned earlier. Whether a nurse care manager provides only referral information to patients or makes arrangements herself depends on her judgment of the patient's and family's ability to follow through with a referral.

Referrals for social services, in particular, may benefit isolated patients. Some of the patients served by the MCCD live miles from the nearest town in heavily forested areas (what one of the nurse care managers described as "wood-bound"), and they may have great difficulty finding help with such services as transportation, grocery shopping, and personal care, especially in winter. Nurse care managers have helped arrange for such services.

These patients (and their caregivers) often suffer from depression as well. One nurse care manager told of such a wood-bound male CHF patient who was constantly making trips to the ER despite her best efforts. After additional investigation, she realized that the patient's wife, his primary caregiver, was calling emergency services out of desperation. The nurse care manager

arranged for respite services, reducing the frequency of the patient's trips to the hospital and improving the quality of life of both patient and spouse.

During its first six months of operation, the program paid for exercise monitoring for 12 out of 58 patients enrolled (22 percent; Table 1). In addition, nurse care managers referred a small proportion (29 percent) of patients to Medicare-covered services or arranged services for them (Table 1). Nurse care managers referred even fewer patients (13.8 percent) to non-Medicare-covered services. This last percentage seems surprisingly low, given the program's emphasis on service arrangement, but it may be the result of some enrollees not having undergone assessment yet, and of the initial group of enrollees having less need of such services.

WHAT WERE ENROLLEES' SERVICE USE AND COSTS?

This report provides preliminary estimates of the effect of the Medical Care Development's MCCD 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. The estimates thus 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 full months after random assignment, total Medicare Part A and B reimbursements for the treatment group, exclusive of demonstration payment, were $3,314 ($1,657 per month), on average, compared with $5,019 ($2,510 per month) for the control group

(Table 4).[12] (The means presented in Table 4 are for the first two full months following the month of enrollment.) This difference ($1,705) is not statistically significant (p = 0.54), due to the small sample sizes, and reflects the presence of two very high-cost patients in the control group. (The control group mean for the two-month period drops to $1,478, or $739 per month, when these two patients are excluded.) The CMS per-member, per-month payment to the program for the two months after the month of randomization averaged $283, slightly less than the negotiated monthly rate of $297.[13] The sample enrolled the first four months is too small to allow us to draw even preliminary conclusions about early program effects.

The evaluation also examined monthly trends in treatment-control differences from April through September 2002, the first six months of program operation (Table 5). Again, the sample enrolled in each of these months is too small to draw inferences. The table is included only to demonstrate the types of analyses the evaluation will conduct in the future.

CONCLUSIONS

Medical Care Development's MCCD has two unique features that affect both the evaluation of the program and its potential for effectiveness. A discussion of these features and their implications is presented next, followed by consideration of the extent to which the program possesses features that earlier research has shown to be associated with effective care coordination.

[12] Due to the small sample sizes, there were several preexisting differences between the treatment and control groups that suggest the control group was healthier, on average, than the treatment group (Table B.6). For the next report, the two groups should be statistically similar as the number of enrollees grows.

[13] The per-member, per-month fee charged by the program is $297. Since Table 4 tracks the second and third month following intake, we would expect the care coordination costs to be $594 over the two-month period. The slightly lower means in Table 4, as well as the lower monthly means in Table 5, may reflect billing errors, delays, or payment adjustments for patients who disenrolled.

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)	25.8	12.1	13.7
Number of admissions	0.35	0.12	0.23 *
Number of hospital days	1.68	2.21	–0.53
Emergency Room Services			
Any emergency room encounters (percent)			
Resulting in admission	19.4	9.1	10.3
Not resulting in admission	9.7	12.1	–2.4
Total	29.0	21.2	7.8
Number of emergency room encounters			
Resulting in admission	0.23	0.09	0.13
Not resulting in admission	0.13	0.12	0.01
Total	0.35	0.21	0.14
Skilled Nursing Facility Services			
Any admission (percent)	6.5	6.1	0.4
Number of admissions	0.06	0.06	0.00
Number of days	1.06	1.55	–0.48
Hospice Services			
Any admission (percent)	0.0	0.0	0.0
Number of days	0.00	0.00	0.00
Home Health Services			
Any use (percent)	12.9	15.2	–2.3
Number of visits	1.65	0.88	0.77
Outpatient Hospital Services[b]			
Any use (percent)	93.6	84.9	8.7
Physician and Other Part B Services[c]			
Any use (percent)	93.6	90.9	2.6
Number of visits or claims	9.0	8.6	0.4
Mortality Rate (percent)	3.2	3.0	0.2
Total Medicare Reimbursement[d]			
Part A[e]	$2,308	$4,071	–$1,762
Part B	$1,006	$949	$57
Total	$3,314	$5,019	–$1,705
Reimbursement for Care Coordination[f]	$565	$0	$565 ***
Number of Beneficiaries	**31**	**33**	

TABLE 4 *(continued)*

Source: Medicare National Claims History File.

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.

[a]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 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.

TABLE 5

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

	Group	Apr 02	May 02	Jun 02	Jul 02	Aug 02	Sep 02
Cumulative Enrollment Through Month's End	Treatment	5	14	21	30	36	49
	Control	6	15	22	31	37	48
Number of Beneficiaries Enrolled Who Meet Medicare Coverage and Payer Requirements and Are Alive That Month	Treatment	5	14	20	29	35	47
	Control	6	15	22	30	35	45
Average Medicare Reimbursement During the Month[a]	Treatment	$4,659	$4,529	$2,083	$1,490	$2,687	$2,513
	Control	$2,338	$3,000	$2,801	$5,606	$2,592	$1,853
Average Reimbursement for Care Coordination During the Month[a,b]	Treatment	$297	$297	$297	$287	$280	$278
Whether Admitted to Hospital This Month[a] (Percentage)	Treatment	80.0	57.1	25.0	20.7	25.7	25.5
	Control	33.3	46.7	18.2	26.7	14.3	15.6
Treatment–Control Difference[c]							
Average Medicare Reimbursement[a]		$2,321	$1,530	–$718	–$4,116	$95	$660
Average Reimbursement for Medicare Plus Care Coordination[a]		$2,618	$1,827	–$421	–$3,829	$375	$938
Percentage Hospitalized[a]		46.7	10.5	6.8	-6.0	11.4	10.0

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.

[c]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.

First, unlike the other MCCD demonstration awardees who are providing the demonstration intervention themselves, the actual providers of the demonstration services (the voluntary hospital consortium) are one step removed from Medical Care Development, the nominal "host organization." Rather than a single care coordination intervention and its implementation, the evaluation is of a chronic care delivery *model* implemented by a loose-knit voluntary group of hospitals and coordinated by an external organization.

The two-layer structure and voluntary nature of Medical Care Development's MCCD make it difficult to offer definitive statements about the intervention being delivered. Even though the Key Elements, and the voluntary assessment every two years of adherence to the Key Elements, to which the participating hospitals agreed do provide some degree of uniformity in the approach each hospital takes to care coordination, there is considerable room for individual hospital and nurse care manager variation. Medical Care Development keeps in close touch with the nurse care managers and has a good idea of what they are doing in general, but still must rely on polls of the nurse care managers to learn the specifics of their approaches. While this variability allows the nurse care managers flexibility in dealing with the unique needs of their individual patients and resources of their hospitals and communities, the variability may make it difficult for the evaluation to describe the program across hospitals, and thus "tease out" the reasons for the program's ultimate success or failure.

Second, unlike most of the other MCCD programs, the demonstration intervention, which is essentially the ongoing ME Cares program applied to Medicare fee-for-service beneficiaries, was not developed specifically for Medicare beneficiaries. The program's disease management software does not address issues of comorbidity, polypharmacy, functional and cognitive impairment, frailty, and social support—all of which tend to assume greater importance among Medicare beneficiaries than among younger patients with commercial managed care or Medicaid

insurance. As noted, the nurse care managers are free to exercise their clinical judgment and supplement the software with their own documentation and care-planning tools or strategies for solving problems. The nurse care managers have undergone little formal training in care management, however. Time will tell whether their approaches will enable them to handle any problems the elderly MCCD beneficiaries present beyond the basic disease management framework of the program; but again, these ad hoc approaches will not be part of the intervention and will be difficult to describe systematically. The program has a relatively sophisticated system for outcomes reporting and feedback, but it has not so far examined the experiences of the MCCD enrollees separately, even though there is reason to suspect that their response to the program may not be the same as other non-elderly ME Cares enrollees.

Research over the past decade suggests, but is by no means conclusive, that successful care coordination has a number of features. One such feature is effective patient identification. In order to generate net savings over a relatively short period, patients enrolled by the program must be high-risk individuals. These individuals may have high-cost diagnoses such as heart failure, but may also have prevalent geriatric syndromes, such as physical inactivity, falls, depression, incontinence, misuse of medications, and undernutrition (Rector and Venus 1999; and Fox 2000). Other features include structures and procedures for integrating fragmented care and facilitating communication among providers, in order to address the complexities posed by patients with several co-morbid conditions and, when necessary, to arrange for community services (Chen et al. 2000; Bodenheimer 1999; and Hagland 2000); physician buy-in; and financial incentives aligned with program goals. Medical Care Development's MCCD does appear to have these features:

- The program has ***targeted and enrolled high-risk patients***, those hospitalized for the high-cost diagnoses of CHF and CHD. The program has indeed enrolled patients with relatively high health care costs in the year prior to enrollment.
- Using nurse care managers who have worked with patients' physicians before has also helped ***facilitate communication.*** Not only do the nurse care managers and physicians already know each other, but they see each other regularly in the hospital. This ease of communication contributes to ***integration of care fragmentation.*** Using nurse care managers who are employees of the local hospitals and residents of the same communities as the enrollees means they are more familiar with and connected to ***community services.***
- The program appears to have the ***active support and involvement of patients' physicians.*** Using nurse care managers known to physicians was an important factor here as well. Also, adding the MCCD to the already existing ME Cares program meant that the concept of care coordination was already familiar to physicians, their office staff, and patients.
- The MCCD offers physicians modest ***financial incentives*** for program participation—the monthly stipends of $20 per treatment group member to compensate the physicians for time spent working with the nurse care managers and reviewing the patient progress reports.

The extent to which Medical Care Development's MCCD possesses other features associated with care coordination effectiveness is less clear, however. These other features include a multifaceted assessment whose end product is a written care plan that can be used to monitor patient progress toward specific long-term and short-term goals and that is updated and revised as the patient's condition changes; a procedure for providing aggregate and patient-level feedback to care coordinators, program leaders, and physicians about patient outcomes; 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; and a highly qualified staff to implement all of these features (Chen et al. 2000; Williams 1999; Lorig et al. 1999; Vernarec 1999; Roter et al. 1998; and Aubry 2000). The relative freedom of the nurse care managers to implement individual approaches to care management, coupled with the lack of systematic, detailed descriptions of these different

approaches, makes it difficult to characterize the exact care coordination services that participating hospitals and nurse care managers are providing.

- The disease management software's assessments and care plans may not capture some of the problems that may be more prevalent among the elderly MCCD enrollees. The extent to which the nurse care managers are successfully supplementing the software with their own tools to address these problems and create ***assessments, care plans, and monitoring that can be tailored to specific patient needs and updated over time as patient conditions change*** is unknown.
- Compared to some of the other MCCD sites nationwide, the Minimum Data Set of Medical Care Development's MCCD is a relatively sophisticated system to ***provide feedback to both Medical Care Development and participating hospital staff and nurse care managers***. These feedback data are used by various ME Cares governing and oversight committees to improve training, the Minimum Data Set, and intervention tools and components. The extent to which the nurse care managers use these results, themselves, to improve their care management practice is unclear, however. It is also unclear the extent to which the nurse care managers produce ***feedback data for enrollees' physicians*** and, if so, whether these reports are being used. Furthermore, Medical Care Development currently produces no separate reports for the MCCD enrollees
- The nurse care managers are ***providing patient education that combines factual information with help changing behavior and improving self-care skills*** on the basic set of CHD and CHF topics suggested by the software, but nurse care managers may be approaching the education in highly disparate ways. Whether they also teach patients about problems beyond the narrow set of CHD and CHF topics in the software, and how they do this, also are unclear.
- Most of the nurse care managers are registered nurses with strong nursing qualifications and experience in cardiac or home care. It is unclear, however, whether the majority of the nurse care managers are ***experienced care coordinators***. Nor is it known how well trained the nurse care managers become in the special skills needed for care coordination—such as telephonic assessment and monitoring, health behavior modification, use of care management software, and use of feedback data for quality improvement.

Potential Barriers to Program Success. One major potential barrier to program success is the program's reliance on hospitals to provide the labor and resources for the intervention, and the program's resultant vulnerability to hospitals' larger agendas, as evidenced by the competing demands on nurse care managers and the constant pressure placed on their time allocation for the

project. There is also the risk of hospitals choosing to withdraw completely from the consortium. The voluntary nature of the consortium also creates difficulty in ensuring fidelity to the intervention across the participating hospitals and in implementing quality assurance and quality improvement efforts.

Another potential barrier to success is the reliance on an intervention designed primarily for younger participants, and the lack of systematic intervention components to deal with the special problems prevalent in elderly patients. Nurses may well be able to handle these problems with their own skill and judgment, but not as part of the intervention per se.

The potential for interhospital variation may present problems for the evaluation as well. The lack of a relatively uniform intervention for many aspects of care management coupled with the lack of detailed descriptions of individual nurse care managers' approaches may make it difficult to identify program components responsible for the program's success or failure.

Obviously, it is too early, and samples too small, to draw any inferences about program impacts. For all demonstration programs, savings in hospitalizations and other expensive Medicare services will have to be large enough, not only to cover direct program fees, but also any higher Part B expenses incurred as nurse care managers refer treatment group patients for Medicare-covered services that may contribute to better short-term or long-term outcomes for enrollees.

Plans for the Second Site-Specific Report. Over the first two years of operation, a second report on MCCD activities will be prepared, which will focus more heavily on program impacts, estimated from both survey and Medicare claims data. This report, due in mid-2005, will describe changes made to the program over time and the reasons for those changes, as well as staff impressions of the program's successes and shortcomings.

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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 county, 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

LIST OF DOCUMENTS REVIEWED FOR THIS REPORT

Medical Care Development, Inc. (MCD), Medicare Coordinated Care Demonstration (MCCD) proposal to the Centers for Medicare & Medicaid Services, dated October 11, 2000.

MCCD eligibility criteria and research plan used for many hospital IRB's

Experimental design flow charts for CHD and CHF

ME Cares Governing Structure and Workgroups

Credentialing application for hospitals to participate in ME Cares ("Verification of Key Elements" or "Verification of Standard Elements"); recommended ME Cares policy and procedures for each participating hospital

Case finding agreement for hospitals to participate in MCCD

Descriptive summaries of ME Cares Minimum Data Set

Beneficiary outreach articles and brochures

Examples of "Barriers" contest—nurse care managers submitting barriers to enrollment or care management entered into drawing for L.L. Bean gift certificate

Algorithm for referral to MCCD; template letters to patients regarding results of random assignment

Provider outreach and education materials; template letters for physician and hospital staff

Suggested schedule for Nurse Care Manager (NCM) telephonic contacts and interventions

Training manual for Nurse Care Managers (NCMs) for two day training provided by Pfizer Health Solutions, including question sets

CD-ROM on Pfizer Health Solutions' Clinical Management System (CMS®) software, including user manual and patient educational materials

Sample Physician Update Reports, Patient Care Plans, and Trend Reports from CMS®

Medical Care Development video, "ME Cares: Healthcare that Touches People," Sponsored by Pfizer Health Solutions, produced by Medical Care Development, December 2003.

Template for hospital implementation plan for MCCD

Sample press releases for hospitals

MCCD patient tracking form for nurse care managers

Outline of hospital billing and payment process for MCCD

"ME Cares: Nurse-Physician Care Support for Cardiovascular Health in Maine, Executive Summary" [http://www.mainecardiohealth.org/ME-Cares/ME-Cares%20Executive%20Summary.htm], accessibility verified August 6, 2003.

"ME Cares: Nurse-Physician Care Support for Cardiovascular Health in Maine, Update." [http://www.mainecardiohealth.org/ME-Cares/ME-Cares%20Update.htm], accessibility verified August 6, 2003

"What's the Buzz?" (ME Cares monthly newsletters), [http://www.mainecardiohealth.org/ME-Cares/What's%20the%20Buzz.htm], accessibility verified August 6, 2003.

Powerpoint presentation: "ME Cares Financial Perspective: The Good, the Bad, the Ugly," November 2001

Powerpoint presentation: "Provider Sponsored Disease Management Programs." September 2001

"MCD: ME Cares." [http://www.mcd.org/domestic/MeCares.htm], accessibility verified August 6, 2003

Sample weekly nurse care manager/hospital updates

Nurse case manager trainings and agendas

Sample hospital status reports

Standing agenda for weekly MCCD staff meeting agenda

Sample minutes from weekly MCCD staff meeting

Disenrollment tracking form

Samples of additional data forms used by nurse care managers at three participating MCCD hospitals

Samples of Annual ME Cares CVD and CHF Outcomes Reports

Sample Overall Data Completeness Report

Recent "Best in Class" report

Sample Site comparison of Overall Performance and Improvement

Sample Analysis of Nurse/Patient Contacts

Health Checkbook

"MaineHealth Healing Hearts Program: Improving Heart Failure Care. Program Evaluation." Presentation by Julie Osgood, M.S. at Maine Medical Center, February 2003.

Statement by Dr. Richard Wexler for Hearing on Eliminating Barriers to Chronic Care Management in Medicare before the Subcommittee on Health, House Committee on Ways and Means, February 25, 2003.

WebEx web-based training on disease management software, held by Pfizer Health Solutions for nurse care managers on March 17, 2003.

Presentation by Dr. Richard Wexler at CMS sponsored meeting for MCCD sites, Baltimore-Washington Airport, March 23, 2004.

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 April 17, 2002, through October 13, 2002. We explored patterns of participation by comparing eligible participants and eligible nonparticipants, noting how they differed on demographics, reason 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 Medical Care Development (MCD) 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, MCD 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 the program's demonstration, beneficiaries must have had (1) a hospital discharge for CHD in the past 30-days,

TABLE B.1

ELIGIBILITY CRITERIA

Inclusion Criteria	Revised (as of 4/02) : **Coronary Heart Disease**: In past 30 days, hospital discharge diagnosis of acute MI (ICD-9 Codes 410.0-410.9), CABG (CPT-4 Codes 33510-33536), percutaneous transluminal coronary angioplasty (CPT-4 Codes 92982, 92984), stent placement (92980, 92981), or atherectomy (92995, 92996). **CHF**: Hospital discharge with primary or secondary diagnosis of CHF (ICD-9 codes 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, 428.2, 428.3, 428.4, 428.9) in past 30 days or in two years before each participating hospital's start (when MCD received the first consent form from that hospital). Or, emergency department discharge with principal diagnosis of CHF within 30 days before program enrollment. Revised (as of 3/03): Window of eligibility for all conditions extended from 30 to 60 days for hospital discharge or ER discharge.
Exclusion Criteria	Patients with any of the following characteristics will be excluded: 1. Dementia 2. Independent terminal disease with life expectancy less than 6 months 3. Resides out of Maine more than half of the year 4. Primary care physician does not support enrollment 5. Participates in nurse care support program at time of hospital start-up with MCCD 6. ESRD ICD codes 140-172.9, 174-208.91, 290-290.9, 294.10, 294.11, 492.0, 492.8, 570, 571.5, 571.2, 571.6, V08, 042
Providers/Referral Sources	Participating hospitals in the State of Maine
Geographic location	Maine

or (2) a hospital or emergency department discharge for CHF in the past 30-days or a hospital discharge during the two years before the hospital began participating in the demonstration. In March 2003, MCD extended the 30-day window for hospitalizations or emergency room visits to 60 days. This report focuses on experiences through October 2002 so it does not address this change. Along with the diagnosis criteria, at the time of enrollment beneficiaries could not (1) have dementia, (2) have an independent terminal disease with a life expectancy of less than six months, (3) reside outside of Maine for more than half of the year, (4) have a primary care physician that does not support enrollment, (5) participate in nurse care support program at time of hospital start-up with MCCD, or (6) have end stage renal disease (ESRD).

We could approximate most of MCD's criteria using Medicare data with some exceptions. We implemented MCD's requirement that a patient must have had one of the target conditions, CHD or CHF, by examining whether a beneficiary had such a diagnosis at any point during the 30-month period beginning May 1, 2000 – two years before enrollment began – and ending six months after enrollment started (October 31, 2002). To identify whether a beneficiary met the program's utilization criteria (hospital admission for CHD and a hospital or emergency department discharge for CHF) we examined hospital claims for CHD over a 7-month period starting March 1, 2002 and ending October 31, 2002 and inpatient, outpatient, and emergency room hospital claims for CHF over a 30-month period starting May 1, 2000 and ending October 31, 2002. A beneficiary met the utilization criteria for CHD if they had a hospital discharge in the 7-month period and they met the utilization criteria for CHF if they had either a hospital discharge for CHF or any claim for CHF in the same month they had an emergency room visit in

the 30-month period.[1] To identify whether a beneficiary met the program's medical exclusion criteria, we examined hospital claims over the 7-month period before intake. 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.[2] In addition, we did not limit eligible beneficiaries to people who had used specific hospitals or doctors who refer patients to the program, making our estimates potentially overstate the true number of people MCD would have approached about participating. We could not fully approximate four of MCD's exclusion criteria using Medicare data: (1) have an independent terminal disease with a life expectancy of less than six months, (2) reside outside of Maine for more than half of the year, (3) primary care physician does not support enrollment, and (4) participates in nurse care support program at time of hospital start-up with MCCD.

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, three years

[1] The 30-month period used for CHF approximates MCD's utilization rule that beneficiaries must have had a hospitalization in the two years before the hospital began enrolling. MCD actually required the ER visit to be within 30 days of intake, but we do not anticipate this difference to influence the results presented here.

[2] Among the 110 who enrolled in the first six months, who had valid Health Insurance Claim (HIC) numbers reported and who met CMS's insurance requirements at intake, 3 percent were enrolled in Medicare FFS 12 or less of the previous 24 months before they enrolled in the demonstration; no participants were in FFS less than 6 of the 24 months before enrolling.

of Denominator records (1999-2001) and one year of HISKEW records (2002) were used to identify people living in the catchment counties at any time in the 1999-2002 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 6-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 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). All claims files were accessed through CMS's Data Extract System. At the end of February 2003, we requested Medicare claims from 1999 through 2002. We received all claims that were updated by CMS through December 2002. This allowed a minimum of a two-month lag between a patient's receipt of a Medicare-covered service in the last month we examined—October 2002—and the appearance of the claim on the Medicare files.[3]

[3] 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.

Medicare claims and eligibility information were summarized as monthly variables from May 2000 through October 2002, 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 before the program's start, to analyze participation in the first six months of program operation, and to 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 July 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 whittle 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 219,696 beneficiaries who lived in MCD's catchment area at some point during the first six months of enrollment (Table B.2). We then excluded 20,495 people (9.3 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 165,626 of the remaining people (75.4 percent of all area beneficiaries) were dropped from the sample, since they were not treated for any claims for the target diagnoses the program identified as necessary for inclusion during the two years before the program began or during the first six months of enrollment. Fifty percent of the remaining beneficiaries (16,707 people) did not meet the utilization requirements we measured for CHD (a hospital discharge for CHD) or for CHF (either a hospital discharge for CHF or any claim for CHF in the same month they had an emergency room visit). Finally, 4,902 people were identified as having dementia or ESRD, MCD's two

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	219,696
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	–20,495
Did not have one or more of the target diagnoses on any claim during the two years before the program started or during the six month enrollment window	–165,626
Did not have a hospitalization for CHD during the 7-month window from April 2002 through October 2002 or a hospitalization or ER visit for CHF during the 30-month window from May 2000 through October 2002	–16,707
Met at least one of the exclusion criteria during the seven months from April 2002 through October 2002	–4,902
Eligible Sample	**11,966**[a]

[a]Tables 2 and B.4 also exclude beneficiaries with coronary heart disease if they did not have a hospitalization in the month before intake (July 15, 2002, the midpoint of the six-month enrollment period, for eligible nonparticipants). This reduces the eligible sample to 10,739.

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	58	57	115
Minus Those Who:			
Had an invalid HIC number on MPR's enrollment file	–2	–1	–3
Not in geographic catchment area during the month of intake	–1	–0	–1
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	–1	–1	–2
Did not have one or more of the target diagnoses on any claim during the two years before the program started or during the six month enrollment window	–0	–2	–2
Did not have a hospitalization for CHD during the 7-month window from April 2002 through October 2002 or a hospitalization or ER visit for CHF during the 30-month window from May 2000 through October 2002	–0	–0	–0
Met at least one of the exclusion criteria during the seven months from April 2002 through October 2002	–10	–11	–21
Eligible Sample	**44**	**42**	**86**[a]

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. The total number of people who failed to meet a particular exclusion criteria may have been greater than the number reported in this table for program criteria that we could not fully assess using claims data (for example, reading level).

[a]Table B.4 also excludes participants with coronary heart disease if they did not have a hospitalization in the month before intake. This reduces the eligible sample to 84.

exclusion criteria that we could approximate, leaving us with a sample of 11,966 beneficiaries we estimated would have been eligible to participate in MCD's program.

MCD randomized 115 beneficiaries who enrolled in the demonstration program during the first six months of operation (Table B.3). Of these, 3 people (about 3 percent) 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.[4] MCD randomized one beneficiary who had an address on the EDB that was outside its catchment area. We excluded this cases from the participation analysis to maintain comparability to the eligible nonparticipant sample. We also excluded two participants who did not meet CMS's insurance requirements for participation in the program during the month of intake. Of participants dropped from the sample of eligibles, two were dropped for not having at least one FFS claim for a target diagnosis. No beneficiaries were dropped for not meeting the utilization criteria. Lastly, 21 participants were dropped from the participation analysis because they met one of the program's exclusion criteria. Thus, among the 115 participants randomized by MCD into the program during the first six months of operations, after exclusions, 86 people were included in the calculation of the participation rate as eligible participants.

MCD's participation rate for the first six months of enrollment is therefore calculated as the number of participants who met the eligibility requirements (86), divided by the number of eligibles who live in the catchment area (11,966), or 0.7 percent.

[4] 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 3). 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.

We next compare the preenrollment characteristics and service use of eligible participants and nonparticipants in Table B.4. [5] Table B.4 is identical to Table 2 in the text, except that the sample of participants has been restricted to the beneficiaries who meet the eligibility criteria according to Medicare claims data. Because almost 76 percent of the participants are included in this table, the results are similar to those in Table 2.

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

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 MCD randomized during the first four months of enrollment. The four-month enrollment window covers April 17, 2002 through August 14, 2002. The follow-up time

[5] Beneficiaries were identified as eligible when calculating the participation rate if they met the target criteria anytime during the six-month enrollment window, as well as the two years before the window. For the comparison of eligible participants and nonparticipants, we excluded beneficiaries if they did not meet the criteria before their intake date (fixed at three months after the program began enrollment (that is, the middle of the six-month window) for eligible nonparticipants). This results in 84 eligible participants and 10,655 eligible nonparticipants in Table B.4.

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)	75.6	77.9**
Younger than 65	3.6	7.7
65 to 74	45.2	25.9***
75 to 84	34.5	40.2
85 or older	16.7	26.2**
Male	41.7	39.6
Nonwhite	0.0	0.7
Original Reason for Medicare: Disabled or ESRD	22.6	20.2
State Buy-In for Medicare Part A or B	16.7	26.7**
Newly Eligible for Medicare (Eligible Less than Six Months)	0.00	0.00
Enrolled in Fee-for-Service Medicare 6 or More Months During Two Years Before Intake	100.0	100.0
Medical Conditions Treated During Two Years Before Month of Intake[b]		
Coronary artery disease	83.3	76.2
Congestive heart failure	79.8	98.3***
Stroke	25.0	30.2
Diabetes	53.6	43.9*
Cancer	9.5	14.3
Chronic obstructive pulmonary disease	53.6	56.8
Dementia (including Alzheimer's disease)	0.0	4.2
Peripheral vascular disease	20.2	19.8
Renal disease	17.9	16.8
Total Number of Diagnoses	3.4	3.6
Days Between Last Hospital Admission and Intake Date[b]		
0 to 30	71.4	9.1***
31 to 60	8.3	7.0
61 to 180	11.9	22.5**
181 to 365	3.6	21.2***
366 to 730	2.4	24.8***
No hospitalization in past two years	2.4	15.4***

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	22.6	16.1
0.1 to 1.0	36.9	49.2**
1.1 to 2.0	17.9	21.9
2.1 to 3.0	10.7	8.2
3.1 or more	11.9	4.7***
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[b]		
Part A	$1,312	$877***
Part B	$479	$397
Total	$1,791	$1,274***
Distribution of Total Medicare Reimbursement per Month Fee-for-Service During One Year Before Intake[b]		
$0	0.0	0.2
$1 to 500	14.3	42.2***
$501 to 1,000	27.4	18.3**
$1,001 to 2,000	28.6	18.2**
More than $2,000	29.8	21.1*
Number of Beneficiaries	**84**	**10,655**

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 July 15, 2002, the midpoint of the six-month enrollment period examined.

[a]Participants who do not meet Medicare coverage and payer 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.

[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.

covered the two calendar months after the month of randomization. For example, for a beneficiary randomized on May 25, we examined outcomes in June and July.

Second, we estimated treatment-control differences by calendar month over the first six months of MCD'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 April 2002 through September 2002, we identified the patients who were enrolled in MCD's coordinated care program and analyzed their Medicare-covered service use. For example, a person randomized in April would be present in April through September, provided that person is eligible and alive in each month.[6] Someone randomized in May would not be part of the calculations for April but would be included in May through September, again provided that the person is eligible during those months.

The sample used to analyze treatment and control 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

[6] 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).

they were not part of the research sample and thus were not used for the outcomes analysis.[7] 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 not excluded from the outcomes analyses. Given this, of the 67 people randomized in the first four months of MCD's demonstration, the sample for analyzing treatment-control differences contained 64 people. For the six-month sample, 110, or 96 percent of the 115 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 6).

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.

Sample sizes for the four-month sample are too small to make valid comparisons. For the six-month sample, the treatment and control groups had largely similar characteristics. There were only five statistically significant differences along baseline characteristics, possibly indicating that the treatment patients are sicker on average than control patients. Those differences include: (1) the proportion of beneficiaries whose original reason for Medicare was

[7] 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	67	115
Minus those who:		
Were members of the same household as research sample members	–0	–0
Had invalid HIC numbers on MPR's enrollment file	–2	–3
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	–1	–2
Number of usable sample members	**64**	**110**

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)	73.2	75.5	74.4	73.7	75.9	74.8
Younger than 65	12.9	3.0	7.8	10.9	3.6	7.3
65 to 74	45.2	42.4	43.8	47.3	41.8	44.5
75 to 84	32.3	36.4	34.4	29.1	36.4	32.7
85 or older	9.7	18.2	14.1	12.7	18.2	15.5
Male	41.9	39.4	40.6	47.3	34.6	40.9
Nonwhite	0.0	0.0	0.0	0.0	1.8	0.9
Original Reason for Medicare: Disabled or ESRD	32.3	15.2	23.4	32.7	18.2 *	25.5
State Buy-In for Medicare Part A or B	29.0	12.1 *	20.3	21.8	18.2	20.0
Newly Eligible for Medicare (Eligible Less than Six Months)	0.0	0.0	0.0	0.0	0.0	0.0
Enrolled in Fee-for-Service Medicare Six or More Months During Two Years Before Intake	100.0	100.0	100.0	100.0	100.0	100.0
Medical Conditions Treated During Two Years Before Month of Intake[a]						
Coronary artery disease	87.1	72.7	79.7	85.5	80.0	82.7
Congestive heart failure	93.6	69.7 **	81.3	78.2	76.4	77.3
Stroke	29.0	30.3	29.7	25.5	25.5	25.5
Diabetes	45.2	42.4	43.8	56.4	47.3	51.8
Cancer	19.4	18.2	18.8	18.2	21.8	20.0
Chronic obstructive pulmonary disease	67.7	45.5 *	56.3	65.5	45.5 **	55.5
Dementia (including Alzheimer's disease)	0.0	0.0	0.0	0.0	0.0	0.0
Peripheral vascular disease	25.8	21.2	23.4	23.6	18.2	20.9
Renal disease	12.9	9.1	10.9	20.0	14.6	17.3

TABLE B.6 *(continued)*

	Four-Month Sample			Six-Month Sample		
	Treatment Group	Control Group	Total Research Sample	Treatment Group	Control Group	Total Research Sample
Total Number of Diagnoses (number)	3.8	3.1 *	3.4	3.7	3.3	3.5
Days Between Last Hospital Admission and Intake Date[a]						
0 to 30	67.7	66.7	67.2	74.6	67.3	70.9
31 to 60	12.9	6.1	9.4	7.3	10.9	9.1
61 to 180	12.9	12.1	12.5	12.7	9.1	10.9
181 to 365	0.0	6.1	3.1	0.0	5.5 *	2.7
366 to 730	6.5	0.0	3.1	3.6	0.0	1.8
No hospitalization in past two years	0.0	9.1 *	4.7	1.8	7.3	4.5
Annualized Number of Hospitalizations During Two Years Before Month of Intake[a,b]						
0	3.2	39.4 ***	21.9	16.4	30.9 *	23.6
0.1 to 1.0	58.1	27.3 **	42.2	41.8	34.6	38.2
1.1 to 2.0	19.4	9.1	14.1	16.4	14.6	15.5
2.1 to 3.0	6.5	12.1	9.4	10.9	12.7	11.8
3.1 or more	12.9	12.1	12.5	14.6	7.3	10.9
Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[a]						
Part A	$1,359	$1,167	$1,260	$1,432	$1,164	$1,298
Part B	$568	$420 *	$492	$598	$439 *	$518
Total	$1,927	$1,587	$1,752	$2,030	$1,602	$1,816
Distribution of Total Medicare Reimbursement per Month in Fee-for-Service During One Year Before Intake[a]						
$0	0.0	0.0	0.0	0.0	0.0	0.0
$1 to 500	6.5	18.2	12.5	10.9	16.4	13.6
$501 to 1,000	29.0	30.3	29.7	27.3	25.5	26.4
$1,001 to 2,000	29.0	36.4	32.8	25.5	36.4	30.9
More than $2,000	35.5	15.2 *	25.0	36.4	21.8 *	29.1
Location During Program Intake Period						
Maine						
Androscoggin	0.0	0.0	0.0	1.8	0.0	0.9
Aroostook	19.4	12.1	15.6	18.2	10.9	14.5
Cumberland	0.0	0.0	0.0	1.8	3.6	2.7
Franklin	6.5	6.1	6.3	7.3	10.9	9.1
Hancock	12.9	12.1	12.5	9.1	14.6	11.8
Kennebec	0.0	0.0	0.0	0.0	0.0	0.0
Knox	0.0	0.0	0.0	0.0	0.0	0.0

TABLE B.6 *(continued)*

	Four-Month Sample			Six-Month Sample		
	Treatment Group	Control Group	Total Research Sample	Treatment Group	Control Group	Total Research Sample
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0
Oxford	0.0	3.0	1.6	0.0	1.8	0.9
Penobscot	12.9	18.2	15.6	16.4	21.8	19.1
Piscataquis	0.0	0.0	0.0	0.0	0.0	0.0
Sagadahoc	0.0	0.0	0.0	0.0	0.0	0.0
Somerset	0.0	0.0	0.0	0.0	0.0	0.0
Waldo	0.0	0.0	0.0	0.0	0.0	0.0
Washington	16.1	15.2	15.6	18.2	9.1	13.6
York	29.0	33.3	31.3	25.5	27.3	26.4
Outside catchment area	3.2	0.0	1.6	1.8	0.0	0.9
Number of Beneficiaries	**31**	**33**	**64**	**55**	**55**	**110**

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 July 15, 2002, the midpoint of the six-month enrollment period examined.

Participants were excluded from this table if they did not meet Medicare coverage and payer requirements for the demonstration, 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.

[a]Calculated among beneficiaries with six or more months in Medicare fee-for-service in the two years before intake.

[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, 2001s 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.

disabled or ESRD, (2) the proportion of beneficiaries whose days between last hospital discharge and intake was between 181 to 365, (3) the proportion of beneficiaries who were treated for chronic obstructive pulmonary disease in the two previous years, (4) the proportion of beneficiaries whose annual number of hospitalizations during the two years before month of intake was zero, and (5) Medicare Part B reimbursement per month enrolled during the two years before month of intake. 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 created any cause for concern.

3. Sensitivity Tests

To assess outcomes, we calculated Medicare-covered service use and cost in the two months after the month of randomization. For example, for an individual who was randomized in the month of May, we tabulated the individual's outcomes in June and July. To examine whether our results were affected by not including costs and services that 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). We conduct this sensitivity test for all sites but once again emphasize that the samples are too small to draw valid inferences for MCD. The results are included to show the types of analyses we will conduct for the next report, when there are larger sample sizes. The results were similar to those for outcomes measured over the two-month period (text Table 5).

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)	67.7	57.6	10.2	
Number of admissions	1.10	0.88	0.22	
Number of hospital days	5.42	5.61	–0.19	
Emergency Room Services				
Any emergency room encounters (percent)				
Resulting in admission	54.8	54.6	0.3	
Not resulting in admission	22.6	27.3	–4.7	
Total	67.7	60.6	7.1	
Number of emergency room encounters				
Resulting in admission	0.74	0.61	0.14	
Not resulting in admission	0.26	0.33	–0.08	
Total	1.00	0.94	0.06	
Skilled Nursing Facility Services				
Any admission (percent)	6.5	15.2	–8.7	
Number of admissions	0.10	0.18	–0.09	
Number of days	1.35	2.21	–0.86	
Hospice Services				
Any admission (percent)	0.0	0.0	0.0	
Number of days	0.00	0.00	0.00	
Home Health Services				
Any use (percent)	16.1	18.2	–2.1	
Number of visits	2.03	1.27	0.76	
Outpatient Hospital Services[b]				
Any services (percent)	93.6	93.9	–0.4	
Physician and Other Part B Services[c]				
Any use (percent)	100.0	97.0	3.0	
Number of visits or claims	18.9	18.5	0.4	
Mortality Rate (percent)	3.2	3.0	0.2	
Total Medicare Reimbursement[d]				
Part A[e]	$5,890	$7,997	–$2,108	
Part B	$1,882	$1,797	$85	
Total	$7,772	$9,794	–$2,023	
Reimbursements for Care Coordination[f]	$862	$0	$862	***
Number of Beneficiaries	**31**	**33**		

TABLE B.7 *(continued)*

Source: Medicare National Claims History File.

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.

[a]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

Key or Standard Elements for hospitals participating in ME Cares (Wexler et al. 2004)

Summary of data elements in ME Cares Minimum Data Set (Wexler et al. 2004)

Sample Heart Failure Symptoms and Lipids Knowledge question sets from CMS® software

Screen shots of dialog boxes from software—New Patient Questions, New Care Plan Actions, New Task, New Note

List of ME Cares nurse care manager trainings

Agenda from a Pfizer Health Solutions training conference on ME Cares and software

Heart Failure Care Plan and Weekly Recorder printed from software to be given to patient

Sample update report generated by software to be given to patient

Health Checkbook

Sample patient-level report of text notes

Representative annual ME Cares program-level outcomes reports

"Best in Class" report

Annual ME Cares Site Comparison of Overall Performance and Improvement with masked hospital identifiers

ME Cares/MCCD Analysis of Nurse/Patient Contacts

One-page physician report developed by nurse care managers and Medical Care Development staff

APPENDIX A: ME CARES VERIFICATION OF STANDARD CARE ELEMENTS

	Standard requirement
Provider Credentials	
1. Existence of a licensed/certified professional as a care manager (CM).	• *One of the following: RN, NP, PA with cardiac care experience and a current State of Maine license.* • *Monitored exercise training, if applicable.*
2. CM participation in CHD management training.	• *Orientation training on information system.* • *Minimum of 3 hours per year at educational program (including self directed) that provides CME's/CEU's accepted by State medical or nursing association.*
3. Supervision of CM.	• *A medical director or clinical supervisor who meets with CM on a regular basis to discuss: programmatic items, problematic cases, care plan development, PCP coordination.* • *Annual evaluation of CM.*
4. Existence of a program medical director.	• *A designated medical director with an interest and experience in cardiac care and rehabilitation.* • *Available for physician outreach, policy and procedure oversight, case consultation.*
Program Coordination	
1. Utilization of national guidelines to support the clinical care of the program.	• *Evidence of one or more of the following national guidelines: AHRQ, ACC/AHA, ACSM AACVPR.*
2. Process for patient enrollment.	• *Process to include the following: explicit target population, procedure for referrals to CM, physician order for pt. enrollment (passive order OK), attempted pt. contact within 2 business days of referral.*
3. Patient informed consent.	• *Patient signature on informed consent as determined by HCFA protocol.*
4. Schedule of communication between CM and the physicians (primary and other providers).	• *Verifiable communication on the following: key clinical indicators requiring immediate attention PCP's to be notified within 4 hours, medication verification, change in status, care plan, referral to community services as appropriate.*
5. Staffing for patient contact with instructions on how to get assistance if CM is unavailable.	• *A message must state how patients can get assistance 24/7 if CM is not available.*
6. Evidence of integration with community services to supplement telephonic intervention.	• *Available community resources should be utilized when appropriate.* • *Community resource development needs should be included in the annual program evaluation.*
7. Criteria for discharge from ME Cares program (eg, relocation, refusal).	• *Criteria must be available to include the following:* - *Inability to communicate by patient or through caregiver* - *Patient refusal* - *Death* - *Relocation to similar program* - *Clinical stability and independence with disease management* • *PCP refusal to cover patient and patient does not change PCP.*

(continued)

APPENDIX A: (continued)

	Standard requirement
Program Management	
1. Standardized intake assessment for:	• *Question sets to cover the following:*
• Physiological function	- *Clinical history*
	- *Symptoms*
• Psycho-social function	- *Treatments*
	- *Risk factors*
	- *Medications*
	- *Social support*
• Risk stratification	- *Functional status*
	• *Risk stratification is not a current requirement.*
2. Evidenced-based, patient-specific goals established at enrollment.	• *Individualized patient clinical goals consistent with AHA guidelines*
	- *Smoking cessation*
	- *BP goal < 140/90 or < 130/85 for HF, diabetes, renal insufficiency*
	- *Lipid management: LDL< 100*
	- *Physical activity increase to 30 minutes 3–4/week*
	- *Diabetes management HBA1c< 7*
	- *Medication use: antilipemics, antiplatelets, ace inhibitors, beta blockers*
3. Evidenced-based, patient-specific goals assessed at regular intervals.	• *Patient goals assessed at least at the following intervals: Baseline, 6 months, 12 months.*
4. Existence of protocol defining a minimum frequency of contact with patients.	*Minimum attempts to contact*
	• *At least four times the first month; follow-up contact within 1–2 business days for change in status or symptoms.*
	• *After one month an average of monthly for CHF; monthly for CHDx5 then q 3 months.*
5. Education/counseling for patient instruction in:	• *Evidence-specific interventions*
• Physiological interventions including: daily weight (CHF), BP monitoring, BMI, medication use, diet, smoking, alcohol, physical activity, symptom identification.	• *Use of community resources to allow participatory learning as appropriate.*
• Psychosocial Interventions to include: stress management, advance directives, family dynamics.	
6. Evidence of on-going medical monitoring for symptoms, disease progression and medication side effects that include red flags for prompt communication with PCP.	• *PCP to be notified within four hours on key clinical indicators.*
7. Evidence of discharge instructions and referrals.	• *Instructions at discharge to include:*
	- *Knowledge of who and when to contact regarding disease management.*
	- *Medication use and other treatments.*
	- *Understanding of goals related to risk factor behavior change*
	- *Understanding of community resources relevant to risk factor goals.*
8. Evidence of plan for quality improvement.	
9. Evidence of an annual program evaluation.	• *Evidence of individual hospital program evaluation tool.*

(continued)

	Standard requirement
Recordkeeping	
1. Evidence of records that include the following: • Confidentiality policy read and understood by staff. • Physician notification/authorization for patient enrollment. • Patient consent form • Initial patient assessment • Plan of care • Signed physician verbal orders • Patient discharge (with reason) from ME Cares program as applicable.	• *"Yes" for all listed records.*
Data Collection	
1. Evidence of a plan for outcomes/data reporting which includes the ME Cares minimum required data set.	• *ME Cares minimum data set must be transferred to Maine Health Information Center on a scheduled basis.*

APPENDIX B: MINIMUM DATA SET

Metric	*Measure*	*Condition*	*Source*	*Frequency*
Disease severity	NYHA Class	HF	CMS question set	Baseline + every 6 mo
Functional status	SF-12	HF and CVD	CMS question set	Baseline + every 6 mo
Health behaviors	Weight self-monitoring Adherence to medication regimen Diet Smoking Physical activity Alcohol use Depression screen Stress management	HF and CVD	CMS question set	Baseline + every 6 mo
Medication regimen	Medications per current guidlines	HF and CVD	CMS question set + provider confirmation	Baseline + every 6 mo
Patient knowledge (nursing assessment)	Medications Diet Lipids Physical activity Symptoms	HF and CVD	CMS question set	Baseline + every 12 mo
Laboratory + tests	Value of ejection fraction	HF	Provider or hospital records	Baseline
	Value of lipid profile	HF and CVD	Provider or hospital records	Baseline + every 6 mo
	Value of HbA_{1c}	HF and CVD	Provider or hospital records	Baseline
Clinical parameters	Blood pressure	HF and CVD	Self-monitored or provider reported	Baseline + every 6 mo

HF, heart failure; CVD, cardiovascular disease; NYHA, New York Heart Association; SF-12, Short Form 12.

Pfizer Health Solutions

Patient Question Modules CMS®

Heart Failure Symptoms

1. During the **PAST 4 WEEKS,** did you have any of the following heart failure symptoms? (Check all that apply)

   - ❒ Shortness of breath
   - ❒ Chest pain or discomfort
   - ❒ Weight gain or leg swelling
   - ❒ Fainting spells
   - ❒ Lightheadedness or dizziness
   - ❒ Times when you woke up short of breath
   - ❒ Cough
   - ❒ Nausea
   - ❒ Other symptoms due to heart failure
   - ❒ None of the above
   - ❒ Don't know

2. During the **PAST 4 WEEKS,** has your heart failure been... (Check one)

   - ❒ Very severe
   - ❒ Severe
   - ❒ Moderate
   - ❒ Slight
   - ❒ Not a problem
   - ❒ Don't know

1. During the **PAST 4 WEEKS,** has your heart failure been (Check one)

   - ❒ Much better than usual
   - ❒ Better than usual
   - ❒ About the same
   - ❒ Worse than usual
   - ❒ Much worse than usual
   - ❒ Don't know

4. During the **PAST 4 WEEKS,** how often have you had heart failure symptoms? (Check one)

   - ❒ Everyday
   - ❒ Three to six days a week
   - ❒ One to two days a week
   - ❒ Less than one day a week
   - ❒ No days
   - ❒ Don't know

Heart Failure Symptoms (cont'd)

5. During the **PAST 4 WEEKS**, how often did your heart failure keep you from doing your usual physical activities, such as working around the house or shopping for groceries? (Check one)

- ❒ All of the time
- ❒ Most of the time
- ❒ Some of the time
- ❒ A little of the time
- ❒ None of the time
- ❒ Don't know

Pfizer Health Solutions

Patient Question Modules CMS®

Lipids Knowledge

Please check **True** or **False** for each statements. Answer **Don't know** if you are not sure.

	True	False	Don't know
1. High blood cholesterol is one of the risk factors for heart disease that you can do something about.	☐	☐	☐
2. Diet, physical activity, weight, hereditary, age and sex influence cholesterol levels.	☐	☐	☐
3. Any blood cholesterol level below 240 mg/dL is desirable for adults.	☐	☐	☐
4. The higher your high density lipoprotein (HDL-cholesterol), the higher your risk for heart disease.	☐	☐	☐
5. To lower your blood cholesterol level you should eat less saturated fat, total fat, and cholesterol, and lose weight if you are overweight.	☐	☐	☐
6. Saturated fats raise your blood cholesterol level more than anything else in your diet.	☐	☐	☐
7. Medications that help lower cholesterol should be taken only when you are above your goal.	☐	☐	☐
8. Lowering blood cholesterol levels can help people who have already had a heart attack.	☐	☐	☐
9. Women don't need to worry about high blood cholesterol and heart disease.	☐	☐	☐
10. Low density lipoprotein (LDL-cholesterol) is the "good" cholesterol.	☐	☐	☐

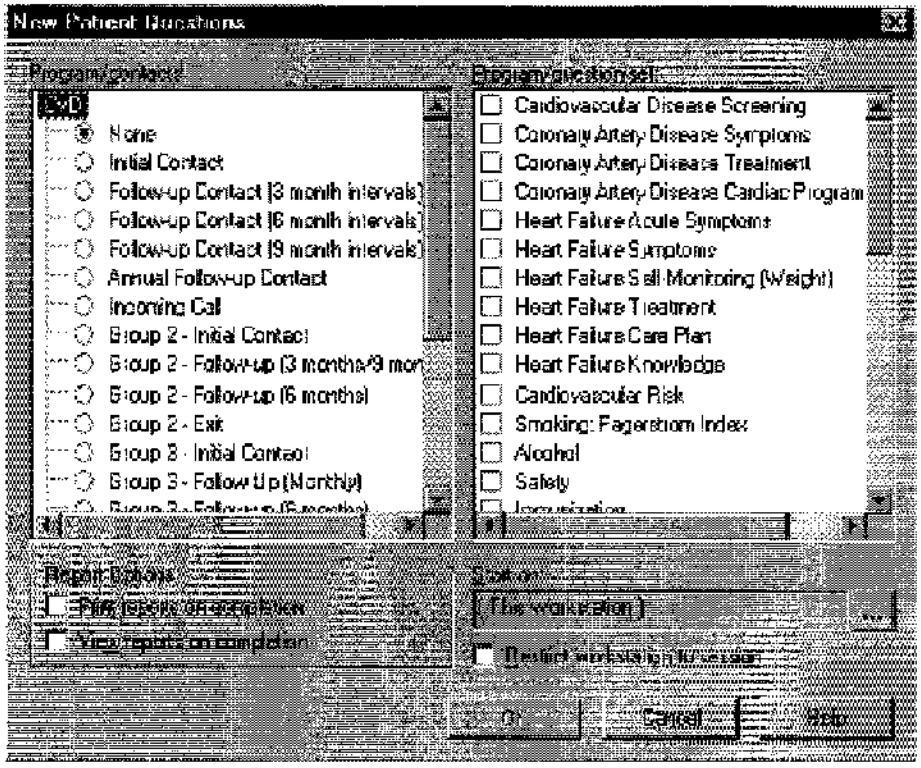
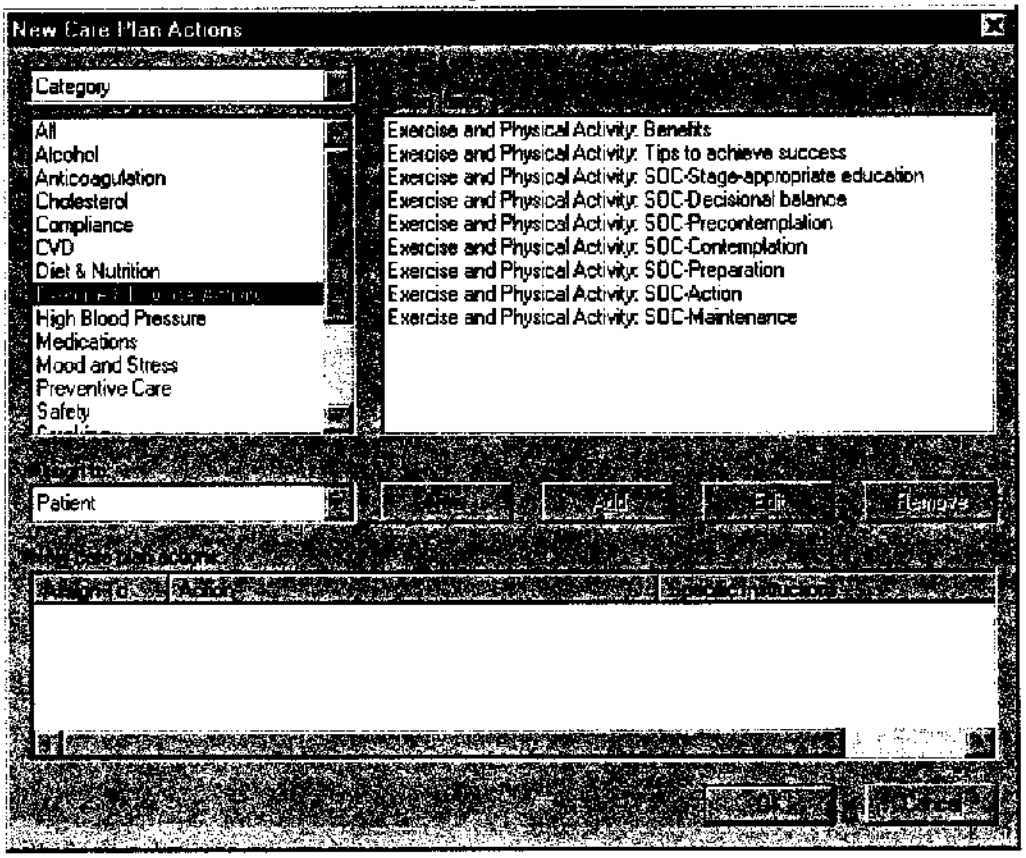


Figure 50. New Patient Questions Dialog Box


New Care Plan Actions
Category
All
Alcohol
Anticoagulation
Cholesterol
Compliance
CVD
Diet & Nutrition
High Blood Pressure
Medications
Mood and Stress
Preventive Care
Safety
Exercise and Physical Activity: Benefits
Exercise and Physical Activity: Tips to achieve success
Exercise and Physical Activity: SOC-Stage-appropriate education
Exercise and Physical Activity: SOC-Decisional balance
Exercise and Physical Activity: SOC-Precontemplation
Exercise and Physical Activity: SOC-Contemplation
Exercise and Physical Activity: SOC-Preparation
Exercise and Physical Activity: SOC-Action
Exercise and Physical Activity: SOC-Maintenance
Patient
Add
Edit

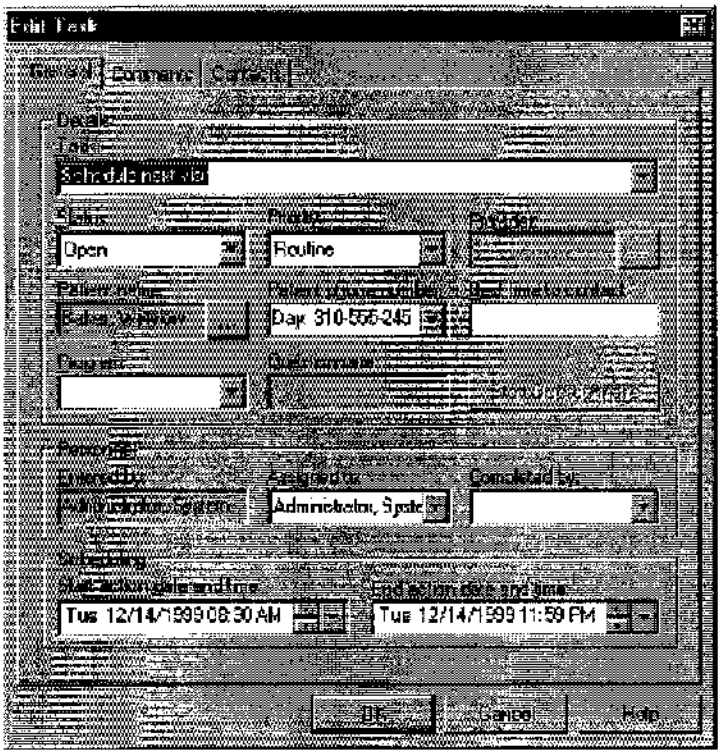


Figure 22. Edit Task Dialog Box

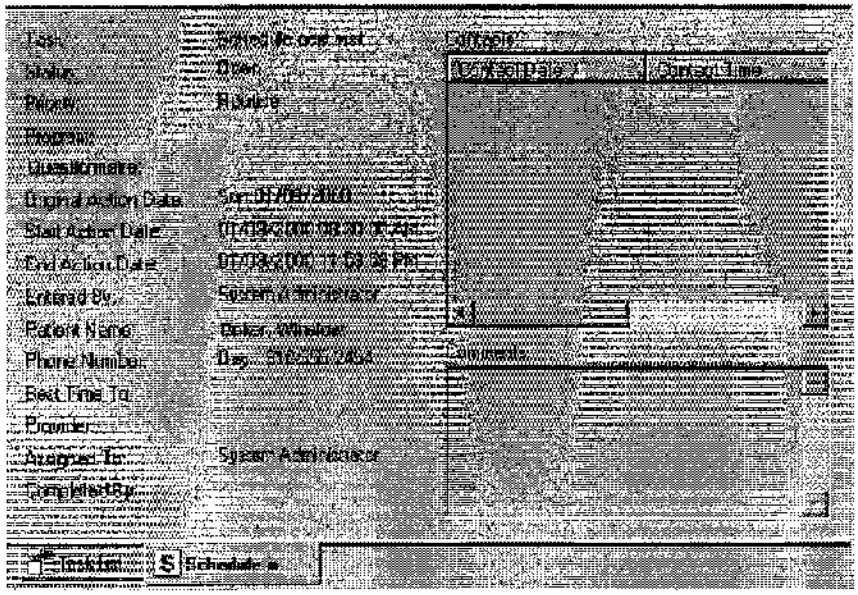


Figure 21. Open Task Record Folder

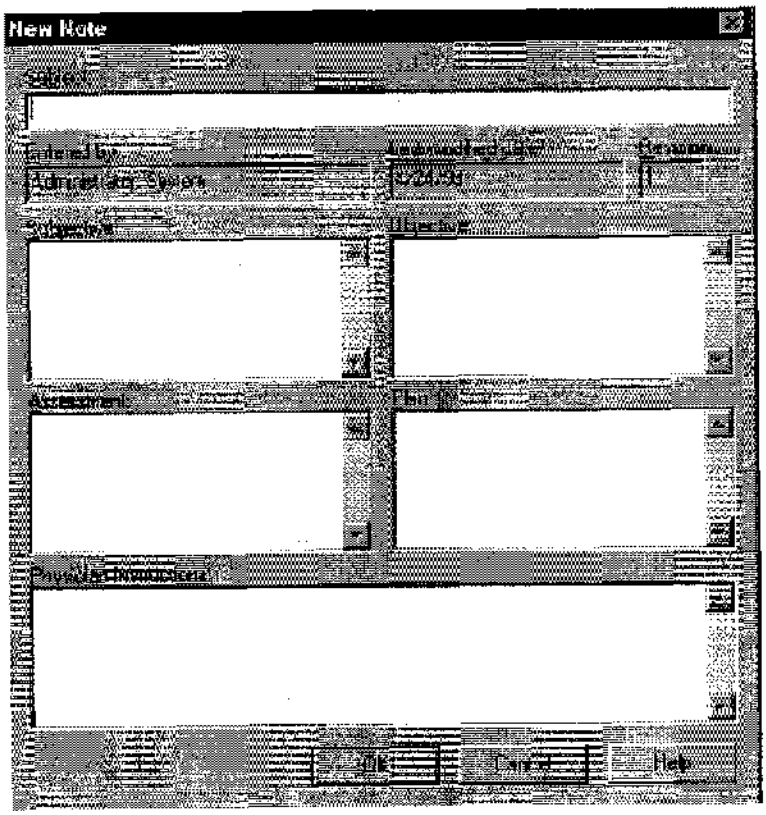


Figure 48. New Note Dialog Box

Trainings (3/2001 – present)
ME Cares & MCCD Project

Date(s) & Location	Attended	Title	Target Audience	Purpose
		ME Cares & MCCD Workshops		
3/29/01 Bangor	25	Depression and Heart Disease	Nurse care managers	To discuss the relationship between depression and heart disease; depression as a risk factor; clinical signs and establishment of care plans for patients with CVD and depression.
9/25/01 Bangor	75	Integration of Telephonic Cares Support & Traditional Cardiac Rehabilitation	Nurse care managers, cardiac rehab nurses, supervisors, financial departments	To examine the clinical, operational and financial issues of the integration of telephonic monitoring and traditional cardiac rehabilitation services
11/19/01 Bangor	31	Diabetes and Heart Disease	Nurse care managers, ADEF educators, and dieticians	To provide a clinical update on diabetes as a risk factor of cardiac disease; to discuss possible collaboration between facility-based programs for cardiac disease and diabetes.
11/30-31/02 Augusta 11/1-2/02 Augusta	15 15	Pfizer Clinical Management System Training	Nurse care managers	To train the nurses on the clinical management system.
3/19/02 Waterville	77	Motivational Counseling	Nurse care managers, ADEF educators, insurance case managers	To provide a model for motivational counseling on risk factors associated with chronic disease.
6/18/02 Augusta	25	Using Information to Improve Program Design and Outcomes	Nurse care managers	To provide an opportunity for participants in ME Cares to discuss the measured outcomes from patients enrolled in the

				program during 2001; to help care teams select specific outcomes for improvement; and to identify through a collaborative process interventions that may result in improved program design and outcomes.
9/10/02 Augusta	10	MCCD Referral Process Workshop	MCCD and ME Cares participants	To refine the MCCD referral process with input from ME Cares and MCCD participants.
9/18/02	15	Advanced CMS Training (Web-based training)	ME Cares and MCCD Nurse Care Managers	To review advanced skills such as using filters to general reports, to troubleshoot issues of interest to the participants, to assess needs for follow-up training.
10/30/02	10	Ensuring Quality Data (Web-based training)	ME Cares and MCCD Nurse Care Managers	To ensure accurate and consistent data collection by providing technical assistance and refresher training on the clinical management system software.
11/5/02	9	Ensuring Quality Data (Web-based training)	ME Cares and MCCD Nurse Care Managers	To ensure accurate and consistent data collection by providing technical assistance and refresher training on the clinical management system software.
11/7/02	22	Maine Leading the Way in Coordinated Care	ME Cares stakeholders including physicians, nurses, hospital administration, and BOH staff	To provide information and build advocacy among ME Cares stakeholders.
1/6-9/2003	24	Data Review System Installation and Training	MCCD and ME Cares Nurse Care Managers	To install Data Review System software and provide training on how to interpret and use reports
1/22/2003	1 staff	Bi-ventricular pacing seminar	Cardiovascular staff working with or	To familiarize participants with bi-ventricular pacing technology,

			interested in bi-ventricular pacing	indications, and outcomes.
2/06/2003	8 MCCD Nurse Care Mgrs & 4 staff	"Spring Break": a Workshop for MCCD Nurse Care Managers	MCCD Nurse Care Managers	To Review the MCCD project, teach care-support skills, and facilitate a discussion of MCCD "Issues and Answers"
2/27 & 3/6/2003	14 Nurse Care Mgrs and 2 Staff	Two-part CHF workshop offered via Webex technology.	ME Cares & MCCD Nurse Care Managers	Practical clinical information on a variety of key CHF topics will be presented for registered nurses and advanced practice nurses who manage the care of patients with congestive heart failure.
3/24/2003	4 new MCCD Nurse Care Managers	A four-hour training was provided by Pfizer Health Solutions. The program focused on use of the Clinical Management System and telephonic "Coaching" skills. Orientation to the ME Cares and the MCCD project, policies and procedures, documentation and reporting was provided individually during site visits. Each nurse was provided CMS user manuals and an updated MCCD Operations Manual.	New MCCD Nurse Care Managers	To familiarize new Nurse Care Managers with the MCCD project, with the basics of the Clinical Management System and telephonic care management skills, specifically patient enrollment, and collection of the minimum data set.
4/16/2003	12 Nurse Care Mgrs and 2 staff	Webex program on CVD and the CMS	ME Cares & MCCD Nurse Care Managers	An update on "Using the Clinical Management System to support care management of CVD patients" .
5/14/03	13 Nurse Care Mgrs and 1 staff	Webex program on "Generating Aggregate Reports from the CMS"	ME Cares & MCCD Nurse Care Managers	A review of how to use report and filtering function of the Clinical Management System to generate reports.
5/28/03	8 new MCCD Nurse Care	A four-hour training was provided by Pfizer Health Solutions. The	New MCCD Nurse Care Managers	To familiarize new Nurse Care Managers with the MCCD project,

	Managers	program focused on use of the Clinical Management System and telephonic "Coaching" skills. Orientation to the ME Cares and the MCCD project, policies and procedures, documentation and reporting was provided by phone, individually during site visits, and by on-site NCMs. Each nurse was provided CMS user manuals and an updated MCCD Operations Manual.		with the basics of the Clinical Management System and telephonic care management skills, specifically patient enrollment, and collection of the minimum data set.
8-11/2003	2 ME Cares program managers and 1 staff	Several 1-hr sessions were held with technology consultants to demonstrate and explore a web-based data mart software application.	ME Cares program managers at one large site.	ME Cares and PHS continue to utilize Webex technology to enable one provider site to "explore" the data extraction and analysis process in an effort to understand outcomes and to identify opportunities for further data analysis and process improvement.
11/4/2003	39 ME Cares / MCCD NCM's, 2 guests, 3 staff	ME Cares "Quality Forum"	Nurse Care Managers	The "Quality Forum" focused on several points of data collection and utilization, hands-on computer training and case review.
Date(s) & Location	**Attended**	**Title**	**Target Audience**	**Purpose**
3/16/04 Senator Inn Augusta	29 Maine legislators and staff	"Today's Healthcare System Under Stress – How did we get here? – What can we do?"	Maine Legislators and HC decision-makers	- to educate the target audiences about the causes of our healthcare crisis - to discuss the prevalence and burden of chronic

				disease as a key cost driver, and - offer potential solutions, including enhanced communication systems, and coordinated care & disease management
Date(s) & Location	**Attended**	**Title**	**Target Audience**	**Purpose**
April 2004 PowerPoint Self-Study Module	36 ME Cares and MCCD Nurse Care Managers	ME Cares Minimum Data Set Training Module	All ME Cares and MCCD Nurse Care Managers entering required data elements into the Clinical Management System	To ensure accuracy and consistency of data entry across ME Cares and MCCD sites by: - familiarizing nurses with revisions in the Minimum Data Set - providing instructions on new data entry points - providing guidelines and common definitions for collecting data - providing an instructional tool and educational material that is user-friendly and can be completed in the user's own time and space.
May 18, 2004 WEBEX	14 ME Cares Nurse Care Managers	WEBEX DATA OUTCOMES REVIEW	ME Cares Nurse Care Managers, supervisors, and program medical directors	To: - Review 2004 ME Cares Data Outcomes Reports - Discuss reporting parameters, definitions and presentation of data - Discuss changes in data elements - Discuss opportunities for Quality Improvement initiatives

May 25, 2004	17 ME Cares Nurses	"Bridging the Gap" – Merging Diabetes and Cardiovascular Health Management	Nurses, dietitians, care mangers, educators, clinicians, and others providing care, education, and support to patients with CVD and Diabetes	Objectives: • To explore the pathophysiology, diagnosis and treatment of diabetes and cvd as co-morbid conditions • To discuss the link between diabetes and cvd from at-risk, to diagnosis, to prevention, and treatment of complications • To identify strategies for diabetes and cvd clinicians to collaborate to provide care, education and care coordination to people with diabetes and cvd.

[redacted]

Pfizer Health Solutions
Where Technology and Healthcare Connect®

Care Manager Training: CMS® 8.5
May 8th – 9th, 2002

Wednesday, May 8th, 2002

9:00 – 9:15	**Introductions**	**All**
9:15 – 9:30	**Disease Management Process Overview**	**Zoe Kopp, RN, MPH**
9:30 – 9:45	**CMS Overview**	**Amelia Valenciana**
9:45 – 10:30	**CMS: How To's** ▪ Adding a Patient ▪ Updating a Patient demographics ▪ Enroll a Patient into a disease ▪ Conduct a Patient Question set	**Amelia**
10:30 – 10:45	**BREAK**	
10:45 – 12:00	**CMS: How To's (continued)** ▪ Entering Medications ▪ Entering Clinical Information ▪ Developing a Care Plan ▪ Accessing Patient Education ▪ Creating Tasks ▪ Printing a Patient Report ▪ Working with Lists	**Amelia**
12:00 – 1:00	**LUNCH**	
1:00 – 1:15	***ME-Cares* Overview**	**Vickie Rea**
1:15 – 2:15	**ME-Cares Minimum Data Sets**	**Vickie**
2:15 – 3:15	**Heart Failure Clinical Overview**	**Zoe**
3:15 – 3:30	**BREAK**	
3:30 4:15	**CMS: Practical Exercises**	**All**
4:15 4:30	**Wrap-Up**	**All**

[redacted]

Pfizer Health Solutions
Where Technology and Healthcare Connect

Care Manager Training: CMS® 8.5
May 8th – 9th, 2002

Wednesday, May 9th, 2002

9:00	**–**	**9:15**	**Review & Question**	**All**
9:15	**–**	**9:45**	**Heart Failure Case Studies**	**All**
9:45	**–**	**10:45**	**CVD Clinical Overview**	**Zoe**
10:45	**–**	**11:00**	**BREAK**	
11:00	**–**	**11:30**	**CVD Case Studies**	**All**
11:30	**–**	**12:00**	**Group Discussion** ▪ Use of CMS for Current DM Activities	**All**
12:00	**–**	**1:00**	**LUNCH**	
1:00	**–**	**2:30**	**CMS: How To's (continued)**	**Amelia**
2:30	**–**	**2:45**	**BREAK**	
3:15	**–**	**4:15**	***ME-Cares* Minimum Data Set Practice**	**All**
4:15	**–**	**4:30**	**Wrap-up**	**All**

HEART FAILURE CARE PLAN

MEDICAL TARGETS

CHF PLAN

WHAT you need to do	WHEN you will do it
○ WEIGH yourself	
○ Reduce SALT (Sodium) to no more than **2g** per day	
○ Monitor WARNING SIGNS	
○ Take MEDICATIONS	
☐	
☐	
☐	
☐	

SEE YOUR WARNING SIGNS

OTHER

WHAT you need to do	WHEN you will do it
○	
○	
○	

HEALTHY LIVING

WHAT you need to do	HOW you plan to do it
○ Stop SMOKING	
○ Increase Physical EXERCISE	
○ Improve DIET & NUTRITION	
○ Lose WEIGHT	
○	

Heart CARE PLAN Failure

Name:

Address:

Tel No.:

Membership No:

What your Plan will help you better manage:

DIAGNOSES

Heart Failure

Other:

GOALS

TARGET	Current	Goal
Blood Pressure		
LDL		
HDL		
Cholesterol		
Weight		
Smoking		

CP2

Heart Failure/CARE PLAN
WEEKLY RECORDER

WEEK OF: _____ (Month) _____ (Date)

Name: _____

Membership No. _____

Please answer all of the following questions for each day of the week:

	SUN Sunday	MON Monday	TUE Tuesday	WED Wednesday	THU Thursday	FRI Friday	SAT Saturday
What was your WEIGHT on each day? Write down your highest weight for each day of the week.							
GREEN ZONE - **Weight Gain of < 2 lbs. Per Day**	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
YELLOW ZONE - **Weight Gain of 2-3 lbs. Per Day**	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
RED ZONE - **Weight Gain of > 3 lbs. Per Day**	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
How severe were your HEART SYMPTOMS? Check either "Mild," "Moderate," or "Severe" for each day of the week. If you do not have symptoms, check "None."	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe	☐ None ☐ Mild ☐ Moderate ☐ Severe
Did you take your MEDICATIONS as scheduled? Check either "Yes" or "No" for each day of the week.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Did you limit your SODIUM intake? Check either "Yes" or "No" for each day of the week.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Did you follow your EXERCISE plan? Check either "Yes" or "No" for each day of the week. If you do not have an exercise plan, check "Not Required."	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required
Did you follow your DIET plan? Check either "Yes" or "No" for each day of the week. If you do not have a special diet plan, check "Not Required."	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required	☐ Yes ☐ No ☐ Not Required

IS there any other information you would like to share with us? Please write down your comments: _____

_____

_____

A few more questions:

PLEASE answer the following questions. If you do not smoke leave that question blank.

Did your heart condition prevent you from going to WORK during the week?

☐ YES ☐ NO

Did you need to use the HOSPITAL or Emergency Room during the week?

☐ YES ☐ NO

Did you see your DOCTOR during the week?

☐ YES ☐ NO

If your doctor made any changes to your medication make sure you IMMEDIATELY notify your Health Care Provider.

WHICH Warning Signs did you experience?

- ☐ Rapid/irregular heartbeat
- ☐ Breathing problems
- ☐ Increased cough
- ☐ Dizziness
- ☐ Weight gain
- ☐ Swelling

WHEN did the most severe episodes occur?

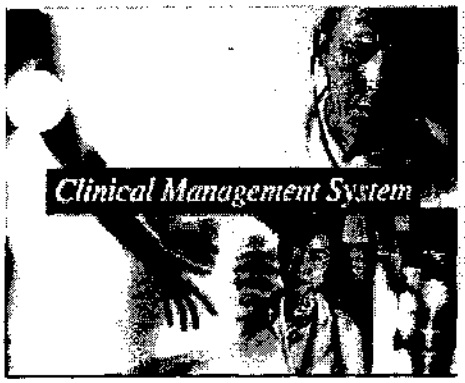
- ☐ when laying down
- ☐ when active
- ☐ when sleeping
- ☐ when sitting

How much did you SMOKE?

Write down the number of cigarettes/cigars/pipefuls you smoked on average each day.

IF your Care Plan includes other medical conditions please make sure you complete and forward ALL of your Weekly Recorders.

THANK YOU



I.D.#: MM-234-2400
Patient Name: Vivian C. Clark
Date of Birth: 02/09/1959
Primary Physician: Samantha S. Strong, MD

SAMPLE

Program(s)
Heart Failure, Healthy Lifestyle

Vivian C. Clark,

The program you are enrolled in is designed to help you manage and improve your health. To help you achieve your health goals, your healthcare team will provide you with information and work with you to develop a personalized care plan.

Plan

Refer to the following list of reminders, suggestions, and information in order to help you meet your health goals:

Heart Failure: Introduction
Review handouts for next visit
Heart Failure: Medications - Role of medications
Read and review information for Lasix, Captopril
Heart Failure: Patient and care plan goals
Heart Failure: Self monitoring - Daily weight
Heart Failure: Signs and symptoms
Heart Failure: Weekly recorder
Weigh yourself daily and record in your weekly log; return log every week
Heart Failure: When to call MD

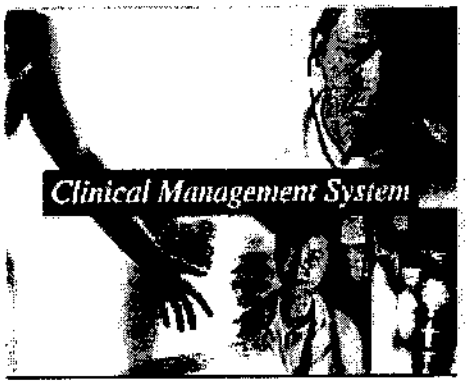
We will review these together during your next contact.

Please feel free to contact us regarding any questions you have. We look forward to working with you and helping you achieve the benefits of a healthy lifestyle.

Next contact:

Date:
Time:

Clinician Name	Signature	Telephone Number	Date



I.D.#: MM-234-2400
Patient Name: Vivian C. Clark
Date of Birth: 02/09/1959
Primary Physician: Samantha S. Strong, MD

SAMPLE

Program(s)
Heart Failure, Healthy Lifestyle

Measurement(s)

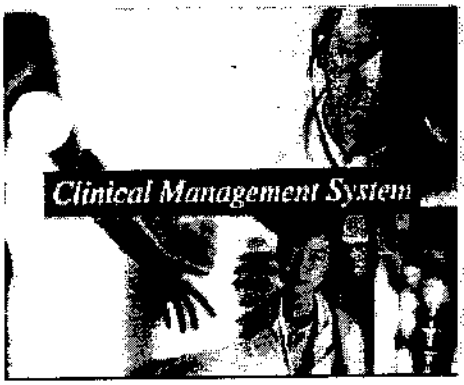
This is a summary of your most recent clinical values.

Date	Measurement	Value
01/27/2000	Weight (lbs)	140
11/16/1999	Goal: Weight (lbs)	136
12/16/1999	Blood Pressure, Systolic	150
11/16/1999	Goal: Blood Pressure, Systolic	120
12/16/1999	Blood Pressure, Diastolic	95
11/16/1999	Goal: Blood Pressure, Diastolic	80
11/16/1999	Total cholesterol (mg/dL)	220
11/16/1999	Goal: Total cholesterol (mg/dL)	200
11/16/1999	HDL cholesterol (mg/dL)	36
11/16/1999	Goal: HDL cholesterol (mg/dL)	60
11/16/1999	Triglyceride (mg/dL)	220
11/16/1999	Goal: Triglyceride (mg/dL)	150
11/16/1999	LDL cholesterol (mg/dL)	175
11/16/1999	Goal: LDL cholesterol (mg/dL)	100
01/27/2000	Body Mass Index	22.64

Medication(s)

This is our record of your current medications. Please notify us if there is any change.

Date	Medication
11/18/1999	Captopril 25 mg, 1 three times a day
11/11/1999	Prozac 20 mg, 1 every day
10/14/1999	KCl-20 20 meq/15ml, 1 every day
08/19/1999	Lasix 40 mg, 1 twice daily

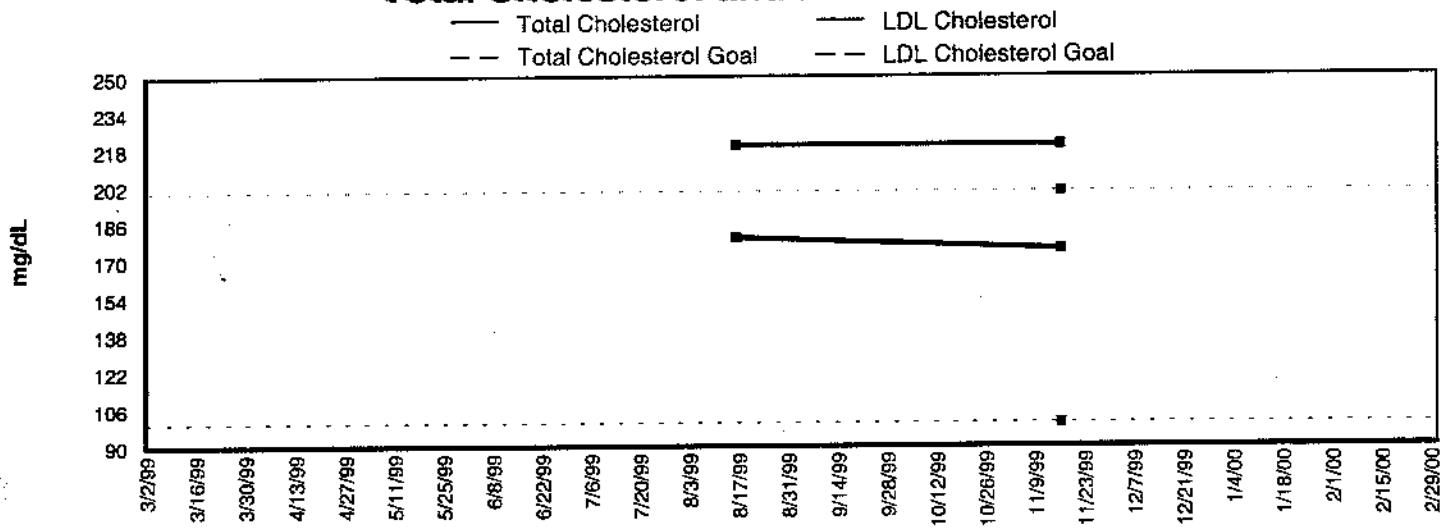


I.D.#: MM-234-2400
Patient Name: Vivian C. Clark
Date of Birth: 02/09/1959
Primary Physician: Samantha S. Strong, MD

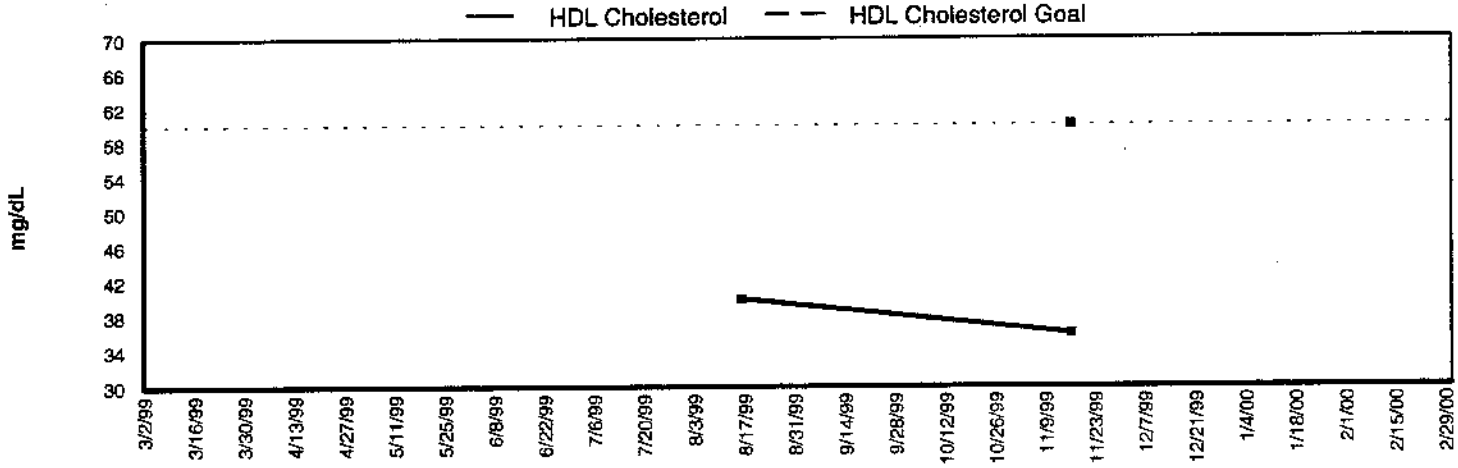
SAMPLE

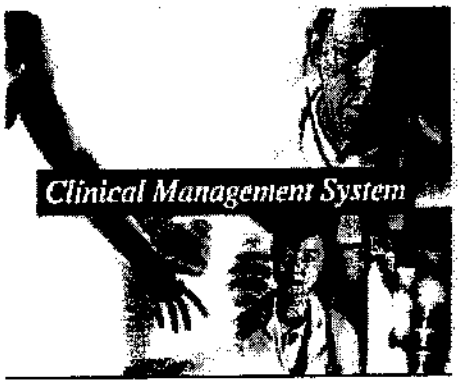
Program(s)
Heart Failure, Healthy Lifestyle

Total Cholesterol and LDL Cholesterol



HDL Cholesterol





I.D.#: MM-234-2400
Patient Name: Vivian C. Clark
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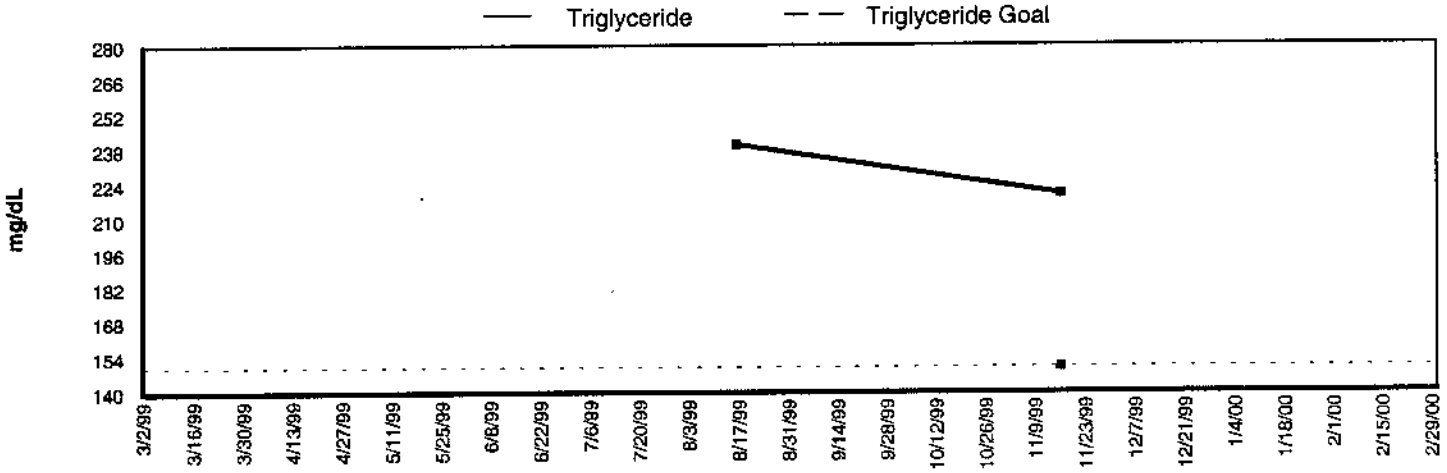
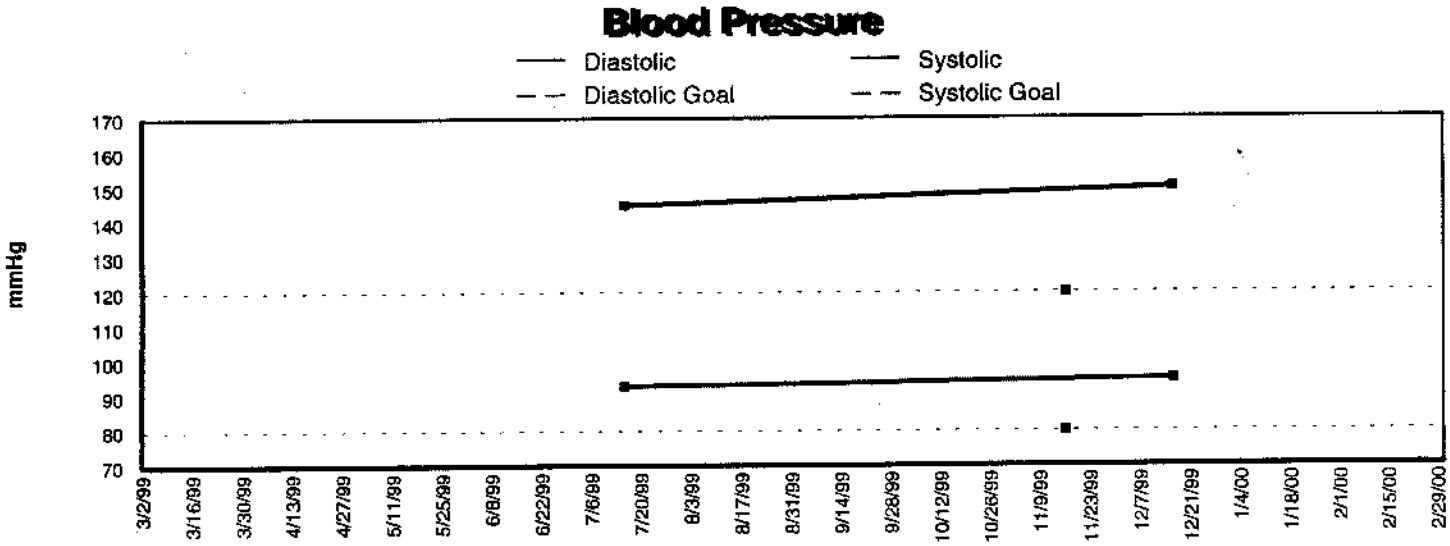
SAMPLE

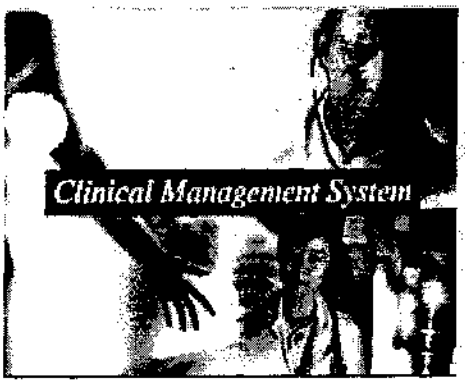
Program(s)
Heart Failure, Healthy Lifestyle

Triglyceride



Blood Pressure



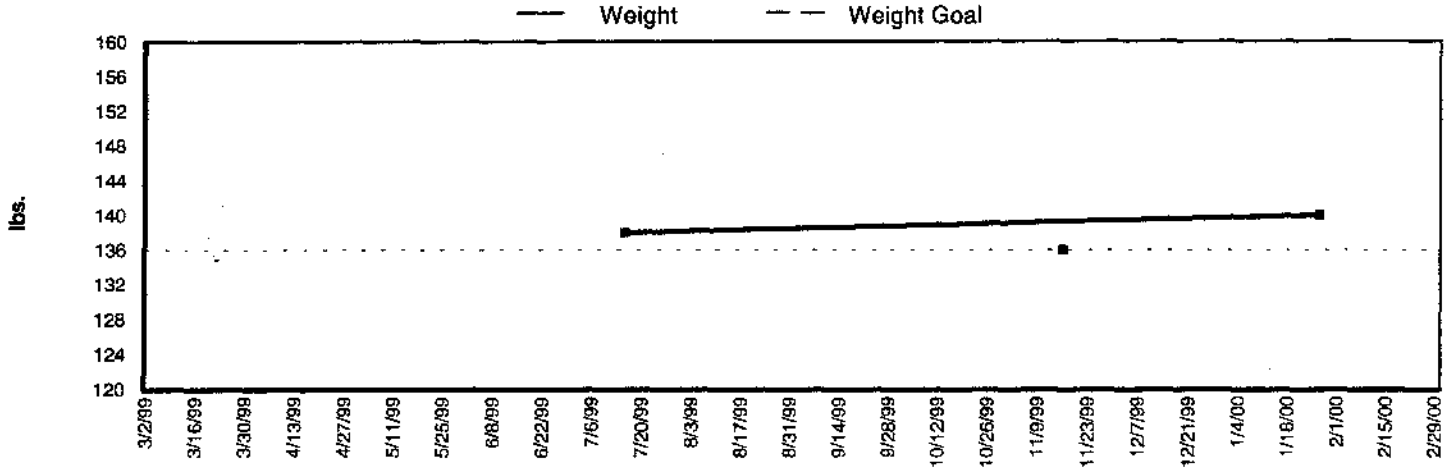


I.D.#: MM-234-2400
Patient Name: Vivian C. Clark
Date of Birth: 02/09/1959
Primary Physician: Samantha S. Strong, MD

SAMPLE

Program(s)
Heart Failure, Healthy Lifestyle

Weight



Health Checkbook

ME Cares

Cholesterol	LDL	HDL	TRI	Date	Glucose (HbA1c)	Date
				/ /		/ /
				/ /		/ /
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				/ /		/ /
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Blood Pressure	Date	Blood Pressure	Date
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Medical Care Development, Inc. and ME Cares are the executive producers of this Health Checkbook.

Supported by a grant from Pfizer Health Solutions Inc, the care management subsidiary of Pfizer Inc.

Printed in USA/December 2003

Health Record of

Name

Date of birth

Address

Phone

eMail

My Healthcare Team

Nurse

Phone

Physician

Phone

Cardiologist

Phone

Weight (lbs)	Date	Ejection Fraction	Date
	/ /		/ /
	/ /		/ /
	/ /		/ /
	/ /		
	/ /	**Shots**	
	/ /	Flu	/ /
	/ /		
	/ /	Pneumococcus	/ /
	/ /		
	/ /	Other	/ /
	/ /		/ /
	/ /		/ /
	/ /		/ /
	/ /		/ /
	/ /		/ /

Medications—Brand/Generic	Dose	How Often	Start	End
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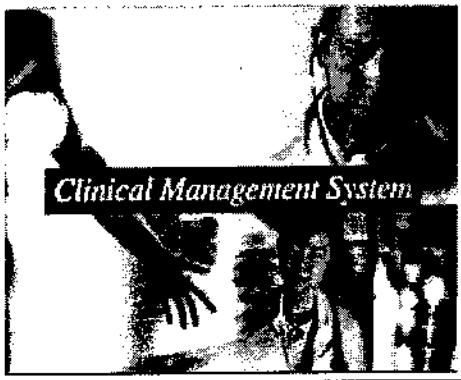
Medications I Cannot Take	Reasons

Allergies



I.D.#:	MM-234-2400
Patient:	**Vivian C. Clark**
Date of Birth:	02/09/1959
Day Phone:	714-555-1245
Version:	2
Entered By:	System Administrator
Last Modified Date:	03/02/2000 04:25:45 PM

Notes Report

Subject: Follow-up Assessment

Subjective

VC is a 41 y/o WF enrolled into the Heart Failure program. She currently reports of weight gain and peripheral edema with overall heart failure symptoms described as moderate severity and worse than normal. Currently, she is not pregnant but is planning in near future.

Objective

Pt classified as NYHA heart failure class II (systolic failure, valvular etiology) since 1998 and hx of HTN (high normal stage) diagnosed earlier last year (1999), migraine and PUD. She reports positive cardiac family history (HF and HTN).

Allergies: Peanuts, PCN
Intolerance:NSAIDs
[illegible]: Lasix, KCL, Prozac, Captopril
Labs: No current labs available (last set 11/99) LDL175
V/S: Wt 140 lbs (4 lbs above goal)
Compliance:Non-compliant with diet, exercise, self-monitoring weight

Assessment

Worsening heart failure secondary to non-compliance issues, subtherapeutic diuretic dose.

Plan

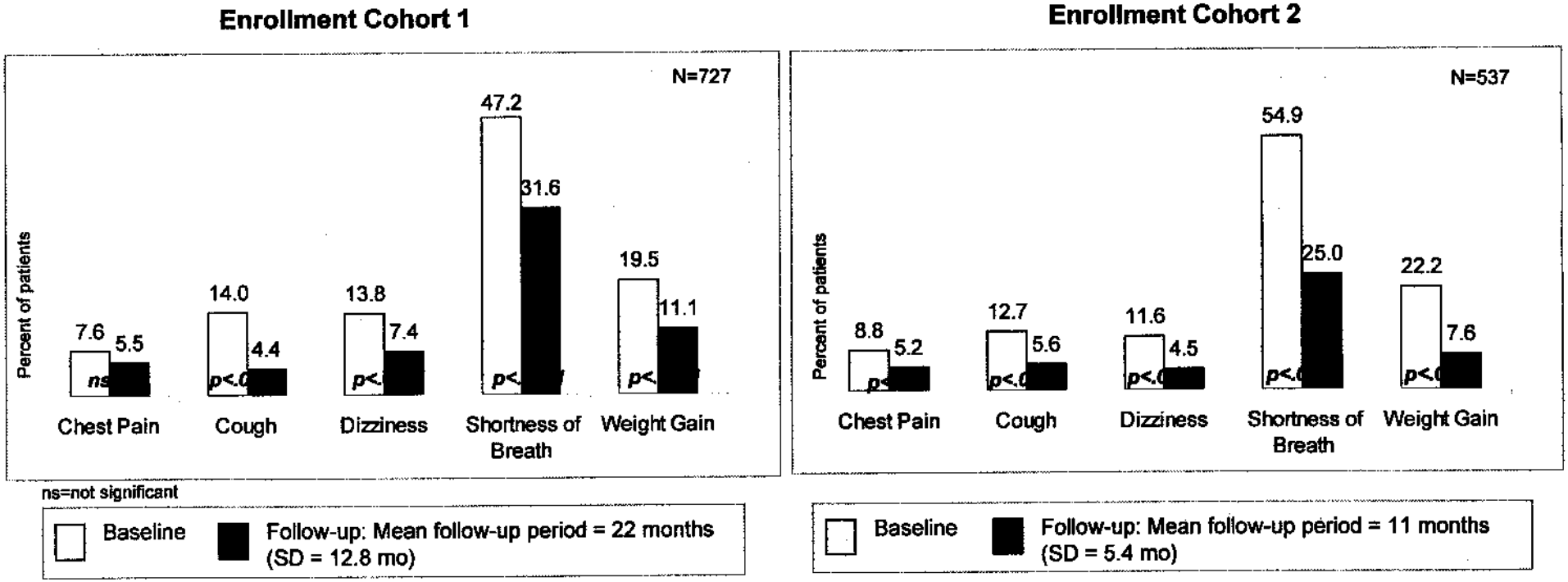
Care plan developed to address compliance issues (medications, self-monitoring), Schedule enrollment into Heart Failure Class Suggest diuretic/potassium adjustment, addition of HMG-CoA reductase because of increasing LDL and CVD risk factors; discussing ACEI use with planned pregnancy.

Physician Instructions

Doctor wants immediate referral for all new symptoms.

Acute HF Symptoms

Presence of acute heart failure symptoms in past week



ns=not significant

Baseline

Follow-up: Mean follow-up period = 22 months (SD = 12.8 mo)

Baseline

Follow-up: Mean follow-up period = 11 months (SD = 5.4 mo)

NOTE:This metric is not part of the minimum data set.

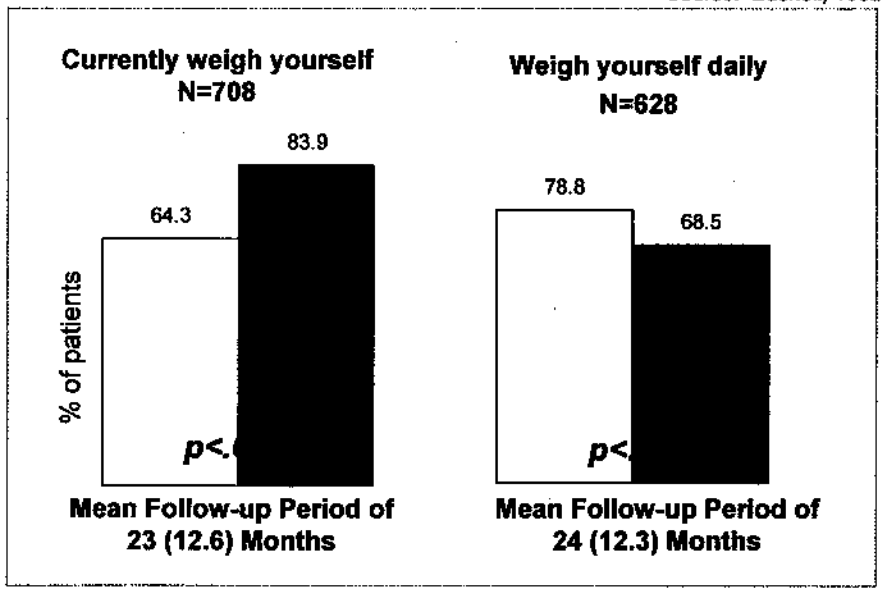
NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or program's overall experience.

Self-Monitoring of Weight at Home

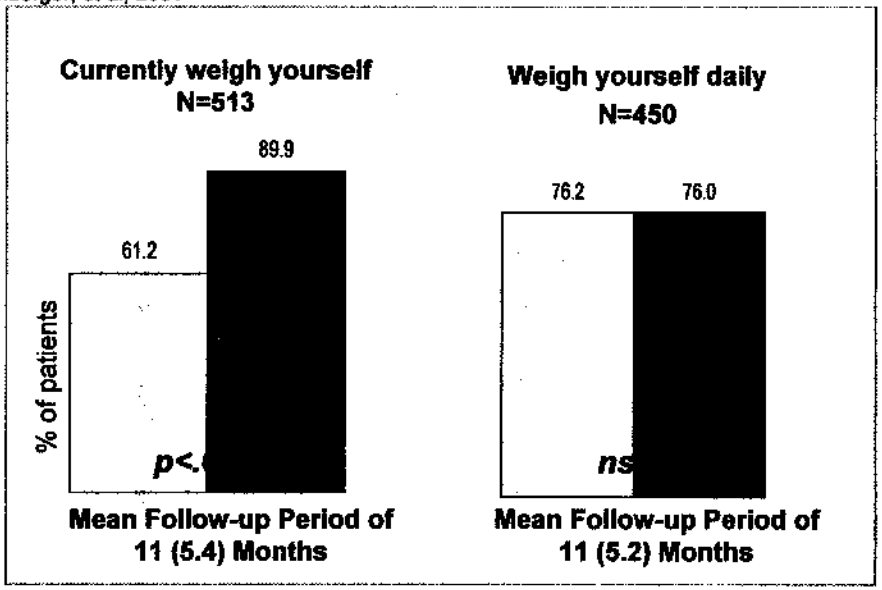
57% to 75% of heart failure patients monitor their weight on a daily basis.

Source: Busnell, 1992; Herschberger, et al, 2001

Enrollment Cohort 1



Enrollment Cohort 2



**ns=not significant

NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or program's overall experience.

Changes in Patient Knowledge of Heart Failure Symptoms

Enrollment Cohort 1

N=289	Mean Follow-up of 28(10.1) Months		
Baseline	**1. Adequate**	**2. Somewhat adequate**	**3. Inadequate**
1. Adequate	128	10	
2. Somewhat adequate	59	33	6
3. Inadequate	24	21	8

N (%) Improved = 83 (55%)**

Enrollment Cohort 2

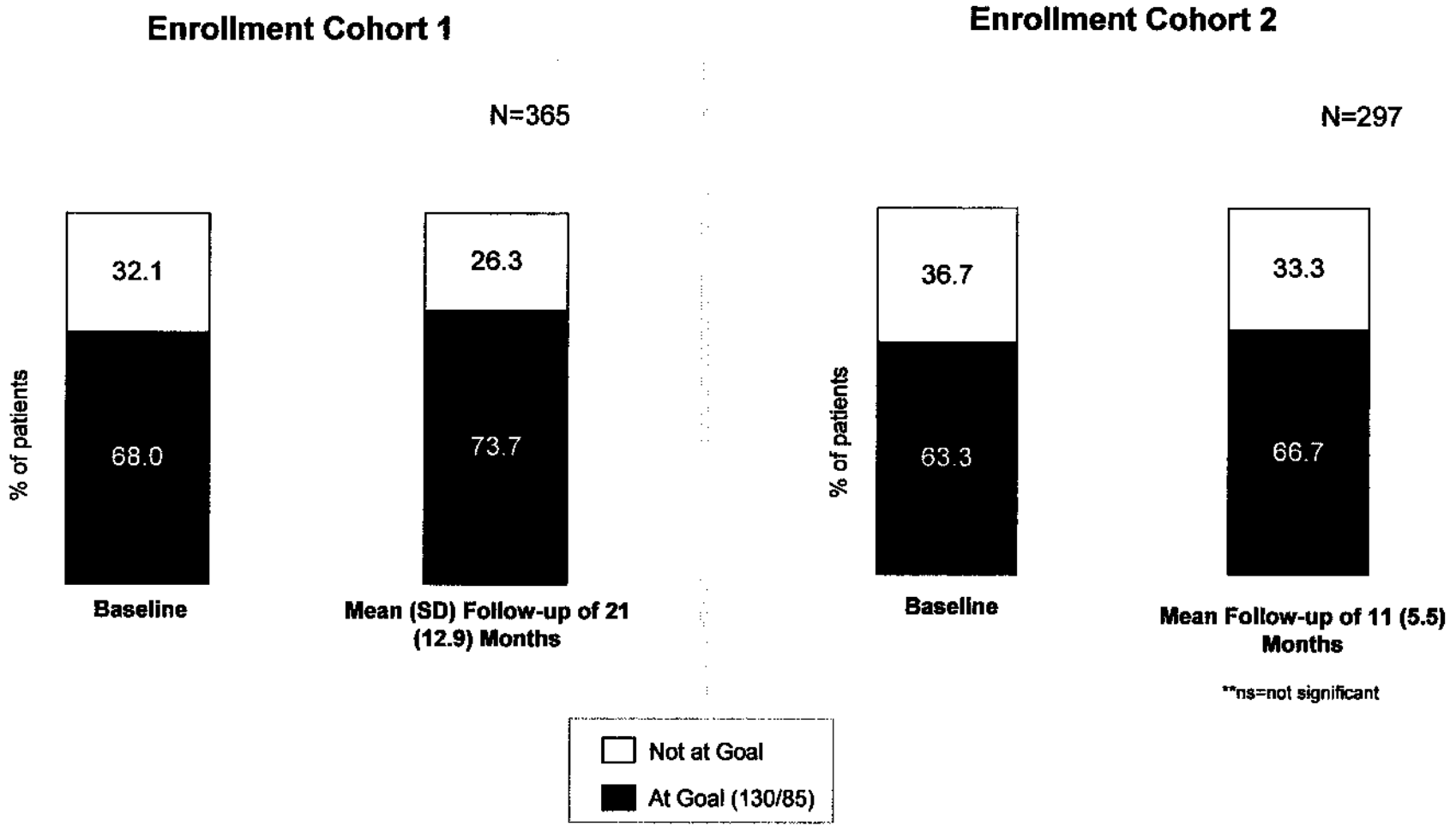
N=243	Mean Follow-up of 13(4.4) Months		
Baseline	**1. Adequate**	**2. Somewhat adequate**	**3. Inadequate**
1. Adequate	59	11	1
2. Somewhat adequate	81	34	5
3. Inadequate	29	16	7

N (%) Improved = 110 (64%)**

** "Improved" defined as those who were inadequate or somewhat adequate at baseline who became adequate at follow-up

NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or program's overall experience.

HF Patients Without Diabetes Meeting BP Goals



NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or program's overall experience.

Medication Compliance Among HF Patients

Enrollment Cohort 1

Changes in Care Manager Assessment of Patient Medication Compliance

N=340	Mean Follow-up of 26(11.3) Months		
	1. Compliant	2. Somewhat compliant	3. Non-compliant
Baseline			
1. Compliant	238	2	2
2. Somewhat compliant	50	21	2
3. Non-compliant	3	4	1

Improved	**57 (17%)**
Stayed the same	**260 (76%)**
Worsened	**23 (7%)**

Compliance rate of ACE inhibitors among heart failure patients ranges from 46% to 86%.

Source: Lightwood, et al, 2001

Enrollment Cohort 2

Changes in Care Manager Assessment of Patient Medication Compliance

N=314	Mean Follow-up of 13(4.6) Months		
	1. Compliant	2. Somewhat compliant	3. Non-compliant
Baseline			
1. Compliant	243	1	1
2. Somewhat compliant	37	12	1
3. Non-compliant	4	2	

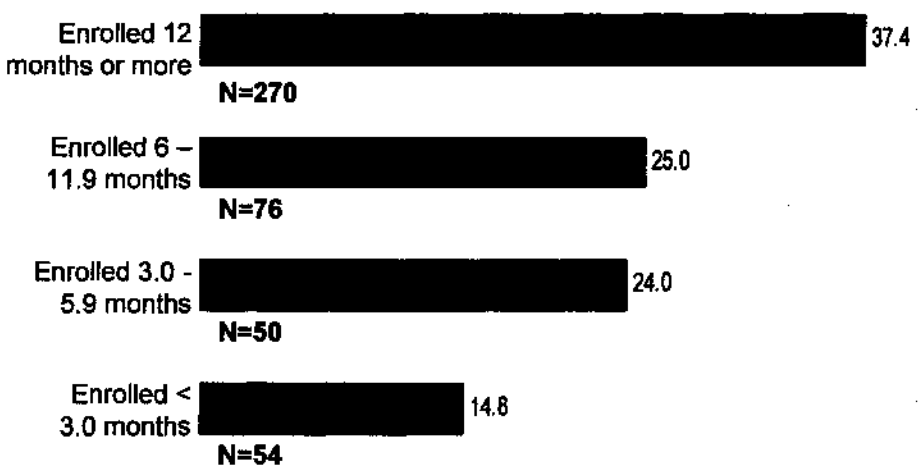
Improved	**43 (14%)**
Stayed the same	**255 (81%)**
Worsened	**16 (5%)**

NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or Program's overall experience.

Increase in Percentage of HF Patients Using ACE/ARB Over Baseline

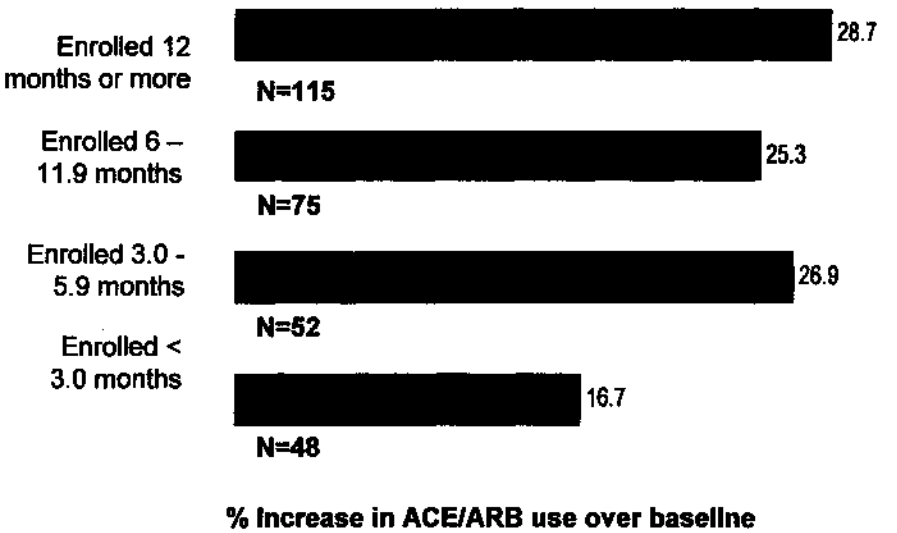
Enrollment Cohort 1

ACE/ARB use among HF Patients with EF < 40%



Enrollment Cohort 2

ACE/ARB use among HF Patients with EF < 40%



NOTE: All currently available data regarding this outcome has been presented, however, these results may not reflect the hospital or program's overall experience.

"Best In Class"

Greatest Percent Improvement

This chart shows baseline and follow-up measures for those sites that demonstrated the greatest % of improvement for HF and CVD elements.

Highest Performance at Follow-up

This chart shows the highest % achieved at follow-up by any sites(s)

Heart Failure Measures	Site Code	Baseline %	Follow-up %	Change	Site Code	Highest % Achieved at Follow-up
Self Monitoring of Weight	M	32.3	87.5	**55.2**	A, H, D	**100%**
Daily self-monitoring of weight	F	45.8	66.7	**20.9**	K, A	**100%**
HF patients without diabetes meeting BP goals	D	60	80	**20**	U	**85.7%**
HF Patients with Diabetes meeting BP goals	V	56	80	**24**	V	**80%**
ACE/ARB use among HF patients with EF </= 40%	L	40	82.5	**42.5**	Z	**88.9%**
Beta blocker use among HF patients	M	37.2	76.7	**39.5**	E	**85.7%**
Anti-lipidemic use among HF patients	K	52.6	79	**26.4**	O	**65.5%**

CVD Measures	Site Code	Baseline %	Follow-up %	Change		
CVD patients without diabetes meeting BP goals	M	61.1	73.5	**12.4**	M	**73.5%**
CVD patients with diabetes meeting BP goals					O	**64%**
CVD patients with diabetes meeting A1c goals	M	28.6	64.3	**35.7**	M	**64.3%**
CVD patients meeting LDL goals	L	37.5	76.7	**39.2**	L	**76.7%**
CVD patients meeting Physical activity goals	M	59.1	78	**18.9**	I	**80%**
ACE/ARB use among CVD patients	O	31.8	51.4	**19.6**	S	**53.3%**
beta blocker use among CVD patients	O	53.4	79.7	**26.3**	M	**87.6%**
Anti-platelet use among CVD patients	O	50.7	86.5	**35.8**	L	**90.3%**
anti-lipidemic use among CVD patients	O	46	83.8	**37.8**	S	**93.3%**

ME Cares Outcomes Report 2004 - HF
Site Comparison of Overall Performance and Improvement

Hosp Code	Self Monitoring of Weight			Daily Monitoring of Weight			HF patients without diabetes Meeting BP Goals			HF Patients with Diabetes meeting BP goals			ACE/ARB use among HF patients with EF <= 40%			Beta blocker use among HF patients			Anti-lipidemic use among HF patients		
	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change
M	32.3	87.5	**55.2**	79.9	72.8	**-7.1**	71.3	76.1	**4.8**	60.9	69.6	**8.7**	35.5	73.8	**38.3**	37.2	76.7	**39.5**	28	44.2	**16.2**
K	92.9	92.9	**0**	84.6	100	**15.4**							no data			42.1	79	**36.9**	52.6	79	**26.4**
V	72.2	84.9	**12.7**	77.1	72	**-5.1**	65.6	57.4	**-8.2**	56	80	**24**	47.9	72.9	**25**	34.6	51.5	**16.9**	25	40.4	**15.4**
N	69.1	86.9	**17.8**	75.3	54.6	**-20.7**	67.4	72.1	**4.7**	50	70	**20**	65.7	77.1	**11.4**	45.2	54.8	**9.6**	41.4	48.1	**6.7**
T	67.3	87.3	**20**	70.6	45.1	**-25.5**	60	60	**0**			**0**	70.8	70.8	**0**	40.3	58.2	**17.9**	37.3	47.8	**10.5**
W	86.8	88.7	**1.9**	61.2	61.2	**0**	47.7	59.1	**11.4**			**0**	64.3	64.3	**0**	51.4	62.2	**10.8**	40.5	46	**5.5**
R	63	71.7	**8.7**	74.3	62.9	**-11.4**	50	40	**-10**			**0**	45.8	70.8	**25**	40.6	54.7	**14.1**	17.2	28.1	**10.9**
G	47.8	65.2	**17.4**	94.4	72.2	**-22.2**	43.8	37.5	**-6.3**			**0**	78.6	64.3	**-14.3**	40.6	46.9	**6.3**	34.4	37.5	**3.1**
U	93.2	87.9	**-5.3**	78.5	80.8	**2.3**	71.4	85.7	**14.3**	46.7	60	**13.3**	38.2	72.1	**33.9**	29.2	65.3	**36.1**	22.2	45.8	**23.6**
I	52.9	94.1	**41.2**	96.9	96.9	**0**	68.2	81.8	**13.6**	41.7	58.3	**16.6**	16.7	50	**33.3**	42.9	45.7	**2.8**	34.3	25.7	**-8.6**
F	40	83.3	**43.3**	45.8	66.7	**20.9**	43.8	50	**6.2**	38.5	38.5	**0**			**0**	42.4	60.6	**18.2**	24.2	33.3	**9.1**
S	55.1	69.4	**14.3**	76.3	57.9	**-18.4**	68.4	68.4	**0**			**0**	53.3	86.7	**33.4**	41.7	50	**8.3**	31.7	40	**8.3**
A	92.3	100	**7.7**	84.6	100	**15.4**			**0**			**0**			**0**	46.7	66.7	**20**	46.7	53.3	**6.6**
E	58.8	82.4	**23.6**	84.6	76.9	**-7.7**	69.2	76.9	**7.7**			**0**			**0**	71.4	85.7	**14.3**	33.3	42.9	**9.6**
X	86.7	86.7	**0**	85.7	85.7	**0**			**0**			**0**			**0**	22.2	50	**27.8**	16.7	33.3	**16.6**
Z	79.5	94.9	**15.4**	75.7	86.5	**10.8**	83.3	83.3	**0**			**0**	77.8	88.9	**11.1**	37.8	48.9	**11.1**	28.9	37.8	**8.9**
H	97.4	100	**2.6**	86.8	84.2	**-2.6**	66.7	75.8	**9.1**			**0**	51.4	75.7	**24.3**	52.9	75	**22.1**	39.7	52.9	**13.2**
D	80	100	**20**	72.2	66.7	**-5.5**	60	80	**20**			**0**			**0**	26.9	47.8	**20.9**	25.4	40.3	**14.9**
O	81.3	93.8	**12.5**	66.7	73.3	**6.6**	57.1	57.1	**0**			**0**	64.7	88.2	**23.5**	55.2	72.4	**17.2**	41.4	65.5	**24.1**
L	90.5	82.5	**-8**	83.9	67.7	**-16.2**	65.5	79.3	**13.8**			**0**	40	82.5	**42.5**	35.7	72.9	**37.2**	34.3	51.4	**17.1**

ME Cares Outcomes Report 2004 - CHD
Site Comparison of Overall Performance and Improvement

Hosp Code	CVD patients without diabetes meeting BP goals			CVD patients with diabetes meeting BP goals			CVD patients with diabetes meeting A1c goals			CVD patients meeting LDL goals			CVD patients meeting Physical activity goals			ACE/ARB use among CVD patients			beta blocker use among CVD patients		
	baseline	Follow-up	Change	baseline	Follow up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change	baseline	Follow-up	Change
M	61.1	73.5	12.4	60	60	0	28.6	64.3	35.7	39.7	72	32.3	59.1	78	18.9	41.9	49.7	7.8	79.2	87.6	8.4
I	63.6	60.6	-3			0			0	53.3	46.7	-6.6	65	80	15	31.2	37.7	6.5	57.1	64.9	7.8
F			0			0			0			0			0	46.2	38.5	-7.7	61.5	61.5	0
S			0			0			0			0			0	46.7	53.3	6.6	73.3	80	6.7
O	69.1	65.5	-3.6	68	64	-4	9.1	31.8	22.7	46.2	69.2	23	83.3	71.7	-11.6	31.8	51.4	19.6	53.4	79.7	26.3
L	60.8	57.8	-3	48	48	0	10	40	30	37.5	76.7	39.2			0	32.5	44.8	12.3	76.2	85.9	9.7

Hosp Code	Anti-platelet use among CVD patients			anti-lipidemic use among CVD patients		
	baseline	Follow-up	Change	baseline	Follow up	Change
M	82.5	89.5	7	77.7	88.1	10.4
I	77.9	63.6	-14.3	54.6	59.7	5.1
F	69.2	76.9	7.7	38.5	38.5	0
S	73.3	86.7	13.4	73.3	93.3	20
O	50.7	86.5	35.8	46	83.8	37.8
L	82	90.3	8.3	71.1	84.5	13.4

Dear Nurse Care Manager,
As part of the ME Cares / MCCD quality improvement program, from time to time we monitor specific aspects of the program for accuracy, consistency, adherence to program standards and to identify potential opportunities for improvement.

The following ANALYSIS OF NURSE / PATIENT CONTACTS is a review of the frequency of contacts between nurse care managers and patients enrolled in the MCCD project. Aggregate program values for this study are presented at the bottom of the chart. Use the hospital code provided in the cover letter of your 2004 Outcomes Reports to find and examine your own data. Please use this information to assist you in evaluating your program.

If you have questions, or if you'd like to discuss this information further, don't hesitate to contact me.
Thanks.
Claudette

ME Cares / MCCD ANALYSIS OF NURSE / PATIENT CONTACTS:

Program Standard: Based on ME Cares standards and MCCD project reporting requirements, there is an expectation that the nurse care manager will attempt to contact enrolled patients at least 4 times during the first month of enrollment, monthly thereafter for HF patients, and monthly for CHD patients for at least the first several months. A monthly report of nurse contacts with enrolled patients is required by the Medicare Coordinated Care Demonstration; and reimbursement is provided to hospitals monthly, per enrolled patient, for provision of care coordination services.

Study Parameters: Patient contacts reported on MCCD Table I from all participating sites from July through December 2003 are included in this analysis. The average number of nurse/patient contacts is calculated on (1) the total number of patients contacted, and on (2) the total number of patients enrolled during the study period.

Diagnosis	Hospital Code	Average # Contacts per Contacted Patient per month	Average # Contacts/ All Enrolled per month		Diagnosis	Hospital Code	Average # Contacts per Contacted Patient per month	Average # Contacts/ All Enrolled per month
CHD	A	1.0	1.0		CHF	A	1.1	1.1
CHD	C	0.0	0.0		CHF	C	0.0	0.0
CHD	D	0.0	0.0		CHF	D	1.1	0.9
CHD	I	0.7	0.7		CHF	I	1.1	1.1
CHD	K	1.2	1.0		CHF	K	1.1	1.1
CHD	F	1.1	1.1		CHF	F	1.4	1.4
CHD	M	1.7	1.6		CHF	L	1.7	1.7
CHD	R	1.9	1.9		CHF	E	2.0	2.0
CHD	S	0.6	0.6		CHF	S	0.9	0.7
CHD	U	0.5	0.3		CHF	G	1.3	1.3
CHD	V	0.8	0.8		CHF	V	2.0	2.0
CHD	Z	0.3	0.3		CHF	Z	1.7	1.5
					CHF	T	1.0	1.0
					CHF	N	1.3	1.3
					CHF	Q	0.5	0.5
					CHF	J	1.0	0.7
CHD	ALL	1.5	1.4		CHF	ALL	1.5	1.3

One-page physician report

CONGESTIVE HEART FAILURE PROGRAM
A Participant in the ME Cares Coalition Project

Phone: **Fax:**

Date: ___/___/___
Patient Name: ____
Program Entry Date: ___/___/___
Physician: ____ **Fax #:** (___)____
Nurse Care Manager:
☐ URGENT – Please respond within ____hrs
☐ ASAP – Please respond by ___/___/___
☐ ROUTINE – Respond as indicated below

Symptoms/Observations Requiring Attention: ☐ Orthopnea/PND ☐ Angina ☐ Other

Patient-reported Weight ____ lb on ___/___/___ date Weight loss/ gain of ____ + or – lb over ____ days ☐ Weight Trend Attached

Baseline NYHC ____ Current NYHC ____

Last Provider Contacts:
☐ Scheduled PCP visit ___/___/___
☐ Unscheduled PCP visit ___/___/___
☐ Telephonic Contacts (↑↓)
☐ Hospitalization ___/___/___
☐ ER visit ___/___/___

VS/Physical Exam (If available) ☐ VS Trend Attached

Significant Labs

Persistent Risk Factor Issue
☐ Smoking
☐ Diabetes
☐ Lipids
☐ BP
☐ Obesity
☐ Physical Inactivity
☐ Depression/Stress
Relevant Co-morbidity ____
Comments:

Guideline Variance
(RN include rationale re: not on/not @ goal, if known)
☐ EF ____ on ___/___/___ date by ____ method
☐ Anti-platelet
☐ ACE-I/Approved Substitute
☐ Beta Blockers
☐ Spironolactone
☐ Lipid management
Comments:

FOR PHYSICIAN REVIEW

Physician confirm √	MEDICATIONS	Physician confirm √	
☐	1	☐	11
☐	2	☐	12
☐	3	☐	13
☐	4	☐	14
☐	5	☐	15
☐	6	☐	16
☐	7	☐	17
☐	8	☐	18
☐	9	☐	19
☐	10	☐	20

	PROBLEM:	RECOMMENDATION:
1		
2		
3		
4		
5		
6		
7		
8		

RN SIGNATURE **DATE:** ___/___/___ **TIME:**

Date	Time		PHYSICIAN ORDERS (Please return by fax to nurse at (207) 973-5986. Thanks!)
___/___		1	
		2	
		3	
		4	
		5	
		6	
		7	

PHYSICIAN SIGNATURE **DATE:** ___/___/___