Contract No.: 500-95-0047 (09)
MPR Reference No.: 8756-310

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Policy Research, Inc.

The Early Experience of the Medical Care Development Medicare Coordinated Care Demonstration Program

Final Report

December 9, 2003

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Submitted to:

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EXECUTIVE SUMMARY

In January 2001, the Centers for Medicare & Medicaid Services (CMS) selected Medical Care Development, Inc. to operate a demonstration program as part of its Medicare Coordinated Care Demonstration (MCCD). Mathematica Policy Research, Inc. is evaluating the 15 programs in the demonstration, as well as 1 program that is participating in CMS's Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus. The evaluation uses a randomized design to test the impact of care coordination on care quality, health service use, and health service costs. This case study, which is based on document review and telephone interviews with program staff conducted three months after the program began enrolling patients, documents MCD's early experiences in the demonstration. MCD is one of the three rural programs mandated to be in the MCCD. A report that examines preliminary program impacts and provides a detailed description of program implementation is planned for mid-2003.

Experience with Care Coordination. MCD, the host organization (the entity receiving Medicare payment for demonstration services), is a large nonprofit health organization based in Augusta, Maine. MCD's role in the demonstration is to coordinate and provide technical assistance, quality assurance, data, and financial services for a loose, voluntary statewide coalition of hospitals, called ME Cares ("Maine Cares"), that are the actual clinical sites for the demonstration intervention.

The MCD MCCD is an expansion of the ongoing ME Cares cardiac disease management effort, which had previously served primarily non-Medicare patients, to include Medicare FFS beneficiaries. Inspired by two successful disease management programs developed by two Maine hospitals, a broad coalition of Maine hospitals, managed care organizations, state agencies, medical societies, hospital associations, and MCD met in 1998 to study disseminating similar programs statewide. The coalition became ME Cares and began implementing CHF and CAD disease management programs in early 2000. A handful of insurers agreed to cover the services, but most hospitals used their own resources to start their programs with no assurance that program services would ever be reimbursed..

The ME Cares steering committee and MCD formulated a set of standards that hospitals wishing to participate in ME Cares must meet. Some of the standards are specific, but others leave room for interpretation by each participating hospital. Hospital participation in the ME Cares coalition and adherence to the standards is completely voluntary, and MCD plays no verification or enforcement role. The steering committee and MCD also selected a common disease management software system for all ME Cares participating hospitals to use, Pfizer Health Solutions' Clinical Management System® (CMS®),[1] and specified a uniform subset of the patient-level variables collected in the CMS® software to be routinely transmitted by the participating hospitals, after stripping off patient identifiers, to a data-processing contractor.

[1] We will refer to the software as "CMS® software" to distinguish it from CMS, the Centers for Medicare & Medicaid Services.

At the time of our interviews, 11 of the roughly 30 ME Cares hospitals, mainly smaller hospitals, had started enrolling patients for the MCD MCCD (that is, had agreed to have their Medicare FFS patients randomly assigned to receive their ongoing ME Cares interventions in the context of the demonstration). MCD originally proposed for their demonstration a comparison group design that did not involve random assignment, but later agreed to a more rigorous random assignment design. MCD did not initially propose a randomized design for three reasons: (1) unfamiliarity of staff in small rural hospitals with random assignment studies, (2) anticipated objections of physicians and patients to two standards of care (control and intervention), and (3) possible intervention effects on physicians' treatment of control patients, weakening the program's apparent impact. Twenty-three hospitals are eventually expected to participate in the MCD MCCD. The MCD MCCD enrolls patients with CHD or CHF, but hospitals may choose to participate for just one condition or both. Patient recruitment and the intervention itself occurs at the local participating hospitals. In fact, each hospital can have its own name for the program. The NCMs are hospital employees already working on ME Cares, and now also enrolling and performing case management for FFS Medicare beneficiaries under the demonstration. Each hospital also has a local ME Cares medical director, a community physician willing to take on this role.

MCD established the MCCD project budget and monitors project spending. Every month, MCD receives enrollment information from the hospitals and submits demonstration claims to Medicare. MCD distributes per-enrollee-per-month payments to the participating hospitals and to enrollees' primary physicians. MCD also holds the subcontract for the demonstration data processing subcontractor and oversees the transmission of demonstration data from the hospitals to this data contractor, as well as the forwarding of demonstration data to MPR and BearingPoint Inc., CMS' implementation contractor for the nationwide demonstration.

Goals and Eligibility Criteria. The MCD MCCD has two primary goals: (1) improving beneficiary education and adherence, and (2) improving communication and coordination between beneficiaries and physicians. The program expects to achieve the first goal through one-on-one teaching and counseling provided by the NCMs to patients during telephone contacts, and the second goal through NCMs translating the primary physician's goals for each patient into clear messages that the patient can really grasp. Supporting primary physicians with national guideline-based treatment suggestions is a secondary program goal. The program targets Medicare beneficiaries hospitalized at any of the participating hospitals with specific CHF or CHD diagnosis or procedure codes.

Outreach and Enrollment. To identify potential participants, NCMs at each hospital search the daily current inpatient census for patients with the appropriate diagnoses, followed by review of hospital medical records. The NCMs then approach eligible patients for informed consent, and enroll those who agree. Given the eligibility criterion of current hospitalization, MCD MCCD has not directly promoted the program to beneficiaries and does not currently accept physician referrals of outpatients. Each hospital is provided a boilerplate media release to announce and explain the demonstration to the local community, though.

The rate of enrollment has been slower than expected. The first-year enrollment target was 608 beneficiaries, but by December 23, 2002, eight months into its first year, the program had enrolled only 206 participants, roughly half the 405 projected by that time. One of the main

factors behind the enrollment shortfall has been constraints on NCMs' time. Although a few hospitals have full-time NCMs, most participating hospitals are providing staff nurses only on a part-time basis to ME Cares, and thus the MCD MCCD, to function as NCMs. At the majority of hospitals, then, most of the NCMs' time is devoted to other hospital duties that have become increasingly pressing with a statewide nursing shortage. MCD had not originally proposed an experimental design for the demonstration and had not planned for the time-consuming tasks of explaining random assignment and obtaining informed consent. In addition, the larger-volume hospitals had not yet started enrolling, and the MCD staff anticipated more rapid enrollment once these larger hospitals joined the demonstration. Much of the larger hospitals' delay in joining was due to their IRBs needing to review the study following the change to a random assignment design. Another factor may have been opposition among physicians and NCMs to having participants possibly assigned to the control group under random assignment, as many physicians and NCMs already believe their hospital's program is beneficial.

Key Program Staff. At MCD, the key staff are the demonstration project director (who is also the project medical director) and the demonstration care coordination supervisor. The demonstration project director/medical director has overall responsibility for the demonstration and works with the hospital medical directors to promote the project among local primary physicians. The MCD care coordination supervisor works with the NCMs to maintain a standard, consistent disease management program across the ME Cares hospitals, and is responsible for the overall training and care coordination in the demonstration. The MCD staff maintains contact with the local hospital staff through phone calls every one to two weeks, periodic consortium-wide conference calls, and e-mail as needed.

The key personnel at the hospitals are the NCMs, many of whom, as mentioned, are only part-time on the project. They must be registered nurses, nurse practitioners, or physician's assistants with cardiac care or home care experience and current licensure in Maine. Each hospital also has a local medical director, as well as a local NCM supervisor, who may be the NCM's existing nursing supervisor or the medical director. MCD trains the NCMs in a two-day session on clinical issues and the CMS® software system, and also trains the other hospital staff involved in ME Cares (the CM supervisors, medical directors, and financial staff). The MCD MCCD recommends that the hospitals pay the local medical director a modest reimbursement that is included in the hospital per-enrollee-per-month payment, but this is also voluntary, and MCD does not know whether the hospitals are, in fact, doing this.

Care Coordination Components. The MCD MCCD includes assessment, care planning, monitoring, patient education, facilitation of communication between providers and patients, and service arrangement. The NCMs perform an initial assessment on all treatment group members, usually starting with a face-to-face interview in the hospital, in order to assess needs, measure the starting levels of the target outcomes, and determine the frequency of subsequent contacts. The assessment gathers data on patients' symptoms, knowledge, medical history, medication compliance, and functional status. Sources are the patient, the medical chart, and test results from hospital computerized records. Reassessments occur at 6 and 12 months, and after specific trigger events: a request by a primary physician, the development of acute symptoms, an emergency room visit, a hospitalization, a medication adjustment, or abnormal lab results.

Results from the initial assessment and the CMS® software guide the NCM in developing the care plan. The software will, for example, identify medication dosing problems or potential interactions, and establish activities and goals for diet, exercise, and smoking. Other potential sources of input to the care plan include the participant, the primary physician, or the hospital floor nurse.

The NCMs monitor patients through a variety of contacts and assess patients' progress toward the care plan goals at every contact. The ME Cares guidelines and protocols specify how often to make telephone contacts and which questions to ask at each contact. The program is also paying for exercise sessions with cardiac monitoring at the hospitals' cardiac rehab facilities for patients with CHF. Medicare covers monitored exercise as part of cardiac rehab for CHD patients, but not for patients with CHF; under the demonstration, the CHF patients can now join the CHD patients in cardiac rehab sessions. Since many of the NCMs are also their hospitals' cardiac rehab nurses, they are thus able to see their MCCD patients face to face at the monitored exercise classes and assess their progress. Patients with CHD who stabilize will generally stay in the program for one year, while patients with CHF will stay until the end of the demonstration (the evaluation will continue to follow patients, however). Only very rarely do the NCMs feel the need to make home visits.

Patient Education and Coordination Across Providers. The NCMs handle all patient education, with referrals to community education resources as appropriate. There is no formal program-wide patient education curriculum, and NCMs work out their own individual approaches to patient education, drawing upon materials in use at their own hospitals or other materials they find useful. The CMS® software also suggests counseling actions and contains links to pdf files of educational handouts in the software. Patient education covers the broad topics of (1) self-care and self-monitoring behaviors (including when and how to call their primary physicians), (2) adherence to prescribed treatments, and (3) general and disease-specific health knowledge.

The NCMs help ensure that participants get recommended care for their conditions, such as cardiac function tests and blood lipid levels. NCMs encourage patients to talk to their physicians directly to schedule needed services, but also frequently prompt physicians to order these tests, will follow-up with patients or the hospitals' central labs to make sure the tests or procedures have taken place. If the primary physician refuses or disagrees with guideline recommendations, the NCM will ask the local medical director to intervene. The NCMs also track all the unexpected hospitalizations or trips to the emergency room (ER) that they can. The NCMs follow up on all such events in their own hospital through the hospital's medical records department or other databases, or the utilization review department. NCMs try to learn about participants' care from other hospitals from during contacts, and also by checking periodically with nurses at nearby hospitals.

Arranging Services. NCMs get any needed social work support from their hospitals' social work departments and have county directories of community organizations. They are encouraged to stay up to date on available resources. The MCD MCCD will also sometimes pay for a scale or a dietary consult.

Physicians' Expected Role. The program expected that physicians would collaborate with the NCMs and support the NCMs' efforts to help patients change behavior change and increase adherence. The actual degree of contact and collaboration varies from hospital to hospital and depends on the relationships between the NCMs and the physicians and their office staff, some of which are longstanding and close. Some NCMs make daily rounds with physicians or drop by physicians' offices, and if physicians trust the NCMs, they may leave standing orders, reducing the contacts needed. The program has no formal education program for primary physicians and encourages the NCMs to provide "opportunistic" education; that is, to take advantage of specific patient issues to provide physicians and their staff with brief reminders or updates on evidence-based practice guidelines. The NCMs also mail periodic update reports on patients generated by the CMS® system to primary physicians, and send notes as patients approach their goals in the care plan or reach the point of discharge (for patients with CHD). The primary physicians often view the CMS® generated reports as too long to be useful or interesting, however.

Data Systems. The NCMs document initial assessments and care plans in both the CMS® software and other paper or computerized assessment instruments developed by the NCMs or their local hospitals. The CMS® software system does not interface with any of the hospital software systems, and information from these other sources must be specially entered into the CMS® database. Most of the information in the computerized records is in discrete fields. The NCMs try to limit the amount of narrative or free text notes to special situations, such as nurses covering for each other, or additional details for primary physicians.

Early Implementation Experience. By overlaying the demonstration on top of ME Cares, an existing program familiar to hospitals, patients, and physicians, the MCD MCCD appears to have avoided many common start-up problems faced by health care demonstrations, and the intervention was being implemented largely as designed and planned. The favorable experience of physicians with the ongoing ME Cares program, as well as the use of nurses already familiar to local physicians as ME Cares NCMs, minimized any opposition to the program by physicians. Hiring staff and finding space have not been problems, as the participating hospitals provide these.

The lack of assured time for many of the NCMs, combined with the widespread nursing shortage, has posed problems, however. Although the pulling away of NCMs to other hospital duties seems so far to have affected recruitment more than ongoing care coordination activities, inadequate staff hours for care coordination could easily become a problem as enrollment grows. The MCD MCCD is highly dependent on the commitment of the hospitals and vulnerable to any problems the larger ME Cares program might encounter. Even though many clinicians and hospital administrators believe that ME Cares is the "right thing to do," the lack of commercial insurance payment makes the program difficult to justify when resources are tight, and hospitals pinched for resources might thus drop out of the ME Cares coalition altogether, thus ending their participation in the MCD MCCD. Decisions by one or more of the few managed care organizations that currently cover the ME Cares program, or by the state Medicaid program, to stop paying for the ME Cares intervention would likely have adverse effects on the MCD MCCD.

Ongoing demonstration costs for MCD have been about as expected. Whether hospitals' costs for the demonstration have been higher or lower than expected is unknown. The MCD

staff did report that some hospitals were skeptical that the per-enrollee-per-month payments adequately covered their costs (primarily NCMs' time). Hospitals were especially concerned about the start-up period, since initial enrollments, and thus total payments, were low, while the time required for NCMs to recruit and provide ongoing care management was substantial (and in the case of recruitment, greater than anticipated). One of the hospitals, in fact, recently closed down its MCCD program as it felt it could no longer afford to have the NCMs spending time on the project. A hospital probably needs to see enrollment reach 50 to 100 patients before the demonstration begins to make financial sense.

The demonstration's CMS® data system appears to be a potential strength of the demonstration. It is comprehensive, permits data entry in multiple discrete fields, and has the capacity for generating several types of reports for monitoring patients and NCMs, and for producing feedback to physicians. Whether the NCMs take full advantage of the system's reporting capabilities remains to be seen, however.

Problems Related to Evaluation Activities. One concern about the evaluation is that the slow enrollment could compromise the evaluation's sample size and thus its power to detect impacts. The potential for contamination of the control group (demonstration effects that alter the care of the control group in ways that bias estimated impacts) seems low. The NCMs do not conduct any assessments of beneficiaries before randomization, nor do they have any contact in their NCM role with those assigned to the control group following randomization. Patients assigned to the control group do not have access to services comparable to ME Cares. Altering physician practice is not a major focus of the intervention. NCMs' treatment recommendations to patients and physicians occur only on a case-by-case basis, with no organized physician educational programs or structured feedback and profiling processes.

One evaluation concern unique to the MCD MCCD, because of its loose, consortium structure, is the potential for undesirable variation in program implementation across hospitals. Hospitals' compliance with ME Cares program standards is completely voluntary, and NCMs have a great deal of discretion in their individual approaches to care management. Hospital medical directors' commitment to the project may also vary. If the inter-hospital variation in program implementation is large enough, the evaluation may become an evaluation of the joint effects of 23 or so disparate interventions, making the job of finding program effectiveness or isolating important program features difficult. The generalizability of the ME Cares and MCD MCCD model to other states is also uncertain. Maine seems to have an unusually high number of broad, voluntary collaborations of health care providers, state agencies, insurers, employers, labor, and nonprofit organizations joining together to address health issues across the state.

Early Successes. Despite the challenges facing them, the ME Cares Consortium and MCD have achieved two noteworthy accomplishments. First, the decentralized, statewide consortium of hospitals that is implementing ME Cares and the MCD MCCD is unique, not only among the programs in the national MCCD, but among care coordination/disease management initiatives in general. The voluntary sponsorship of the program by community hospitals, and the staffing of the intervention by well-known local nurses and medical directors may help the programs' acceptance and integration into existing local practice patterns. Second is the project's data system. The hospitals have all adopted the CMS® software, which provides electronic medical record keeping, real-time decision support to the NCMs, uniform collection of data, and

automatic generation of various reports and graphs, and have agreed on regular transmission of patient level data to a central location. The program thus has promising features and several characteristics that have been associated with successful care coordination programs. If the issues of slow enrollment and program fidelity do not prove to be major barriers, the program has the potential for positive impacts.

MEDICAL CARE DEVELOPMENT CASE STUDY

This case study briefly describes the features and early experiences of Medical Care Development, Inc.'s Medicare Coordinated Care Demonstration Project, which we abbreviate as the MCD MCCD. The MCD MCCD is 1 of 15 demonstration programs in the Centers for Medicare & Medicaid Services (CMS) nationwide Medicare Coordinated Care Demonstration, mandated by the Balanced Budget Act of 1997, and one of the three rural programs mandated by the Act.[1] The national demonstration is testing a wide range of models to improve the care of chronically ill beneficiaries in the Medicare fee-for-service (FFS) program. Mathematica Policy Research, Inc. (MPR) is evaluating the national demonstration, through both impact and implementation analyses.[2]

This case study is part of the implementation analysis. Separate case studies will be prepared for each of the 16 demonstration programs. Each case study will be based on telephone interviews with key program staff, program documents, and program encounter data that the programs have been submitting electronically to MPR. The telephone interviews are based on semistructured protocols and are being conducted about three to four months after each program starts enrolling patients.

Subsequent reports from the implementation analysis will describe program implementation in greater detail using information from site visits, a second round of telephone interviews, and data and documents submitted by the programs. Ultimately, to help us to interpret the overall

[1] The other two rural programs are those sponsored by Avera McKennan Hospital in South Dakota and Mercy Medical Center in Iowa.

[2] MPR is incorporating a 16th program into the overall MCCD evaluation. That program, the CMS Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus, is operated by Lovelace Health Systems, in Albuquerque, New Mexico.

results, and to tease out program features that correlate with program effectiveness or lack of effectiveness, we will synthesize the findings from the implementation analyses with those from the impact analysis. We are unable to undertake such an assessment in this early descriptive report.

The MCD MCCD began enrolling patients in April 2002. For this report, we interviewed the following MCD MCCD staff in July 2002: the program director (who is also the medical director), the care coordination supervisors, and a member of the financial staff. Other sources of data include MCD's original proposal, submitted to CMS in October 2000; data that the MCD MCCD is collecting for MPR's evaluation; and the program documents listed in Appendix A.

Program Context

The host organization (the entity receiving Medicare payment for demonstration services) is MCD, a nonprofit health care research and service organization based in Augusta, Maine. It was originally founded in 1966 to be the grantee for Maine's Regional Medical Program.[3] After the end of the Regional Medical Program in 1973, MCD continued to design and implement projects to improve public health in Maine in collaboration with state agencies, providers, and other organizations. In 1977, MCD added an international program (out of its Washington, DC, office), which has provided technical assistance to many countries in the developing world. In 1989, MCD also began to provide assisted living for the elderly in Maine and supportive housing for people with chronic mental illness. In 2001, MCD had 600 employees and a $24 million annual budget.

[3] The Regional Medical Programs were a large federal initiative launched by Congress and the Johnson Administration in 1965 (PL 89-239) to establish regional cooperatives to improve care for several chronic diseases ([www.mcd.org] and [rmp.nlm.nih.gov/RM], both September 2002).

As described further below, MCD's role is primarily to provide centralized support services for the demonstration. Hospitals in a statewide coalition are the actual clinical sites for the demonstration intervention.

Intervention History. The MCD MCCD is an expansion of an ongoing statewide cardiac disease management effort that had previously served a primarily non-Medicare population, to include Medicare FFS beneficiaries. This cardiac disease management initiative is called ME Cares (pronounced "Maine Cares"). The original impetus for ME Cares came from programs developed in two Maine hospitals: (1) the HEARTWARMERS program at Franklin Memorial Hospital in Farmington, and (2) the Healing Hearts Program at Southern Maine Medical Center in Biddeford (Table 1). The HEARTWARMERS program started in 1997 and focused on patients with coronary heart disease (CHD) and congestive heart failure (CHF). It used disease management protocols and software leased from CorSolutions, a commercial disease management firm. By October 2000, when MCD sent CMS its proposal for the MCCD, HEARTWARMERS had served 200 patients with CAD and 40 patients with CHF. Program participants had 0.44 cardiac hospital days during the 12 months following a myocardial infarction, compared to 2.92 days for nonparticipants (Table 1).

The Healing Hearts program started in 1996 and targeted patients with CHF. It consisted of classes for patients followed by telephone calls from nurses. By October 2000, it had served 90 patients. In a pre-post comparison, the rate of hospital readmissions within 30 days of admission for CHF patients was 6.9 percent in 1998, down from 12.5 percent in 1997. Moreover, the percentage of CHF patients with three or more hospitalizations was 2.3 percent in 1998, compared with 4.6 percent in 1997 (Table 1).

TABLE 1

PROGRAM HISTORY

Intervention Developers

ME Cares ("Maine Cares") Consortium

- Consortium of Maine community hospitals, Medical Care Development, Inc. (MCD), and other health care and cardiovascular health stakeholders in Maine

Where Original Intervention Was Used and to Whom Targeted

- ME Cares
  - Disease management intervention for patients hospitalized with coronary heart disease (CHD) and congestive heart failure (CHF)
  - Covered by some Maine insurers (a few large managed care organizations and the state Medicaid agency)
  - As of June 2002, 32 hospitals providing ME Cares

Original Intervention and How Adapted for Demonstration

- ME Cares
  - Telephonic case management by nurses on staff of local participating hospitals
  - Use of Pfizer Health Solutions' Clinical Management Software® (CMS® software) to collect data and monitor outcomes
  - Collaboration between primary physicians and ME Cares nurse at hospital

- MCD MCCD intervention same as ME Cares
  - Just being extended to fee-for-service Medicare beneficiaries previously not covered for the program
  - Of 32 ME Cares hospitals, 11 in the Medicare Coordinated Care Demonstration (MCCD). Eventually, 23 ME Cares hospitals expected to participate in MCCD

Effectiveness of Original Intervention

(Data from precursor programs to ME Cares)

	Measures of Effectiveness
Medicare patients hospitalized for acute myocardial infarction (AMI) 1998 at Franklin Memorial Hospital participating in a precursor program (n=35)	0.44 cardiac hospital days in the year following AMI

TABLE 1 (*continued*)

Effectiveness of Original Intervention *(continued)*	Measures of Effectiveness
Medicare AMI patients in 1998 at Franklin Memorial Hospital not participating in program	2.92 days cardiac hospital in the year following AMI
All patients hospitalized for CHF in 1998 at Southern Maine Medical Center after implementation of a precursor program	6.9 percent rate of readmission within 30 days 2.3 percent of patients with > 3 hospitalizations
All patients hospitalized for CHF in 1997 at Southern Maine Medical Center before implementation of the precursor program	12.5 percent rate of readmission within 30 days 4.6 percent of patients with >3 hospitalizations

SOURCE: Telephone interviews with MCD program staff conducted in July 2002 and review of program documents.

Motivated by the success of these two programs, a broad coalition of Maine health care stakeholders formed in 1998 to study disseminating similar programs statewide. This coalition, which included hospitals, managed care organizations (MCOs), state agencies, medical societies, hospital associations, and MCD, eventually became ME Cares. Hospitals in the ME Cares Consortium began implementing CHF and CAD disease management programs in early 2000. Although a handful of large MCOs and the state Medicaid agency agreed to cover the services, most hospitals used their own resources to start their programs, with no assurance that program services would ever be reimbursed. There were some limited charitable funds early on to help hospitals with startup costs, but those have long since been exhausted.

Under the guidance of the ME Cares steering committee, which has representation from all participating hospitals and a number of other experts, MCD formulated and disseminated standards that hospitals are expected to meet to participate in ME Cares (and thus also in the MCCD). The standards specify, for example, the training of nurse care managers (NCMs), plans for night and weekend availability of NCMs to patients, supervision of the NCMs, evidence of program integration with community services, and plans for quality assessment and improvement. Many elements of the standards are open to interpretation and implementation by each participating hospital, however, such as the requirement that a local hospital medical director or clinical supervisor meet with the NCM on a regular basis, without further specification of the frequency of such meetings. Credentialling of hospitals by MCD to participate in the ME Cares coalition is through written documents only, and MCD plays no verification or enforcement role.

The ME Cares steering committee and MCD also selected a common disease management software system for all ME Cares participating hospitals to use: Pfizer Health Solutions' Clinical

Management System® (CMS®).[4] They specified that a uniform subset of the patient-level variables collected in the CMS® software stripped of patient identifiers (the Minimum Data Set, or MDS), must be routinely transmitted by the participating hospitals to a data-processing contractor.

Traditional Medicare does not cover the full array of ME Cares services (although some of the ME Cares hospitals have been offering ME Cares at their own expense to Medicare FFS beneficiaries anyway). Medicare FFS beneficiaries with coronary artery disease do have cardiac rehabilitation available to them (a Part B benefit subject to the usual deductibles and co-pays). This cardiac rehabilitation includes some disease management elements, such as patient education and health behavior counseling, but they are covered only when delivered during face-to-face monitored exercise sessions. Medicare does not reimburse separately for care management over the telephone from nurses. Medicare FFS beneficiaries with CHF only have no Medicare coverage for any cardiac rehabilitation, disease management, or care coordination services.

When the solicitation for MCCD sites came out, the MCD staff recognized the opportunity to obtain additional funding for the ME Cares program and to expand it to Medicare FFS beneficiaries as a "natural fit." They saw the goals of the national MCCD as consistent with ME Cares' missions to improve the quality 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. MCD originally

[4] We will refer to the software as "CMS® software" to distinguish it from CMS, the Centers for Medicare & Medicaid Services. Version 8.5 is currently in use.

proposed for their demonstration a comparison group design that did not involve random assignment, but later agreed to a more rigorous random assignment design.[5]

When MCD applied to CMS to be a MCCD site, 17 hospitals were participating in ME Cares. As of June 2002, this number had grown to 32 hospitals. Of the ME Cares hospitals, 23 are expected to participate in the MCD MCCD (that is, to have their Medicare FFS patients randomly assigned to receive their ME Cares interventions in the context of the demonstration). At the time of our interviews, 11 hospitals, mainly smaller ones, had started enrolling patients for the MCD MCCD.

Relationship Between Program, Host Organization, and Providers. As the MCD MCCD hospitals represent a subset of the ME Cares consortium, the organizational structure of the MCD MCCD is essentially that of the ME Cares project. A consortium of voluntarily participating hospitals provides clinical staff and the clinical intervention; MCD, the demonstration host entity, serves several central functions.

In addition to overall facilitation and coordination, MCD's functions include budget monitoring and billing, oversight of data collection from the hospitals, and assistance with quality improvement efforts. MCD established the project budget upon award of the cooperative agreement and monitors project spending. MCD receives enrollment information from the hospitals on a monthly basis and submits demonstration claims to Medicare. MCD then

[5] In MCD's originally proposed design, participants discharged from ME Cares hospitals would be compared to a matched group of Medicare beneficiaries discharged from hospitals in New Hampshire and Vermont. MCD proposed a non-randomized design for three reasons: (1) staff in small rural hospitals are unfamiliar with random assignment studies and would have difficulty following a protocol involving randomization, (2) physicians and patients would object to two standards of care (control and intervention), thus lowering physician participation and collaboration, and (3) the intervention would alter physicians' treatment of control patients (the so-called "halo" or "contamination" effect), especially in small communities, thus weakening the program's apparent impact.

distributes per-enrollee per-month payments of $123.83 to the participating hospitals and $20 to enrollees' primary physicians.

MCD oversees the transmission of demonstration data from the hospitals to a central data-processing contractor and the forwarding of demonstration data to BearingPoint Inc., CMS' implementation contractor for the nationwide demonstration, and MPR. The data contractor is the Maine Health Information Center (MHIC), an independent, nonprofit, health data organization created in 1976 by the major provider and payer organizations in Maine (health plans, the state hospital and medical associations, and the state health department, among others) to provide health data services to clients inside and outside of Maine. For the demonstration, MHIC has a subcontract to collect a standardized set of data (with patient identifiers removed) from each hospital on a regular basis, to clean and aggregate the data, check each hospital's data submissions for timeliness and completeness, and to report the data back to the hospitals and MCD for management and quality improvement. Each participating hospital has signed a data agreement with MCD that permits the transfer of data on demonstration enrollees from the hospital to MHIC.

MCD subcontracted with the state CMS Quality Improvement Organization, the Maine Medical Assessment Foundation (MMAF), to help with other aspects of the demonstration. MMAF provides research support to the demonstration and technical consultation on the demonstration's continuous quality improvement efforts.

The recruitment of patients and delivery of the intervention itself occurs at the level of the local participating hospitals. In fact, each hospital can have its own name for the program. The NCMs are hospital employees, and each hospital has its own ME Cares medical director, a local practicing physician willing to assume this role. Each hospital also has its own NCM supervisor,

who may be a senior nurse on the hospital staff or the ME Cares medical director. Patients' primary physicians are area doctors affiliated with the participating hospitals.

Service Environment. Like many hospitals nationwide, the hospitals participating in the MCD MCCD are experiencing nursing staff shortages, which are in turn affecting demonstration operations. Most of the NCMs are only part-time on ME Cares (and thus the MCD MCCD), with most of their time devoted to other hospital duties.[6] They are frequently pulled away from ME Cares/MCD MCCD to perform more pressing hospital work (although, anecdotally, the NCMs enjoy their care coordination work the most). The staff shortages have especially delayed recruitment of patients for the MCCD and led to a slower start than expected.

No other coordinated care programs similar to ME Cares and the MCD MCCD are available in Maine, which is a very rural state. Three hospitals in Aroostook County in northern Maine had a rural health grant for a small care management project targeting patients with asthma, diabetes, and heart failure. This project, which ended in August 2002, differed from the MCD MCCD in several ways: it focused mainly on referral to community resources rather than disease management, lacked a telephone component, had no clinical management software system, and did not include patients with CHD. One of the three rural grant hospitals was planning on becoming a MCD MCCD site when its grant ended.

Key Program Features

Program Goals and Expected Savings. The MCD MCCD has two main goals: (1) improving beneficiary education and adherence, and (2) improving communication and

[6] Some of the larger hospitals that joined the coalition later do have full-time nurse case managers, however.

coordination among and between beneficiaries and physicians (Table 2).[7] The program expects to achieve the first goal through one-on-one teaching and counseling provided by the NCMs to patients during telephone contacts (Table 2). To reach the second goal, the program sees NCMs as translating the primary physician's goals for each patient into clear messages patients can really grasp; the NCM will be the link between the primary physician's envisioned goals for a patient and that patient's world. In addition, two key assumptions or principles underlie ME Cares and the MCD MCCD: (1) physician support is essential for successful disease management programs, and (2) the most promising and realistic means of gaining physician support is to have disease management programs sponsored and operated by local providers, such as local hospitals, rather than by organizations external to local medical communities, such as insurers or commercial vendors.

Specific desired outcomes for patients include reducing risk factors for poor outcomes, increasing patients' active roles in their own management, and a general improvement in health status. Specific desired outcomes for physicians and the larger health care system include greater involvement of physicians in improving care for chronic disease, development of multidisciplinary teams to better distribute the work of caring for the chronically ill, provision of systems by hospitals to support these efforts, and reduced fragmentation of health care.

The program's waiver application projects an average net savings for Medicare of $322 per patient per month (control group Medicare costs minus combined treatment group Medicare and

[7] Subsidiary goals are the promotion or development of community and advocacy resources to support people with CHF and CHD, and providing specific treatment suggestions to physicians for their patients in the treatment group, based on national recommended guidelines.

TABLE 2

PROGRAM GOALS AND DESIRED OUTCOMES

Program Goals

- Improve beneficiary education and adherence
- Improve communication and coordination among and between beneficiaries and physicians
    - Gain physician support for program through sponsorship and operation of program by local hospital, rather than external organization (such as insurer or vendor)

Outcomes for Health Service Delivery System

- Development of multidisciplinary teams to better distribute the work of caring for the chronically ill
- Provision of systems by hospitals to support these efforts
- Reduced fragmentation of health care
- Influence Medicare reimbursement policy through participation in a national demonstration project

Outcomes for Patients

- Reducing risk factors for poor outcomes
- Having patients take more active roles in their own management
- General improvement in health status

Outcomes for Providers

- Greater involvement of physicians in improving care for chronic disease

Program Payments and Net Savings for Medicare

- Payments to program of $296.96 per patient per month in Year 1 (2002), then $207.16 per patient per month in Years 2 through 4 (2003 through 2005).
- Average savings to Medicare (net of demonstration costs) of $322 per patient per month, or projected four-year net savings to Medicare of $9,220,735 assuming a 20 percent reduction in Medicare costs (Brown et al. 2001).

SOURCE: Telephone interviews with MCD program staff conducted in July 2002 and review of program documents.

care management costs). The waiver calculations for all the demonstration programs assume a 20 percent reduction in Medicare costs, mostly through reductions in hospitalizations (Table 2).

Over the four-year life of the program, the expected net savings for all Medicare- and Medicaid-covered services are $9,358,161, and the expected net savings to the Medicare program are $9,220,735 (Brown et al. 2001). CMS paid the program $296.96 per patient per month in Year 1 of the demonstration (2002), then will pay $207.16 per patient per month for the rest of the demonstration (Years 2 through 4, 2003 through 2005).

Target Population and Outreach. The MCD MCCD targets Medicare beneficiaries hospitalized at any of the participating hospitals with specific CHF or CHD diagnosis or procedure codes (Table 3). MCD MCCD chose this population for many reasons: (1) the relatively high potential to achieve budget neutrality because of the potential for large cost impacts, (2) the availability of existing treatment guidelines, (3) the high frequency of occurrence, (4) the availability of data to identify eligible patients, (5) the potential to slow decline in patients' functional status, and (6) the consortium's expertise from its ME Cares experience. Respondents ranked the first two reasons—the potential to achieve budget neutrality and the availability of existing treatment guidelines—as the most important, however. Respondents noted that the cost impacts would likely occur quickly for patients with CHF, whereas the impacts for patients with CHD might take at least one or two years to become evident.

The main way that the NCMs identify potential patients is through daily review of the inpatient census to search for those with the appropriate diagnoses. Because the NCMs can determine patients' eligibility from hospital medical records before approaching them, the program does not have to worry about "false-positive" referrals (patients who are referred but turn out to be ineligible). The patient's primary physician must sign an order before the patient

TABLE 3

TARGET POPULATION AND OUTREACH

General Eligibility Criteria for All Medicare Coordinated Care Demonstrations	Has coverage under Medicare Parts A and B
	Has Medicare as primary payer
	Is not enrolled in Medicare risk plan
Eligibility Inclusion Criteria for Patients with Coronary Heart Disease (CHD) in MCD MCCD	Within the past 30 days, any one of the following:
	Hospital discharge with discharge diagnosis of acute myocardial infarction (ICD-9 codes 410.0-410.9)
	Coronary artery bypass graft (CABG) surgery (CPT codes 33510-33545)[a]
	Percutaneous Transluminal Coronary Angioplasty (PTCA) (CPT codes 92982 or 92984), Stenting (CPT codes 92980 or 92981), or Atherectomy (CPT codes 92995 or 92996)[a]
Eligibility Inclusion Criteria for Patients with Congestive Heart Failure (CHF) in MCD MCCD	Hospital discharge with principal or secondary diagnosis of heart failure (ICD-9 codes 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 428.0, 428.1, 428.9) within the past 30 days
Eligibility Exclusion Criteria for Patients with both CHD and CHF	Dementia
	Independent terminal disease (life expectancy of less than 6 months)
	Residence outside Maine for more than six months per year
	Primary physician unwilling to enroll the patient
Procedures for Outreach to Patients	Nurse care manager performs daily scans of hospital inpatient census for patients with the appropriate diagnoses
	Review of hospital medical records of patients identified above for eligibility

TABLE 3 (*continued*)

	Patient's primary physician signs order authorizing participation in MCCD
	Nurse case manager obtains informed consent
	Enrollees randomly assigned to control or treatment groups
Referral Procedures	Currently not accepting referrals of outpatients because targeting hospitalized patients.
Enrollment	
Projected by December 23, 2002	405
Number actually enrolled as of December 23, 2002	206
Problems with Eligibility Criteria or Enrollment Shortfalls	Many nurse case managers only part-time on ME Cares and MCCD, insufficient time on project to recruit
	Larger hospitals had not started yet. Need for IRB review following change to random assignment design. Resistance to random assignment by primary physicians and hospital staff possibly also contributing.

SOURCE: Telephone interviews with MCD program staff conducted in July 2002 and review of program documents.

[a]These are all surgeries or procedures to treat blocked coronary arteries.

[b]Assuming a steady rate of enrollment of 608 over 52 weeks.

can be enrolled and randomized. The program anticipated about 50 percent of patients approached would consent to be randomized. Because of the eligibility criterion requiring current hospitalization, MCD MCCD currently does not accept physician referrals of outpatients, although the program may eventually allow referrals of outpatients with CHF who have been hospitalized in the past two years. Given the target population, there has been no direct promotion of the program to beneficiaries, although each hospital is provided a boilerplate media release to announce and explain the demonstration to the local community.

The program's enrollment target by the end of its first year is 608 patients (treatment and control, CHF and CHD combined), roughly 50 patients a month, or 12 patients a week. At the time of our interviews (July 8, 2002, about 11 weeks after start of enrollment), the program had randomized only 47 participants—24 to the treatment group and 23 to the control group. By December 23, 2002, about 8 months into its first year, the MCD MCCD had enrolled 206 participants, or roughly half of the 405 participants expected by then.

As mentioned earlier, respondents identified constraints on NCMs' time, combined with the substantial time needed to explain the study, as a main factor behind the enrollment shortfall. As MCD had not originally proposed an experimental design for the demonstration, budgeted hours for the NCMs had not included time to explain random assignment and to obtain informed consent.

A second factor was that the larger-volume hospitals had not yet started enrolling for the demonstration. The 11 hospitals enrolling at the time of the interviews were together discharging only about 75 eligible patients a month on average, whereas the 12 larger hospitals that had not yet started averaged a combined 360 eligible patients a month. One reason for the delayed startup of the larger hospitals was the relatively late change to the experimental design with random assignment of beneficiaries, necessitating review of the study by the hospitals'

IRBs. A related reason may have been that a number of the larger hospitals were already offering ME Cares services to Medicare FFS beneficiaries despite the lack of Medicare reimbursement, and physicians and NCMs, who viewed these services as beneficial to all cardiac patients, were reluctant to agree to randomization of participants.

A ME Cares hospital could choose to enroll only its CAD patients, only its CHF patients, or both types of patients into the MCD MCCD, but a hospital participating in the demonstration had to agree that Medicare patients assigned to the control group would receive no ME Cares services. For example, a hospital that already makes its ME Cares CHF program available to Medicare FFS beneficiaries and does not want them possibly forgoing the program, might elect to participate only in the CHD portion of the MCD MCCD.

Key Program Staff Members and Their Responsibilities. Key staff are at the central MCD location and at each participating hospital. The key MCD staff are the demonstration project director (who is also the project medical director) and the demonstration care coordination supervisor. The demonstration project director/medical director spends about 60 percent of his time on the project. He has overall responsibility for the demonstration. Specifically, he works with the hospital medical directors to make sure primary physicians understand the project and become an integral part of the disease management process. The MCD care coordination supervisor is full-time on the project. The supervisor is responsible for fostering a standard, consistent disease management program across the hospitals and for the overall training and care coordination processes in the demonstration. The original supervisor helped initiate the ME Cares program, assisted in solving care process problems, guided the development of the MDS, and negotiated the data-sharing agreement between the hospitals and MCD. At the time of our interviews, the original supervisor was leaving the project and shifting her responsibilities to the new supervisor. The central staff at MCD maintains contact with the

hospital staffs through phone calls every one to two weeks, periodic consortiumwide conference calls, and e-mail as needed.

The key personnel at the hospitals are the NCMs, the local NCM supervisor, and the local medical director. In many of the participating hospitals, NCMs come from the existing hospital nursing staff and are working only part-time on ME Cares (and thus the MCD MCCD), with most of their time devoted to other hospital duties, such as cardiac rehabilitation nursing or discharge planning. A few of the larger hospitals did have NCMs working full time on ME Cares, however. NCMs must be registered nurses, nurse practitioners, or physician's assistants with cardiac care or home care experience and current licensure in Maine. Experience with care management and comfort with computers are desirable but not required. Training in monitored exercise is also helpful for hospitals that include it as part of their programs. The NCMs are also expected to complete at least three hours a year of continuing education credits.

As mentioned earlier, the local NCM supervisors can be either members of the hospital staff (usually the NCMs' existing nursing supervisors) or the local ME Cares medical director. The supervisors are to meet with the NCMs on a regular basis to cover a list of specified issues (for example, problem cases, care plan development, clinical guidelines, physician coordination, and aggregate NCM- and hospital-level reports). They may also discuss the monthly data that are being collected for MPR's evaluation. The supervisors perform annual evaluations of NCMs, which include an audit of their records, an assessment of their coordination efforts with community resources, and a review of the completeness and timeliness of the data transmitted to MHIC.

The MCD MCCD recommends that the hospitals provide the local medical director with a modest reimbursement that is included in the hospital per-enrollee per-month payment. The medical director reimbursement is $10,000 per 100 enrollees per year (in other words, $8 per

enrollee per month). Because hospital participation in the demonstration is voluntary, MCD does not know whether the hospitals are, in fact, paying the medical directors this amount.

Finally, the ME Cares guidelines recommend that each hospital have an advisory committee. In addition to the local medical director, the NCMs, and the NCM supervisor, committee members include the following hospital staff: social workers or discharge planners, financial personnel, and information systems personnel. The functions of the advisory committee 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 deal with any other operational issues. As mentioned earlier, the ME Cares guidelines are voluntary, and it was the impression of one of our respondents that most ME Cares hospitals do not, in fact, have an advisory committee.

The MCD MCCD believes the optimal ratio of NCMs to participants is 1 FTE NCM to 50 to 100 patients.[8] The demonstration staff derived this ratio primarily from the projected number and duration of activities (including direct contacts, charting, and administrative tasks), their previous care management experience from ME Cares, and the anticipated mix of patients (CHF patients require more NCM time than CHD patients, in their experience). They had also researched ratios suggested by care management organizations and had received a recommendation from Pfizer Health Solutions, the vendor for the CMS® software, for a ratio of 1:250 based on time records from ME Cares. Given the NCMs' projected duties, however, the demonstration staff thought that both the 1:250 ratio, as well as many of the ratios from care management organizations, were too high. Finally, the demonstration staff had made a list server inquiry but found the answers to be of limited value.

[8] Including both MCCD enrollees and non-MCCD ME Cares patients.

MCD trains the hospital staff involved in ME Cares and the MCD MCCD. The NCMs receive a two-day training on clinical issues and the CMS® software system. The program also trains the hospital-based CM supervisors, medical directors, and financial staff.

Care Coordination Components

We describe below how the MCD MCCD addresses the following major aspects of care coordination: assessment, care planning, monitoring, patient education, service arrangement, and communication (Chen et al. 2000). Table 4 summarizes the main program components.

Assessment. All treatment group members undergo an initial assessment, done to assess needs and measure the starting levels of the target outcomes. Although the program does not formally stratify patients into risk levels, findings from the assessment also determine the frequency of subsequent contacts. If the patient's diet is poor, for example, the next contact will be sooner rather than later.

The NCMs perform all initial assessments. The program gives the NCMs one month to gather and complete all the data for the initial assessment. Most initial assessments include a face-to-face interview, usually before hospital discharge. The NCMs follow standardized question sets that are part of the CMS® software. Examples of these question sets are Heart Failure Symptoms, Heart Failure Knowledge, Functional Status, the Fagerstrom Index (a measure of nicotine dependence), Medication Compliance, and Diet Knowledge. Other information sources for the initial assessment include the medical chart from the hospitalization, as well as results and dates of tests (such as cardiac function tests or laboratory blood tests) stored in hospital computerized records. The NCM also prints the list of prescriptions that the patient says he or she is taking and sends it to the primary physician for confirmation. The primary physician does not generally provide other input for the initial assessment.

TABLE 4

MAJOR PROGRAM COMPONENTS

Component	Provided?	Description
Initial Assessment and Reassessments	Yes	All treatment group members undergo initial assessment by nurse care managers (NCMs) within one month of enrollment. Usually includes face-to-face interview prior to hospital discharge. Pfizer Health Solutions' Case Management System® (CMS®) software provides standard assessment questions in following five domains: - Symptoms, functional status, quality of life, use of health care services - Self-care, lifestyle, knowledge - Prevention and screening - Vital signs, lab and test results - Medications Reassessments both at regular intervals (baseline, 6 months, and 12 months) and after specific trigger events (request by a primary physician's office, development of acute symptoms, emergency room visit, hospitalization, medication adjustment, abnormal lab results).
Care Planning	Yes	Uses results of assessment to identify problems for care plan to address Input from primary physician, physician's office staff, hospital nurse, patient to identify problems and goals Care plan documented electronically and on paper, letters with care plan sent to physician and patient
Ongoing Monitoring and Evaluation	Yes	The ME Cares guidelines specify telephone contacts weekly for the first four weeks then monthly, and questions to be administered at each contact. Telephone contacts with patient and/or physician after each physician visit See and monitor patients at the programs' monitored exercise classes Progress against care plan goals assessed at each contact. No use of remote or home monitoring technology Variety of reports available in CMS®[a] Patients with CHD generally in program for one year (assuming stability). Patients with CHF generally in program indefinitely

TABLE 4 (*continued*)

Component	Provided?	Description
Patient Education	Yes	Mostly by NCMs with referrals to other educators or community resources as needed (smoking cessation programs, stress management classes, dietitians, or support groups, for example) NCMs also coordinate with local Ambulatory Diabetes Education and Follow-up Programs (CDC-funded community initiative) Patient education focuses on (1) participant self-care and self-monitoring behaviors, (2) adherence to prescribed treatments, and (3) general and disease-specific health knowledge CMS® software also suggests individualized counseling actions (based on patient data) and contains links to pdf files of educational handouts
Provider Education	No formal or systematic program	NCMs often use first contacts with primary physician and office nurses to provide education on national guidelines. NCMs also educate primary physicians and staff during contacts about medication adjustments or tests or checkups that are due
Service and Resource Arrangement or Provision	Yes	Any needed social work support obtained from hospitals' social work departments Program pays for monitored exercise for CHF. Sometimes pays for a scale or a dietary consult Services arranged for/referred to: Medicare covered: - Durable medical equipment - Home health care (skilled, including R.N., therapy, S.W.) - Mental health, counseling Non-Medicare covered: - Personal care, homemaker, companion, respite - Medical supplies - Dental - Adult day care - Assistance with applying for public programs, or other benefits - Housing resources - Transportation - Meals and/or food sources - Medication assistance programs - Spiritual care

TABLE 4 (*continued*)

Component	Provided?	Description
Facilitating Communication	Yes	NCMs communicate with participants' primary physicians on both a routine (periodic mailed update reports, routine contact as patients approach care plan goals and upon discharge) and an as-needed basis (phone calls or fax/mail communications depending on urgency). Typically three or more contacts with a primary physician per patient per month, depending on patients' problems and the nature of the relationship between the NCM and the primary physician (some long standing) NCMs could be involved telephonically in care of patients for short, post-acute SNF stay. Home visits uncommon

SOURCE: Telephone interviews with MCD program staff conducted in July 2002 and review of program documents..

[a]Trend graphs of physiologic values (blood pressure or cholesterol), summary scores and individual question values of patient-reported information (symptoms or functional status).

The NCMs document the assessments in the CMS® software and in any other paper or computerized assessment instruments the NCMs or their local hospitals have developed. The CMS® software system is a standalone system that does not interface with any of the hospital software systems or with the software in hospital cardiac rehabilitation departments (most of which is by Quinton, Inc.). Thus, any information from these other sources must be specially entered into the CMS® database.

Reassessments are conducted both at regular intervals and after specific trigger events. The regular intervals are at baseline, 6 months, and 12 months. The trigger events are a request by a primary physician's office for followup at a specific time, the development of acute symptoms (such as shortness of breath or weight gain), an emergency room visit, a hospitalization, a medication adjustment, and abnormal lab results.

Care Planning. Results from the initial assessment guide the NCM in developing a care plan tailored to a participant's specific problems. The CMS® software helps to generate much of the care plan from the responses to assessment questions. The medication questions in the software, for example, will identify such problems as suboptimal or incorrect dosages of prescribed drugs or interactions between medications. Other entered data will trigger notifications of problems or even red flags that require urgent attention. The software also helps establish activities and goals for such areas as diet, exercise, and smoking. The patient may bring up or suggest specific goals, and the primary physician, the medical chart, or the hospital floor nurse may be additional sources for identifying problems that need to be addressed.

After the care plan is developed, the CMS® software produces letters to both the patient and his or her physician, outlining the care plan and goals. The letter to the physician also briefly summarizes the findings of the initial assessment. The NCM contacts the patient's primary physician and the physician's office staff to review the care plan and the preferred methods of

communication (for example, mail, fax, phone) and to set the goals for the physiologic measures, such as blood pressure, cholesterol levels, and weight. The NCM also discusses the care plan with the patient and members of the family to reach agreement on the goals, although in contrast to some other care coordination programs, the patient is not asked to sign the care plan.

The care plans themselves are recorded both in the CMS® software and on paper records. Most of the information in the computerized records is in discrete fields. The NCMs try to use narrative or free text notes only in special situations (for example, when one NCM is temporarily substituting for another and such supplemental notes can help the regular NCM understand what happened in his or her absence, or when the primary physician might need additional explanations for events).

Monitoring. The NCMs monitor patients through a variety of contacts and assess patients' progress towards the care plan goals at every contact. The ME Cares guidelines specify periodic telephone contacts (for example, weekly for the first four weeks, then monthly) and the question sets to be administered at each contact. NCMs also telephone the patient and/or the physician after each physician visit. The program is currently not using any remote- or home-monitoring technology.

The program is also paying for exercise sessions with cardiac monitoring at the hospitals' cardiac rehabilitation facilities for patients with CHF. Medicare covers monitored exercise as part of cardiac rehabilitation for CHD patients but not for patients with CHF; under the demonstration, the CHF patients can now join the CHD patients in the rehab sessions. Many of the NCMs are also their hospitals' cardiac rehab nurses, and are thus able to see their MCCD patients face to face at the monitored exercise classes and assess their progress.

Patients with CHD will generally stay in the program for one year, assuming they have stabilized, while patients with CHF will stay indefinitely, even if they appear to have stabilized

(the evaluation will continue to follow all patients enrolled in the program, however, up to two years for patients enrolling in the first 16 months of the program). Care coordination for patients with CHD is planned to be time-limited, since most patients can learn to manage their condition and become clinically stable. CHF, on the other hand, is frequently a progressive illness that is difficult to stabilize completely, so patients with CHF are kept in the program indefinitely. In addition, nearly half will die within five years of enrollment. Other reasons for discharge from the program include multiple refusals to speak or work with the NCMs, moving out of state, physician desire to withdraw the patient, and death.

Patient Education. The NCMs handle all the patient education, although they may refer patients to other educators or community resources as appropriate (for example, smoking cessation programs, stress management classes, or dietitians). Since many patients with heart disease have diabetes, the NCMs also coordinate with local Ambulatory Diabetes Education and Follow-Up Programs (a CDC-funded community initiative).

There is no formal programwide patient education curriculum. Individual NCMs work out their own approaches to patient education, using any learning aids they find helpful, often drawing on materials developed or used at their own hospitals.

The broad topics that patient education focuses on are (1) participant self-care and self-monitoring behaviors, (2) adherence to prescribed treatments, and (3) general and disease-specific health knowledge. Diet, for example, is often one of the first issues a NCM would address in a patient with CHF. The NCM might first get input from a dietitian (one of the few non-Medicare covered services paid for by the program—see below), then explain to the patient how salt intake leads to fluid imbalance and weight gain, teach the patient how to read food labels, and work with the patient on types of foods to avoid. Based on the data entered on the

patient, the CMS® software also suggests counseling actions and contains links to pdf files of educational handouts in the software.

Another education goal is to encourage patients to call their primary physicians to report any changes or problems with their health. NCMs will call physicians on behalf of patients in the beginning, but their hope is that patients will eventually take over themselves.

In general, the NCMs help patients identify barriers to behavior change and ways to overcome them, and they support patients through the process. They try to provide education at each contact. Respondents also noted that primary physician support of patient behavior change is a key element in promoting adherence.

Provider Education and Practice. The program does not mount any formal education program for primary physicians but rather uses "opportunistic" education. The NCMs' first contacts with a primary physician and his or her office nurses to discuss patients' care plans and goals for physiologic measures are often good opportunities for the NCM to explain the national guidelines underlying the recommended plan of care. The NCMs' follow-up contacts with physicians and their office staff (to remind them about medication adjustments or tests and checkups that are due) are other opportunities to educate them further about the guidelines.

Arranging Services. The NCMs refer to, and help arrange for, a wide range of services and resources (most of which are listed in Table 4). The MCD MCCD will sometimes pay for a scale or a dietary consult. NCMs get any needed social work support from their hospitals' social work departments. In addition, the NCMs all have county directories of community organizations and are encouraged 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.

Facilitating Communication. The NCMs communicate with the participants' primary physicians on both a regular and an as-needed basis. As described earlier, the NCMs mail periodic update reports to primary physicians and routinely contact physicians when patients are approaching the goals in the care plan and when they are discharged. NCMs will call for urgent matters, such as abnormal laboratory values or worrisome symptoms ("red flag" alerts).[9] Less urgent matters, such as medication adjustments or recommendations, occur in the manner the primary physician and his or her office staff have requested (no physician's offices are currently using e-mail to communicate with the NCMs).

NCMs will typically have three or more contacts with a primary physician per month, with a wide range, depending on patients' problems. Contact frequency also varies from hospital to hospital and depends on the relationships between the NCMs and physicians, some of which are longstanding. In one hospital, for example, the NCMs make rounds every day with the physicians, and in another small hospital, many physician contacts are in person. In longstanding NCM-physician relationships, there may actually be fewer contacts, if physicians trust the NCMs and have left a set of standing orders.

The NCMs help ensure that participants receive recommended care for their conditions, particularly in the case of cardiac function tests and blood lipid levels. The NCMs frequently find the need to prompt physicians to order these tests but will often encourage patients to follow up themselves with their physicians to schedule needed services. The NCMs will check with patients to make sure the test or procedure has taken place or will access results through the

[9] The NCMs have access to results of tests performed in their hospital's outpatient laboratory. A few NCMs are so well known to practices near their hospitals that they have also been given access to those practices' office records.

central laboratory. If the primary physician refuses or disagrees with guideline recommendations, the NCM will ask the local medical director to intervene.

NCMs have less of a role in the details of making sure that events occur in the appropriate order (for example, reminding the patient to fast for a test) or that required information is available at the right time (for example, making sure that test results are available at the time of a visit to the doctor). NCMs can remind patients to have laboratory tests done, but whether the results get to physicians is often beyond NCMs' control. Their role is to work primarily with patients rather than with these other services. As mentioned earlier, the program sees the NCMs as translating to patients what their physicians expect of them in terms that patients can understand.

The program tracks all unexpected health care events, such as hospitalizations or trips to the emergency room (ER), that the NCMs are able to learn about. The NCMs follow up on all hospital admissions and ER visits to their own hospital through the hospital medical records department or the hospital utilization review nurse. Some of the NCMs have their own computer link to the hospital's inpatient census or ER visit data. These methods will not work if patients go to other hospitals, however. Patients will usually, but not always, mention such events at NCM-patient contacts, and NCMs have lists of nurses at nearby hospitals (or NCMs, for ME Cares hospitals) with whom they can check periodically.

NCMs are potentially involved in patients' care across a number of other settings in addition to when the patients are living at home independently. NCMs often first meet patients in the hospital. If a patient is discharged from the hospital to a nursing home for a postacute, limited stay (for example, two or three weeks), the NCM will continue following the patient, tracking the patient's progress in the nursing home by talking with the nursing home staff, and contacting the patient again upon discharge to home. If it appears the nursing home stay will develop into a

long-term placement, however, the NCM will discharge the patient. NCMs may sometimes accompany patients to a physician visit, although this is infrequent. Home visits are also rare, and are made only when the patient lives alone, has a complex treatment regimen, and the NCM feels unable to organize care over the telephone.

Early Implementation Data

Table 5 displays data up to the end of September 2002 that MCD MCCD has been collecting for the evaluation. By that date, case managers had assessed about three quarters of the 50 enrollees. Of those assessed, about a third have been assessed within the first week after random assignment. However, as noted, NCMs were given a month to complete assessments. All but five patients enrolled up to then have had at least one NCM contact. Nearly 58 percent of contacts have been in person. There have been no contacts for non-Medicare services yet, and most contacts have been for more medical issues such as providing disease-specific or self-care education, explaining medications or procedures, or patient monitoring. Fifty-two percent of the contacts also involved emotional support.

Involvement of Physicians

The program had high expectations that primary physicians would encourage patient participation, communicate freely with NCMs, and function as members of the care management team. As described earlier, the program did not expect primary physicians to be a major source of referrals, however. Many physicians were already familiar and supportive of their local hospital's ME Cares program and had developed working relationships with the NCMs. Physicians thus had little objection to extending ME Cares to FFS Medicare beneficiaries. What some did object to was random assignment and the possibility that some of their patients would not receive care management services.

TABLE 5

CASE MANAGER CONTACTS WITH PATIENTS BETWEEN JULY 1, 2002, AND SEPTEMBER 30, 2002

Number of Patients Enrolled	50
Number of Nurse Case Managers (NCMs) Contacting Patients	15
Number of Patients with One or More NCM Contacts	45
Total Number of Contacts for All Patients	236
Among Patients with at Least One Contact:	
Percentage of contacts NCM initiated	99
Percentage of contacts	
By telephone	42.4
At patient's residence	.4
In person, elsewhere	57.2
Of All Patients Enrolled, Percentage with an Assessment Contact	74
Among Those Patients with an Assessment, Percentage Whose First Assessment Contact Was:	
Within one week after random assignment	32
Between one and two weeks after random assignment	16
More than two weeks after random assignment	51
Of All Patients Enrolled, Percentage with Contacts to:	
Identify need for non-Medicare service	0
Identify need for Medicare service	28
Provide disease-specific or self-care education	68
Explain tests or procedures	32
Explain medications	38
Perform routine patient monitoring	38
Monitor services	12
Monitor abnormal results	16
Provide emotional support	52
Average Number of Patients Contacted per NCM	3
Average Number of Patient Contacts per NCM	16

SOURCE: MCD program data submitted in October 2002.

MCD MCCD is pursuing a variety of strategies to gain physician acceptance of and support for the program (Table 6). First, the local hospital medical directors are to act as "physician champions" at the hospitals, and each participating hospital is represented on the ME Cares steering committee. In practice, however, the enthusiasm and involvement of the hospital medical directors has been variable. Second, outreach letters have been mailed to all primary physicians on the staffs of the hospitals. Third, primary physicians are paid a monthly stipend of $20 for each of their patients who is a treatment group member; this is to compensate for time spent in working with the NCM and reviewing the patient-monitoring reports. Fourth, they were encouraged to attend introductory workshops at the beginning of the demonstration. Attendance was not mandatory, though, and most did not go.

Data Systems

The NCMs record nearly all participant-level data in the CMS® software, although data entry and generation of reports can be time consuming for the NCMs. A subset of these data stripped of patient identifiers, the MDS, is regularly transmitted to MHIC (Table 7), which processes the data and aggregates them up to the physician or hospital levels. The data the demonstration is collecting for MPR's evaluation are not currently routinely captured in the CMS® software, although the MCD MCCD staff have approached Pfizer Health Solutions about adding them to the software. As mentioned earlier, some of the NCM supervisors and NCMs may be using these evaluation data in their supervisory meetings to monitor NCM performance.

The CMS® software used by the individual NCMs is able to generate a variety of reports. These include trend graphs of physiologic values (such as blood pressure or cholesterol values), summary scores and individual question values of patient responses to the question sets (such as symptoms or functional status), and printouts of narrative notes. The software can also create, on

TABLE 6

PLANNED PHYSICIAN INVOLVEMENT

	Brief Description
Promotion of Program to Physicians	ME Cares hospital medical directors act as "physician champions" at each ME Cares hospital Outreach letters mailed to all primary physicians on the staffs of the hospitals Encourage medical directors to attend regional ME Cares and MCD MCCD workshops for NCMs and hospital staff
Physicians as Referral Sources	No expectations
Physician Role in Encouraging and Maintaining Patient Participation	Expected to encourage patient participation and support patient efforts to change health behaviors
Physician Role in Care Coordination	Expected to communicate freely with NCMs and function as members of the care management team

SOURCE: Telephone interviews with MCD program staff conducted in July 2002 and review of program documents.

TABLE 7

PLANNED DATA SYSTEMS

Type of Data	Program Maintains Records?	Brief Description
Participant		
Assessment	Yes	In CMS® software[a] and in paper copies
Care planning	Yes	In CMS® software in discrete fields
Monitoring	Yes	In CMS® software in discrete fields
Non-Medicare services	Yes	In paper records collected for evaluation
Adverse events	Yes	In CMS® software in discrete fields
Grievances	No	
Nurse Care Manager		
Variety of patient outcomes	Yes	Aggregate reports produced by CMS® software
Individual Hospital Level		
Variety of patient outcomes	Yes	Aggregate reports produced by CMS® software[b]
Payments from MCD	Yes	MCD accounting records
Program Level		
Variety of patient outcomes	Yes	Aggregate reports stripped of patient identifiers produced by MHIC at programwide level and by hospital
Overall costs	Yes	Medicare cost reports

[a]Primarily in discrete fields as opposed to free narrative text.

[b]Recent reports, for example, were on percentage of patients with weight gain or shortness of breath at followup, and percentage of patients with maintenance or improvement of New York Heart Association Functional Class at followup.

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-practice level to produce, for example, the percentage of a physician's patients taking a recommended medication.[10]

The NCMs send the primary physicians records of their patient contacts, and depending on the hospital, the primary physician, and the NCM, short reports monthly and long reports every two months. Some primary physicians request a report only when there is a problem. Respondents noted that the CMS® generated reports are generally too long to be useful or interesting to physicians.

Quality Monitoring and Outcomes

According to the ME Cares credentialing standards, each hospital is to establish its own Quality Improvement Plan in which it specifies its own goals (for example, a goal of a 25 percent reduction in CHF hospital admissions over one year). The hospitals are currently on the honor system for instituting these quality improvement plans, and, as respondents mentioned, MCD is not in a position to verify that each hospital is meeting the recommended standards.

At the program level, the MDS data contain a great deal of patient-level data. Program- and hospital-level reports of aggregated patient-level data for the overall ME Cares program are produced every six months, although the frequency may decrease to annually, since MDS data entry is time-consuming for the NCMs. Examples of hospital-level reports that have been distributed include the number of patients who have gained weight or have shortness of breath, maintenance or improvement of New York Heart Association Functional Class, and other self-

[10] We learned at our site visit in February 2003, however, that NCMs were probably not taking full advantage of all CMS's reporting features. MCD was planning additional training for the NCMs to encourage them to make greater use of the reporting features.

reported health-related quality-of-life scores. Currently, the reports combine the Medicare FFS beneficiaries in the MCCD demonstration with the other nondemonstration ME Cares patients (such as patients with commercial or Medicare managed care coverage, or Medicaid). There are also plans to conduct a patient satisfaction survey. The ME Cares/MCD MCCD program does not yet have a process for receiving and resolving participant complaints about the program.

Early Implementation Experience

Operations. Demonstrations of health care delivery such as the ones in the MCCD typically encounter barriers in the early stages of implementation that sometimes necessitate changes to the original program design. These barriers can include opposition from physicians, difficulty hiring qualified staff or obtaining space and equipment, higher-than-expected costs, and difficulty developing a data collection system that can efficiently monitor patients and program activities.

By adding the demonstration to ME Cares—an existing program familiar to hospitals, patients, and physicians—the MCD MCCD appears to have avoided many of the potential startup problems listed above. The favorable experience of physicians with the ongoing ME Cares program, as well as the use of NCMs who are already members of the local and medical community, has minimized any physician opposition to the program or unwillingness to work with NCMs. Although some physicians and NCMs have had reservations about the random assignment aspect of the demonstration, this has not translated into resistance to the actual operations of the intervention.

Because the participating hospitals provide the staff hours and work space to implement the intervention, hiring staff or finding space have not been issues. The lack of assured time for the NCMs, combined with the widespread nursing shortage, has been an issue, however. Although the diversion of NCMs to other hospital duties seems so far to have affected recruitment more

than ongoing care coordination activities, inadequate staff hours could easily become a problem as enrollment grows.

The MCD MCCD project depends highly on the hospitals' commitment to the project and is vulnerable to any problems the larger ME Cares program might encounter. Even though many clinicians and hospital administrators believe that ME Cares is the "right thing to do," the lack of commercial insurance payment makes committing staff hours to the program difficult for hospital administrators to justify when resources are tight. Hospitals pinched for resources may thus drop out of the ME Cares coalition altogether, thereby ending their participation in the MCD MCCD as well. If one or more of the few MCOs that are reimbursing for the services, or the state Medicaid program decide to no longer cover for the ME Cares intervention, cutbacks in ME Cares would likely have adverse effects on the MCD MCCD.

Ongoing demonstration costs for MCD have been about as expected. There was a delay of several months in program revenues, but this has not caused any major problems. (The MCD MCCD staff had assumed that they would start enrolling patients and receiving demonstration payments in September of 2001. OMB clearance of their demonstration waiver took longer than anticipated, however, so there were no program revenues to offset project expenditures until April 2002.)

We do not know whether hospitals' costs for the demonstration have been higher or lower than expected, as we did not speak directly to administrators from individual hospitals. The MCD staff did report that some hospitals were unconvinced that the per-enrollee-per-month reimbursements were adequate to cover their costs (primarily NCMs' time). Hospitals were especially concerned about the startup period, since initial enrollments, and thus total payments, were low, while the time required for NCMs to recruit and provide ongoing care management was substantial (and, for recruitment, greater than anticipated). One of the hospitals, in fact,

recently closed down its MCCD program as it felt it could no longer afford the NCMs' time on the demonstration. The respondents did point out that the demonstration would probably make much more financial sense to a hospital once enrollment reached 50 to 100 patients.

The demonstration's CMS® data system appears to be a potential strength. It is comprehensive, permits data entry in many discrete fields, and has the capacity to generate several types of reports for monitoring patients and NCMs to produce feedback for physicians. Whether the NCMs take full advantage of the system's reporting capabilities, and whether physicians can make use of the rather lengthy CMS® reports remain to be seen, however.

Overall, at the time of our interviews, the intervention was being implemented largely as designed and planned. For example, when asked about major implementation problems to date, respondents cited only a minor data entry issue.

Potential Problems Related to Evaluation Activities. Health care delivery demonstration programs also commonly encounter other early problems that can affect their evaluation. These include (1) low enrollment, which compromises the ability of the evaluation to detect impacts; (2) "contamination," which alters the care of the control group in ways that affect estimated impacts; and (3) difficulty providing program data required for the evaluation.

Slow enrollment, as mentioned earlier, has been attributed to the NCMs being pulled away to other duties, and to the larger hospitals not having joined yet (due in part to the need for IRB review after the change to random assignment, and possibly to physicians' and NCMs' discomfort with random assignment). Although the MCD staff has been considering expanding the heart failure eligibility criteria to include patients with a hospitalization during the past two years, they felt it was still too early to judge whether their inclusion and exclusion criteria needed to be relaxed. They do wish they had more patients randomized, but they are also aware of the risks of finding no impacts if they enroll too many patients who are at low risk for outcomes.

Program staff expect enrollment to pick up once the larger hospitals join the demonstration, soon, they hope.

Contamination of the control group can occur in several ways. Control group members might participate in other case management programs similar to the one under study. Their contact with demonstration staff before or after random assignment might lead them to receive treatment they might not otherwise receive. Demonstration influences on physicians' practice patterns could likewise lead to treatment changes for control patients that would not have otherwise occurred.

The potential for contamination of the control group in the MCD MCCD seems low at this point. Since eligibility is determined from hospital records, the NCMs do not conduct any assessments on beneficiaries before randomization, nor do they have any contact as a NCM for the MCD MCCD with those assigned to the control group following randomization.[11] As described earlier, patients assigned to the control group do not have access to services comparable to those of ME Cares.

Although the ongoing ME Cares program (both for non-Medicare patients and for the Medicare FFS beneficiaries in the demonstration) could exert additional influences on physicians' practices, changing physician practice is not a major focus of the intervention. NCMs' suggestions to patients and physicians for monitoring tests and treatments are based on evidence-based clinical practice guidelines, but they occur only on a case-by-case basis, and

[11] Recall that many of the NCMs, especially in the smaller hospitals, are only part-time on ME Cares and the MCD MCCD. If the NCM also functions as a discharge planner, or a cardiac rehabilitation nurse, he or she may still interact with a control patient in those roles but will not provide any care by telephone or use CMS® in any of those interactions.

there are no organized physician educational programs or structured feedback and profiling processes in place.

The MCD MCCD is doing well with the timeliness of their submissions of data for the evaluation, but they have had early some problems with accuracy and completeness. For example, they have added extra rows into tables and made typographical errors, all of which can lead to incorrect tabulations of contacts and services provided (Table 5). Their most recent data submissions, however, are free of such problems.

One concern unique to the evaluation of the MCD MCCD, because of its loose, consortium structure, is the potential for undesirable variation in program implementation across hospitals. For example, the program recommends several policies and procedures for participating hospitals, such as the responsibilities of local MCCD hospital staff, the establishment and composition of the program advisory committee, and the frequency and content of regular meetings. Compliance with these policies is voluntary, however. Hospital medical directors' commitment to the project may also vary. Other responsibilities compete for the attention of these practicing community physicians, and the time and energy the medical directors may be able to devote to the project may not be uniformly high across hospitals or sustained over time. Finally, NCMs have a great deal of discretion in their individual approaches to care management. If the interhospital variation in program implementation is large enough, the evaluation of the intervention may, in fact, be an evaluation of the joint effects of 23 or so disparate interventions, which makes the job of finding program effectiveness or isolating important program features even more difficult. For future implementation analyses we will explore interviewing hospital staff directly.

The last potential evaluation problem is the uncertain generalizability of the MCD MCCD to states besides Maine. Compared to other states, Maine appears to have an unusual number of

broad, voluntary collaborations in which health care providers, state agencies, insurers, employers, labor, nonprofit organizations, and other health care stakeholders join to address health issues across the state. For example, besides ME Cares, Maine also has a number of ongoing coalitions that focus on improving the care and prevention of diabetes, high blood pressure, and other cardiovascular risk factors across the state.

Summary and Discussion

The recent rapid growth in care coordination and disease management initiatives has yielded a confusing array of programs. Some do little more than utilization review, others focus on improving physicians' practice patterns, and yet others attempt to intervene at multiple levels—physicians' practice, patients' behavior, and coordination of providers and services. Programs' interventions also consist of various combinations and permutations of basic care coordination elements.

One of the goals of the implementation analysis for the evaluation of the MCCD is to develop a useful method of classifying the wide variety of care coordination/disease management programs using readily observed program features, and to relate this classification scheme to impacts. We start with a simple, provisional framework that will evolve as we learn more from the MCCD. In the current framework, we classify programs by (1) the organization(s) implementing the program and the extent of the program's integration with other key providers, (2) the program's target population and whether the program is condition specific or not, and (3) the program's major strategies and interventions. By major strategies and interventions, we mean, for example, improving patient education and adherence, improving provider practice, providing or arranging for services, and improving communication and coordination. In addition to placing the MCD MCCD intervention in this framework, we provide early observations on the

implementation experiences of the program to date and on potential challenges facing its evaluation.

Organizations Implementing the Program and Integration with Providers. The demonstration is being implemented by an innovative coalition of hospitals coordinated and facilitated by a central nonprofit organization—MCD. Basing the programs in local hospitals, and using NCMs who are members of both the local medical community and the community at large, and who are already well-known to primary physicians, should greatly facilitate the integration of the programs into the existing patterns of care. These features should help overcome some of the barriers care coordinators in other programs have faced—for example, having to introduce themselves and explain their role, needing to overcome initial suspicion and establish trust, and getting busy physicians to respond.

Target Population. The MCD MCCD is a disease management program for patients with CHF and CHD recently discharged from the hospital. As the demonstration staff noted, these patients are easy to identify, and their conditions are indeed common and associated with high costs. There are well-defined treatment guidelines for these conditions, and as studies have shown, care often falls short of those guidelines. For these beneficiaries, there do appear to be opportunities for substantial impacts on cost, quality of care, and functioning and quality of life.

By focusing on the clinical care of specific diseases, disease management programs have the potential to cause more, rather than less, fragmentation of care. MCD MCCD, despite being a CHF and CHD disease management program, tries to integrate the care of patients' other conditions, such as diabetes. The NCMs are also sensitive to needs for socially oriented services and are expected to identify and collaborate with community resources. The NCMs have ready access to the hospital social workers, and as members of the communities they work in, the NCMs are generally aware of community organizations as well.

Major Strategies and Interventions. The program's major emphases are on having the NCMs educate and support the patients in adherence and on improving communication and coordination between beneficiaries and their physicians. The CMS® software system selected by the ME Cares consortium supports the NCM by providing a structured patient education component and a means of generating periodic progress and monitoring reports to physicians. The NCMs strive to translate the primary physician's goals for each patient into clear messages that patients can readily grasp and that apply to their own lives, and to teach patients to assume primary responsibility for coordination and communication (although NCMs will still sometimes perform these duties for them). There is less emphasis on improving physician adherence to clinical practice guidelines, although the NCMs do make guideline-based medication and treatment recommendations to the primary physicians at contacts on specific patient-care related matters, and the hospital medical directors are there to supervise the NCMs and to back them up in this effort.

Early Successes of the Demonstration. Despite the challenges facing them, the ME Cares Consortium and MCD have achieved two noteworthy accomplishments. First, the decentralized, statewide consortium of hospitals that is implementing ME Cares and the MCD MCCD is unique, not only among the programs in the national MCCD, but also among care coordination/disease management initiatives in general. The hospitals have all agreed to abide by certain standards for program implementation, maintained by MCD, that must be met for a hospital to participate. As mentioned earlier, the voluntary participation, sponsorship, and staffing of programs by local hospitals may help the programs integrate into existing practice patterns. The second accomplishment is the project's data system. The hospitals have all adopted a disease management software system (the CMS® software), which provides electronic medical record keeping, real-time decision support to the NCMs, uniform collection of data, and

automatic generation of reports and graphs. The consortium has also agreed on a standard data set (the MDS) and arranged for all hospitals to transmit this MDS regularly to a central location. An experienced data contractor is collecting and processing the data. ME Cares and the MCCD thus have the potential for regular monitoring of program performance on a variety of indicators at both hospital and program levels.

Potential Challenges for the Demonstration and Evaluation. The main challenge facing the implementation of the demonstration is that the amount of time the NCMs can spend on the project is vulnerable to cutbacks by the participating hospitals, which are facing nursing shortages and other pressures. Challenges facing the evaluation include the enrollment shortfall, which could compromise the ability of the evaluation to detect program impacts, and the potential for variation in the intervention across hospitals, given the voluntary nature of their participation. The ME Cares intervention also developed in Maine, a state with a tradition of statewide health collaborations, which raises the question of whether the program will work as well in other states. The MCD MCCD intervention does have many features that have been associated with improved patient outcomes and reduced health costs, however, and if the challenges of hospital commitment, slow enrollment, and program fidelity can be addressed, the program has the potential for positive impacts.

REFERENCES

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

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

APPENDIX A

MATERIALS PROVIDED BY MEDICAL CARE DEVELOPMENT AND ME CARES AND REVIEWED FOR THIS REPORT

LIST OF MATERIALS PROVIDED BY MEDICAL CARE DEVELOPMENT AND ME CARES AND 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

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

Credentialing application for hospitals to participate in the MCCD

Minimum data sets for CHD and CHF required of all ME Cares hospitals

Recommended ME Cares policy and procedures for each participating hospital

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

CD-ROM about PHS Clinical Management System (CMS®) software

Template for hospital implementation plan for MCCD

Sample press releases for hospitals

MCCD patient tracking form for NCMs

Template letters—physician outreach, patients regarding results of random assignment, hospital staff

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

Documents about the ME Cares Coalition

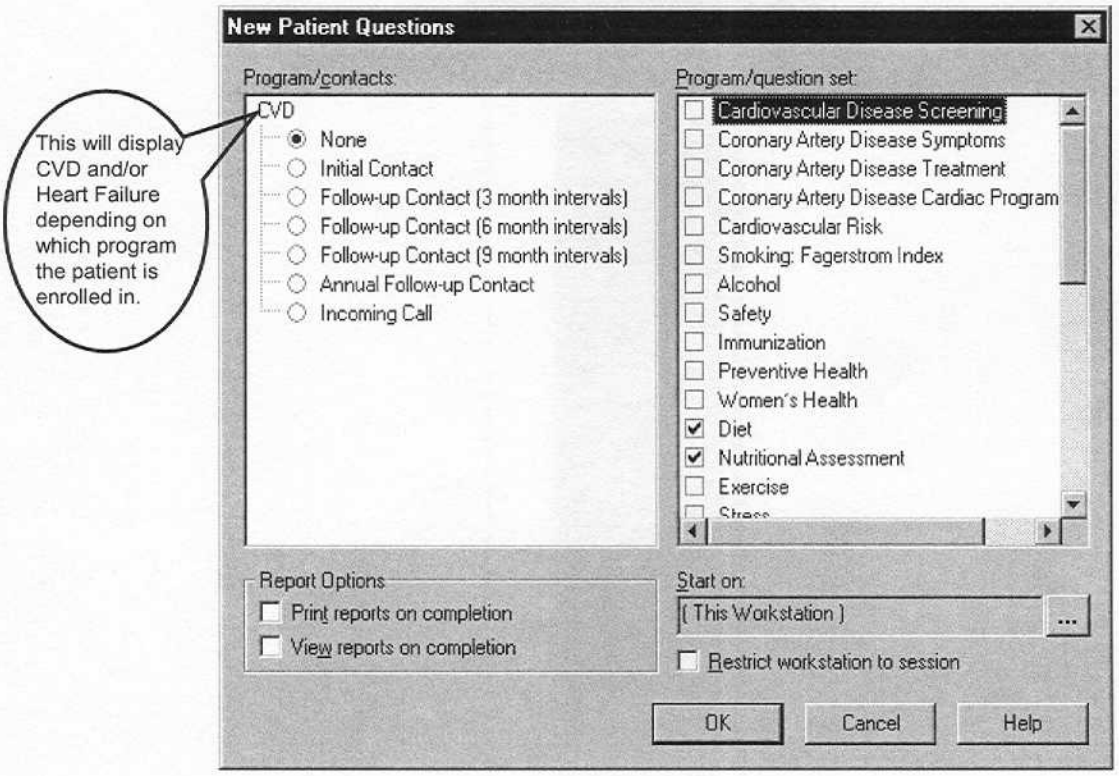
- ME Cares Executive Summary (history of the coalition and clinical outcomes from 2001)
- Governing Structure and Workgroups
- Verification of Standard Elements (standards for hospital participation in ME Cares)
- Minimum Data Set
- Data Review System

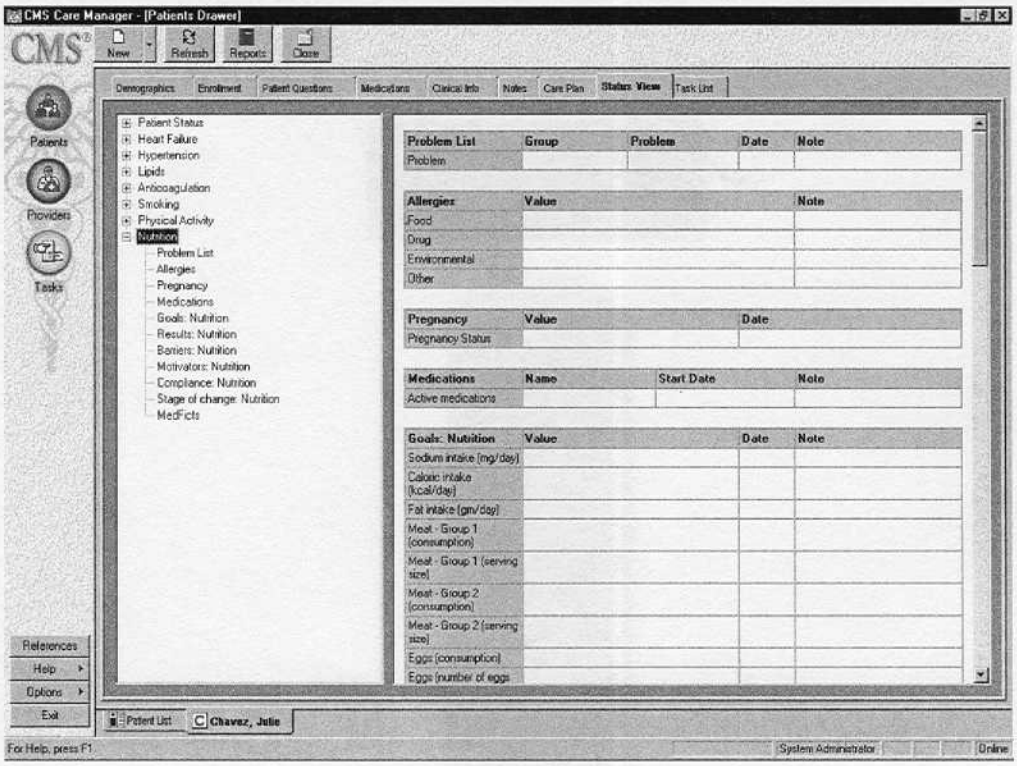
MCD MCCD Documents

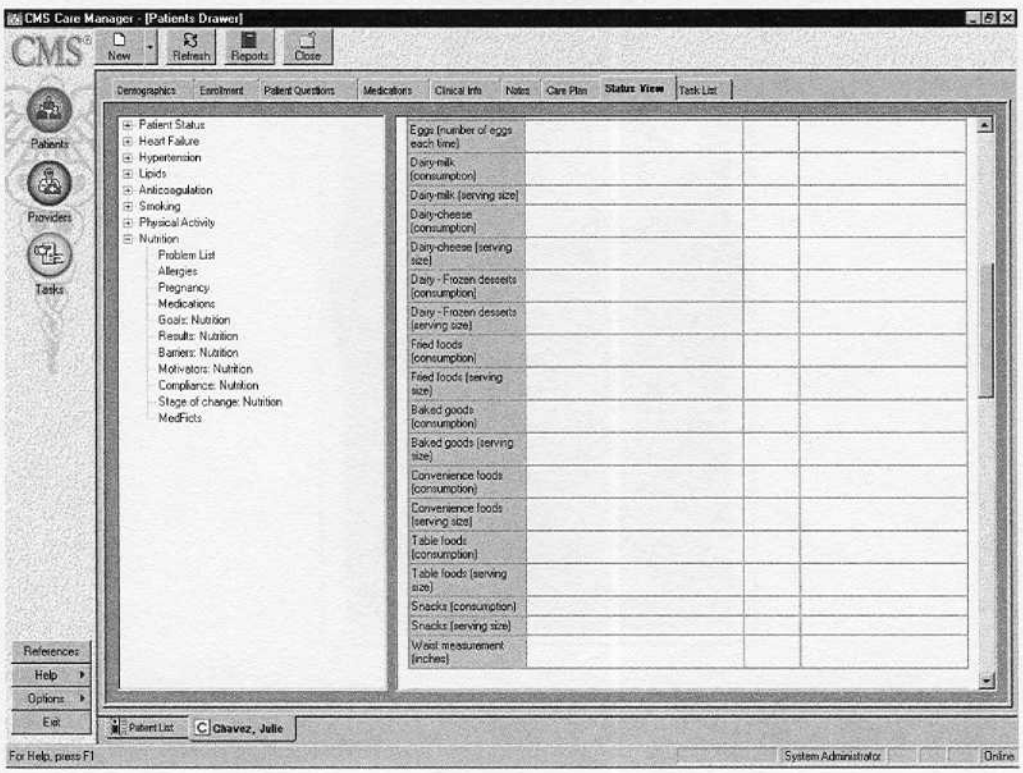
- Articles and brochures for beneficiary outreach
- Barriers contest and results on barriers survey for Nurse Care Managers
- Referral Process
- Provider outreach material Outreach and Education
- Case finding agreement
- Sample weekly hospital updates
- Nurse case manager trainings and agendas
- Sample hospital status reports
- Standing agenda for weekly MCCD staff meeting agenda,
- Disenrollment tracking form

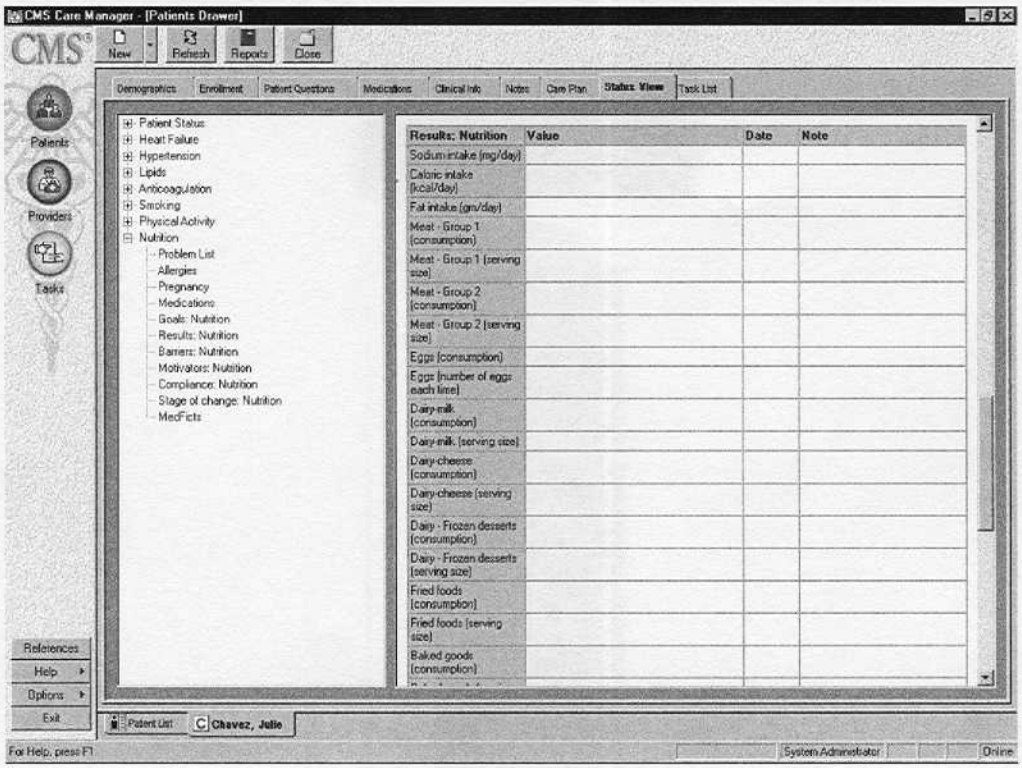
APPENDIX B

CMS® SAMPLE SCREEN SHOTS AND REPORTS

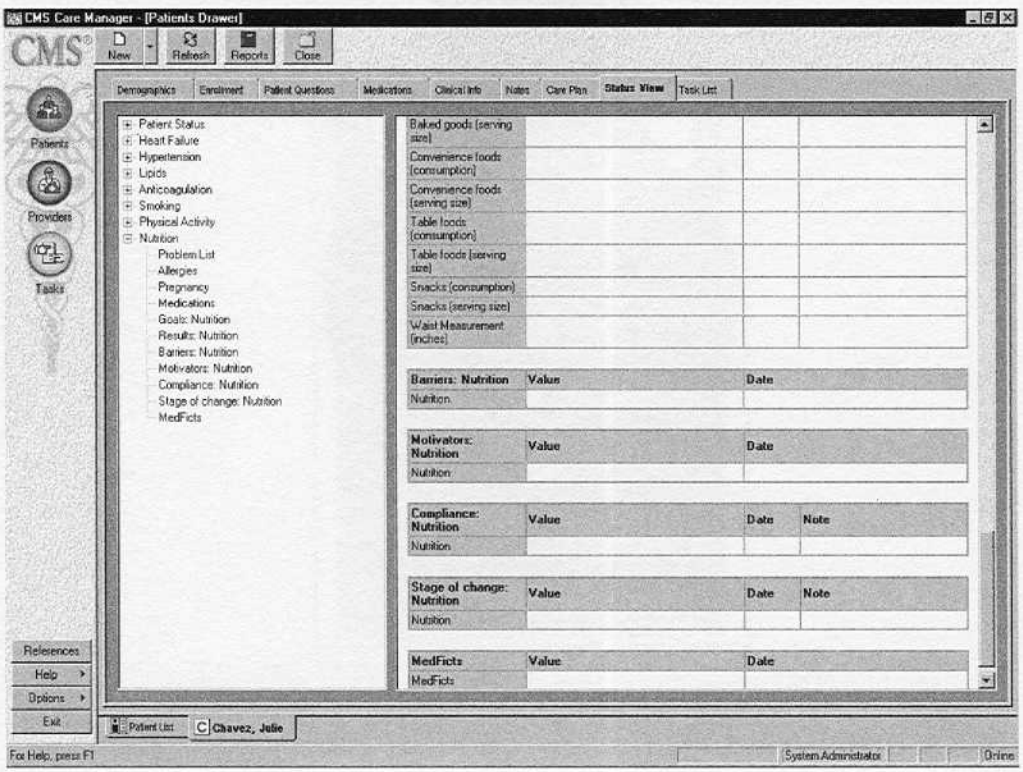








Results: Nutrition	Value	Date	Note
Sodium intake (mg/day)			
Caloric intake (kcal/day)			
Fat intake (gm/day)			
Meat - Group 1 (consumption)			
Meat - Group 1 (serving size)			
Meat - Group 2 (consumption)			
Meat - Group 2 (serving size)			
Eggs (consumption)			
Eggs (number of eggs each time)			
Dairy-milk (consumption)			
Dairy-milk (serving size)			
Dairy-cheese (consumption)			
Dairy-cheese (serving size)			
Dairy - Frozen desserts (consumption)			
Dairy - Frozen desserts (serving size)			
Fried foods (consumption)			
Fried foods (serving size)			
Baked goods (consumption)			



Baked goods (serving size)			
Convenience foods (consumption)			
Convenience foods (serving size)			
Table foods (consumption)			
Table foods (serving size)			
Snacks (consumption)			
Snacks (serving size)			
Waist Measurement (inches)			

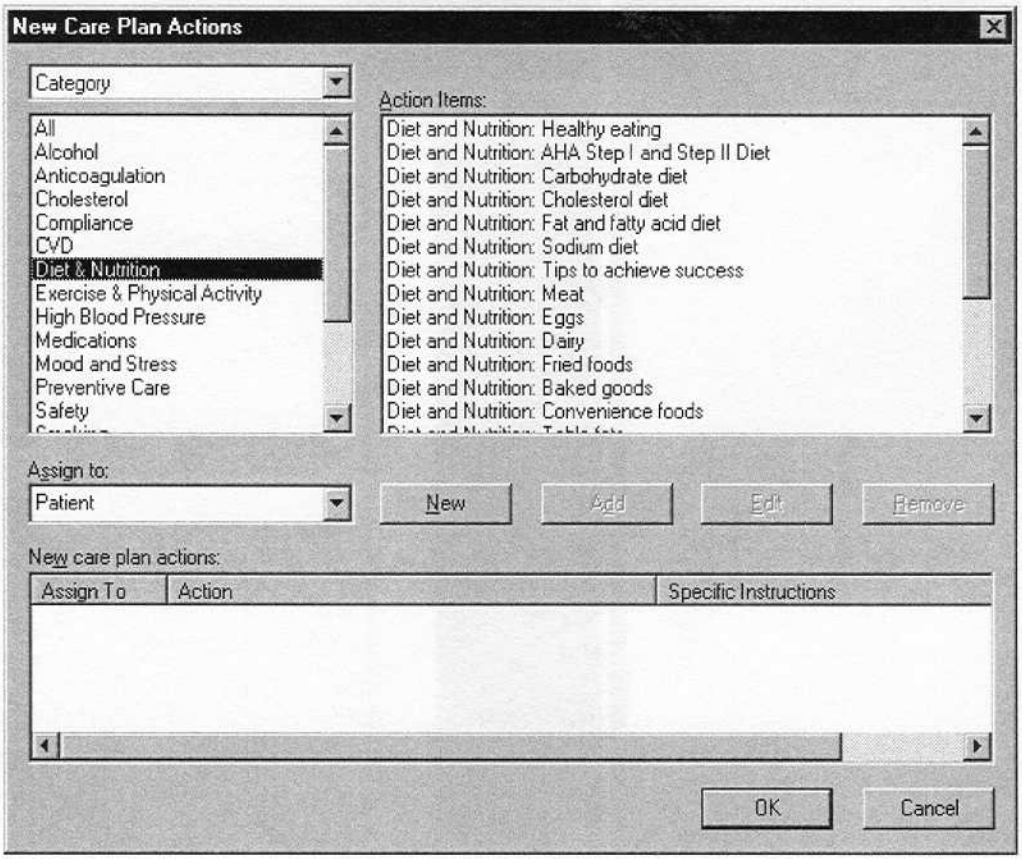
Barriers: Nutrition	Value	Date
Nutrition		

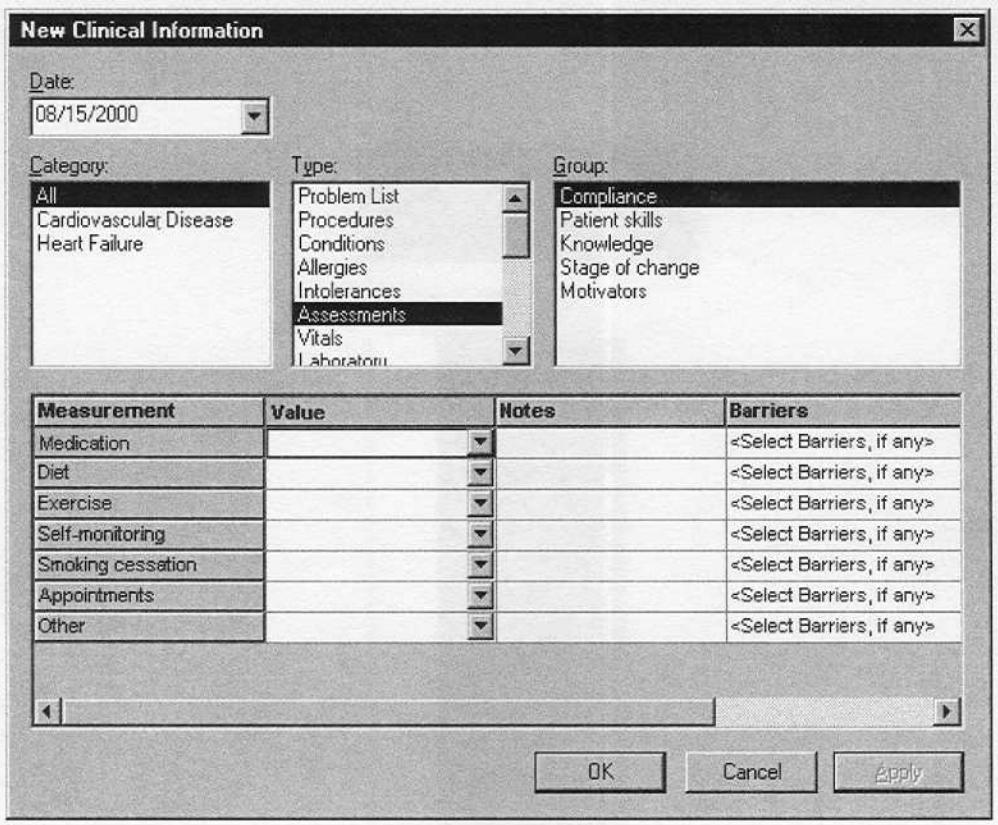
Motivators: Nutrition	Value	Date
Nutrition		

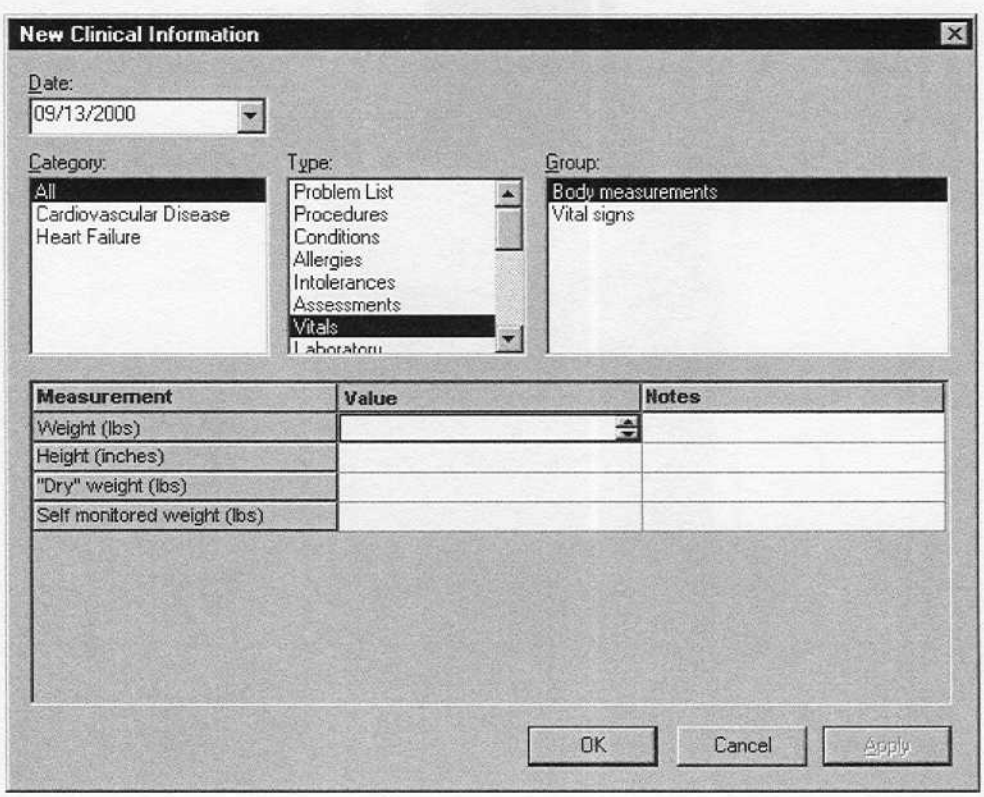
Compliance: Nutrition	Value	Date	Note
Nutrition			

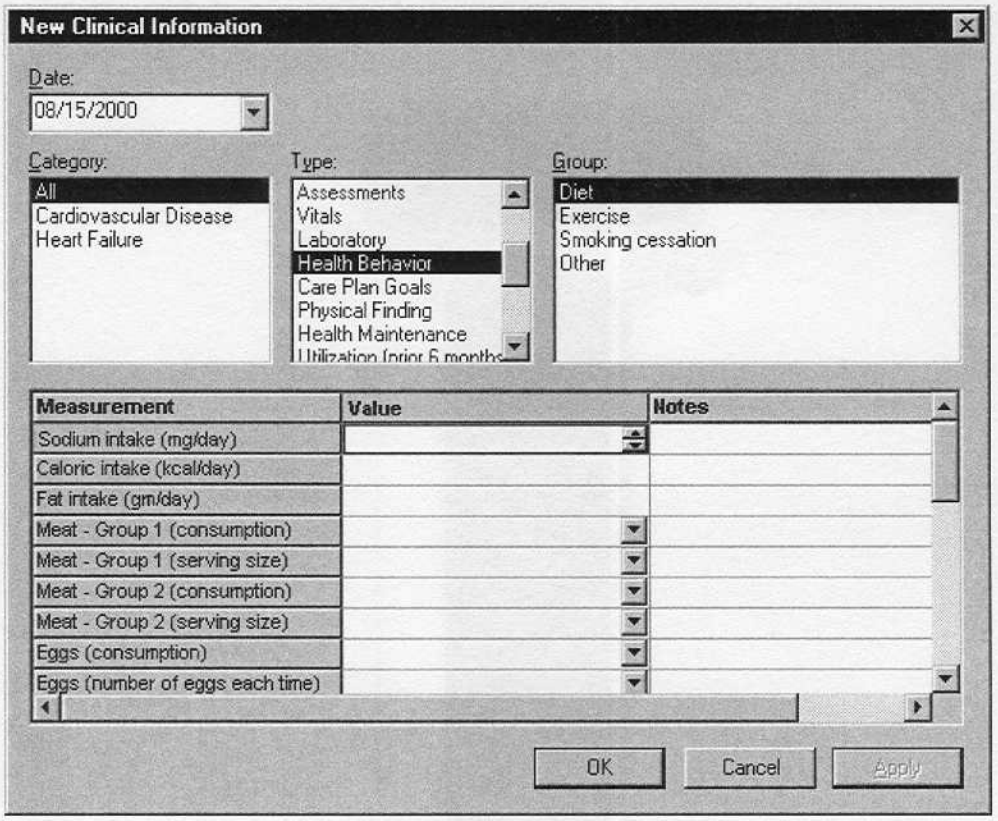
Stage of change: Nutrition	Value	Date	Note
Nutrition			

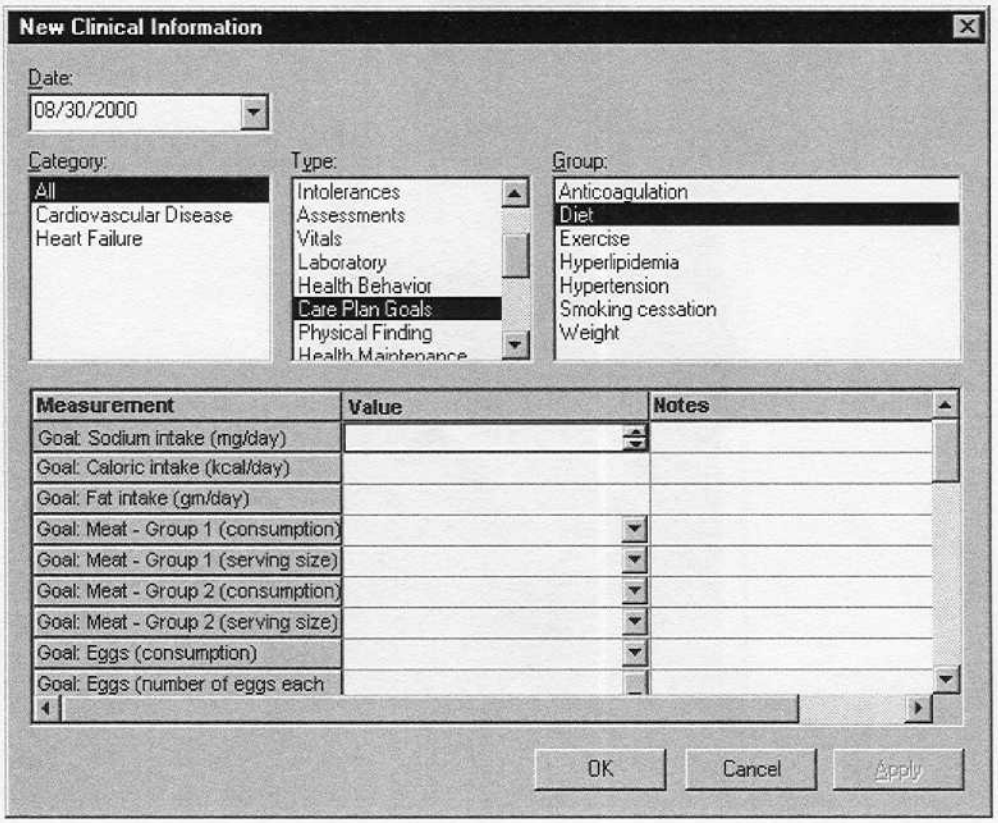
MedFicts	Value	Date
MedFicts		

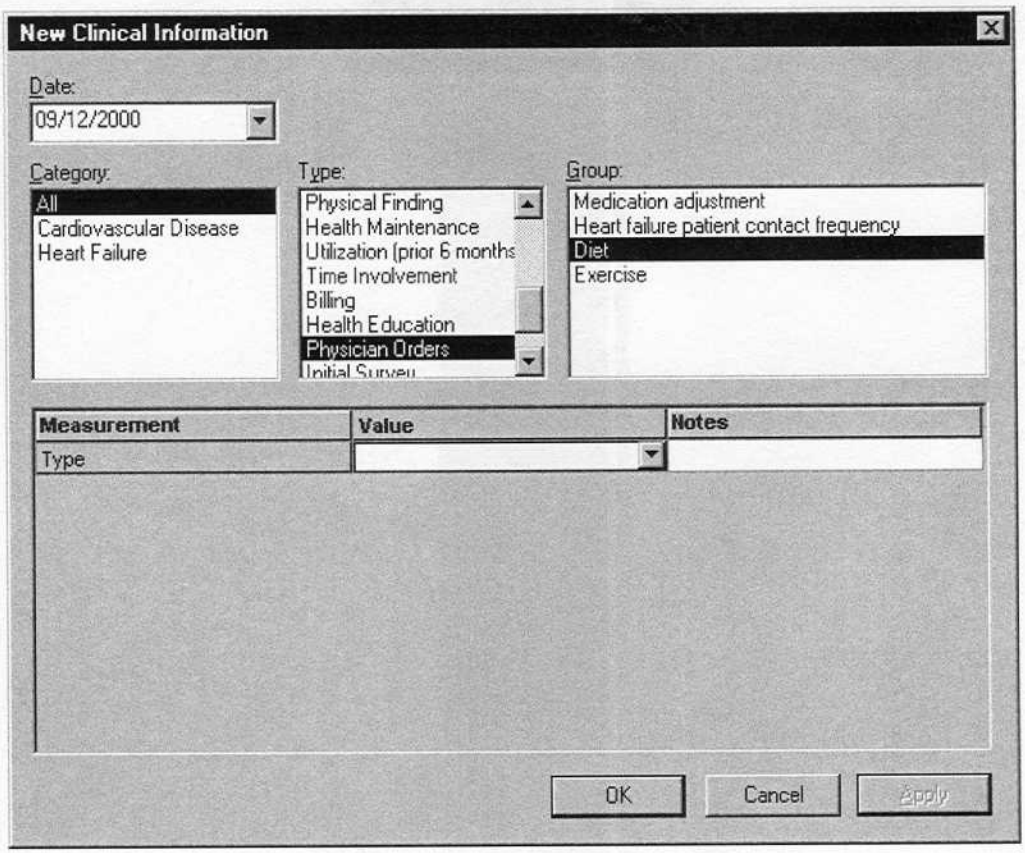




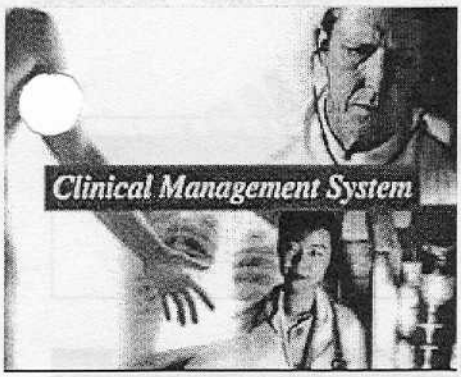








Wednesday March 01, 2000



I.D.#:	MM-234-2400
Patient:	Vivian C. Clark
Address:	3456 Pacific Beach Blvd #101 Beach Front, CA 96987-1524
Telephone:	714-555-1245
Date of Birth:	02/09/1959
Sex:	Female
Physician(s):	Samantha S. Strong, MD Linda A. Novak, MD

Current Enrollment(s):
Heart Failure
Healthy Lifestyle

PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Status:			
Problem List*:	Cardiovascular, Central nervous system, Gastrointestinal		
Condition(s)*:	Heart failure - NYHA class: II Hypertension - Stage: High normal	**Intolerances:**	NSAIDs
Allergies:	Peanuts, Penicillin	**Pregnancy Status:**	Planning to become pregnant

*See the following pages for detailed results.

Medication(s):

Start Date	**	Prescribed As	Physician	Notes
08/19/1999	PT	Lasix 40 mg, 1 twice daily	Strong, Samantha	"taking to get rid of water"
10/14/1999	PR	KCl-20 20 meq/15ml, 1 every day	Strong Samantha	"for potassium"
11/11/1999	PT	Prozac 20 mg, 1 every day	Strong, Samantha	"for nerves"
11/18/1999	PT	Captopril 25 mg, 1 three times a day	Novak, Linda	"for high blood pressure"

** Source of Information = PR: Professional - Provider Reported ; PT: Patient

Patient Reported Symptoms:

Date	Program	Severity	Change	Symptoms
03/01/2000	Heart Failure	Moderate	Worse than usual	Weight gain or leg swelling

Care Plan:

Action(s) & Specific Instruction(s)

Patient:

- 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

Care Manager:

- Referral: Heart failure class
  Schedule enrollment into Heart Failure class at Santa Monica Clinic

Notes for Physician:

- Medication Review: Adjustment
  Suggest increase in Lasix to 80 mg BID, KCL 30 mEq QD; Add Lipitor 20 mg QD

Clinician Name | Signature | Telephone Number | Date

Clark, Vivian MM-234-2400

PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Problem List (Detail):

Illness Classification	Identified Problem(s)
Cardiovascular	Heart failure, Hypertension
Central nervous system	Migraine
Gastrointestinal	Peptic ulcer disease

Medication Messages:

Condition	
Heart Failure	Patients with systolic failure may benefit from the use of ACE inhibitors, beta-blockers and spironolactone in addition to the use of other diuretics and inotropic agents. Patients with diastolic dysfunction may benefit from the use of beta-blockers and calcium channel antagonists.

Conditions (Detail):

Classification	Measurement(s)	Value
Heart failure	Etiology	Valvular
	Family history	Father
	NYHA class	II
	Type	Systolic dysfunction
	Year of diagnosis	1998
Hypertension	Etiology	Essential
	Family history	Father Grandmother
	Stage	High normal
	Year of diagnosis	1999

Patient Reported Information:

Date		Value	Notes
03/01/2000	Medication Compliance Behavior Score:	5	Range, 0 - 12: Very compliant = 0; Non-compliant = 12
03/01/2000	Sodium Intake Behavior Score:	5	Acceptable = 0 - 5, High Risk = 6 - 8
03/01/2000	SF-12 Physical Health Score:	48	Percentile Scores for general U.S. adult population: Median = 53.55, 25th = 46.53, 75th = 56.49 (higher scores indicate functioning)
03/01/2000	SF-12 Mental Health Score:	43	Percentile Scores for general U.S. adult population: Median = 52.85, 25th = 45.13, 75th = 57.30 (higher scores indicate better functioning)
03/01/2000	Smoking Status:	Current smoker	
03/01/2000	Fagerstrom Index:	5	Score > 6 indicates a high risk for developing nicotine withdrawal symptoms.

Assessments (Detail):

Type		Assessment	Date
Compliance	Diet	Non-compliant	03/01/2000
	Exercise	Non-compliant	03/01/2000
	Medication	Somewhat compliant	03/01/2000
	Self-monitoring	Non-compliant	03/01/2000
Knowledge	Medication	Deficit	03/01/2000
	Self-management goals	Deficit	03/01/2000

Barriers (Detail):

Compliance	Interference with lifestyle, Patient understanding or knowledge of condition, Social issues
Knowledge	Patient understanding or knowledge of condition, Impaired comprehension

Clark, Vivian MM-234-2400

PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Laboratory:

Group	Measurement	Date	Value	Date	Value	Date	Value
Blood chemistry	Sodium (mEq/L)	08/16/1999	135				
	Potassium (mEq/L)	11/16/1999	4.6	08/16/1999	4.6		
	BUN (mg/dL)	08/16/1999	20				
	Creatinine (mg/dL)	11/16/1999	1.1	08/16/1999	1.2		
Cardiac function	Ejection fraction (%)	08/16/1999	40				
Lipid panel	Total cholesterol (mg/dL)	11/16/1999	220	08/16/1999	220		
	HDL cholesterol (mg/dL)	11/16/1999	36	08/16/1999	40		
	Triglyceride (mg/dL)	11/16/1999	220	08/16/1999	240		
	LDL cholesterol (mg/dL)	11/16/1999	175	08/16/1999	180		

Vitals:

Group	Measurement	Date	Value	Date	Value	Date	Value
Vital signs	Systolic BP (mm Hg)	12/16/1999	150	07/15/1999	145		
	Diastolic BP (mm Hg)	12/16/1999	95	07/15/1999	93		
	Pulse	07/15/1999	79				
Body measurements	Weight (lbs)	01/27/2000	140	07/15/1999	138		
	Height (inches)	01/27/2000	66				
	"Dry" weight (lbs)	01/27/2000	138	07/15/1999	138		
	Body Mass Index	01/27/2000	22.64	07/15/1999	22.32		

Utilization (Prior 6 Months):

Condition	Classification	Last Reported	Utilization
Heart failure	Unscheduled physician visit (visits)	11/16/1999	2

Care Plan Goals:

Group	Measurement	Date	Value
Exercise	Goal: Duration (minutes per day)	11/16/1999	20
	Goal: Frequency (days per week)	11/16/1999	3
	Goal: Intensity (level)	11/16/1999	Moderate
Hyperlipidemia	Goal: HDL cholesterol (mg/dL)	11/16/1999	60
	Goal: LDL cholesterol (mg/dL)	11/16/1999	100
	Goal: Total cholesterol (mg/dL)	11/16/1999	200
	Goal: Triglyceride (mg/dL)	11/16/1999	150
Hypertension	Goal: Diastolic BP (mm Hg)	11/16/1999	80
	Goal: Systolic BP (mm Hg)	11/16/1999	120
Weight	Goal: Weight (lbs)	11/16/1999	136

Initial Survey Results:

Group	Measurement	Date	Value
Alcohol	Frequency	03/01/2000	Monthly
	Plans to change alcohol intake	03/01/2000	No
	Servings per occasion	03/01/2000	3
Diet	MD-ordered special diet	03/01/2000	Yes
	Plans to change diet	03/01/2000	Yes, in the next 6 months
	Special diet	03/01/2000	No
Pt Rating	Health care	03/01/2000	10
	Health plan	03/01/2000	2
Contact information	Best time to call	03/01/2000	Morning

Clark, Vivian MM-234-2400

PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Health Behavior:

Group	Measurement	Date	Value
Exercise	Duration (minutes per day)	11/16/1999	10
	Frequency (days per week)	11/16/1999	1
	Intensity (level)	11/16/1999	Mild
Smoking cessation	Smoking (cigarettes/day)	11/16/1999	18

Motivators:

Classification(s)	Value(s)
Diet	Improve self-image/appearance
Exercise	Social reasons
Medication	Reduce health risk for others

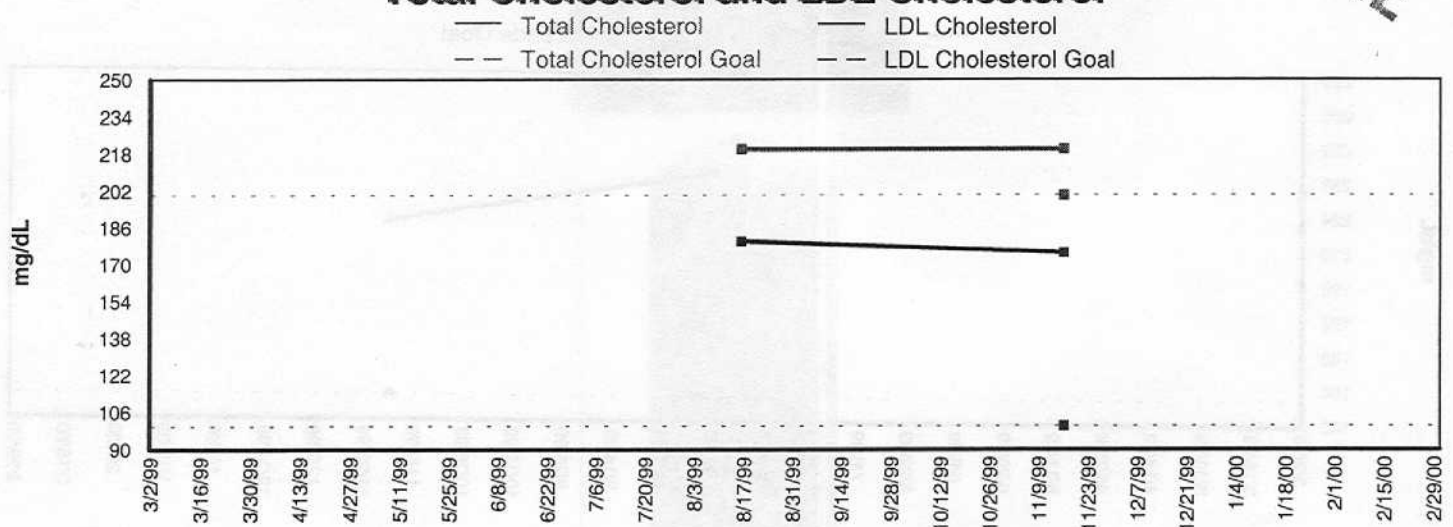
Wednesday March 01, 2000

Clark, Vivian MM-234-2400

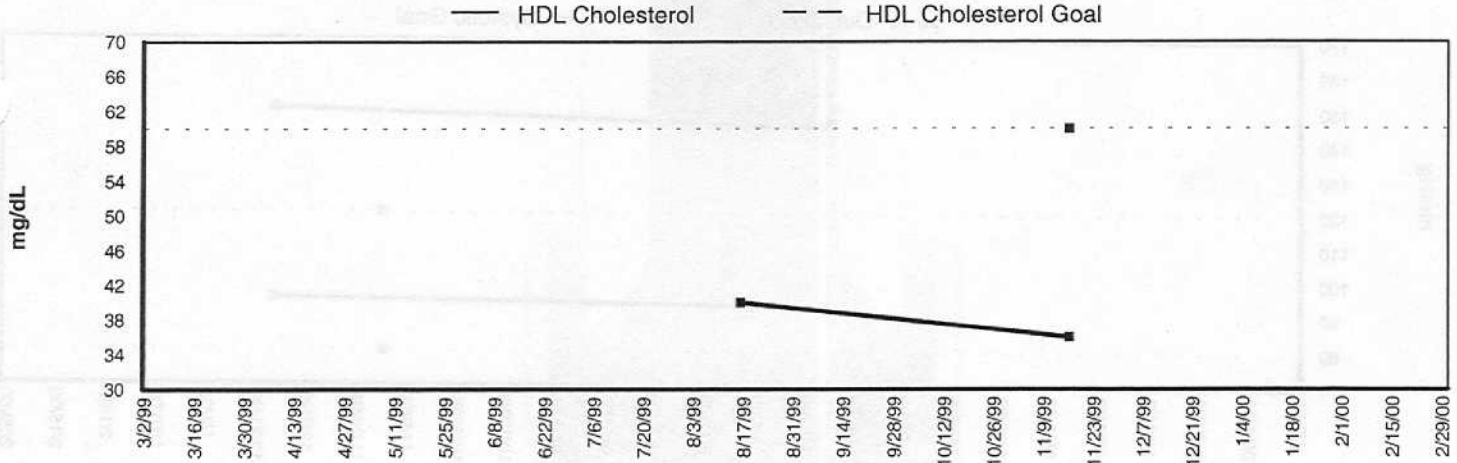
PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Total Cholesterol and LDL Cholesterol



HDL Cholesterol



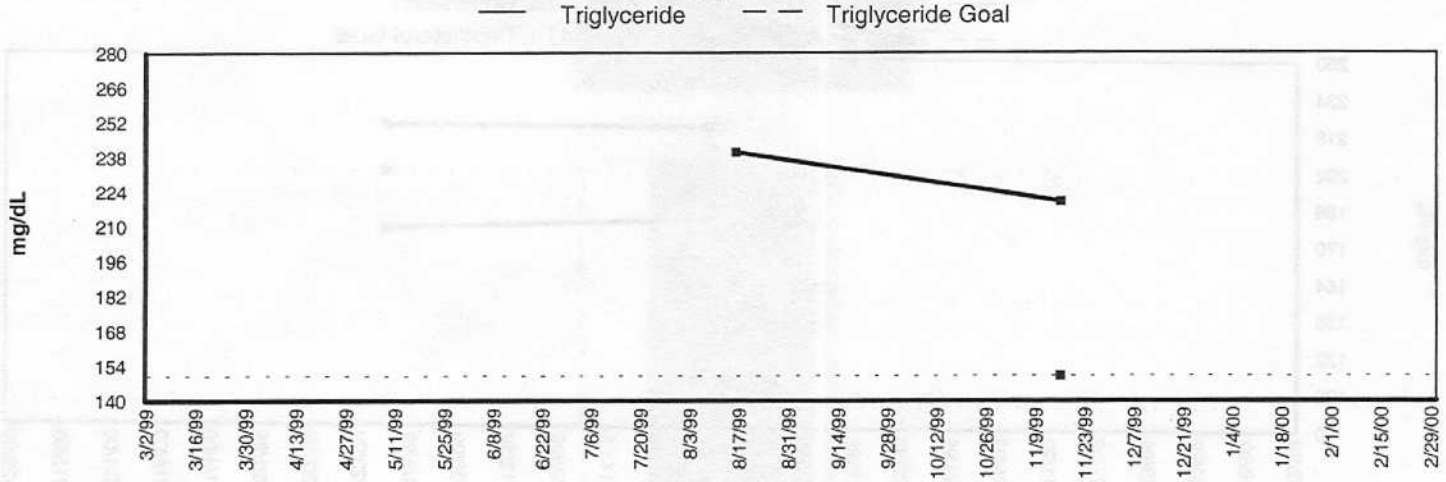
Wednesday March 01, 2000

Clark, Vivian MM-234-2400

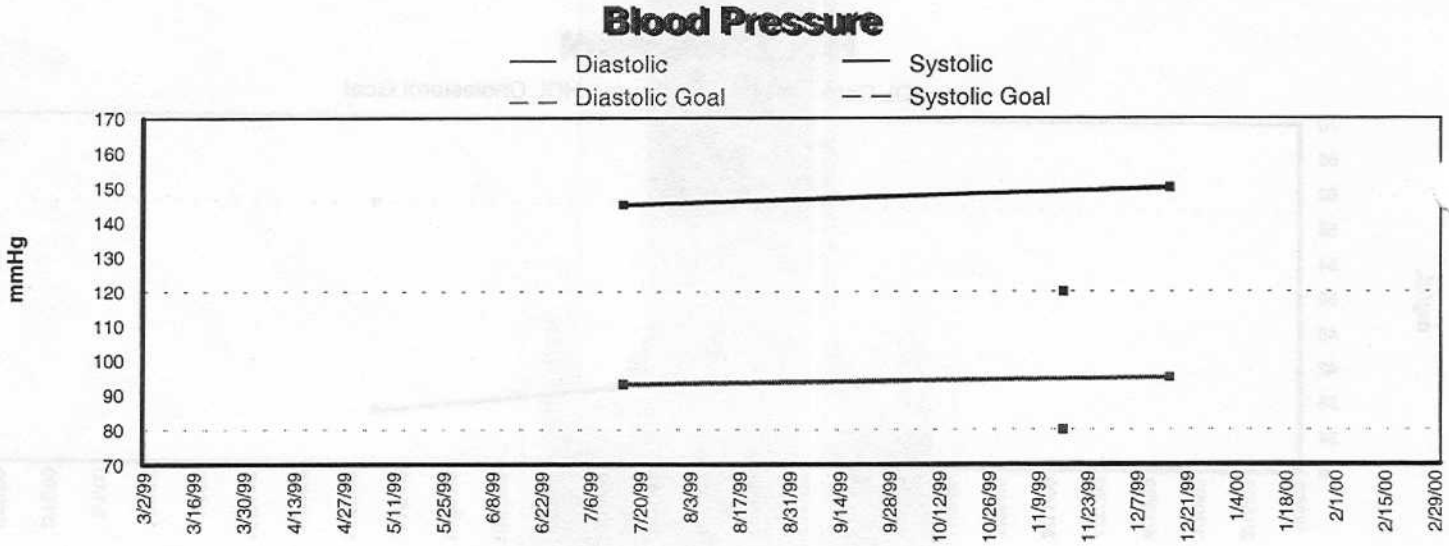
PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000

Triglyceride



Blood Pressure

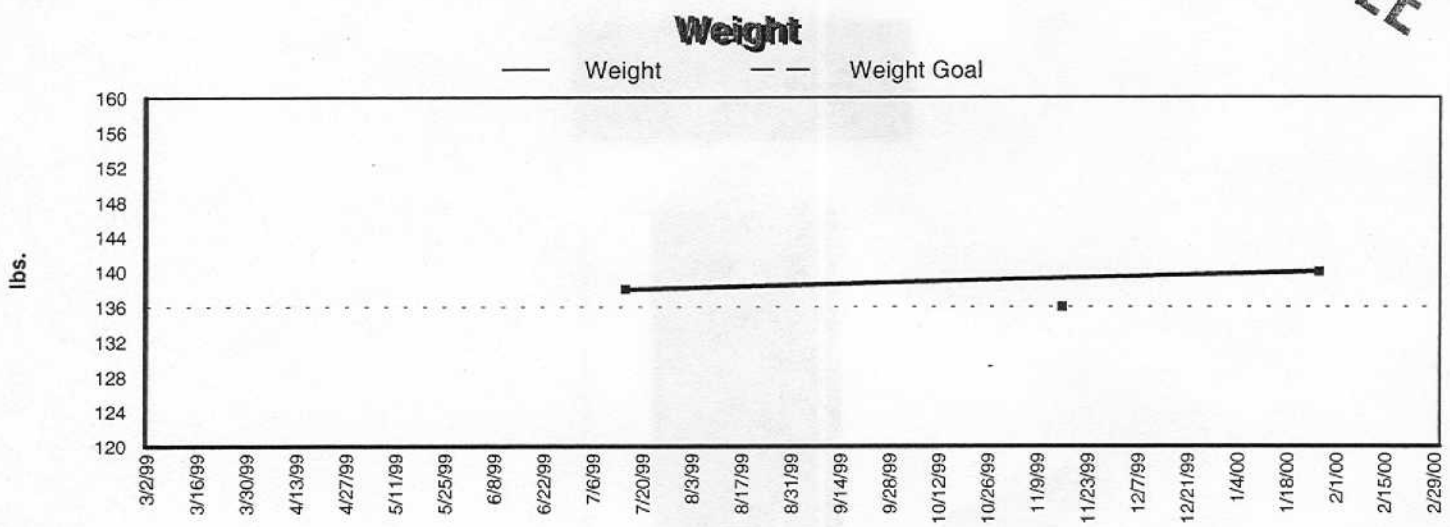


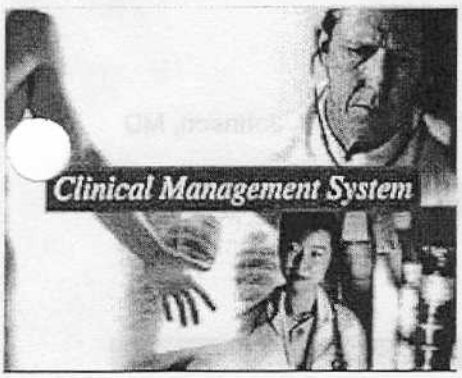
Wednesday March 01, 2000

Clark, Vivian MM-234-2400

PHYSICIAN UPDATE REPORT

Summary as of 03/01/2000





Print Date: 03/01/2000 **Page 1 of 4**

Interview Date: 03/01/2000 **I.D.#:** DL-90334

Patient: Nancy Manning

Date of Birth: 05/09/1957 Provider: Jason J. Johnson, MD

Day Phone: 818-555-4962

SAMPLE

Patient Reported Information

(collected on 03/01/2000)

Heart Failure: Symptoms (past 4 weeks)

Description:	Weight gain or leg swelling
Severity:	Moderate
Status:	Worse than usual
Frequency:	One to two days a week
Limitations of Activity:	A little of the time

Heart Failure: Self-Monitoring

Weight monitoring performed:	No

Heart Failure: Treatment

Current Tx:	Medications, Exercise

Heart Failure: Care Plan Adherence

How often patient has trouble with the following:

Weighing yourself daily:	Sometimes has trouble
Taking your blood pressure:	Sometimes has trouble
Following a diet plan:	Always has trouble
Following an exercise plan:	Always has trouble
Taking Rx as prescribed:	Sometimes has trouble

Heart Failure: Knowledge Issues

Reinforce the following educational topics:

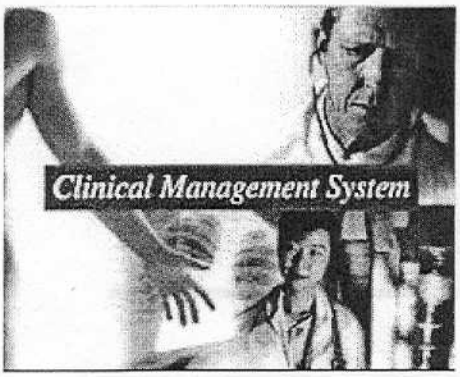
- Low sodium diet
- Care plan components
- Weight safety zone
- Chronic nature of heart failure
- Etiology of heart failure
- Daily self monitoring of weight

Cardiovascular Risk

Coronary Heart Disease Hx:	Yes
Father/Brother Hx of CHD:	No
Mother/Sister Hx of CHD:	No
Current Tx for CHD:	Yes
Current Tx for Hypertension:	No
Current Rx for Hyperlipidemia:	No

Smoking

Forms used, lifetime:	Cigarettes
Cigarette usage:	Smokes less than 16 cigarettes per day
Fagerstrom Index:	5
Stage of Change:	Action



Patient: Nancy Manning
Date of Birth: 05/09/1957 Provider: Jason J. Johnson, MD
Day Phone: 818-555-4962

Patient Reported Information

(collected on 03/01/2000)

Alcohol

Drinking Habits:	Never drinks

Safety

Seat belt use:	Half the time
Child car seat use:	Half the time
Smoke detector last checked:	Not within past 12 months
Secure rugs/items at home:	No

Immunization

Tetanus/Booster past 10 yrs:	No
Influenza/Flu Shot past 12 mo.:	No
Pneumococcal Vac (ever):	No

Preventive Health

Breast Self-Exam Frequency:	No
Last MD Breast Exam:	2-3 years
Last Mammogram:	2-3 years
Last Pap Smear:	2-3 years
Tests for Colorectal Cancer:	Colonoscopy

Women's Health

Menopause:	No
Estrogen use:	No
Breast feeding:	No
Pregnancy:	I plan to become pregnant in the next 3 months

Diet

Fatty Foods:	<=1 servings/day
Fruits	<=1 servings/day
Vegetables:	2 servings/day
Cereals and Grains:	3 servings/day

Diet Issues:

Somewhat difficult to cut back on food quantity and change food type
Not very successful at changing eating habits to eat healthier

Barriers to Successfully Changing Diet:

Healthy food is too expensive

Stage of Change: Preparation

Exercise

Vigorous Exercise:	< 1 time/week
Stage of Change:	Action

Stress

Psychosocial Stressors (past 6 mo):	Problems with your children
Excess Stress, past 6 months:	A little of the time
Stage of Change:	Contemplation

Print Date: 03/01/2000
Interview Date: 03/01/2000
Patient: Nancy Manning
Date of Birth: 05/09/1957
Day Phone: 818-555-4962

I.D.#: DL-90334
Provider: Jason J. Johnson, MD

Patient Reported Information

(collected on 03/01/2000)

General Health Knowledge

Reinforce the following educational topics:

- Food pyramid - Breads, cereal, grains
- Healthy eating
- Food pyramid - Fruits & Vegetables
- Risks of smoking
- Benefits of exercise - lowers cardiovascular risk factors
- Benefits of smoking cessation

General Health Utilization (past 6 months)

Admitted to hospital:	No
Visited ER:	No
Unscheduled physician's visit:	Yes
Missed Work:	Yes

Functional Status

Activities of Daily Living

Independent in: 5 out of 6: except getting in or out of bed or a chair

Instrumental Activities of Daily Living

Independent in: 5 out of 6: except preparing meals

Health Status (SF-12)

Physical Health (SF-12 PCS):	35
Mental Health (SF-12 MCS):	46

**Higher scores indicate better functioning.*

Percentile scores for general U.S. adult population:
PCS (median = 53.55, 25th = 46.53, 75th=56.49)
MCS (median = 52.85, 25th = 45.13, 75th=57.30)

Compliance Assessment

Medication Compliance Score:	5	(Range, 0-12: Very compliant = 0; Non-compliant = 12)
Sodium Intake Behavior Score:	5	(Acceptable = 0-5; High Risk = 6-8)

Diet: Knowledge Issues

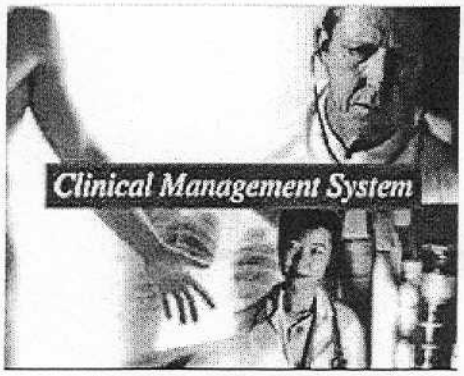
Reinforce the following educational topics:

- Vegetable oils and cholesterol
- Food labels

Exercise: Knowledge Issues

Reinforce the following educational topics:

- Age and physical activity
- Frequency and duration
- Physical activity and daily routine



Interview Date: 03/01/2000 **I.D.#:** DL-90334

Patient: Nancy Manning

Date of Birth: 05/09/1957 Provider: Jason J. Johnson, MD

Day Phone: 818-555-4962

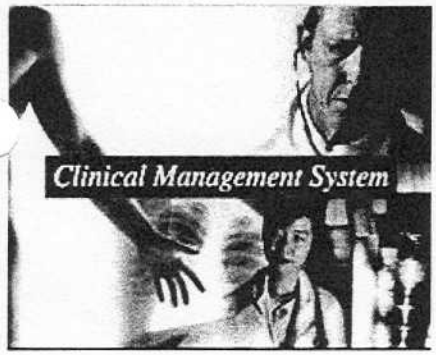
Patient Reported Information

(collected on 03/01/2000)

Smoking: Knowledge Issues

Reinforce the following educational topics:

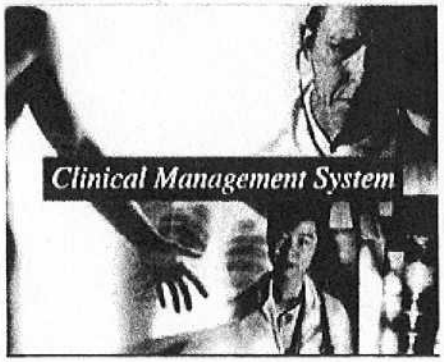
- Smoking cessation and secondary prevention



Report Type: Medications Aggregate
Report Date: 03/21/2001 1:18:28 PM
Report Period: 03/22/1995 - 03/21/2001
Data Source: Entire Patient Population
Comment:

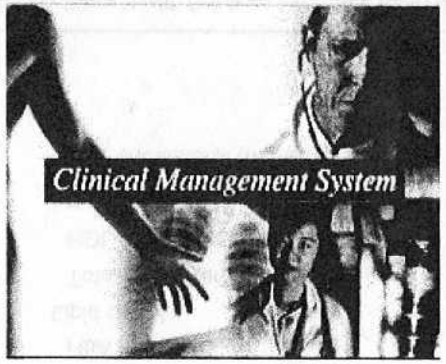
Medication Usage	# Patients Still Taking	# Patients Stopped Taking
Program CMS		
angiotensin converting enzyme inhibitors		
captopril	0	1
enalapril	1	0
angiotensin ii inhibitors		
valsartan	1	0
antihypertensive combinations		
captopril-hydrochlorothiazide	1	0
hmg-coa reductase inhibitors		
Pravachol	1	0
inotropic agents		
digoxin	1	0
loop diuretics		
Lasix	1	0
non-sulfonylureas		
Glucophage	1	0
platelet aggregation inhibitors		
aspirin	1	0
sulfonylureas		
glyburide	1	0

Number of Patients reported in CMS: 4



Report Type: Vitals & Labs Aggregate
Report Date: 03/21/2001 1:10:58 PM
Report Period: 03/06/1995 - 03/21/2001
Data Source: Entire Patient Population
Comment:

Measurement (units)	Avg Baseline Value* (n)	Baseline Value Min-Max	Avg Latest Value* (n)	Latest Value Min-Max	Relative to Baseline				
					# With Increased Values (n)	Avg Increase in Value	# With Decreased Values (n)	Avg Decrease in Value	# Without Change in Values (n)
CMS									
Vitals									
Body measurements									
Weight (lbs)	216.0 (2)	177.0 - 255.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Height (inches)	69.0 (2)	68.0 - 70.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Body Mass Index	31.8 (2)	27.0 - 36.7	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Vital signs									
Systolic BP (mm Hg)	146.7 (3)	132.0 - 160.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Diastolic BP (mm Hg)	86.0 (3)	76.0 - 94.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Pulse	73.0 (2)	70.0 - 76.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Laboratory									
Glucose									
Blood glucose (mg/dL)	130.0 (1)	130.0 - 130.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Fasting plasma glucose (mg/dL)	136.0 (2)	128.0 - 144.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
HbA1c (%)	9.3 (2)	8.4 - 10.2	9.6 (1)	9.6 - 9.6	0	0.0	1	0.6	0
Lipid panel									
Total cholesterol (mg/dL)	268.0 (3)	250.0 - 299.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
HDL cholesterol (mg/dL)	37.3 (3)	35.0 - 40.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
Triglyceride (mg/dL)	246.7 (3)	190.0 - 350.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0
LDL cholesterol (mg/dL)	145.3 (3)	110.0 - 177.0	0.0 (0)	0.0 - 0.0	0	0.0	0	0.0	0



Report Type: Vitals & Labs Aggregate
Report Date: 03/21/2001 1:10:58 PM
Report Period: 03/06/1995 - 03/21/2001
Data Source: Entire Patient Population
Comment:

Measurement (units)	Avg Baseline Value* (n)	Baseline Value Min-Max	Avg Latest Value* (n)	Latest Value Min-Max	Relative to Baseline				
					# With Increased Values (n)	Avg Increase in Value	# With Decreased Values (n)	Avg Decrease in Value	# Without Change in Values (n)

Number of Patients reported in CMS: 31

*
This value may occur at any point within the report period.