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**MATHEMATICA**  
Policy Research, Inc.

**The Early Experience  
of the Avera Medicare  
Coordinated Care  
Demonstration Program**

*Final Report*

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*Sherry Aliotta  
Karen Sautter  
Jennifer Schore*

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Centers for Medicare & Medicaid Services  
Office of Strategic Planning  
C3-20-17  
7500 Security Boulevard  
Baltimore, MD 21244

Submitted by:

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

Project Officer:  
Carol Magee

Project Director:  
Randall Brown



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## EXECUTIVE SUMMARY

In October 2000, Avera Research Institute (ARI) applied to the Centers for Medicare & Medicaid Services (CMS) to participate in the Medicare Coordinated Care Demonstration (MCCD). Mathematica Policy Research, Inc. (MPR) is evaluating the ARI program, along with 14 other participating programs and a disease management program. The evaluation uses a randomized design to test the impact of coordination on care quality and service use and costs and includes an implementation analysis to assess which features lead to the success or failure of each program. This case study documents ARI's program plans and early experiences based on telephone interviews conducted three months after the program began enrolling patients. A report containing preliminary program impacts and a detailed description of program implementation is planned for early 2004.

**Experience with Care Coordination.** The Avera Health system operates more than 100 health care facilities in five states, including Avera McKennan Hospital and University Health Center (AMH/UHC), a 429-bed regional medical facility in Sioux Falls, South Dakota. ARI is an entity within AMH/UHC. There was no pilot program for the ARI MCCD, although AMH/UHC has a short-term health management program for a working-age managed care population with cardiovascular disease and diabetes. ARI's intervention was developed based on the American College of Cardiology/American Heart Association Guidelines for the Management of Chronic Heart Failure in the Adult. The intervention supplements the heart failure guidelines with those of the American Diabetes Association for those patients who also have diabetes, as well as with guidelines for morbid obesity and hyperlipidemia.

**Goals and Eligibility Criteria.** ARI's program goals include (1) improving patient education and adherence to treatment regimens, and (2) improving communication and coordination among patients and physicians. The program targets patients with congestive heart failure (CHF) residing in one of 25 counties around Sioux Falls. Participants must have both Medicare Part A and Medicare Part B, must have Medicare as their primary payer, and must not be enrolled in a managed care plan. Participants must have been hospitalized during the year preceding May 1, 2002 for primary CHF, or after May 1, 2002 for primary or secondary CHF. The program excludes beneficiaries who have active psychiatric disorders, have renal disease treated with dialysis, have a life expectancy of less than six months for a condition other than CHF, or live in a skilled nursing facility. The program's waiver cost calculation anticipates that the program will be roughly budget neutral, saving Medicare \$8,000 over the four-year study period, assuming a 20 percent reduction in Medicare costs.

**Outreach and Enrollment.** To identify potential participants, the program relies primarily on hospitals and clinics in its service area to generate lists of eligible patients. After the program receives names of potential patients, the program verifies Medicare eligibility and identifies each patient's primary physician. The program then asks physicians to refer those patients to the demonstration. If referred, the program calls the patient to solicit participation. If the patient is interested, the program sends him or her a packet containing a brochure, an informed consent form, and a medical record release form. The programs calls the patient to obtain informed consent, and the patient sends back both forms. The medical record release form allows the

program to review the patient's hospital record to make a final check of eligibility criteria. The program then submits the patient's information for random assignment and notifies the patient, physician, and hospital of the result. The program began enrolling patients in June 2002 and set a target of 700 participants to be enrolled within 12 months. After just 3 months of operations, it had enrolled 58 out of 563 potentially eligible patients. The program attributes its enrollment shortfall to a high patient refusal rate and delays in the enrollment process and has expanded its service area from 25 to 71 counties in the hopes of identifying additional eligible patients.

**Key Program Staff.** Key program staff members are the program director, medical director, care coordination supervisor, and four care coordinators. The medical director works with the physicians on the program's physician advisory council, helps with recruiting physicians and beneficiaries, and answers beneficiaries' medical questions. The program director is responsible for establishing program goals, objectives, and performance standards, and developing policies and procedures. The care coordination supervisor trains and oversees the care coordinators and is responsible for the day-to-day management of the program. The four care coordinators who are responsible for implementing the intervention are registered nurses with at least 10 years of nursing experience, all of whom have cardiology experience. A research associate assists the care coordinators in the enrollment process and provides clerical support to the program.

**Care Coordination Components.** The ARI intervention includes the basic components of care coordination—assessment, care planning, monitoring, patient education, service arrangement, and communication with providers. The program does not discharge enrollees and will follow them until the end of the demonstration. Each new treatment group member undergoes an initial in-person assessment in their home with their care coordinator. That assessment covers the medical history, emotional and cognitive status, social status, home safety and comfort, and education and self-management needs of the patient. Reassessments occur informally after significant health events and whenever the care coordinator thinks they are warranted. The care plan is based on the results of the assessment, the patient's medical record, and the physician's treatment plan. Physicians must approve the care plan.

All patients are contacted at least weekly for the first six weeks and then twice a month thereafter. During routine monitoring contacts, the care coordinators check the patient's symptoms and adherence to the prescribed treatment regimen, and they provide information and education about the patients' condition and self-care skills. In addition to routine monitoring, care coordinators rely on a home monitoring device called HomMed to determine whether additional contact is necessary. The HomMed device collects and analyzes patient weight, heart rate, blood pressure, and oxygen saturation on a daily basis. Except for the assessment, communication between patients and care coordinators is almost exclusively by telephone.

**Patient Education and Coordination Across Providers.** The program's education intervention focuses on disease etiology, signs and symptoms, and the relationship between symptoms and patient behavior. Care coordinators also instruct patients about when to call the doctor with acute symptoms versus when to go directly to an emergency room. Care coordinators primarily provide patient education, although they occasionally refer patients to pharmacists, dietitians, and social service workers. Education is provided during regular contacts between care coordinator and patient. The program developed a standardized

curriculum for patient education, which can be tailored to individual patient needs. Care coordinators also commonly refer patients and/or their caregivers to community education classes. Care coordinators are responsible for communicating with the patients' providers (particularly with the primary care physicians) about the patients' care plans and about the patients' progress toward completing the care plans' goals. They also are responsible for tracking unexpected hospitalizations and trips to the emergency room. When a patient is admitted to the hospital or visits the emergency room, the care coordinator calls the patient's physician to determine if the patient's treatment will change. Care coordinators understand that the physician is in charge of patient care and try not to interfere in the patient-physician relationship.

**Arranging Services.** The program also aims to ensure patients are receiving appropriate services for CHF. It will arrange for services for patients in the program, although it had not yet had to do so at the time of the interviews. Through Avera McKennan Hospital and members of the multi-disciplinary team, care coordinators have access to a comprehensive list of services to refer patients to, and care coordinators will address each patient's need for services on an individual basis. Social workers are also available to the program to help arrange services for patients through the Avera McKennan Social Service. Staff have considered that the program may have to pay for needed medications or equipment if patients cannot afford them. They have not had to confront this issue yet. However, Avera McKennan's Development Foundation has guidelines about how to provide such support.

**Expected Role of Physicians.** Some of the physicians participating in the program are employed by Avera McKennan Hospital and practice on the AMH/UHC campus, but most do not. Program staff expect that physicians will (1) review lists of potential patients for program appropriateness and refer eligible patients directly, (2) provide acceptable ranges for monitoring device readings and approve care plans, and (3) communicate with care coordinators. Physician involvement with the program during its first three months was modest. Physicians did not refer many patients directly to the program. However, physicians have cooperated with care coordinators in providing needed input to care plans and in developing a reporting schedule once they have seen the program positively affect their patients. The program has attempted to garner physician support by creating a physician advisory council and making presentations about the program to groups of physicians in major clinics in the program's service area. Many physicians were already familiar with the program's directors and care coordination supervisor before the program started. Finally, physicians receive a stipend of \$30 per month per patient in the treatment group.

**Data Systems.** At the time of the interview, the program used Canopy System's Canopy CM Web-based case management software. Canopy stores data from assessments, care plans, home monitoring devices, and care coordinator followup. It also has a task management feature that reminds care coordinators when patient tests and procedures are due. Although Canopy has many positive features, the program found that inputting data from the assessment into Canopy was extremely time-consuming. Staff also reported difficulty in generating the reports they needed.

**Early Implementation Experience.** Health service delivery demonstration programs such as those in this evaluation typically encounter some barriers to early implementation. These

problems include lower-than-expected enrollment, opposition from physicians, difficulty hiring qualified staff or obtaining space and equipment (including higher-than-expected labor, rent, or equipment costs), and difficulty developing a data collection system that can monitor patients and program activities efficiently. While ARI's MCCD has not encountered opposition from physicians or had any difficulty obtaining resources, staff have not been satisfied with the Canopy software. The program is considering abandoning Canopy in favor of developing its own data system.

The program also reported enrollment has been lower than expected, in part, because many eligible beneficiaries deemed appropriate for the program by their physicians decline to participate. Staff report that many beneficiaries do not recognize that they have CHF even though they have been hospitalized for it. That physicians are not actively promoting the program to their patients likely contributes to the high refusal rate. Staff also reported that the process of identifying eligible beneficiaries had been much more time-consuming and costly than expected. To address the shortfall in eligible beneficiaries, the program requested and received permission from CMS to expand its service area to 71 counties. This expansion, however, may make it more difficult for the program to build rapport with physicians, since the farther away physicians are from Sioux Falls, the less likely they will be familiar with staff. An ongoing enrollment shortfall will hinder the ability of the evaluation to detect program effects.

**Early Successes.** The ARI MCCD contains many features that have been found to be associated with successful care coordination interventions. The program has selected a high-cost disease for which effective therapies exist in an area where many physicians are suboptimally prescribing treatment relative to current standards. Daily in-home monitoring with care coordinator oversight should improve patients' ability to recognize and respond to seminal symptom changes and adhere to treatment recommendations. This assistance may be particularly important in rural areas where it can be difficult for patients to see their physicians frequently.

In its first three months of operations, the program has encountered few problems, except for lower-than-anticipated enrollment, and thus has been implemented largely as planned. The program has the potential to be successful if it can attract more patients.

In October 2000, Avera Research Institute (ARI) applied to the Centers for Medicare & Medicaid Services (CMS) to operate a demonstration care coordination program at Avera McKennan Hospital in Sioux Falls, South Dakota, as part of CMS's Medicare Coordinated Care Demonstration (MCCD). Mathematica Policy Research, Inc. (MPR) is evaluating this program, along with 14 others participating in the demonstration and another program participating in CMS's Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus. The MCCD, mandated by the Balanced Budget Act of 1997, tests a wide range of care coordination models for fee-for-service beneficiaries. The evaluation of programs participating in both demonstrations uses a randomized design to test the impact of care coordination on care quality and health service use and costs. It includes an implementation analysis to assess which features appear to lead to the success or failure of each model. The ARI MCCD, called the Helping Hearts Research Study, began enrolling patients for the evaluation in June 2002.

This case study report describes the early experiences of the ARI MCCD. (Sixteen reports—one for each program—will be written.) This report is based on telephone interviews, using semistructured interview protocols, conducted in September 2002 with program staff (the program and medical directors, program manager, and financial staff). Other sources of data include ARI's original proposal and the program documents listed in Appendix A. The report first describes the history of ARI's program and how it relates to Avera Health, the system in which it is housed. It then provides an overview of the key features of the intervention. The report concludes with highlights of some early program successes and potential areas of concern to the evaluation team.

Later reports will describe program implementation in greater detail using information collected during in-depth, in-person interviews and another set of telephone interviews with program staff. Ultimately, the findings from the implementation analysis will be synthesized

with those from the impact analysis to assess the strengths and weaknesses of each program, as well as which features lead to the success or failure of each program. This report does *not* make such an assessment, as it would be premature to do so.

### **Program Context**

The Avera Health system operates more than 100 health care facilities in five states (Iowa, Minnesota, Nebraska, North Dakota, and South Dakota). The system includes four hospitals in South Dakota located in the cities of Aberdeen, Mitchell, Sioux Falls, and Yankton. Each hospital operates clinics, nursing homes, and home health agencies. Avera McKennan Hospital and University Health Center (AMH/UHC), a 429-bed regional medical facility in Sioux Falls, is the largest of the four. McKennan Hospital, as it was known in 1910, was founded by the Presentation Sisters, a religious order whose original mission was to “educate the poor and care for the sick and aged.” The hospital was funded with a grant from Helen Gale McKennan. In 1998, when it became part of the Avera system, it changed its name to Avera McKennan (Avera McKennan and University Health Center Web site 2003). ARI, within AMH/UHC, holds the contract with CMS for the demonstration program. The program targets beneficiaries with congestive heart failure (CHF).

**Intervention History.** The Helping Hearts intervention was developed specifically for the demonstration, based on the American College of Cardiology/American Heart Association Guidelines for the Management of Chronic Heart Failure in the Adult (Hunt et al. 2001) (Table 1). The intervention supplements the heart failure guidelines with those of the American Diabetes Association for those patients who also have diabetes, as well as with guidelines for morbid obesity and hyperlipidemia. There was no pilot program for the Helping Hearts program, although AMH/UHC has a short-term health management program for a working-age managed care population with cardiovascular disease and diabetes. ARI applied to participate in this

TABLE 1  
PROGRAM HISTORY

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**Intervention Developer**

- Avera Research Institute (part of Avera McKennan Hospital and University Health Center)

**Origin of Intervention**

- Developed from the American College of Cardiology/American Heart Association (ACC/AHA) Guidelines for the Management of Chronic Heart Failure in the Adult

**Previous Experience in Care Coordination**

- Program did not have an original intervention for heart failure
- Implemented program for cardiovascular disease and diabetes for working age adults; guided by the ACC/AHA and American Diabetic Association practice guidelines

**Program Startup**

- Enrollment began in June 2002
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Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

demonstration because it wanted to be “part of the future of health care and health care reimbursement” and because sharing an innovative, effective, and replicable model of care is consistent with the hospital’s mission.

**Relationship Among Program, Host Organization, and Providers.** AMH/UHC employs all program staff: the program director, medical director, care coordination supervisor, and care coordinators. The director of ARI, who also directs the demonstration, reports to the AMH/UHC Vice President of Medical Affairs. Program offices are on the main AMH/UHC campus. Although ARI holds the contract for the demonstration, AMH/UHC is still responsible for the

project, since ARI is a department within AMH/UHC. ARI performs a wide variety of research throughout the region on behalf of AMH/UHC. Both AMH and ARI are nonprofit organizations.

Some of the physicians participating in Helping Hearts are employed by Avera McKennan Hospital and practice on the AMH/UHC campus, but most do not. Others practice at outlying Avera clinics as far as 240 miles from Sioux Falls. The consulting cardiologists for the demonstration are from the Avera Health-affiliated Heart Hospital of South Dakota in Sioux Falls. Several physicians participating in the program have worked on previous ARI projects.

The program's structure supports communication between care coordinators and physicians in several ways. Care coordinators first review lists of potentially eligible patients with patients' primary care physicians by telephone. Following enrollment, care coordinators contact physicians at least monthly by telephone and send them patient reports from the home monitoring devices that are part of the program intervention at on a schedule convenient for the physician. Care coordinators and AMH/UHC physicians also share a common employer, which suggests that both groups share a common mission. At the beginning of the project, the care coordination supervisor established a physician advisory council (PAC) to gain wide physician support for the program. The PAC includes cardiologists, internists, and family practice physicians and meets semiannually to discuss program status and current activities. The PAC also gives the program feedback on how to improve physician practice.

The Helping Hearts program is able to support effective communication between program staff and physicians who practice at AMH/UHC. Staff and these physicians are close geographically and share Avera McKennan Hospital as an employer, and the program has had local physician opinion leader support. Effective communication between program staff and physicians who practice outside Sioux Falls could be more difficult. Before it became affiliated with the Avera system, however, ARI had established relationships with physicians in rural areas

through other research projects. Actively seeking the participation of physicians who practice outside of the Sioux Falls area, particularly those serving remote areas, is a cornerstone of the ARI program.

**Service Environment.** South Dakota is a rural state, with a sparse, dispersed population. The areas of the state included in the demonstration have federal designations as medically underserved and health professional shortage areas. Program staff indicated that access to primary care is problematic for many of their patients, since it is difficult to attract primary care physicians to rural areas and retain them. However, staff report that patient access to specialty physicians in rural areas does not seem to be a problem for demonstration participants, as specialty physicians go to remote areas in many of the study counties one day a week or every other week. The program has also not had difficulty recruiting care coordinators because positions in care management are highly sought after in the area.

The program is not aware of any other similar care coordination programs in its service area. One local health plan had a cardiac management program for HMO enrollees, but it has been discontinued.

### **Key Program Features**

**Program Goals and Expected Savings.** The Helping Hearts program has two primary goals: (1) to improve patient education and adherence, and (2) to improve communication and coordination among patients and physicians (Table 2). To meet the first goal, each patient receives a home monitoring device that tracks diet, weight, and prescription medication adherence. Care coordinators receive readings daily and use them to teach patients about the importance of treatment adherence and to communicate with physicians about the patient's condition. The program also seeks to improve physician practice and to ensure access to

TABLE 2  
PROGRAM GOALS

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**Program Goals**

- Improve patient education and adherence
- Improve communication and coordination among patients and physicians

**Outcomes for Patients**

- Improve knowledge of CHF and adherence to treatment regimens
- Improve access to appropriate services
- Improve overall quality of life

**Outcomes for Providers**

- Improve prescribing of CHF medications according to most recent guidelines

**Goals for Health Service Delivery System**

- Demonstrate cost-effectiveness
- Reduce hospital admissions for patients enrolled in the treatment group

**Program Payment and Net Savings for Medicare**

- Program payment of \$316 per patient per month
  - Reductions in hospitalizations, resulting in a net savings to Medicare of \$8,000 over the four-year life of the demonstration, assuming a 30 percent reduction in Part A and B costs and enrollment of 350 treatment group members
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Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

CHF = congestive heart failure.

appropriate services, but these are not the program's main focus. The program has not had to arrange for services yet but reported that it would try to arrange for (and, in some cases, cover) CHF-related services where appropriate. Based on their own prior research, program staff suspect that physicians in their service area do not always prescribe medications for patients with CHF according to the most recent guidelines. The program is trying to change this by performing a medication review on all new enrollees and sharing the results with physicians.

The program strives to achieve the following specific outcomes for patients: (1) improved knowledge of CHF, (2) increased adherence to treatment recommendations, and (3) better quality of life. Staff believe improved care from program participation will also reduce unnecessary hospital admissions for patients with CHF and that this, in turn, will allow hospitals to use scarce resources to care for other populations.

The program expects to generate cost savings for Medicare by reducing hospital admissions by about 50 percent. Waiver cost calculations for all the demonstration programs assume a more conservative 20 percent reduction in Medicare costs. According to these calculations, the program will be roughly budget neutral, saving Medicare about \$8,000 over the four-year life of the demonstration, net of the demonstration's costs (other than start-up and evaluation costs), assuming 350 patients are randomly assigned to the treatment group. The program is receiving \$316 per patient per month from CMS.

**Target Population and Outreach.** Helping Hearts originally targeted beneficiaries living in one of 25 counties around Sioux Falls who were hospitalized during the year before May 1, 2002 for primary CHF, or after May 1, 2002 for primary or secondary CHF (New York Heart Classification of II, III, or IV) (Table 3). Beneficiaries must be at least 65 years old. They must also have Medicare A and B as their primary payer and must not be in managed care, as is true for all the demonstration programs. The program excludes beneficiaries who (1) have active

TABLE 3

TARGET POPULATION AND OUTREACH

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General Eligibility Criteria for All Medicare Coordinated Care Demonstrations	Has coverage under Medicare Parts A and B Does not have Medicare as second payer Is not enrolled in Medicare risk plan
Eligibility Inclusion Criteria for Helping Hearts	Hospitalized the year before May 1, 2002 for primary CHF, or after May 1, 2002 for primary or secondary CHF
Eligibility Exclusion Criteria	Active psychiatric disorders (except those with milder depression or anxiety) Life expectancy less than six months as a result of a condition other than CHF Living in a skilled nursing home Renal failure with dialysis
Outreach Procedures	Review of hospital admissions Program brochures and advertisements
Referral Procedures	Physicians and nurses can refer patients Patients may self-refer
Enrollment After Three Months:	
Goal	700 (350 treatment group and 350 control group members) enrolled within 12 months (June 2003)
Number Enrolled	58 (29 treatment group and 29 control group members) as of September 8, 2002
Enrollment Problems	High patient refusal rate Service area excluded a number of CHF patients treated at Avera McKennan Hospital Delays in getting back physician referral forms and diagnosis verification from hospitals

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Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

CHF = congestive heart failure.

psychiatric disorders, (2) have renal disease treated with dialysis, (3) have a life expectancy of less than six months for a condition other than CHF, or (4) live in a skilled nursing facility.

The program is targeting beneficiaries with heart failure because it is the number one admitting diagnosis for Medicare beneficiaries in terms of both frequency and total Medicare costs and has a five-year mortality rate of 50 to 70 percent. Thus, the program's potential impact on medical costs is high. The program also chose CHF because treatment guidelines are available to support patient care.

The program contracted with the Towers-Perrin Company to develop an estimate of the size of the pool of beneficiaries eligible for the program. Using the original catchment area, this estimate was roughly 2,400 beneficiaries.<sup>1</sup> Target enrollment for the program is 700 beneficiaries (of whom 350 will be randomly assigned to the treatment group to receive program services). If the pool of eligible beneficiaries were 2,400, the program would need to enroll about 30 percent to achieve its enrollment goal. In September 2002, the program received permission from CMS to expand its service area to an additional 24 counties in South Dakota and 1 additional county in Iowa. The program asked for this expansion because it had a shortfall in enrollment and discovered that many patients eligible for the program and receiving care at Avera McKennan were from counties beyond the 25 originally included in the program's service area.<sup>2</sup>

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<sup>1</sup>In its proposal, the program reported that 4,248 patients in the original catchment area had been treated for CHF in 1998. During the interview, ARI reported that, when the hospitalization eligibility criterion was added to maximize budget neutrality, the estimate decreased to 2,400. This compares to 2,319 eligibles calculated for waiver cost estimates.

<sup>2</sup>ARI expanded its service area for the second time on March 20, 2003, adding 17 counties in South Dakota and 4 counties in Nebraska.

The program identifies potentially eligible beneficiaries primarily by reviewing lists generated by approximately 20 hospitals and 40 clinics throughout the service area, although most come from the Heart Hospital and Avera McKennan Hospital, both in Sioux Falls. Not all the hospitals and clinics providing patient lists are affiliated with Avera Health. Discharge planners from participating hospitals are familiar with Helping Hearts and refer patients directly to the program. In addition, program staff have advertised Helping Hearts and met with physician groups to promote referrals. Direct physician and patient self-referrals have been relatively infrequent, however.

When the program receives names of potentially eligible patients from a hospital, the program first checks the common working file for Medicare eligibility. The care coordinators then identify each patient's primary physician, call the physician to discuss the patient's appropriateness for the study, and send the physician a patient referral form. If the physician determines his or her patient is appropriate for the program, the physician's staff fills out the form, which contains a checklist of inclusion/exclusion criteria that the program uses to verify eligibility. If referred, the program calls the patient to solicit participation. If the patient is interested, the program sends him or her a packet containing a brochure, an informed consent form, and a medical record release form. The program calls the patient to obtain informed consent, and the patient sends back both forms. The program reviews the patient's hospital record to make a final check of eligibility criteria. The program then submits the patient's information for random assignment and notifies the patient, physician, and hospital of the result. The process can take from a week to up to more than three weeks depending on when the program gets back the physician referral form and receives confirmation of the patient's hospitalization diagnosis.

After three months, although the program had received the names of 563 potentially eligible patients from hospitals and other sources, it had enrolled only 58 beneficiaries in the treatment and control groups (MPR enrollment report for week ending September 8, 2002). It had expected to have 180 participants enrolled by that time, but a high patient refusal rate and delays in the enrollment process have caused a significant shortfall in enrollment. The program believes that many beneficiaries with heart failure may be reluctant to participate in the program on their own because they do not identify themselves as having heart failure even though they know they have its symptoms. Staff revised program brochures that they include in their enrollment packet to refer to heart failure symptoms rather than “CHF” or “heart failure.” Staff also cite delays in the receipt of the referral forms from physicians and diagnosis verification from patients’ hospitals as reasons for the enrollment shortfall.

**Key Program Staff Members and Their Responsibilities.** ARI’s key program staff members are the program director, medical director, care coordination supervisor, and four care coordinators. The care coordination supervisor and the care coordinators do not work exclusively for the demonstration program and have other ARI responsibilities.

- ARI’s executive director and program director for Helping Hearts is a registered pharmacist with a master of science degree in administrative studies who has an extensive background in pharmacy services and research. He is responsible for establishing program goals, objectives, and performance standards, and developing policies and procedures. He is also responsible for maintaining program compliance with research study requirements. For example, he went to Avera’s institutional review board to advocate for increasing the number of counties the program serves.
- ARI’s principal investigator for Helping Hearts, who is also the program’s medical director, is a doctor of osteopathy and has a master’s degree in business administration. He works with the physicians on the PAC, helps recruit physicians and beneficiaries, and answers medical questions that beneficiaries ask.
- ARI’s project leader and care coordination supervisor for Helping Hearts is a registered nurse working toward a master’s degree in public health. She trains and supervises the care coordinators and is responsible for the day-to-day management of

the program. She also meets with physicians individually and in groups to promote the program.

- ARI's four care coordinators are all registered nurses with baccalaureate degrees in nursing. Before joining Helping Hearts, two care coordinators performed heart failure management for a large cardiology group, one as a care coordinator and one as a research nurse. Two coordinators have a background in community nursing, one in geriatrics. The primary responsibility of the care coordinators is to work directly with program patients to implement the study intervention. Care coordinators also have a role in identifying and enrolling patients in the study.

The program also has a research associate who primarily manages program data. She assists the care coordinators in the enrollment process by checking Medicare eligibility, sending informed consent forms to interested beneficiaries, and entering patient demographic information into the program's Access database, which tracks each beneficiary from eligibility screening through to enrollment. She also orders home monitoring devices for patients and helps the care coordinators with program paperwork.

The care coordination supervisor conducts most care coordinator training, but a multidisciplinary team is available to help with this. This team includes program staff, social workers, dietitians, pharmacists, physical therapists, home care staff, sleep study staff, and fitness trainers. The supervisor ensures that care coordinators are trained in all areas of care coordination, particularly in providing patient education specific to CHF. Most of the care coordinators have more than 10 years of experience in nursing, and all have cardiology experience. The care coordination supervisor does not directly observe the care coordinators as they perform their activities, but she meets with them about twice a week. She also reviews individual cases on an ad hoc basis. The supervisor monitors performance based on patient and physician satisfaction, patient outcomes, and each care coordinator's efficiency in handling her workload.

When the program reaches full enrollment (350 treatment group members), it plans to have a ratio of one care coordinator for approximately every 90 patients. The program originally proposed having a ratio of 1 to 65, based on the experience of other care coordination programs. Because the research associate handles routine clerical and communication tasks, staff believe the higher ratio is feasible. With four care coordinators and only 29 treatment group members at the time of interview, however, the feasibility of the 1 to 90 ratio was untested. Care coordinators are assigned geographic areas, and all patients in an area are assigned to the care coordinator responsible for that area. Most contact is by telephone. One care coordinator is on call during the weekends (this duty rotates among the four care coordinators), and the care coordinators cover each other's caseloads when any are out of the office.

**Care Coordination Components.** The Helping Hearts intervention includes core case management functions (assessment, care planning, and monitoring), patient education, service and resource arranging, and communication with patients' providers (Table 4). All of these have been associated with effective care coordination efforts (see, for example, Chen et al. 2000). Participants remain in the program for the duration of the demonstration.

**Assessment.** The care coordination process for all treatment group members begins with an assessment. Care coordinators conduct assessments in person, preferably in the patient's home. The care coordinators occasionally contract with home care nurses to do in-home assessments, instead of making the visit themselves. The assessment covers medical conditions; emotional, cognitive, and social status (including depression and quality of life); home safety and comfort; and education and self-management needs. It also covers the patient's own assessment of problems and goals. The assessment examines the patient's current situation, potential future problems, and barriers to achieving optimal health care status. Care coordinators also ask the patient's spouse and other significant caregivers to provide input to the assessment.

TABLE 4  
MAJOR PROGRAM COMPONENTS

Component <sup>a</sup>	Program Provides?	Brief Description
Assessment	Yes	<p>Attempts to do an in-home assessment of all participants</p> <p>Results documented on paper and recorded in Canopy, a web-based computer system</p> <p>Covers:</p> <ul style="list-style-type: none"> <li>Medical history</li> <li>Physical assessment</li> <li>Medications and regimen adherence</li> <li>Social/financial resources</li> <li>Living environment</li> <li>Emotional status</li> <li>Activities of daily living</li> <li>Instrumental activities of daily living</li> <li>Caregiver burden</li> </ul> <p>Reassessment triggered by acute events such as hospitalization</p>
Care Planning	Yes	<p>Created for each participant using the results of the assessment</p> <p>Documented in the Web-based computer system</p> <p>Complements physician treatment plan</p> <p>Physician and participant receive a copy</p>
Ongoing Monitoring and Evaluation	Yes	<p>Care coordinator calls patients at least weekly for the first six weeks, then twice a month</p> <p>Daily monitoring through home monitoring device that transmits results of biometric measures and yes/no questions directly into computer system</p>

TABLE 4 (continued)

Component <sup>a</sup>	Program Provides?	Brief Description
Participant Education	Yes	Covers topics related to diagnosis, etiology, signs and symptoms, relationship of symptoms to behavior, and increasing self-management  Provided by care coordinators; standard curriculum developed by the program
Provider Education	Yes	Providers receive medication review results.  Physicians invited to participate in videoconferences about advances in CHF treatment.
Service and Resource Arrangement or Provision	Yes	Completed on a case-by-case basis  Mostly Medicare-covered services
Facilitating Communication	Yes	Coordinate care plan with medical plan  Send physicians regular patient progress reports  Maintain a list of needed tests and preventive care that is communicated to providers  Call patients when daily monitor reading not received

Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

<sup>a</sup>Based on recommendations for successful care coordination interventions by Chen et al. (2000).

The care coordinators developed the program's assessment instrument specifically for the program, but it contains some standard tools, such as the SF-36 and the Beck anxiety scale. The care coordinators take blank paper copies of the assessment tool to patient's home, then enter the results into Canopy, a Web-based case management software system.

There is no formal reassessment tool, nor are reassessments regularly scheduled. Reassessments are conducted after significant trigger events, such as a hospitalization, or if the patient reports symptoms outside of the parameters determined by his or her physician. The care coordinator calls the patient and completes an assessment of signs and symptoms by telephone. The results of any reassessments are also documented in the Canopy computer system.

**Care Planning.** The care coordinators use assessment results and medical records review to develop patient care plans. They set patient goals, such as treatment adherence improvement and lifestyle change, as well as a timetable for meeting those goals. The program obtains medical records from the patient's physician or hospital stay, then accesses the records after the patient has signed a release form. Patients and care coordinators work cooperatively to set goals for behavior change. The care coordinator develops the care plan based on the patient's assessment, the physician's treatment plan, and information from medical records and caregivers. The physician reviews and signs the care plan, which is then documented in Canopy. The patient receives a summary of the care plan, which consists mainly of instructions.

**Monitoring.** The program uses a home monitoring device called HomMed (made by HomMed LLC) to collect and analyze patient weight, heart rate, blood pressure, and oxygen saturation daily, as well as additional information provided by yes/no responses to questions. The device can also monitor temperature, if necessary, and has a medication reminder. Care coordinators take the monitor to the patient's home, set it up, and teach the patient how to use it. The monitor is a small device that can be easily accommodated on a tabletop. It also includes a

digital scale, finger probe, and blood pressure cuff. The data collected by the monitor are automatically transmitted to the care coordinators' central monitoring station each day. The monitor has two communication modes: a digital wireless pager or, for those patients who do not live in areas with wireless coverage, a telephone modem. The program pays for the installation and ongoing use of the device. Installation costs depend on the distance between the program office and patient's home, since the overall costs include staff time and travel. The fee per month of rent for the HomMed device is approximately \$90. The program also pays for cellular phone usage.

Monitoring takes the patient about three minutes each day. At a predetermined time, via a voice prompt, the monitor reminds the patient that it is time to take their vital signs. The monitor prompts the patient every five minutes for 30 minutes until they take their vital signs; otherwise, it will report a missed reading to the program. The monitor is directly connected to the measurement devices, so patients do not have to input their vital signs into the machine. After vital signs are taken, the patient is asked up to 10 subjective "yes or no" questions.<sup>3</sup> For example, the monitor asks, "Are you feeling more fatigued today than usual?" and "Are you noticing swelling in your legs and feet?" Depending on the patient's response, the monitor might also ask the patient if they would like the clinician to call them. After the questions are answered, the monitor reminds the patient to take medications as ordered and to follow his or her prescribed diet.

Home monitoring results are fed into a centralized HomMed computer terminal on a daily basis. The patient's physician sets the monitoring device's ranges, and HomMed contains the

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<sup>3</sup>Care coordinators program the monitor to ask questions specific to each patient's needs. They select up to 10 out of 25 possible questions. Patients are asked an average of 5 questions each day.

acceptable range for each reading. If the program does not hear from the physician before the first monitoring results, staff use preset parameters, which the physician receives when asked for the patient's care plan. HomMed color codes readings so that the care coordinators know who should be called that day. (Patients in red should be called that day, those in yellow are missing and should be called immediately, and those in green fall within the acceptable range and do not need to be called that day). The care coordinators call patients at least weekly for the first six weeks, then twice a month thereafter. In general, unless there is a problem with a patient's monitoring device, the care coordinators do not see patients in their home after the initial assessment.

***Patient Education.*** Care coordinators provide most patient education, although they can enlist educational support from other AMH/UHC staff, such as pharmacists, dietitians, and social service workers, if needed. At the time of the interview, program staff reported that they had called on their multidisciplinary team to address several issues. For example, the program routinely has a pharmacist review patients' medication lists to determine if they are following the guidelines for CHF and other conditions. One patient had been taking three glucose medications. After pharmacy review and consultation with the patient's physician, the patient's regimen was reduced to one medication.

Patient education that the program provides includes disease etiology, signs and symptoms, and the relationship between symptoms and patient behavior. Care coordinators also instruct patients about when to call the doctor with acute symptoms versus when to go directly to an emergency room. Education is provided during the regular contacts between care coordinator and patient. The program developed a standard curriculum for patient education, which can be tailored to individual patient needs. The program gives all patients a booklet on CHF and uses other written educational materials on topics such as diet, medications, exercise, and stress

reduction. Care coordinators commonly refer patients to community education classes on diabetes and sometimes recommend they participate in cardiac and pulmonary rehabilitation programs. ARI has also referred family members and caregivers to the Care Givers workshop and dietary classes at the Heart Hospital.

The program's education goal is to improve the participant's self-care skills and adherence to recommended treatment guidelines, with a specific focus on improving patients' individual activity level (for example, walking). It also seeks to improve the participant's ability to communicate effectively with their physician by counseling the patient on how and when to call their physician, and how to interact with their physician for best use of their clinic visit.

***Provider Education.*** Helping Hearts aims to make physicians more aware of CHF practice guidelines, specifically prescribing appropriate medications. The program performs a medication review for all new enrollees which compares the patient's treatment regimen with CHF medication guidelines from the American College of Cardiology and the Heart Failure Society of America. The program shares the results of the medication review with the patient's physician to support their clinical judgment. In addition, the program sponsors videoconferences on advances in CHF treatment presented by a cardiologist practicing in the Sioux Falls area.

***Arranging Services.*** The program also aims to ensure patients are receiving appropriate services for CHF. It will arrange for services for patients in the program, although it had not yet had to do so at the time of the interviews. Through Avera McKennan Hospital and members of the multi-disciplinary team, care coordinators have a comprehensive list of services to refer patients to, and care coordinators will address each patient's need for services on an individual basis. Social workers are also available to the program through the Avera McKennan Social Service to help arrange services for patients. Staff have considered that the program may have to pay for needed medications or equipment if patients cannot afford them. They have not had to

confront this issue yet. However, Avera McKennan's Development Foundation has guidelines about how to provide such support.

***Communication.*** Care coordinators are responsible for communicating with patients' primary care physicians. Care coordinators develop a patient care plan acceptable to the patient's physician and give the physician regular progress reports. Physicians decide how often they would like to receive regular progress reports, and this is documented in the patient's care plan. Most of the physicians have requested monthly reports. Care coordinators also fax or call physicians with changes in patient condition whenever necessary. On average, care coordinators have some kind of contact with physicians every two to four weeks, depending on the patient's severity of illness. In the most complex cases, communication is weekly. The program also regularly sends physicians home monitoring trend reports at a frequency requested by the physician.

Canopy has a task list set up with daily reminders to help care coordinators make sure tests and routine preventive care (for example, mammograms) are performed in the proper order and at the correct times. The care coordinators then remind physicians that these procedures need to be ordered. Care coordinators understand that the physician is in charge of patient care and try not to interfere in the patient-physician relationship. However, the medical director is available to contact physicians who do not order needed services.

Care coordinators track hospitalizations and emergency room visits, usually learning about these unplanned events when a patient does not send in a monitor reading at the agreed-upon time. Care coordinators will then call the patient at home. If they do not reach the patient, they call the patient's emergency contacts. After the unplanned event, the care coordinator contacts the patient and/or caregiver, as well as the physician, to find out what happened and why. The

care coordinator then revisits the care plan and confers with the patient's physician to determine if the patient's treatment will change.

**Early Implementation Data.** According to data the program prepared for the evaluation describing activities during July through September 2002, case managers contacted and began assessing 33 of 37 treatment group members enrolled by the end of that period (Table 5). During the period, the four care coordinators made a total of 469 patient contacts. Care coordinators initiated nearly all contacts (99 percent), and all except the initial assessments were conducted by telephone (93 percent). All initial assessments were done in person, because the program needed to deliver the HomMed device and teach patients how to use it. Among the 33 patients for whom assessment had begun, the first care coordination contact for that purpose was within a week of random assignment for a third of the patients (33 percent) and more than two weeks after random assignment for just under half (46 percent).

Between July and September, just under 90 percent of patients enrolled had contacts during which care coordinators followed up to discuss abnormal readings or test results. (Many of these contacts probably were to discuss out-of-range readings from the home monitor.) About two-thirds (65 percent of patients) had contacts involving disease-specific or self-care education (65 percent of patients), and 60 percent had contacts for routine monitoring.

**Involvement of Physicians.** Program staff expect that physicians will (1) review lists of potential patients generated by participating hospitals and clinics for program appropriateness and refer eligible patients directly, (2) provide acceptable ranges for monitoring device readings and approve care plans, and (3) tell care coordinators how often to send patient reports and respond to care coordinators' communications about individual patient problems as needed (Table 6). The program does not want to do anything to disturb the relationships physicians have with their patients, but it would like physicians to view care coordinators as part

TABLE 5  
CONTACTS BY DEMONSTRATION STAFF WITH PATIENTS  
BETWEEN JULY 1 AND SEPTEMBER 30, 2002

Number of Patients Enrolled <sup>a</sup>	37
Number of Patients with at Least One Case Management Contact	33
Total Number of Contacts for All Patients	469
Number of Care Coordinators Contacting Patients	4
Number of Patients in Contact with More than One Care Coordinator	26
Among Those Patients with at Least One Contact:	
Percentage of contacts care coordinator initiated	99.4
Percentage of contacts:	
At patient residence	6.6
By telephone	92.8
In person, elsewhere	0.6
Of All Patients Enrolled, Percentage with Assessment Contact	89.2
Among Those Patients with an Assessment, Percentage of Patients Whose First Assessment Contact Is:	
Within a week of random assignment	33.3
Between one and two weeks of random assignment	21.2
More than two weeks after random assignment	45.5
Of All Patients Enrolled, Percentage of Patients with Contacts for:	
Identifying needs for non-Medicare services	2.7
Identifying needs for Medicare services	5.4
Providing disease-specific or self-care education	64.9
Explaining tests or procedures	8.1
Explaining medications	40.5
Routine patient monitoring	59.5
Monitoring services	24.3
Monitoring abnormal results	89.2
Providing emotional support	27.0
Average Number of Patients Contacted per Care Coordinator	8.3
Average Number of Patient Contacts per Care Coordinator	117.3

Source: Avera Research Institute program data submitted November 2002.

<sup>a</sup>Number enrolled in the treatment group as of September 30, 2002.

TABLE 6  
 PLANNED PHYSICIAN INVOLVEMENT

	Brief Description
Promotion of Program to Physicians	Medical director, care coordination supervisor, and care coordinators meet with physicians and promote/explain program.
Physicians as Referral Sources	Physicians are encouraged to refer patients directly to the program, although review of hospital records identifies most potential participants.
Physician Role in Encouraging and Maintaining Patient Participation	The program would like physicians to encourage participation, but it is unclear if this is occurring.
Physicians' Role in Care Coordination	Physicians sign off on initial care plan, set monitoring parameters, respond to care coordinator's recommendations.  Physicians paid \$30 per treatment group member per month.

Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

of the patient's care team and be receptive to care coordinator recommendations to make practice consistent with accepted guidelines.

The program has taken several approaches to garnering physician support. As noted earlier, the care coordination supervisor created a PAC at the beginning of the demonstration to obtain feedback about the program and discuss approaches to promoting the program to local physicians. Staff have made presentations about the program to groups of physicians in all the major clinics in the program's service area. ARI's CEO also promotes the program when speaking to groups for other purposes. In addition, many physicians were already familiar with the program's directors and care coordination supervisor before the program started.

Physician involvement with the program during its first three months was modest. Physicians did not refer many patients directly to the program, primarily because they are too busy to remember to do so. However, physicians have cooperated with care coordinators in reviewing patients identified by the hospitals and clinics for program appropriateness, providing needed input to care plans, and developing a reporting schedule once they have seen the program positively affect their patients. Physicians receive \$30 per month per patient in the treatment group to partially compensate them for time spent interacting with program staff.

**Data Systems.** At the time of the interview, the program used Canopy System's Canopy CM Web-based case management software (Table 7). Canopy stores data from assessments, care plans, home monitoring devices, and care coordinator followup. It also has a task management feature that reminds care coordinators when patient tests and procedures are due. Staff also have access to the Avera intrahospital database (MediTech) that houses patient demographics and accounting information, system e-mail, hospital procedure manuals, nursing policies, and employee wellness information. MediTech does not interface with Canopy. Evaluation data are recorded in an Excel spreadsheet.

Although Canopy has many positive features, the program found the software cumbersome. Care coordinators reported that it took them up to three hours to input an individual assessment into Canopy, twice the amount of time it took to actually perform the assessment. Staff also mentioned that it was difficult to get Canopy to generate the reports they needed. At the time of the interview, the program had planned to abandon Canopy and develop its own system.

**Financial Monitoring and Incentives.** The program monitors overall spending for staff salaries relative to the budget, but it does not monitor the costs of specific tasks (such as enrollment or patient education). In addition to paying staff salaries before enrollment began,

TABLE 7  
PLANNED DATA SYSTEMS

Type of Data	Program Maintains?	Brief Description
<b>Participant Level</b>		
Enrollment/disenrollment	Yes	Excel spreadsheet
Assessment	Yes	In Canopy (Web-based computer program)
Care planning	Yes	In Canopy (Web-based computer program)
Monitoring	Yes	Monitoring contacts by care coordinator in Canopy (Web-based computer program) and monitoring device readings in HomMed system
Non-Medicare services	Yes	Excel spreadsheet
Adverse events	Yes	Excel spreadsheet
Grievances	Yes	Excel spreadsheet
<b>Care Coordinator Level</b>		
Time log/productivity	Yes	In Canopy (Web-based computer program)
<b>Program Level</b>		
Costs by type (labor by type of staff, supplies, rent, etc.)	Yes	Excel spreadsheet

Source: Telephone interviews with Avera Research Institute program staff conducted in September 2002 and review of program documents.

ARI has provided goods and services to the program which it expects to make up in patient payments when the program is fully operational. According to the demonstration cost report through September 30, 2002, the program had spent just under \$227,034 and had been reimbursed just over \$23,290 in patient payments. (About half of the \$227,034 in expenses was for care coordinator and other staff salaries and benefits, and about a tenth was for patient monitoring devices.) The program does not offer financial incentives to promote patient program goals but, as mentioned earlier, it pays a small monthly stipend to physicians for each of their patients in the treatment group.

## **Early Implementation Experience**

**Operations.** Health service delivery demonstration programs such as those in this evaluation typically encounter some barriers to early implementation. These problems include lower-than-expected enrollment, opposition from physicians, difficulty hiring qualified staff or obtaining space and equipment (including higher-than-expected labor, rent, or equipment costs), and difficulty developing a data collection system that can monitor patients and program activities efficiently. Problems in these areas in the early months of implementation could lead to changes in the original design of the program.

While ARI's MCCD has not encountered opposition from physicians or had any difficulty obtaining resources, staff have not been satisfied with the Canopy software. The program also reported enrollment has been lower than expected, in part, because many eligible beneficiaries deemed appropriate for the program by their physicians decline to participate. Staff report that many beneficiaries do not recognize that they have CHF even though they have been hospitalized for it. That physicians are not actively promoting the program to their patients likely contributes to the high refusal rate. Staff also reported that the process of identifying eligible beneficiaries had been much more time-consuming and costly than expected. To address the shortfall in eligible beneficiaries, the program requested and received permission from CMS to expand its service area to 71 counties. This expansion, however, may make it more difficult for the program to build rapport with physicians, since the farther away physicians are from Sioux Falls, the less likely they will be familiar with staff. An ongoing enrollment shortfall will hinder the ability of the evaluation to detect program effects.

**Problems Related to Evaluation Activities.** Health care delivery demonstration programs also commonly encounter early problems that can affect their evaluation. These problems

include contamination of the control group, provider or beneficiary opposition to random assignment, and difficulty providing program data required for the evaluation.

Control group contamination can occur in several ways. Control group members might participate in other case management programs. Their contact with the demonstration staff before or after random assignment might lead them to receive treatment they might not have received otherwise. Demonstration influences on physicians' practice patterns could lead to treatment changes for all patients, control and treatment group alike, in the so-called "spillover" effect on physicians' care.

ARI's program is not at risk for significant control group contamination. As far as the program staff are aware, there are no other care coordination programs available in the Helping Heart's service area that control group members might join, even in the expanded service area. The program does not assess beneficiaries prior to random assignment and has no contact with control group members following random assignment.

Finally, it will not be unusual for some physicians to treat both treatment and control group members, although it seems likely that with such a large service area a substantial number of physicians may have very few patients in either group. Program staff believe that physicians are largely unaware of a patient being in the control group even though they receive letters informing them of this. Moreover, physicians do not perceive much of a change in the day-to-day care of their treatment group patients. While the program is trying to make physicians more receptive to care coordination, it is not trying to make major changes to physician practice other than by giving them home monitoring trend reports and sharing medication review results for treatment group patients. Still, the program does make videoconferences on advances in CHF guidelines available to all physicians the program contacts, not just those with patients in the treatment group. There is, thus, some limited potential to contaminate the control group.

## **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 others attempt to intervene at several levels—physicians' practice, patients' behavior, and coordination of providers and services. In addition, the programs' interventions consist of combinations and permutations of basic care coordination elements.

One of the eventual aims 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 by using readily observed program features, and to relate this classification scheme to program 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 or organizations 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 ARI MCCD intervention in this framework, we provide some early observations on the implementation experiences of the program to date and on potential challenges facing its evaluation.

**Integration with Providers.** The ARI MCCD is hosted by a large health system that includes the Sioux Falls host site (AMH/UHC), which employs both program staff and some of the physicians who serve program patients. As the program's service area grows, the physicians of eligible patients are likely to be less familiar with program staff and less likely to have any

face-to-face contact with them. As a result, integration is likely to become more difficult to achieve. On the other hand, having the same employer and working in geographic proximity may engender both familiarity and a common sense of purpose in some physicians and program staff. Some of the majority of physicians who are not employed by AMH/UHC have worked with ARI staff on previous research projects. Thus, the potential exists for some integration between the program and many patient providers. In fact, the program does not require a great deal of regular input from physicians to the care coordination process because it does not wish to burden them further and does not seek to make major changes in physician practice. Thus, the program does not seek a high level of program/physician integration.

**Intervention Focus.** The ARI MCCD targets beneficiaries residing in Avera's mainly rural service area, who have CHF, and who are, by virtue of recent health care use, at risk of future high utilization of health care. Although the ARI MCCD targets people with CHF, the program uses a holistic, traditional case management approach that looks beyond CHF, and its intervention includes the use of guidelines for such common comorbid conditions as diabetes, obesity, and hyperlipidemia.

**Major Strategies.** The ARI MCCD is pursuing two major strategies to improve patient health and reduce health care costs: (1) improving patients' education and adherence, and (2) improving communication and coordination among patients and providers. A cornerstone of its intervention is the use of home monitoring devices to improve patient adherence to CHF treatment recommendations and to focus teaching about CHF self-management, as well as providing timely information about changes in patient condition and adverse events.

***Challenges and Early Successes of the Demonstration.*** The primary challenge the ARI MCCD faced during its first three months has been its enrollment shortfall, described above. With that exception, the ARI MCCD is well under way to achieving its goals. The program has

selected a high-cost disease for which effective therapies exist in an area where many physicians are suboptimally prescribing treatment relative to current standards. The program has assembled a staff with impressive credentials. Daily in-home monitoring with care coordinator oversight should improve patients' ability to recognize and respond to seminal symptom changes and adhere to treatment recommendations, especially in rural areas where patients may see their physicians less frequently.

The ARI MCCD contains many features that have been found to be associated with successful care coordination interventions (Chen et al. 2000). In its first three months of operations, the program has encountered few problems, except for lower-than-anticipated enrollment, and thus has been implemented largely as planned. Thus, the ARI MCCD has the potential to be very successful. However, detecting these effects may be difficult unless the program becomes more successful in enrolling patients.

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**APPENDIX A**

**LIST OF MATERIALS PROVIDED BY ARI AND REVIEWED FOR THIS REPORT**



## **APPENDIX A**

### **LIST OF MATERIALS PROVIDED BY ARI AND REVIEWED FOR THIS REPORT**

ARI Medicare Care Coordination Demonstration (MCCD) proposal to the Centers for Medicare & Medicaid Services dated October 9, 2000.

Materials for training care coordinators

ARI's operational protocol (September 24, 2001)

Beneficiary marketing materials

Beneficiary informed consent form

Physician referral form

Forms and protocols used by care coordinators

Staff resumes and position descriptions

Patient education materials

Samples of data collection instruments

