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The Early Experience of the Mercy Medicare Coordinated Care Demonstration Program

Final Report

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EXECUTIVE SUMMARY

In October 2000, Mercy Medical Center North Iowa (MMC/NI) applied to the Centers for Medicare & Medicaid Services (CMS) to participate in the Medicare Coordinated Care Demonstration. Mathematica Policy Research, Inc. (MPR) is evaluating the MMC/NI program, along with 14 other participating programs and another 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 successes or failures of each program. This case study documents the MMC/NI program's 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 late 2003.

Experience with Care Coordination. MMC/NI, based in Mason City, Iowa, is a member of the Mercy Health Network (MHN). The network consists of 7 primary hospitals and 23 affiliated hospitals, home health care agencies, outpatient rehabilitation providers, long-term care facilities, and many physician practices. The prototype intervention for the demonstration project, which the program refers to as its traditional case management program, was developed and paid for by MMC/NI. MMC/NI modified the design of its traditional case management program by creating more specific criteria for defining the target population, supplementing face-to-face contact in the home or clinic with telephone contact, and increasing the number of patients in each case manager's active caseload. Otherwise, the demonstration intervention is similar to the one MMC/NI used in the traditional case management program.

Goals and Eligibility Criteria. MMC/NI program goals include improving coordination and communication among physicians and patients, improving patient education and adherence, improving provider practice, and providing and arranging for non-Medicare services. The program targets beneficiaries who have had two or more in-patient stays or emergency room visits at MMC/NI for congestive hear failure (CHF), chronic lung disease, liver disease, stroke, other vascular diseases, or renal failure. Waiver cost estimates suggest the program will save Medicare $6,480 over the four-year life of the project, expected to be achieved by reductions in hospital admissions and emergency room services.

Outreach and Enrollment. The program's primary mode of outreach begins with reports generated by the MHN Sunrise Decision Support Manager, an information system that contains financial, demographic, and diagnostic information for all patients who have been hospitalized at MMC/NI. The program sends each potentially eligible patient a letter signed by his or her physician inviting that patient to participate. After the letter is sent, the case manager follows up with a script-guided telephone call to the patient. The program began enrolling patients in April 2002. At the time of the interview, the program had enrolled 149 participants, close to the goal of enrolling 180 to 200 participants during the first three months of the program.

Key Program Staff Members. The key program staff members are a program director, an advisory co-program director, a medical director, a case manager supervisor/program manager, an office manager, and the case managers. The co-program director, a physician, provides

support to the program design, speaks with other physicians to promote the program, and serves as a consultant but does not have day-to-day program responsibilities. The primary program director interacts with administrative staff for the Mercy hospitals, solves program problems, and finds resources for the program. The medical director advises the case managers on difficult cases, refers patients to the project, and serves as a link to, and champion of, the program for physicians. The office manager provides clerical support for the staff. The current case manager supervisor and eight case managers are highly educated and have extensive backgrounds in nursing. Most have several years of case management experience.

Care Coordination Components. The Mercy intervention includes assessment, care planning, and ongoing monitoring. The initial assessment is done face-to-face in the patient's home or at the clinic. The assessment covers functional status, nutrition, medications, mental status, prognosis for goal achievement, services needed, emergency plan and contacts, and a physical assessment. Care plans are based on the assessment and establish individual patient goals. The patients are encouraged to identify the main problems they want to address. The physician reviews and approves the care plan once it has been developed. The case manager monitors the patients' progress in meeting goals by regular telephone contacts and occasional face-to-face meetings in the clinic. In addition, the program is experimenting with a "Tel-Assurance" program for two CHF patients, which allows them to enter information by telephone prompts. The program will close a patient case when the patient has achieved his or her case management goals.

Coordination Across Providers. The program encourages the formation of partnerships between case managers and physicians to increase coordination and communication. Some case managers are assigned to the clinics of participating physicians and regularly communicate with the physicians about patient progress toward care plan goals. The case managers make sure events (such as diagnostic tests) occur at the appropriate time and in the proper order, and that needed information (such as test results) are available when visits occur, by communicating with patients and physicians' offices. They also follow up with patients to make sure that needed appointments are scheduled and care received.

Patient education and service arranging are important secondary goals of the intervention. The program's education intervention focuses on improving self-care skills and adherence to recommended treatment regimens, as well as on disease etiology and lifestyle changes. During the initial assessment, case managers identify the patient's need for disease-specific education. The case managers deliver educational interventions on topics such as weight management, smoking cessation, and various disease processes. In addition, MMC has formal patient education programs on a variety of topics. Case managers also arrange for a wide variety of services and resources. The program does not provide payment for any of these services. Medication assistance programs and skilled and supportive home care services are the services arranged most often.

Expected Physician Role. The program has also established the goal improving provider practice by increasing physicians' understanding of case management. The program staff expects that case managers and physicians will actively collaborate in the care coordination process by reviewing and approving the case management plan for the patient and participating

in discussions of the patient's care during informal interactions in the clinic, through more formal grand rounds, and during an annual review of the patient's progress.

Data Systems. The program uses a software program developed for its case management demonstration called the "Case Management Information System." The system houses clinical information, as well as assessments, care plans, and notes on the patient's ongoing progress. The case management system is not linked to any other systems, and only case management staff may access it. Information for providers is available in paper format.

Early Implementation Experience. Health service delivery demonstration programs such as this one typically encounter barriers to early implementation. These barriers include lower-than-expected enrollment, opposition from physicians, difficulty hiring qualified staff or obtaining space or equipment, and difficulty developing an efficient data system for monitoring patients and program activities. MMC/NI has not encountered any significant physician opposition, since most physicians were familiar with program staff as a result of the traditional case management program. The program has also not had any difficulty hiring staff due to the popularity of the program. Enrollment has progressed close to expectations.

The only problems the program encountered relate to computing. The Case Management Information System was still being tested at the time of its implementation, but it was up and running by the time of the telephone interview. The program also had to provide computer training for some of the case managers.

Potential Control Group Contamination. Control group contamination risk appears to be minimal. There is a state-funded program for the elderly with similar services. However, the intervention is not nearly as intense, and the population served is small and could contain both treatment and control group members.

Early Successes. The MMC/NI demonstration program has many features that have been found to be associated with successful care coordination interventions. The program had an enrollment process that was effective even in a rural area, has highly experienced case managers, and has a substantial physician network to draw on for support. The program takes a holistic approach to the management of patients with specific, costly chronic illnesses. Because many case managers work with the physicians in a clinical setting, there is potential for greater communication between the case manager and the physician, and ultimately, between the patient and physician.

Mercy Medical Center North Iowa (MMC/NI), a member of the Mercy Health Network (MHN), applied to the Centers for Medicare & Medicaid Services (CMS) in October 2000 to operate a demonstration case management program as part of CMS's Medicare Coordinated Care Demonstration. The demonstration, mandated by the Balanced Budget Act of 1997, tests a wide range of care coordination models for fee-for-service beneficiaries. Mathematica Policy Research, Inc. (MPR) is evaluating the 15 programs participating in the demonstration, as well as a program participating in CMS's 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 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.

This report is one of 16 that will be completed (one for each demonstration program). It describes the early experiences of the MMC/NI demonstration, called the Case Management Demonstration Project, which began enrolling patients for evaluation in April 2002. The report is based on telephone interviews, using semistructured interview protocols, conducted in July 2002 with MMC/NI staff members (the program and medical directors, case management supervisor/program manager, and financial staff). Other sources of data include MMC/NI's original proposal and the program documents listed in Appendix A. The report first describes the history of MMC/NI's demonstration program and how it relates to MMC/NI and MHN. It then provides an overview of the key features of the intervention. It concludes with highlights of early program successes and potential areas of concern to the evaluation team.

Later reports on this program 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, we will synthesize the findings from the implementation analysis with impact analysis findings to assess the strengths and weaknesses of

each program, as well as to determine which features appear to be associated with each program's success or failure. This report does *not* make such an assessment, as it would be premature to do so.

Program Context

MMC/NI, located in Mason City, Iowa, is part of the Mercy Health Network (MHN). MHN, formed in July 1998, is jointly operated by Catholic Health Systems and Mercy Health Services. It provides services through 7 primary hospitals and 23 affiliated hospitals, home health agencies, outpatient rehabilitation providers, long-term care facilities, and many physician and related primary care practices. The seven primary hospitals, all in Iowa, are in Centerville, Clinton, Des Moines, Dubuque, Mason City, New Hampton, and Sioux City. In July 1999, each of the seven changed its name to Mercy Medical Center to unify the network and give it a common identity across the state (MHN Web site 2002).

Intervention History. The MMC/NI demonstration intervention is based on a prototype intervention, which the program refers to as its traditional case management program, that MMC/NI has been operating since 1993. This ongoing case management program was modeled after the Carondelet Nurse Practice Model, developed in 1985 at Carondelet St. Mary's Hospital in Tucson, Arizona (Table 1). The Carondelet model is a community nursing organization where the nurse designs and implements a self-care program for patients with chronic diseases (Lamb and Zazworsky 1997). The nurse assesses risk, allocates the necessary resources to reduce risk, and manages and provides care until the patient is able to take care of him- or herself. The MMC/NI traditional case management program differs from the Carondelet model in two main ways: (1) the case managers are not a part of a community nursing organization; and (2) the patients have primary care physicians, rather than nurse practitioners, as their medical providers.

TABLE 1

PROGRAM HISTORY

Intervention Developer

- Mercy Medical Center North Iowa

Original Intervention Context and Target Population

- Case management program based on Carondelet Model (Tucson, AZ)

- Targeted people with multisystem chronic illnesses with social and medical issues resulting in heavy use of health care resources

- Served approximately 1,200 to 1,500 people between 1993 and 1999

Original Intervention and Adaptations for Demonstration

- Included an assessment, care planning, and monitoring

- Supplemented face-to-face contact with telephone contact for demonstration

- Increased the patient-to-case manager ratio approximately 50 percent from 1:20–25 to 1:40–50

- Introduced specific eligibility criteria

Effectiveness of Original Intervention

- Length of hospital stay for case-managed patients fell from 6.7 days to 4.3 days

- Number of hospital admissions per patient decreased from 2.8 per year to 1.1 per year

- Effects based on pre/post comparison

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted July 2002 and review of program documents.

The MMC/NI traditional case management program accepts all patients with chronic illness referred to the program who have problems coping with health issues, have three inpatient and/or emergency room visits within six months, lack of formal or informal support systems, and have medical charges higher than current Medicare reimbursement rates. The program thoroughly assesses all patients, creates care plans for them based on its assessment and goals set by the patient, and monitors them primarily through home visits. Case managers also regularly attend clinic appointments with program participants. As a patient becomes more stable, case managers reduce the number of home visits and monitor the patient by telephone. Patients leave case management when they meet their care plan goals or when the case manager judges that the patient has improved as much as possible. After the initial two-year start-up period, MMC/NI's traditional case management program served between 90 and 120 patients per month, on average, and has served approximately 1,500 patients over its nine-year life. Between 1993 and 1999, based on pre-post comparisons, the average length of hospital stay for patients in the program fell from 6.43 to 4.86 days. The program also claims that the annual number of hospital admissions per patient decreased from 2.8 to 1.1 and that the annual number of emergency room visits decreased from 2 to 0.7.

MMC/NI has modified its traditional case management program for the demonstration by enhancing the mode of patient contact and by limiting participation to Medicare beneficiaries with specific diagnoses. First, during its first year of operations, the demonstration program supplemented home visits by adding face-to-face contact in clinics and telephone contact in order to establish rapport with patients and their families/caregivers. Decreasing regular home visits during subsequent years will allow MMC/NI to double caseload size from the 20 to 25 patients per case manager in the traditional program to 40 to 50 in the demonstration. Second,

unlike the traditional program, the demonstration program is restricted to Medicare beneficiaries with diagnoses discussed below. In all other aspects, the interventions are identical.

The demonstration has largely replaced the traditional case management program. Physicians may still refer patients eligible for the demonstration to the traditional program; however, Mercy has a formal process to review these referrals. First, all patients are discussed in grand rounds, and evidence supporting admission to the traditional program is reviewed. Then Mercy requires that three to four case managers must agree to allow a patient entrance into the traditional program.[1]

MMC/NI cites, as the primary reasons for applying for the demonstration, its success with case management and belief in its value. Staff view the demonstration as an opportunity to prove that case management is the right thing to do and is also cost-effective.

Relationship Among Program, Host Organization, and Providers. MMC/NI, the program host, employs all demonstration program staff. The staff consists of the program director, an advisory co-program director, a medical director, a case management supervisor/program manager, and eight case managers. The program's main office is in Mason City on the MMC/NI campus. Most of the demonstration team had worked together for many years in the traditional case management program. The program has satellite offices in Algona, Britt, and Hampton, which are within 50 miles of Mason City. Case managers are located either in the main program office, one of the satellite offices, or in one of more than 40 MMC/NI clinics where the program participants' physicians practice. Case managers are placed where they can have the most regular contact with their patients.

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[1]After one year, only one patient had been diverted to the traditional program. Another patient was seen on a short consultative basis because the patient did not wish to take part in the demonstration.

Although MMC/NI employs a significant proportion of the program patients' primary physicians, some of the participating physicians are in private practice. Many of the physicians, particularly those affiliated with MMC/NI, had worked with some of the case managers prior to the demonstration through the traditional case management program. The program believes that, because of these established relationships, communication between program staff and physicians can be effective. In the demonstration, physicians have regular contact with case managers beginning with enrollment, during which case managers review with them each eligible patient's appropriateness for the program. Physicians have regular contact with the case manager assigned to their clinic but also may interact with other case managers. For example, patients who live nearer one of the hospital office bases than the clinic they attend may be assigned to an office-based case manager rather than the clinic-based manager. In addition to informal contact with the case managers during practice, the program holds more formal meetings with physicians to discuss individual program patients. The program's medical director regularly attends these meetings, called "grand rounds."

Service Environment. Iowa has a severe transportation shortage, and this is a problem for the state's many poor residents. Residents who do not have access to an automobile can choose from a regional transit bus or a bus sponsored by the Easter Seal program to get to medical appointments. Specialty physicians, in particular, may be located quite far from home. Program staff predict that this transportation shortage will result in case managers spending significant time coordinating transportation for specialty care and making home visits to patients unable to get to the clinics. The program also anticipates helping some patients find prescription drug financing resources, since affording prescription drugs is a significant problem among rural residents.

Two programs in the demonstration program area offer services similar to those of the demonstration program. The first is the traditional case management program described above. This program, however, is not available to patients assigned to the demonstration control group. Second, in each county, the Iowa Department of Elder Affairs also offers a program for frail elders through the county public health departments. These programs serve relatively few patients, however, and demonstration staff describe them as much less intensive than the demonstration program because they are not integrated with medical care. Members of the demonstration treatment and control groups may receive services from these programs—these services are considered "usual care."

Key Program Features

Program Goals and Expected Savings. The program's primary goal is to improve communication and coordination among patients and physicians (Table 2). A secondary goal is to improve patients' education and adherence, provider practice, and access to non-Medicare services. The program also aims to improve patients' well-being and quality of life by improving the overall quality of their health care and to increase patient satisfaction with care by improving their self-management skills. In addition, the program would like to demonstrate an effective case management model that can become part of the Medicare program.

The program plans to improve communication by developing a partnership between case managers and physicians and by acting as a liaison between physicians and patients. MMC/NI physicians already are familiar with case management and have a trusting relationship with some program staff. Staff believe this relationship, when added to regular contact with program case managers in clinics, will help the program achieve this goal. In general, physicians in MHN adhere to practice guidelines, so improving clinical practice is not a program goal. However, the program does seek to improve physician practice by increasing physician understanding of the

TABLE 2

PROGRAM GOALS AND DESIRED OUTCOMES

Program Goals

- Improve communication and coordination among patients and physicians

- Improve patient education and adherence

- Improve provider practice

- Provide and arrange for non-Medicare services

Outcomes for Patients

- Improve overall quality of life and satisfaction

- Improve control and understanding of their disease process and self-management skills

- Improve clinical outcomes and health

Outcomes for Providers

- Increase collegiality between case managers and physicians

Goals for Health Service Delivery System

- Receive the maximum value for the money spent

- Manage patients optimally using effective, well-proven strategies

Program Payment and Net Savings for Medicare

- Program costs of $257 per patient per month[a]

- Reductions in inpatient and emergency room use, resulting in net savings to Medicare of $6,480 over the four-year life of the project, assuming a 20 percent reduction in Part A and B costs and enrollment of 343 treatment group members

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted July 2002 and review of program documents.

[a]Increase after first year due to inflation.

usefulness of case management in their practice. The program will increase patient adherence by having case managers provide disease-specific education and assistance with self-management.

The program's waiver application projects a net savings to Medicare over the four-year life of the project of $6,480 net of demonstration costs (other than start-up and evaluation costs). The program expects to generate savings through reductions in hospital admissions and emergency room services. (The waiver application assumes a reduction in total Medicare costs of about 20 percent and enrollment of about 300 patients in the treatment group.) These savings are expected to cover the cost of the demonstration, which is $257 per patient per month.[2]

Target Population and Outreach. The MMC/NI program targets beneficiaries who have had two or more in-patient stays or emergency room visits at MMC for congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or other chronic lung disease, liver disease, stroke, vascular disease, or renal failure (Table 3). Participants must also have adequate environmental and social supports to live safely in the community. In addition, they must live in one of the 17 Iowa counties the program serves. Beneficiaries must have Medicare A and B as primary coverage and not be enrolled in managed care, as is true for all 16 demonstration programs. MMC/NI selected the target diagnoses because of their prevalence and because it believes its traditional case management program reduced health care costs substantially for patients who have them. CMS requested that the hospitalization requirement be added to make budget neutrality more likely.

The program excludes patients who are currently receiving services from MMC/NI's traditional case management program, have a terminal illness that qualifies them for hospice, or

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[2]As a result of an annual increase from inflation built into the original grant, CMS increased the program's per-patient per-month rate from $257 to $269 as of April 1, 2003.

TABLE 3

TARGET POPULATION AND OUTREACH

Eligibility Inclusion Criteria	Have Medicare A and B Reside in the geographic area served by the program Have needs that can be adequately met in the home
Disease-Specific Inclusion Criteria	Two or more in-patient stays or emergency room visits for CHF, COPD, chronic lung disease, liver disease, stroke, vascular disease, renal failure
Eligibility Exclusion Criteria	Receiving services from the traditional case management program Living in nursing home or hospice
Outreach Procedures	Generate patient lists from MHN hospital registration systems Primary care doctors review patient lists Admission packet with invitation letter sent to potential enrollees
Referral Procedures	Providers encouraged to refer patients directly Patients may self-refer
Enrollment	
Goal	686 treatment and control group members enrolled within 12 months (by April 2003)
Number enrolled after 3 months	149 as of July 14, 2002
Enrollment Problems	Only 10 to 20 participants behind in expected enrollment Case manager staff vacations and longer-than-expected waits for new hires slowed enrollment during summer of 2002 Shortfall anticipated to be rectified once staffing levels are at full capacity

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted in July 2002 and review of program documents.

CHF = congestive heart failure.

who live in a nursing home or long-term care facility. The program had considered serving patients in nursing homes but decided the impact of case management would be minimal for them. The program does not exclude those patients who had *previously* participated in the traditional case management program, although the program has not yet admitted anyone fitting this criterion to the demonstration.

To identify the target population, the program primarily uses MMC/NI's Sunrise Decision Support Manager (SDSM), an automated system that contains financial, demographic, diagnostic, and service use information for all patients who have been hospitalized at MMC/NI. The smaller, outlying hospitals have a similar system called Dairyland, which the program also uses to identify potential patients. Data management staff query these data systems by using admission criteria and diagnosis codes, and a case manager manually reviews all queries to determine eligibility for the demonstration. Physicians are then asked to review these lists and eliminate patients who are not good candidates for the program. Staff also encourage physicians to refer patients directly to the program. However, most patients enrolled in the program so far have been identified from the SDSM and Dairyland systems, then designated as appropriate by their physicians, rather than through direct referral.

The program also markets itself directly to the public. It has been profiled in "Mercy Reflections," a newsletter sent to Mercy patients and employees, and staff issued a press release about the program to local media in summer 2001. In addition, a program staff member was interviewed about the program on a local radio station on July 9, 2001.

After a potential participant has been identified, a case manager sends the patient an admission packet. This packet includes an introductory letter signed by the patient's physician, a brochure describing the program, and the informed consent form. The case manager follows up with a telephone call. During the call, the case manager uses a script that contains frequently

asked questions and answers. If the potential participant wishes to enroll, a visit with the case manager is scheduled to obtain informed consent. After the consent form is signed, MPR randomly assigns participants to the treatment or control group. MPR then sends a letter to participants who have been assigned to the control group and the program sends a letter to the intervention participants. Control group members receive no further contact from the program.

At the time of the interview, the program had enrolled 149 participants—76 in the treatment group and 73 in the control group (MPR enrollment report for the week ending July 14, 2002). The program had expected it would enroll 90 to 100 patients in the treatment group during the first three months of program operations. The slight shortfall was attributed to staff vacations, which led to a reduction in enrollment activities. Staff believe, however, that the program's pool of approximately 700 eligible patients from MMC/NI and another 400 to 800 eligible patients from affiliated hospitals will be large enough to achieve the needed 343 treatment group members (or 686 enrollees total). The refusal rate among eligible patients has been approximately 30 percent, substantially lower than the 50 percent refusal rate staff anticipated.

Key Program Staff and Their Responsibilities. As noted earlier, key program staff are the program director, the co-program director, the medical director, the case management supervisor/program manager, the case managers, and the office manager. The co-program director, a nonpracticing physician, has a limited role and serves the program as a consultant on an as-needed basis.

- The program director is a registered nurse with an M.B.A. She has approximately 10 years of experience in nursing supervision and administration in an acute-care setting. She has been involved with MMC/NI's traditional case management program since 1995. Her major responsibilities for the project are interacting with the administrative staff for the hospitals, finding effective solutions when program problems arise, and getting the necessary resources for the program.

- The medical director is a practicing physician. He practices in family medicine and is well-grounded in the principles of case management through his work directing a

hospice. He advises the case managers on difficult cases, refers patients to the project, and serves as a link to, and champion of, the program for physicians. He also attends case manager meetings to provide staff with a physician's perspective.

- The case management supervisor/program manager, who has an M.S.N., has been a registered nurse for more than 20 years. She has more than six years of experience as a family nurse practitioner, during which she conducted coordination and management of chronically ill patients. She was also a nurse manager at a home health agency/hospice. For this program, she trains and supervises program case managers, makes sure all documentation and reporting are completed, and is responsible for addressing any problems that may arise with physicians. She also manages a caseload of patients for the program.

- The case managers include three M.S.N. nurses and five B.S.N. nurses. (Three work part-time for the program.) All the case managers have four to six years of case management experience. The program also has a social worker who has experience in a hospital geriatric assessment unit. They are responsible for the implementation of the program interventions described below.

- The office manager, who is a medical assistant, provides clerical support for the staff, prepares the budget and payroll, enters and maintains patient records and information, and participates in quality improvement for the program.

The case managers receive four weeks of program training under the direction of a preceptor. The preceptor, an experienced case manager, works with the new employee to complete a well-defined orientation curriculum that includes assigned readings and a written competency test. Training topics include (1) physical assessment, (2) coordination and advocacy, (3) therapeutic relationships, (4) applicable regulations and standards, (5) encouraging self-responsibility in patients, (6) patient education, (7) collaboration with physicians and other members of the program staff, and (8) services needs assessment. Training content varies according to the new case manager's prior experience, and the preceptor must document that the case manager has mastered each topic.

The program plans to have a ratio of 1 case manager to 40 patients when it reaches full enrollment (343 treatment group patients). The program chose this ratio based on its experience with the traditional program, which had a ratio of 1 case manager to 20 patients. It believes the

ratio could be increased for the demonstration program because it substitutes telephone contact for some in-person home visits and has patients who are less severely ill. At the time of the interview, there were approximately 75 treatment group members and six full-time case managers (including the case manager supervisor). The social worker is not on the project staff but is a liaison to the program through the MMC system.

Care Coordination Components. The MMC/NI demonstration program intervention includes core case management functions (assessment, care planning, and monitoring), patient education, service and resource arranging, and communication with providers (Table 4), all of which have been associated with effective care coordination efforts (see, for example, Chen et al. 2000). Patients will remain in the study until they have achieved their care plan goals or improved as much as they can, as determined by the case manager. In addition, patients will be discharged from the case management program if they move out of the program's service area, if they do not or cannot cooperate with the case manager, or if their physician decides not to participate in the program.

Assessment. For all patients, case management begins with a comprehensive assessment to establish the patient's condition and determine his or her needs. The case managers conduct a holistic assessment in patients' homes or in their physicians' offices. The assessment is patterned after the MMC/NI home care assessment and includes functional status, nutrition, medications, mental status, prognosis for goal achievement, services needed, emergency plan and contacts, and a physical assessment. This assessment takes about one to two hours to complete. The results of the assessment are documented on paper forms and become a permanent part of the patient's medical record. Case managers formally reassess patients annually, but they informally reassess patients at each contact, documenting their findings on an encounter form. In addition, patients are reassessed after major trigger events such as

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TABLE 4

MAJOR PROGRAM COMPONENTS

Component[a]	Provided?	Brief Description
Assessment	Yes	Conducted in patient's home or physicians' office to allow direct observation
		Results documented on paper only
		Covers:
		Vital signs
		Physical exam
		Dietary
		Mental status
		Functional status
		Social support system
		Resources and agencies involved with patient
		Medications
		Educational needs
		Case managers conduct informal reassessment during each patient contact, and after hospital stays, acute exacerbations of illness, and falls.
Care Planning	Yes	Assessment results used to identify problems to be addressed by care plan
		Patients identify problems, set goals for care plan
		Physician involvement limited to approving the care plan
		Documented on paper, then in stand-alone case management database
Ongoing Monitoring and Evaluation	Yes	Case managers monitor patients by telephone, or (infrequently) in person at the patient's home or clinic. Contact frequency determined by case manager's judgment.
		Case managers perform a physical exam, assess vital signs, weight, height, and functional status, review the care plan, and educate the patient at each in person encounter.
		Tel-Assurance program used for a small number of CHF patients (patients call in and record answers to monitoring questions)

TABLE 4 *(continued)*

Component[a]	Provided?	Brief Description
Participant Education	Yes	Conducted during patient contacts, except community education classes
		Patient education booklets are used
Provider Education	No	Providers informed about the program by staff presentations only
Service and Resource Arrangement or Provision	Yes	Case managers arrange for a wide variety of services and resources.
		Program pays only for scales and oxygen saturation units[b]
		Services arranged for/referred to include:
		Medicare-covered services: Durable Medical Equipment Medical Supplies Home Health Care
		Community-based services: Transportation Meals and/or food sources Medication assistance programs Personal care, homemaker, companion, or respite care Mental health counseling and spiritual care Dental services Adult day care Assistance with public programs or other benefits Housing resources Diabetic and heart failure education classes Wound and pain clinics
Facilitating Communication Across Providers	Yes	Case managers communicate with providers at least quarterly; contact is more frequent if the patient is complex.

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted in July 2002 and review of program documents.

[a]Based on recommendations for successful care coordination interventions by Chen et al. (2000).

[b]For patients who cannot afford to pay.

hospitalizations, exacerbations of acute illness, and falls. After these types of events, the case managers increase the intensity of the monitoring to identify causes or patterns.

Care Planning. Case managers develop care plans with each patient based on the findings of the assessment and participant-identified problems or goals. Although physicians may provide input into the care plan, the program does not require their input. Case managers give physicians copies of care plans, and physicians review and approve these plans annually. The care plan is documented on a paper form, and the patient receives a copy of the final plan. The case manager enters the care plan into a stand-alone case management database developed for the program as discussed in detail below.

Monitoring. The case managers monitor all patients' progress in meeting care plan goals with regular telephone calls or visits with patients at clinics. The case managers may also visit patients in their homes, but this is expected to happen infrequently. Most routine monitoring includes the case manager asking specific questions and assessing the progress the patient is making toward resolution of the identified problems and the goals established in the care plan. The case manager uses her own judgment to establish the monitoring frequency, based upon the intensity of the patient's problems and the patient's progress toward achieving the goals established in the care plan. Case managers contact their patients once every two to three weeks on average, once a month at a minimum. The results of the monitoring are documented on an encounter form, then entered into the stand-alone case management system.[3]

The case managers use a Tel-Assurance Patient Support Program for a few patients with CHF. The Tel-Assurance program allows patients to transmit answers to CHF-monitoring

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[3]At the time of the interview, the evaluation team did not ask the program about how they monitor patients who are away from the area for long periods of time. We will follow up with the program and include their response in the final draft.

questions by telephone. Trinity Corporation (of which MHN is a part) developed the Tel-Assurance program. Originally, the program had planned to try the Tel-Assurance technology with a small group of intervention patients. MMC/NI used this technology with three patients in the traditional case management program to overcome the long distance between these patients and their health care providers. However, measuring the effect of Tel-Assurance on removing this barrier may prove difficult, since the program has been able to recruit only two demonstration patients to use the technology.

Patient Education. During the initial assessment, case managers identify the patient's need for disease-specific education, and this is incorporated in care plan goals. The program's education intervention focuses on improving self-care skills and adherence to recommended treatment regimens, as well as on disease etiology and lifestyle changes. The case manager distributes educational packets to patients and reviews the contents of the packets with them. The packets cover (1) weight management, (2) diabetes, (3) COPD, (4) arteriosclerosis, (5) cerebral vascular accident, (6) CHF, and (7) smoking cessation. In addition, the program refers some patients to a formal diabetic education program that MMC/NI runs.

Provider Practice. Program staff believe that most MHN physicians follow practice guidelines, so changing clinical practice is not a program goal. However, the program encourages the formation of partnerships between case managers and physicians to increase coordination and communication. At the time of the interview, program staff believed they had achieved success in developing rapport between the case managers and physicians.

Staff would also like physicians to become more accepting of case management and refer patients directly to the program. The program did not report that they had experienced any active resistance from providers, and some had been proactive in referring and encouraging their patients to enroll in the program.

Arranging Services. The program arranges for a wide variety of services and resources, none of which are provided at the program's expense. Medicare covers most of the medical care that the program arranges. The services that staff arranged most frequently at the time of our interview were home health care and personal care (including homemakers, companions, and respite care). Staff had also helped a number of patients apply to medication assistance programs. (Table 4 contains a detailed list of services to which the program refers patients.)

Communication. As noted, the primary goal of the MMC/NI program is to improve communication among and between patients and physicians by introducing the case manager as a liaison between the patient and physician. The program wants to develop active partnerships in which physicians refer patients to the program and communicate regularly and effectively with the case managers about enrolled patients. To achieve this, the program plans to nurture staff relationships with providers that they established with the traditional case management program.

Case managers have regular formal and informal communication with the patient's primary care physician. Most communication is by telephone, but some is in writing or in person. Case managers may call the patient's physician informally to alert him or her that a particular problem needs to be addressed or that a service needs to be ordered or provided. Formal written communication includes the annual update of the care plan, which physicians must sign. Case managers also discuss patient progress with the physicians in person when they visit the clinics or more formally in "grand round" meetings. Typically, the case manager has contact with a physician on a quarterly basis, but complex patients may require the case manager to speak with the physician on a daily basis during some periods.

Case managers are also responsible for making sure events (such as diagnostic testing) occur at the appropriate time and in the proper order and that needed information (such as test results) is available in doctor's offices when visits occur. They encourage patients to make sure

that needed appointments are scheduled and care received. If patients do not make appointments on their own, case managers encourage them to do so and help them identify and eliminate barriers to following up on their care. If necessary, case managers will make appointments for patients, arrange transportation for the appointment, and then call patients to remind them to go.

Other Case Manager Responsibilities. The case managers provide some hands-on care to the participants. During a typical face-to-face contact, the case manager takes blood pressure, pulse, and other vital signs and conducts a physical assessment. In addition, the case manager may provide simple wound care, set up medications, and provide other minor treatments that are less complex and intensive than those a home health nurse typically provides. Case managers interact with patients in a variety of settings, including patients' homes, assisted-living facilities, acute-care facilities, and the physician's offices. They do not see patients in nursing homes, since those moving to a long-term care facility are discharged from the program.

Early Implementation Data. According to program data generated between July 1 and September 30, 2002, for the evaluation, 127 of the 136 participants enrolled in the study treatment group during this period had at least one contact with a case manager (Table 5). The case managers, rather than the patients, initiated most contacts (90 percent). Just over half of the patients enrolled (63 percent) had a contact for assessment. Of those with an assessment contact, 68 percent were contacted within two weeks of random assignment. Among contacted patients, most (72 percent) of the contacts occurred in the patient's homes, primarily because initial patient assessments are conducted in person, in the patient's home if possible. The rest occurred in person in other locations (12 percent) or by telephone (17 percent).

Of the 136 patients enrolled, many were contacted for routine patient monitoring (93 percent), providing emotional support (90 percent), identifying the need for non-Medicare

TABLE 5

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

Number of patients enrolled[a]	136
Number of patients with at least one case management contact	127
Total number of contacts for all patients	461
Number of case managers contacting patients	14
Number of patients in contact with more than one case manager	19
Among those patients with at least one contact:	
Percentage of contacts case manager initiated	90.2
Percentage of contacts:	
At patient's residence	72.0
By telephone	16.5
In person, elsewhere	11.5
Of all patients enrolled, percentage with assessment contact	62.5
Among those patients with an assessment, percentage of patients whose first assessment contact is:	
Within a week of random assignment	40.0
Between one and two weeks of random assignment	28.2
More than two weeks after random assignment	31.8
Of all patients enrolled, percentage of patients with contacts for:	
Identifying needs of non-Medicare services	91.9
Identifying needs for Medicare services	2.2
Providing disease-specific or self-care education	81.6
Explaining tests or procedures	11.8
Explaining medications	46.3
Routine patient monitoring	92.6
Monitoring services	7.4
Monitoring abnormal results	36.8
Providing emotional support	89.7
Average number of patients contacted per case manager	9.1
Average number of patient contacts per staff member	32.9

SOURCE: Mercy program data submitted in November 2002.

[a]Number enrolled in the treatment group as of September 30, 2002.

services (92 percent), providing disease-specific or self-care education (82 percent), explaining medications (47 percent), or monitoring abnormal results (37 percent).

Involvement of Physicians. The program assumes physicians will be active, but limited, partners in the care coordination (Table 6). Staff view this partnership as one in which the physician is "respectful, collegial, and communicative" with the case manager. Staff expect that physicians will be involved with the program primarily at two junctures: (1) at enrollment, when they help identify patients who are good candidates for the program from the lists generated by MHN data systems; and (2) following enrollment, when they discuss specific patients' conditions and problems with case managers as part of the ongoing monitoring process.

Although program staff hope that physicians will encourage patients to enroll, they do not expect to get many direct referrals from physicians, who typically spend little time—perhaps 10 to 12 minutes per contact—with each patient. With so much else to discuss, physicians are not likely to remember to refer patients to the program or to spend time explaining the program to their patients and encouraging them to enroll. However, staff hope that, because of physicians' underlying support of the program and their influence over their patients' health service choices, they will encourage patients to enroll in the program when patients ask for their opinion.

Data Systems. The program uses a homegrown software program called the "Case Management Information System," originally developed by MMC/NI for MMC/NI's traditional case management program and updated for the demonstration (Table 7). This system stores both discrete and narrative data and houses information on all case management encounters, the required reporting elements for MPR and BearingPoint, Inc. (formerly KPMG), clinical data (for example, vital signs and blood glucose readings), medication lists, laboratory tests, provider visits, and case managers' narrative notes. The database has incorporated the taxonomy for the

TABLE 6

PLANNED PHYSICIAN INVOLVEMENT

	Brief Description
Promotion of Program to Physicians	Case managers describe program to physicians at the Mercy Medical Center North Iowa physician meetings. Physicians familiar with staff as a result of the traditional case management program
Physicians as Referral Sources	Physicians have not been a major source of referrals to the program, but the program would welcome such referrals. Staff review the list of potential enrollees with the physicians, and there is good cooperation on this activity.
Physician Role in Encouraging and Maintaining Patient Participation	Physician signs the initial letter explaining the program to the patient There is no formal plan for increasing physician promotion of the program and maintenance of patient participation, but some are more active in encouraging participation than others.
Physicians' Role in Care Coordination	The program seeks the cooperation of the physician and would like them to be active partners in care coordination by referring patients and communicating with the care coordinators once patients are enrolled.

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted July 2002 and review of program documents.

TABLE 7

PLANNED DATA SYSTEMS

	Program Maintains?	Brief Description
Participant Level		
Enrollment/disenrollment	Yes	Database developed in-house for the program
Assessment	Yes	Database developed in-house for the program
Care planning	Yes	Database developed in-house for the program
Monitoring/evaluation	Yes	Database developed in-house for the program
Non-Medicare services	Yes	Database developed in-house for the program
Adverse events	Yes	Database developed in-house for the program
Grievances	Yes	Database developed in-house for the program
Case Manager Level		
Time log/productivity	No	
Program Level		
Costs by type	No	

SOURCES: Telephone interviews with Mercy Medical Center North Iowa program staff conducted July 2002 and review of program documents.

Nursing Intervention Classification and the Nursing Outcomes Classification (NIC/NOC) and can generate reports based on this classification and other criteria. Case managers document nursing interventions for each patient encounter in the database. This is a stand-alone database to which only program staff have access. All information of interest, including that kept in the Case Management Information System, is available to other members of the health care team (physicians, clinic staff, and hospital home care staff) in paper format on the patient's medical record.

The initial setup of the program's case management software was difficult because it was still being tested when first implemented in the demonstration. The program had trouble integrating the system into the Mercy intranet system, a step that allowed for remote case management sites in the regional hospitals to transmit data to and from the main office. These difficulties, however, did not persist beyond the testing phase, and the system was working at the time of the telephone interviews. The program could not use the Stratford billing software on its newest computer, but solved this problem by installing it on one of their older computers. Some of the case managers also lacked the necessary computer skills, but the program provided extra training for them.

Financial Monitoring and Incentives. The demonstration program is its own cost center within the host organization, MMC/NI. The program monitors overall spending for staff salaries relative to the budget, but it does not monitor the costs of specific tasks (for example, enrollment or patient education). The host provides many goods and services to the program. These include accounting, purchasing, marketing support, human resources, information technology, building and office space, protocols and other proprietary materials, and continuing education for nurses. Staff salary and benefits are directly allocated to the demonstration program's cost center, and goods and services that the host provides are allocated to the program cost center in proportion to

actual use. According to the demonstration cost report through June 30, 2002, the program had

spent just over $61,000 and has received nearly $24,000 in patient payments. The $61,000 is for

costs incurred in preparation for enrollment, primarily for staff salaries. Major expenses during

the start-up phase also included building costs, equipment, and other administrative costs. (The

program did not get any start-up funds from CMS.) The program does not use financial

incentives to promote favorable patient or program goals, nor does it pay physicians to review

patient care plans or to discuss patients with case managers.

Early Implementation Experiences

    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.

    At the time of the telephone interview, MMC/NI had encountered few barriers to

implementation. Recruitment and enrollment has gone well for the MMC/NI program, helped by

access to the MHN data systems, physician cooperation, and patient enthusiasm, although the

program had a small enrollment shortfall during the first 3 months. The program also had no

difficulty recruiting experienced case managers. Staff described the case management positions

as "very popular." The program had eight applicants for the last posted opening, most from

current hospital employees.

    In general, physicians have been accepting of the MMC/NI program, and the program has

not experienced any active resistance from them. Their involvement in the demonstration has

been somewhat limited by design, however. Most physicians are cooperative with the case managers. Although some physicians are proactive in getting their patients to participate, they have not been a major source of referral for the program. The only other problem MMC/NI encountered was the installation of the Case Management Information System as described previously.

Problems Related to Evaluation Activities. Demonstration programs also commonly encounter early problems related to their participation in an evaluation. These problems include difficulty providing program data required for the evaluation and inadvertent contamination of the control group. The program had little difficulty providing data for the evaluation and appears to be at minimal risk for control group contamination.

Control group contamination or bias of program impacts can occur in several ways, most notably if control group members (1) participate in other similar case management programs, (2) have contact with program staff before or after random assignment that leads them to receive treatment they might not otherwise have sought, or (3) are treated differently by their physicians because of changes the physicians have made to practice for all patients. In the immediate region, there are few other case management programs in which control group members might enroll. Although there is a state-funded case management program for the elderly considered "usual care" in the program's service area, intervention is not as intense as that of the demonstration, and the program is small. Both treatment and control group members may participate in it. Demonstration program staff have no contact with the beneficiaries before or after they are assigned to the control group. Physicians and nurse practitioners do treat both control group and treatment group patients. However, the program does not seek to change clinical practice. Thus, these providers are unlikely to change how they practice for all of their patients as a result of having some patients in the treatment group.

Summary and Discussion

The relatively recent history of care coordination and disease management yields a huge variety of programs, sponsored by many types of organizations. The interventions they provide range from simple utilization review, to improvement of physician care and self-care for a particular disease, to general improvement of health service delivery to patients at risk for avoidable service use and high costs. As one of its goals, the implementation analysis for the evaluation of the Medicare Care Coordination Demonstration will develop a parsimonious classification of these programs made up of a few salient care coordination/disease management program features. Our classification scheme will evolve as we learn more about the diverse interventions being tested under this demonstration. We have begun, however, by classifying programs according to (1) the type of organization implementing the program and the extent to which the program is integrated with other key providers; (2) the program's target population and whether the program focuses on care for a particular disease or on overall health care; and (3) what the program's major focus is—improving patient education and adherence, improving provider practice, increasing access to support services, or improving communication and coordination. We use this classification here to provide an overview of the MMC/NI intervention, then discuss early successes of the program and some areas of concern to the evaluation.

The MMC/NI program is based in a hospital that is part of a larger provider network, and physicians employed by MHN serve the program's patients. The physicians were familiar with the program and its staff before the program started as a result of their familiarity with the hospital's traditional case management program. The program seeks to develop a collegial, although primarily consultative, relationship between physicians and case managers and has located the case managers in the clinics where the physicians practice. Thus, the program has the

structure for a high degree of integration between its staff and patients' physicians, but it makes modest demands on those physicians, recognizing that they have limited time to devote to the program.

The program targets patients with a variety of chronic illnesses common among elderly Medicare beneficiaries and uses a case management approach with traditional components such as assessment, care planning, and service arrangement. MMC/NI's demonstration augments this strategy by providing patients with education tailored to their disease to improve treatment adherence and self-management.

The primary goal of the MMC/NI intervention is to improve communication and coordination among and between physicians, patients, and case managers by first developing (or building on existing) trusting relationships between physicians and case managers, then having case managers act as intermediaries between patients and physicians. Secondary, but important, goals were to improve patient adherence and increase access to non-Medicare covered services. The program also wants to increase physicians' understanding of case management and willingness to collaborate with case managers.

Based on the lessons of the care coordination literature and experience with evaluating other care coordination programs, the evaluation team has just one concern about the MMC/NI program. The program is using the Tel-Assurance program only for a small number of patients with CHF. If the number of patients using this service increases, the evaluation would benefit from the program identifying which patients received this intervention and over what period because they might have better outcomes as a result of this additional service.

The MMC/NI demonstration program has many features that have been found to be associated with successful care coordination interventions (Chen et al. 2000). The program had an enrollment process that was effective even in a rural area, has highly experienced case

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managers, and has a substantial physician network to draw on for support. The program takes a holistic approach to the management of patients with specific, costly chronic illnesses. Because many case managers work with the physicians in a clinical setting, there is potential for greater communication between the case manager and the physician, and ultimately, between the patient and physician.

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APPENDIX A

**LIST OF MATERIALS PROVIDED BY MMC/NI AND
REVIEWED FOR THIS REPORT**

**LIST OF MATERIALS PROVIDED BY MMC/NI AND
REVIEWED FOR THIS REPORT**

MMC/NI Medicare Care Coordination Demonstration (MCCD) proposal to the Centers for Medicare & Medicaid Services dated October 6, 2000

MMC/NI's Community Case Management Policy and Procedure Guide

Beneficiary marketing materials and recruitment packet

Beneficiary admission packet (includes informed consent form)

Admission checklist

Assessment tools

Standardized care plans

Referral lists of community service providers

Patient education materials

Samples of electronic documentation forms

Program staff organizational chart

Key staff and care coordinators' resumes, position descriptions, and orientation checklists for training