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The Early Experience of the Lovelace Case Management Program

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EXECUTIVE SUMMARY

Lovelace Health Systems (LHS) applied to the Centers for Medicare & Medicaid Services (CMS) in 1998 to operate demonstration case management programs as part of CMS's Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus. Mathematica Policy Research, Inc. is evaluating the LHS program, along with 15 programs participating in CMS's Medicare Coordinated Care Demonstration. 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 the LHS 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 2002.

Experience with Care Coordination. LHS, based in Albuquerque, New Mexico, is a 3,000-employee, managed-care oriented, integrated delivery system that includes more than 300 physicians, an acute-care hospital, a health plan, nine primary care clinics, and a regional practice site in Santa Fe. The prototype intervention for the demonstration is the LHS outpatient case management program, and a key component of this program is its "Episodes of Care" disease management practice guidelines. LHS modified the design of its case management program for the CMS demonstration by narrowing its target population to patients with congestive heart failure (CHF) and diabetes; by adding regular, ongoing patient monitoring to its intervention; and by developing specific outcomes with which to assess patient progress. The demonstration intervention is otherwise similar to the one LHS uses in its ongoing case management program.

Goals and Eligibility Criteria. LHS program goals include improving communication and coordination between patients and physicians and improving disease-specific education and treatment adherence for patients. The program targets patients residing in the Albuquerque area who have CHF or diabetes, have Medicare Parts A and B as their primary payer, are not in managed care, and have a relatively high level of comorbidity. Those with diabetes must have poorly controlled blood glucose. The program expects to save Medicare $558,268 for CHF patients and $345,138 for diabetes patients over the three-year study period by reducing hospital costs by 15 percent.

Outreach and Enrollment. The program's primary mode of outreach begins with case managers reviewing LHS (or other health system) records to identify patients with CHF or diabetes and Medicare coverage, followed by a more detailed review of medical records to verify additional clinical criteria. Case managers then contact physicians to get consent for their patients to participate and send the patient a letter signed by the physician inviting participation. The program began enrolling patients in November 2001. After six months, the program had enrolled 84 patients, but it has a goal of enrolling 1,372 patients for both disease groups within one year. The shortfall is due primarily to (1) underestimating how many patients were in managed care; (2) using overly restrictive comorbidity criteria; and (3) for patients with diabetes, overestimating the number with poor glucose control. In addition, a substantial fraction of eligible patients decline the invitation to participate.

Key program staff members are two medical directors, a program director, a program manager, and case managers. The medical directors, a cardiologist and an endocrinologist, provide consulting services but do not have day-to-day program responsibilities. The program director and manager/case management supervisor have extensive case management experience. The three current case managers are highly educated and experienced nurses, although two of the three have limited case management experience.

Program case management includes assessment, care planning, and ongoing monitoring. The program does not discharge patients; they may participate in the program until the demonstration ends. The case managers conduct assessments in the patient's home whenever possible to assess health, functioning, social environment, patient supports, and patient education needs, among other things. Care plans are based on the assessment, a review of medical records, and the results of a conference that includes the case manager, the physician, the patient, and the patient's family. The program sees physicians as health care team leaders, having control over the care plan. At the conference, the case manager shares the results of the assessment and the key problems she has identified. The patient is encouraged to bring family to the conference and to identify his or her main problems. The case manager then develops the care plan, setting out individual goals for treatment adherence and lifestyle changes, as well as a timetable for meeting them. The case managers monitor patients' progress in meeting goals with weekly telephone calls or visits for the first four months, after which contact is monthly. In particular, they ask all patients about weight, hospitalizations, and emergency room use. They also ask patients with diabetes about blood glucose readings.

Patient education and coordination across providers are key components of the LHS program. Education focuses on improving self-care skills and adherence to recommended treatment, as well as on disease etiology and lifestyle changes. Patients attend classes offered by LHS and run by certified health educators. During contacts with patients, case managers reinforce the content of the classes. Case managers are responsible for communicating with the patient's providers (particularly the primary care physician) about patient progress toward care plan goals, for making sure events (like diagnostic testing) occur at the appropriate time and in the proper order, and that needed information (such as testing results) is available when visits occur. They also follow up with patients to make sure that needed appointments are scheduled and care received.

Service Arranging. Case managers arrange for a wide variety of services and resources using an extensive reference manual to identify community services such as personal assistance, senior centers, and transportation. A few services are provided at the program's expense: taxicab vouchers to address short-term transportation problems, short-term funds for medications, and funds for some durable medical equipment that Medicare does not cover. The LHS endocrinology and cardiology departments also provide glucose monitors and scales as a "standard of care" for patients who cannot afford them.

Expected Physician Role. The program also has the goal of improving provider practice by increasing provider willingness to engage in multidisciplinary, collaborative patient care rather than "solo" practice. The program staff expects that physicians will play a key role primarily in two ways: (1) providing consent for their patients to enroll, and (2) taking the lead in guiding the patient's program care plan. Case managers communicate regularly with physicians, including formally at the care planning conference and subsequently less formally, to keep them apprised of patient progress and problems. Case managers will also participate in physician visits with patients twice a year and provide physicians with reports on patient outcomes annually.

Data Management. The program uses the IDX case management module and MedProfile medical profiling software as the basis of its data system. MedProfile includes data from assessments, care plans, and ongoing patient notes. IDX includes data on encounters, such as hospitalizations and emergency room and physician visits. The systems are not linked, share only basic patient data, and store data in narrative form. The program maintains a separate Access database with patient-level data describing case management contacts that are exported to Excel for the evaluator. The program itself does not use this database.

Early Implementation Experience. Health service delivery demonstration programs such as this one typically encounter some barriers to early implementation. These barriers include lower-than-expected enrollment, opposition from physicians, difficulty hiring qualified staff or obtaining space and equipment, and difficulty developing an efficient data system for monitoring patients and program activities. The LHS program has not encountered physician opposition and has not had difficulty hiring or obtaining space or equipment. However, enrollment has been lower than anticipated, for reasons already noted. To increase enrollment, the staff has moved ahead, perhaps sooner than planned, to forge agreements with two other health systems to refer patients to the program and has asked CMS to allow the program to loosen its comorbidity criteria for eligibility slightly. It appears that physicians could be more actively engaged in encouraging participation among eligible patients who initially decline the program's invitation. The program's medical directors in particular might be able to influence physicians to provide such encouragement.

Program staff members did not indicate any dissatisfaction with their IDX and MedProfile data systems during our interview. However, the evaluation team is concerned that, as the program grows, these data systems will not help staff monitor patient progress or program operations. The lack of interface between the data systems, combined with the narrative format the systems use to store information, will make it difficult to develop reports and for program staff and providers to efficiently share data about patients; to monitor patients' care, progress toward goals, and outcomes; and to quickly recognize impending patient or program problems.

Potential Control Group Contamination. Finally, the evaluation team believes that this demonstration program has some potential for contamination of the control group. Contamination could occur if control group members participate in other similar programs, receive assessment prior to their random assignment that leads them to get treatment they might not otherwise have sought, or are treated differently by their physicians because of practice changes the physicians make. Two other case management programs operate in the area. LHS itself operates ongoing outpatient case management and CHF telemanagement programs. Although the demonstration excludes patients who currently participate or have participated in such programs in the previous year, the program obviously cannot prevent patients from enrolling following assignment to the control group. The program also collects some basic information during the preenrollment home visit. If the case manager identifies a serious health problem during that visit, she informs the patient's physician (but not the patient directly), which will likely result in necessary, but previously unplanned, treatment. Finally, most physicians who serve treatment group members will likely also have some control group members as patients. The program's medical director noted that, as the program grows, physicians of treatment group patients *might* change the way they treat all patients with CHF or diabetes as a result of their familiarity with the program. However, while the program is trying to make physicians more receptive to care coordination, it is not trying to make major changes to physician practice.

The evaluation team believes there is little potential for control group contamination as a result of the home visit case managers conduct prior to random assignment or as a result of changes physicians might make to the way they treat patients. We are somewhat more concerned about control group members participating in the outpatient case management and CHF telemanagement programs. However, we will not know how severe this type of contamination is until survey (and possibly program) data are available to indicate what proportion of control group members participate in these programs. If significant numbers do participate, the evaluation will be comparing demonstration outcomes with the outcomes of a less intense case management intervention, rather than comparing it to usual Medicare-covered services without case management. As a result, demonstration impacts are likely to be smaller than if control group members had not had these options.

Early Successes. The Lovelace demonstration program contains many features that have been found to be associated with successful care coordination interventions. In its first three months of operations, the program has encountered few problems other than lower-than-anticipated enrollment, and thus has been implemented largely as planned. The program's medical director reported that case managers were doing a good job explaining the program to physicians and convincing them that it was a "win/win proposition" for them and their patients. The program director and manager reported more than 95 percent of patients meeting program eligibility criteria and participating in the introductory home visit by case managers decide to participate and subsequently are very satisfied with the services they have received. Thus, the Lovelace program has the potential to be very successful, if enough participants can be identified and impact estimates are not greatly reduced by control group participation in other case management programs.

LOVELACE CASE STUDY

Lovelace Health Systems (LHS) applied to the Centers for Medicare & Medicaid Services (CMS) to operate demonstration case management programs in 1998 as part of CMS's Medicare Case Management Demonstration for Congestive Heart Failure and Diabetes Mellitus. Mathematica Policy Research, Inc. (MPR) is evaluating this demonstration, along with 15 other programs participating in CMS's subsequent Medicare Coordinated Care Demonstration. The latter, 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 Lovelace demonstration began enrolling patients for evaluation in November 2001.

This brief report is the first of 16 (one for each of the demonstration programs in the evaluation). It describes the early experiences of the LHS demonstration, called the CMS Case Management Demonstration Project. The report is based on telephone interviews, using semistructured interview protocols, conducted in February and March 2002 with LHS staff members (the program director, one of the program's two medical directors, the program manager, and financial staff). The report first describes the history of LHS's demonstration program and how it relates to LHS as a whole. It then provides an overview of the key features of the intervention. It 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

LHS, located in Albuquerque, New Mexico, was founded by Doctors William Lovelace and Edgar Lassiter in the 1920s as a medical group practice modeled on the Mayo Clinic. In 1973, it became one of the first organizations in the country to develop a health maintenance organization. Since then, it has expanded throughout New Mexico. Today, it is a wholly owned subsidiary of CIGNA HealthCare (www.lovelace.com May 2002).[1]

Intervention History. The prototype intervention for the LHS demonstration is its ongoing, five-year-old outpatient case management program (Table 1). A key component of the case management program is the LHS "Episodes of Care" disease management program, begun in 1993, which includes best practice guidelines and patient education and compliance tools for congestive heart failure (CHF) and diabetes. The LHS case management program serves patients at high risk for inappropriate health service use (such as avoidable hospitalizations). The program provides assessment, care planning, and short-term monitoring and evaluation. In a typical month, the case management program serves roughly 600 people from among 101,000 LHS managed health care program subscribers and 40,000 to 50,000 Medicare fee-for-service patients (roughly 1 in 250 patients). The staff reports that it receives many compliments on its case management program from LHS physicians, administrators, and participating patients. However, the program has never been formally evaluated outside LHS.

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[1] In July 2002 Ardent Health Services signed an agreement to purchase Lovelace Health Systems.

TABLE 1

PROGRAM HISTORY

Intervention Developer

Lovelace Health Systems (LHS), case management department

Where Original Intervention Was Used and to Whom Targeted

The original case management intervention has been used at LHS since 1997 and targets high-use/high-cost individuals.

Original Intervention and How Adapted for Demonstration

Outpatient case management program: assessment, care planning, short-term monitoring, evaluation, disease management using “Episodes of Care” practice guidelines also developed by LHS. The original intervention was adapted for the demonstration by:

- Targeting specific diseases rather than broad high-risk category
- Providing regular long-term patient monitoring
- Identifying specific outcome measures to assess program effectiveness

Effectiveness of Original Intervention

The intervention received strong anecdotal support from LHS physicians (most of whom have had some contact with the program) and patients. However, because it did not track patient outcomes, it could not rigorously assess effectiveness.

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

For the CMS demonstration, LHS modified the prototype case management program design in three ways: (1) by narrowing its target population, (2) by providing regular ongoing patient monitoring, and (3) by developing specific outcomes with which to assess patient progress. Other than the introduction of ongoing monitoring, the intervention is similar to that used in the prototype program. The demonstration program focuses on patients with two specific conditions—CHF and diabetes—with additional specific inclusion and exclusion criteria (discussed in more detail below), whereas the case management program targets patients at general risk of high health care costs and utilization. The demonstration program provides regular, long-term patient monitoring and reassessment to proactively identify and address problems, whereas the case management program is short-term and discharges patients as soon as immediate care needs are met. In addition, the case management and disease management programs have measured effectiveness primarily through pre-post comparisons of service use and costs, which have suggested reductions in both. For the demonstration program, however, LHS has incorporated specific outcome measures such as clinical and quality-of-life indicators.

LHS's interest in research, national recognition of its "Episodes of Care" program, and success of its case management program were the primary motivations for deciding to participate in the CMS demonstration. LHS views the evaluation as an opportunity to prove that its approach to case finding and case management can identify patients at risk of high health care costs and can lead to reductions in those costs while maintaining or improving patient health.

Relationship Between Program, Host Organization, and Providers. LHS, the program host, is a 3,000-employee, managed-care oriented, integrated delivery system that includes more than 300 physicians, an acute-care hospital, a health plan, nine primary care clinics, and a regional practice site in Santa Fe. LHS directly employs the program director, program manager, case managers, and medical director.

The developers of the demonstration program envisioned that many patients participating in the program would come from LHS and would have physicians employed by LHS but that the program would also be open to patients from outside LHS. The staff is actively promoting the program to other Albuquerque health systems, two of which have agreed to refer patients to the program. At the time of our interview, the program had enrolled LHS patients only.

The program staff consists of the program director, the program manager (who is responsible for operations on a day-to-day basis), the care coordinators (called case managers in this program), and the medical director. The program’s offices are in a former shopping mall across the street from the main LHS campus. The program manager and case managers work exclusively for the demonstration program and have no other LHS responsibilities.

The case managers routinely contact physicians about their patients who are participating in the demonstration program. The first contact after random assignment to the treatment group is a formal conference, called the Case Management Physician (CaMP) conference, that occurs after a patient is assessed for case management. After this initial conference, case managers communicate with physicians about patient progress and problems primarily in a more ad hoc manner by mail, by telephone, or in person.

Because the program staff, the LHS administrative staff, providers affiliated with LHS, and their common employer (LHS) are all located near each other, communication should be effective among these groups. It remains to be seen how effective communication will be between the program and physicians affiliated with other health systems.

Service Environment. The program staff noted that New Mexico is a very poor state and suffers from a severe shortage of health care and support services. People move from other parts of the state to Albuquerque for services; even in the city, however, services are in short supply. Public transportation is a particular problem, described as barely adequate. Recently, many physicians and mid-level practitioners, such as nurse practitioners and physician’s assistants, have left the state in search of better pay.

Two other large health systems in the area operate disease management programs, one of which is a CHF telemanagement program that a heart hospital runs. LHS itself operates a telephone-only case management program for patients with severe CHF who are being treated by LHS cardiologists, most of whom are LHS managed care enrollees. This program serves a maximum of 300 patients at any one time. As noted, LHS has an ongoing outpatient case management program that also serves roughly 600 patients each month for about three months at a time, on average.

Key Program Features

Program Goals and Expected Savings. The broad goals of the LHS demonstration program are to (1) improve communication and coordination among and between patients and physicians, (2) improve beneficiary education and adherence, and (3) improve physician practice (Table 2). The program would like to provide the overall health care system with a replicable, cost-effective model of case management for patients in the Medicare fee-for-service sector. Specific desired outcomes for patients include an increased level of physical activity and better quality of life; improved knowledge of, and adherence to, treatment recommendations and symptom monitoring; improved clinical process and outcomes; and reduced hospital use. Keeping a daily weight log is a specific outcome for patients with CHF. Reducing HgbA1c levels (that is, improving long-term control of blood sugar levels) and increased daily blood sugar testing are outcomes for patients with diabetes.

The program’s waiver application projects annual net savings for patients with CHF of $2,781 per patient and for those with diabetes of $2,415, as a result of a 15 percent reduction in

TABLE 2

PROGRAM GOALS AND DESIRED OUTCOMES

Program Goals

- Improve communication and coordination
- Improve beneficiary education and adherence
- Improve physician practice

Outcome for Health Service Delivery System

- Provide a replicable, cost-effective model of case management for the Medicare fee-for-service sector

Outcomes for Patients with Congestive Heart Failure

- Increase level of physical activity and quality of life
    - Increase quality of life by 10 percentage points compared to baseline on the Minnesota Living with Heart Failure Quality of Life Questionnaire
- Improve clinical process and outcomes
    - Review of drug list by pharmacists for all patients
    - 80 percent of patients who have not had echocardiograms will have one within the first year
- Reduce number of hospitalizations and decrease DRG severity
- Improve patient knowledge of, and adherence to, treatment recommendation
    - 80 percent will weigh themselves daily and keep log of weight
    - 90 percent will adhere to their prescribed medication 80 to 100 percent of the time by the end of the first year and maintain throughout the duration of the project
    - All will recognize and report disease symptoms and medication side effects

Outcomes for Patients with Diabetes

- Increase level of physical activity and quality of life
    - 50 percent will expend 1,000 exercise calories per week by the end of the first year

- Improve clinical process and outcomes
    - Maintain HgbA1c below 8 percent; test twice per year
    - 100 percent of patients will be on appropriate medications

- Reduce number of hospitalizations and decrease DRG severity

- Improve patient knowledge of, and adherence to, treatment recommendation
    - 100 percent will adhere to prescribed medications 80 to 100 percent of the time
    - 90 percent will adhere to daily blood sugar testing by the end of the first year and maintain this level for the duration of the project

Outcomes for Providers

- Physicians will be satisfied with the case management
    - Satisfaction scores will be 90 percent or greater using tool that the program will develop

Expected Savings for Medicare and Their Sources

Savings for Patients with Congestive Heart Failure

- Annual net savings of $2,781 per patient or $558,268 net savings to Medicare over the life of three-year study; annual cost of $2,242 per patient. Savings will stem from 15 percent reduction in hospital costs.

Savings for Patients with Diabetes

- Annual net savings of $2,415 per patient or $345,138 net savings to Medicare over the life of three-year study; annual cost of $2,100 per patient. Savings will stem from 15 percent reduction in hospital costs.

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

hospital costs (Table 2). The average cost of the program during its first year is projected to be $2,242 per patient with CHF and $2,100 for patients with diabetes. The expected net savings for Medicare over the three-year life of the study are $558,268 for CHF and $345,138 for diabetes. (CMS is paying the program $205 per treatment-group CHF patient per month and $192 per treatment-group diabetes patient per month during the first year of the demonstration.)

Target Population and Outreach. The LHS program targets patients with CHF and diabetes who live in the Albuquerque metropolitan area (Bernalillo and parts of Valencia and Sandoval counties). Patients must have Medicare Parts A and B as their primary payer and must not be in managed care, as is true for the Medicare Care Coordination Demonstration programs. Patients in the LHS program also must have a relatively high level of comorbidity (such as cancer, pulmonary disease, or paralysis). Those with diabetes must have poorly controlled blood glucose (Table 3). The program excludes patients who are in a nursing home or hospice, are on dialysis, do not read at least at a fourth-grade level, or have cognitive impairment and no able caregiver. The program also excludes patients currently participating in other telemanagement or disease management programs and those who participated within the last year. Finally, physicians must agree to allow their patients to participate.

LHS chose this target population to test the protocols developed for its case management program. It also chose this population because, at least anecdotally, experience with the case management program suggested interventions for patients with CHF or diabetes and high rates of comorbidity could greatly reduce costs and slow functional decline.

The primary mode of outreach for the program begins with case managers reviewing LHS (or other health system) records to identify patients with CHF or diabetes and Medicare coverage, followed by a more detailed review of medical records to verify additional clinical criteria. Physicians and nurses can also refer patients to the program, and patients and their

TABLE 3

TARGET POPULATION AND OUTREACH

Eligibility Inclusion Criteria for CHF and Diabetes	Reside in Albuquerque metropolitan statistical area Have fee-for-service, primary payer Medicare (Parts A and B) Read at a fourth-grade level (or have caregiver who can) Cornell Comorbidity Index disease score 3 or more[a] Agreement of their physician
Disease-Specific Inclusion Criteria	Diagnosis of CHF Diagnosis of diabetes with poor glucose control (HgbA1c of 8 or more)
Eligibility Exclusion Criteria for CHF and Diabetes	Received telemanagement or outpatient case management in the past 12 months In nursing home or hospice On dialysis Has cognitive deficit that would inhibit participation (according to a mini-mental status test) or dementia and no able caregiver
Outreach Procedures	Primary outreach effort is review by case managers of LHS records for patients with target diagnoses and Medicare, with case manager follow-up review of medical charts for other criteria Program placed advertisement in the newspaper; issued press release to announce selection as a demonstration site Developing brochure for senior centers and clinics
Referral Procedures	Physicians and nurses can refer patients; patients can also self-refer
Enrollment	
Goal	686 treatment and control group members for each disease (or 1,372 patients total) enrolled by November 2002
Number enrolled after six months	84 as of early May 2002

Table 3 *(continued)*

Problems with Eligibility Criteria or Enrollment Shortfalls	Higher than expected managed care participation Chronic disease score for many patients too low to qualify; considering adding hyperlipidemia and hypertension to the scale so that more patients would have a score of 3 or more[b] Among those with diabetes, HgbA1c of many patients already less than 8[b]

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

[a] The Cornell Comorbidity Index scores the presence of comorbid conditions on a scale of 1 to 6 and sums these scores. Heart attack, congestive heart failure, peripheral vascular disease, and cerebrovascular disease receive a score of 1; chronic lung disease, connective tissue disease, ulcers, mild liver disease, and diabetes receive a score of 2; hemiplegia receives a score of 3; and moderate or severe renal disease, diabetes with end organ damage, cancer, moderate or severe liver disease, and AIDS receive a score of 6.

[b] Following our interview with program staff, the Centers for Medicare & Medicaid Services granted permission to change program eligibility criteria.

CHF = congestive heart failure.

families may self-refer. At the time of our interview, however, few patients had entered the program through such referrals. The program ran a newspaper advertisement to attract patients and issued a press release about the program's participation in the national evaluation. It is also developing a brochure for patients that will be placed in senior centers and clinics.

Case managers contact the physician of a potentially eligible patient to receive consent for the patient to participate, then send the patient a letter signed by the physician inviting the patient to participate. Case managers then visit interested patients, usually at home, to explain the program (including the fact that participation includes random assignment for the evaluation), have them sign demonstration enrollment and consent forms, and collect basic patient data. MPR randomly assigns those who decide to enter the program either to the treatment group, in which they receive care coordination services in addition to the usual Medicare-covered services, or to the control group, in which they continue receiving the usual Medicare-covered services.

At the time of the interview, the program was having difficulty meeting its enrollment target: 1,372 treatment and control group members, in total, for the CHF and diabetes groups, enrolled with the first year of the study. To reach this goal, the program would need to enroll roughly 114 patients a month. However, the program had enrolled only 84 patients (half in the treatment group and half in the control group) between November 2001 and the end of April 2002, its first six months of operations (about 14 patients per month, on average).

The program identified reasons for its enrollment shortfall and approaches to solving it. The two main reasons for the shortfall were (1) underestimating how many patients in the area were enrolled in managed care, and (2) using overly restrictive comorbidity criteria. For patients with diabetes, the program also overestimated the number for whom glucose control is a problem.

Although the program originally believed it could enroll many participants from LHS and would enroll them first, it has reached agreements with two large health systems in the area to refer their patients to the program. The health systems view the program as a free service they can offer their own patients. In fact, LHS named its demonstration program the “CMS Case Management Demonstration Project” (omitting “Lovelace” from the title) to encourage physicians and hospitals outside LHS to refer patients to it without appearing to endorse a competitor. At the time of our interview, case managers for the demonstration program had signed confidentiality agreements with the health systems, giving the case managers access to medical records of patients in those health systems. The health systems had given the case managers an electronic list of patients with Medicare coverage and CHF or diabetes, and they were reviewing patient medical records to identify those meeting the other program eligibility criteria.

The Cornell index the program is using to assess comorbidity was developed many years ago and does not include hyperlipidemia and hypertension, two conditions that can greatly complicate care for CHF and diabetes. At the time of our interview, the program had requested that CMS allow it to modify its comorbidity assessment to include patients with these conditions in addition to CHF or diabetes and to reduce the clinical cutoff measure for glucose control.

Key Program Staff Members and Their Responsibilities. As noted earlier, key program staff members are the program director, program manager, and case managers. The program has two medical directors, a cardiologist and an endocrinologist. The medical directors provide consulting services, primarily concerning the program’s eligibility criteria, but do not have day-to-day responsibilities in the program.

- The program director is a registered nurse with an M.S., 23 years of nursing experience, and 6 years of case management experience. She is responsible for ensuring that the intervention is provided as planned, that enrollment goals are met, and that there is enough administrative support (such as for billing and staff training) to accomplish the program’s objectives.

- The program manager is a licensed social worker with an M.A. and 15 years of social work experience in community mental health, medical case management, and acute care hospital social work. She is responsible for supervising the case managers, allocating program resources, reviewing budgets, leading team meetings, and training case managers and helping them solve problems. She also conducts case management with patients.
- The three case managers employed at the time of the interview are all registered nurses: one has an M.H.A., 37 years of nursing experience, and six months of case management experience; a second has an M.S.N., more than 20 years of nursing experience, and three months of case management experience; and the third has an M.S., certification as a diabetic educator, 16 years of nursing experience, and 3 years of case management experience. They are responsible for implementing the program intervention, which is discussed in more detail below.

The program director and manager train the case managers informally in communication skills, interviewing techniques, and the case management process. The program manager meets with the case managers weekly to discuss issues not covered during training and to provide additional education and guidance. The case managers also attend all the patient education classes the program offers.

The program plans to have 10 case managers—a ratio of 1 case manager to 60 or 70 patients—when it reaches full enrollment (686 treatment group patients). The program chose this ratio based on experience with its ongoing LHS case management program. (The program continues to receive applications from experienced nurses to fill future case management positions.) With an enrollment of just over 40 treatment group patients six months after its start and three case managers, however, the ratio is 1 to about 13, substantially fewer patients per case manager than the program believes would be best.

Care Coordination Components. The LHS demonstration program intervention includes core case management functions (assessment, care planning, and monitoring), patient education, service and resource arranging, and communication across providers (Table 4), all of which have

TABLE 4

MAJOR PROGRAM COMPONENTS

Component[a]	Provided?	Description
Assessment	Yes	Attempt to conduct all assessments in person; may be conducted by telephone if necessary Results documented on paper form and electronically in MedProfile using a documentation template Areas assessed include: Past medical history Current medical status Medications Symptoms Social environment (for example, living arrangement, support network) Functional status Community and other resources available to patient Recent use of medical services (for example, hospitalizations, physician and emergency room visits) No formal reassessment; case managers do informal reassessment during each patient contact
Care Planning	Yes	Uses results of assessment to identify problems for care plan to address Physician input obtained during meeting with case manager and patient to discuss the plan of care Care plan is documented on paper form and electronically in MedProfile
Ongoing Monitoring and Evaluation	Yes	Case managers contact patients weekly by telephone, in the clinic, or at home for first four months, monthly thereafter. May be more frequent if necessary; case managers discouraged from decreasing frequency from recommended contact schedule During contacts with patients, case managers identify and discuss new and resolved problems and progress made in addressing ongoing problems

Table 4 *(continued)*

Component[a]	Provided?	Description
		Technology (such as in-home response devices, recording scales or glucose meters, and electronic reminders) not used for monitoring
Patient Education	Yes	Sends patients to LHS classes for both CHF and diabetes Case managers provide education during contacts with patients
Provider Education	No	Providers receive information only about care coordination program
Service and Resource Arrangement or Provision	Yes	Arranges for a wide variety of services and resources A few are paid for by the program: short-term financial assistance with transportation and medications, and non-Medicare-covered durable medical equipment Services arranged for/referred to include: Covered by Medicare: - Durable medical equipment - Home health Community Based: - Adult day care, senior centers, senior fitness sites - Transportation - Personal care/homemaking - Meals and/or food sources - Dental services - Housing, including homeless services - Mental health - Spiritual care - Abuse and neglect reporting agencies, guardianship services - Funeral services

Table 4 *(continued)*

Component[a]	Provided?	Description
Facilitating Communication Across Providers	Yes	Case managers communicate with all providers about the care plan, but they emphasize communication with the primary care physician, beginning with formal care planning conference and continuing with ad hoc contacts Communication with other providers to ensure continuity of care is not a specific program component, although it might occur on a case-by-case basis

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

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

CHF = congestive heart failure.

been associated with effective care coordination efforts (see, for example, Chen et al. 2000). Patients will remain in the program until the end of the three-year study; no patients willbe enrolled during its last six months. Thus, treatment group patients will receive case management for between 6 and 36 months, depending on when they enroll. (The remainder of this description of care coordination components refers to services and assistance provided to treatment group patients only.)

Assessment. For all patients, case management begins with a comprehensive assessment to establish the patient's condition and determine his or her needs. The assessment covers medical history and current health, health habits, medications, physical activity, daily living activity limitations, social environment, patient supports, patient education needs, and other areas. The case managers conduct the assessment in person in the patient's home whenever possible, but by telephone if necessary. They use an assessment tool developed for the program that includes the SF-12, the American Group Practice Association Diabetes 2.1 instrument, and the Minnesota Living with Heart Failure instrument. The results of the assessment are documented on paper, then entered in narrative form into MedProfile, one of the program's computer systems, using a template to standardize the documentation. The intervention has no formal reassessment process, although case managers reassess patients informally at each follow-up contact and following major events such as hospitalizations. Results of reassessments are entered into MedProfile.

According to data that the program prepared for the evaluation in February 2002, case managers had assessed 15 of the 19 CHF and diabetes patients enrolled between November 2001 and January 2002 by the end of January (Table 5). A third of those assessments were conducted within a week of random assignment to the treatment group, another third within two weeks.

TABLE 5

CASE MANAGER CONTACTS WITH PATIENTS BETWEEN NOVEMBER 2001 AND JANUARY 2002

	CHF	Diabetes
Number of Patients Enrolled[a]	6	13
Number of Patients with at Least One Case Manager Contact	5	12
Total Number of Contacts for All Patients	39	92
Number of Case Managers Contacting Patients	2	3
Number of Patients in Contact with More Than One Case Manager	0	0
Among Those Patients with at Least One Contact:		
Percentage of contacts case manager initiated	84.6	81.5
Percentage of contacts at patient's residence	10.3	15.2
Percentage of contacts by telephone	87.2	79.4
Percentage of contacts in person elsewhere	2.6	5.4
Of all Patients Enrolled, Percentage with Assessment Contact	66.7	84.6
Among Those Patients with an Assessment, Percentage of Patients Whose First Assessment Contact Is:		
Within a week of random assignment	25.0	36.4
Between one and two weeks of random assignment	25.0	36.4
More than two weeks after random assignment	50.0	27.3
Of All Patients Enrolled, Percentage of Patients with Contacts for:		
Identifying need for non-Medicare service	0.0	23.1
Identifying need for Medicare service	33.3	53.5
Providing disease-specific or self-care education	83.3	92.3
Explaining tests or procedures	50.0	69.2
Explaining medications	50.0	76.9
Routine patient monitoring	83.3	69.2
Monitoring services	0.0	15.4
Monitoring abnormal results	33.3	23.1
Providing emotional support	0.0	7.7
Average Number of Patients Contacted per Case Manager	2.5	4.0
Average Number of Patient Contacts per Case Manager	19.5	30.7

Table 5 *(continued)*

SOURCE: Lovelace program data received February 5, 2002.

[a] Number of patients enrolled in the treatment group as of January 31, 2002.

CHF = congestive heart failure.

Care Planning. Case managers develop care plans for each patient, setting out individual goals concerning treatment adherence and lifestyle changes and a timetable for meeting those goals. They base the care plans on the results of the assessment, as well as on a review of available medical records and the results of the CaMP conference. The CaMP conference typically occurs about 30 to 60 days after enrollment and includes the case manager, the physician, and the patient and his or her family. The program sees physicians as health care team leaders, "driving the care" and having control over the care plan. This conference gives physicians the opportunity to assume that leadership role. At the conference, the case manager shares with the physician and patient the results of the individual assessment and the key problems she has identified. The patient is encouraged to identify what he or she sees as the main problems and to bring family to participate in care planning. The care plan is documented with a paper tool that the program developed and is entered into MedProfile. A printout of the computer record is included in the patient's medical record.

Monitoring. The case managers monitor all patients' progress in meeting care plan goals with weekly telephone calls or visits at the clinic or in the participant's home for the first four months of enrollment, after which contact is monthly. During these contacts, they ask all patients about weight and whether they have been hospitalized or visited the emergency room, as well as asking patients with diabetes about blood glucose readings. (If the patient has been hospitalized or visited the emergency room, the case manager asks the physician why the event happened and discusses what could be done to prevent its recurrence. If the case manager learns of the hospitalization while the patient is still in the hospital, she also coordinates with the discharge planner.) If the patient is not meeting care plan goals, the case manager reviews with the patient any barriers to meeting the goals and revises the plan accordingly. Monitoring may be more frequent if the case manager finds it necessary, but case managers are discouraged from decreasing the frequency of contacts. The program conducts a second CaMP conference about six months after the first and provides physicians with annual patient reports. The program does not use automated prompts or any other technology for monitoring patients. However, it keeps ongoing patient notes in the MedProfile system and uses IDX to document adverse events (such as unplanned hospitalizations). This information is shared with patients' primary physicians.

Patient Education. During the initial assessment, case managers identify the need for patient 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. Patients attend classes offered by LHS and run by certified health educators. During their contacts with patients, case managers reinforce the content of the classes. (As noted, one of the case managers is also a certified diabetic educator.) Case managers try to have all patients attend these classes; when patients cannot attend, however, the case managers will give the patients the handouts provided in the classes.

Provider Practice. The program also wants to improve provider practice by increasing provider willingness to engage in multidisciplinary, collaborative patient care rather than "solo" practice. The program expects this will happen through physicians' contacts with program case managers concerning their patients, beginning with the CaMP conference. This goal will be met if physicians are satisfied with the demonstration program. The program does not seek to change clinical practice, as the staff believes that most physicians in the area are already using published guidelines for CHF and diabetes.

Arranging Services. The program provides or arranges for a wide variety of services and resources. A few are provided at the program's expense: taxicab vouchers to address short-term transportation problems, short-term funds for medications, and funds for some durable medical equipment that Medicare does not cover. The LHS endocrinology and cardiology departments also provide glucose monitors and scales as a “standard of care” for patients who cannot afford them. Most medical care that the program arranges is covered by Medicare, and much of that is provided by LHS (at least for the Lovelace patients enrolled at the time of interview). The program has developed an extensive reference manual for case managers to identify community services for patients. The manual is based on materials developed for LHS’s ongoing case management program and handouts from local agencies. The most frequently used services, as reported by program staff at the time of our interview, were senior centers and senior fitness programs, transportation, and personal care/homemaking services. (Table 4 contains a detailed list of services to which the program refers patients.)

Communication. Case managers are responsible for communicating with the patient’s providers (particularly the primary care physician) about the care plan and patient progress toward its goals and for tracking unexpected hospitalizations and trips to the emergency room. They 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 testing results) is available when visits occur. They also follow up with patients to make sure that needed appointments are scheduled and care received. This is done primarily by encouraging patients to follow up with providers for needed services rather than making patients’ appointments for them. If patients do not make appointments, case managers keep encouraging them to do so and help them identify and eliminate barriers to following up on their care.

Other Case Manager Responsibilities. Case managers act as patient advocates and participate in hospital discharge planning. In particular, they help physicians recognize barriers patients face in understanding them and identify ways physicians might communicate more effectively with particular patients. Case managers also help patients access community services, which includes helping them cut through red tape and teaching them to act as their own advocates. Finally, case managers consult with and assist inpatient discharge planners when program patients are hospitalized and counsel patients on insurance coverage. Although case managers do not provide direct, hands-on care, they do interact with patients in many settings. These include the patient's home, assisted-living centers, group homes, intermediate or skilled nursing facilities (for short-term stays), acute-care facilities, and physicians' offices.

Early Implementation Data. According to program data generated for the evaluation, between November 2001 and January 2002, 17 of the 19 patients enrolled through the end of January had had at least one contact with a case manager (Table 5). Most of these contacts (more than 80 percent) were initiated by the case managers, rather than by patients. Most were telephone contacts (87 percent for patients with CHF and 79 percent for patients with diabetes), although a substantial portion of contacts were home visits (10 and 15 percent, respectively, for patients with CHF and diabetes), primarily as part of the program's initial patient assessment. More than 80 percent of the CHF patients enrolled had contacts involving disease-specific or self-care education or had routine monitoring contacts. Among patients with diabetes, more than 90 percent had contacts for such education, while roughly 70 percent had contacts to have tests, procedures, or medications explained to them or to have routine monitoring.

Involvement of Physicians. Program staff expect that physicians will play a key role primarily in two ways: (1) providing consent for their patients to enroll, and (2) taking the lead in guiding the patient's care plan for the program (Table 6). As noted earlier, the case managers communicate regularly with physicians about their patients by telephone and in person, including formally at the initial care planning meeting (the CaMP conference) and subsequently on an ad hoc basis to inform them about patient progress and problems. The program also plans to have

TABLE 6

PLANNED PHYSICIAN INVOLVEMENT

	Brief Description
Promotion of Program to Physicians	Case managers described program at meetings of the LHS cardiology and endocrinology departments, as well as to other large physician groups both within and outside of LHS.
Physicians as Referral Sources	Physicians are encouraged to refer patients, although review of health system records identifies most potential participants. Physicians must give consent for patients to participate.
Physician Role in Encouraging and Maintaining Patient Participation	Physician and patient both participate in initial care planning conference with case manager; this gives physician an opportunity to encourage patient to maintain participation.
Physician Role in Care Coordination	Physicians are the "drivers" of care; they participate in the care planning conference to plan care (that is, to decide what the patient's care will be and subsequently adjust care based on feedback from the case managers).

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

case managers participate in physician visits with patients twice a year and to provide physicians with reports on patients' clinical, functional, quality-of-life, and cost outcomes annually. At the time of our interview, physicians were not playing an active role in recruiting or referring patients to the program.

Data Systems. The program uses the IDX case management module and MedProfile medical profiling software as the basis of its data system (Table 7). As noted earlier, MedProfile includes data from assessments and care plans and ongoing patient notes, while IDX includes data on encounters, such as hospitalizations and emergency room and physician visits. The systems are not linked and share only basic patient data related to program application, but not more detailed clinical notes. The systems store data in narrative form, making it difficult to generate reports for monitoring patient outcomes or case manager activities.

The program maintains a separate Access database with patient-level data for the evaluator: dates of program enrollment and disenrollment and records of case management contacts and services the program pays for. The Access database is then exported to Excel before it goes to the evaluator. It appears that the program does not use this database for monitoring or any other operational purpose.

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 (like enrollment or patient education). In addition to paying staff salaries, LHS has been providing goods and services to the program, but it anticipates the program will reimburse LHS for them when it is fully operational. These goods and services include accounting, purchasing, human resources, office space, and use of the LHS case management protocols. According to the demonstration cost report through March 31, 2002, the program had spent just under $121,000 and had been reimbursed just over $10,000 in patient payments. (The $121,000 includes outlays for such

TABLE 7

PLANNED DATA SYSTEMS

Type of Data	Program Maintains Records?	Brief Description
Patient Level		
Enrollment/Disenrollment	Yes	In Access database prepared for evaluator
Assessment	Yes	In MedProfile in narrative form using a standardized documentation template
Care planning	Yes	In MedProfile in narrative form using a standardized documentation template
Monitoring	Yes	In MedProfile in narrative form
Non-Medicare services	Yes	In Access database prepared for evaluator if program pays for them; otherwise, in case manager notes
Adverse events	Yes	In IDX in narrative form using a standardized documentation template
Grievances	No	
Care Coordinator Level		
Time log/productivity	No	
Other	Yes	In Access database prepared for evaluator
Program Level		
Overall Costs	Yes	Medicare cost reports

SOURCE: Telephone interviews with Lovelace program staff conducted in February and March 2002 and review of program documents.

items as staff salaries, equipment, and rent. CMS did not provide the demonstration with start-up funding.)

The program does not use financial incentives to promote desired patient or program goals.

Early Implementation Experience

Operations. Health service delivery demonstration programs such as those in this evaluation typically encounter some barriers to early implementation. These barriers can 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 efficiently monitor patients and program activities. Problems in these areas in the early months of implementation could lead to changes to the original design for the program.

The biggest problem the LHS program encountered during its first three months was lower-than-anticipated enrollment. As described earlier, reasons for this included an underestimation of the proportion of Medicare beneficiaries with the target diagnoses served by LHS who were enrolled in managed care, an overestimation of the proportion of beneficiaries with poorly controlled diabetes, and an eligibility criterion concerning comorbidity that was too stringent. To increase enrollment, the staff has moved ahead, perhaps sooner than planned, to forge agreements with two other health systems to have them refer patients to the program. It has also asked CMS to allow the program to loosen its comorbidity criteria slightly. However, at the time of our interview, the program had not enrolled any patients from outside LHS and had not received permission from CMS to alter eligibility criteria.[2]

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[2] Following our interview, CMS granted the demonstration permission to change its program eligibility criteria.

Physicians sometimes feel case managers threaten their autonomy or find program procedures or paperwork burdensome. However, the LHS program had not experienced any opposition from physicians. The staff felt that LHS physicians had a positive attitude toward the demonstration program because of the success of its ongoing case management program. On the other hand, the program does not appear to view physicians as active sources of referral to the program, even with enrollment lower than expected. It is also unclear how receptive and cooperative physicians affiliated with health systems other than LHS, who may not be as familiar with case management, will be toward the program.

The staff reported no changes to its care coordination intervention per se (assessment, care planning, monitoring, patient education, coordinating with providers, and service arranging). The program did not have any difficulty hiring staff or obtaining space, and the staff was satisfied with the program data systems. Thus, the intervention is being implemented largely as planned.

Problems Related to Evaluation Activities. Demonstration programs also commonly encounter early problems related to their participation in an evaluation. These problems include inadvertent contamination of the control group and difficulty providing program data required for the evaluation. Program staff did report having difficulty providing data for the evaluation describing disenrollment, case manager contacts with patients, and services paid for by the program. This information is apparently not part of the main program data system, nor does the staff use these data for its own purposes. The data are generated in Access and exported to Excel before they are sent to the evaluator, a process that appears to require substantial manual intervention. Staff members also reported that they found CMS's financial reporting requirements and the NHIC software cumbersome and were frustrated when they tried to get answers to questions about the reports and programming problems.

Contamination of the control group or bias of program impacts can occur in several ways, most notably if control group members participate in other case management programs; have contact with program staff before or after random assignment that leads them to get treatment they might not otherwise have sought; or are treated differently by their physicians because of changes the physicians have made to practice for all CHF and diabetes patients. Two other case management programs operate in the area, and LHS itself operates an ongoing short-term case management program and telephone case management for patients with severe CHF which primarily serves LHS managed care enrollees. LHS program eligibility criteria exclude patients who participated in such programs in the previous year, although obviously they cannot prevent control group members from enrolling in other programs following random assignment.

The program does collect basic information about potential program patients during the home visit, in which the case manager explains the program prior to consent and random assignment. If the case manager identifies a serious health problem at this point, she faces a dilemma: Does she not inform a potential control group member of the problem, risking adverse health outcomes for the patient? Or does she inform the patient, causing the patient to seek treatment he or she might not have otherwise sought, thus contaminating the control group? To address this dilemma, the program has adopted a policy of informing the patient's physician of the problem, but not informing the patient directly, thus fulfilling a moral obligation to inform someone of a serious problem, but minimizing possible control group contamination. The program has no contact with control group members after random assignment (although at one point it had planned to interview control group members annually).

Finally, it will not be unusual for physicians who serve treatment group members to also treat control group members. Although the program sends the physician a letter with the outcome of random assignment for a particular patient, the program staff believes physicians are largely unaware of a patient being in the control group. Moreover, while the program is trying to make physicians more receptive to care coordination, it is not trying to make major changes to physician practice patterns since most physicians in the area are already using CHF and diabetes practice guidelines. However, the medical director noted that, in the future, physicians treating patients in the treatment group *might* change the way they treated all their patients with CHF or diabetes as a result of their familiarity with the program (although the program currently had too few patients to be able to tell whether this would happen).

In summary, there seems to be little potential for control group contamination as a result of the home visit case managers conduct prior to random assignment or as a result of changes physicians might make to the way they treat patients. We are somewhat more concerned about control group members participating in the LHS outpatient case management and CHF telemanagement programs. However, we will not know how severe this type of contamination is until survey (and possibly program) data are available to indicate what proportion of control group members participate in these programs. If significant numbers do participate, the evaluation will be comparing demonstration outcomes with the outcomes of a less intense case management intervention, rather than simply comparing it to usual Medicare-covered services without case management. As a result, demonstration impacts are likely to be smaller than if control group members had not had these options.

Summary and Discussion

The relatively recent history of care coordination and disease management yields a huge variety of programs, sponsored by all sorts of organizations, that provide interventions. These interventions 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 of avoidable service use and high costs. As one of its goals, the implementation analysis for the evaluation of the Medicare Care Coordination Demonstration would like to develop a parsimonious classification of these programs composed 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) who is implementing the program and the extent to which the program is integrated with other key providers; (2) for whom the program is implemented 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, providing or arranging for services, or improving communication and coordination. We use this classification to provide an overview of the LHS intervention, then discuss some areas of concern to the evaluation and early successes.

The LHS intervention emphasizes improving patient education and adherence and improving communication and coordination with physicians and other providers to reduce hospital use and costs. Program plans and early experience suggest that case managers will focus on these areas. However, they will also help arrange for Medicare-covered and non-Medicare-covered services, try to gain wider acceptance of case management among physicians, and work with physicians to improve their ability to communicate with individual patients, which could ultimately improve this aspect of physician practice. The intervention targets patients with CHF or diabetes who also have other serious illnesses, although its educational intervention appears to focus on CHF or diabetes, not on other conditions. The program uses standard case management procedures (assessment, care planning, monitoring) to address needs beyond those related to these two specific diseases, including conducting a comprehensive needs assessment that looks beyond these diseases and development of an extensive community resource handbook to help meet these needs. Thus, it seems likely that the LHS program will provide both a focused disease management intervention and a more global case management one.

It is too soon to assess the level of integration between the program and providers such as primary care physicians. Because program staff and physicians share the same employer and geographic proximity, the program has the structure needed to achieve a high level of integration for patients with providers in the LHS system. In addition, the program staff reports that LHS physicians are familiar with and support the concept of case management as a result of earlier LHS case management and disease management efforts. The program also engages physicians early in the case management process by including them in a formal care planning conference, meeting with physicians and patients together twice a year, and providing physicians with reports on patient outcomes once a year, as well as communicating on an ad hoc basis at other times. These factors create the potential for a highly integrated system of care that could greatly facilitate communication about program patients and thereby improve their care. It is too soon to tell, however, if this structure, combined with the efforts of case managers, will be sufficient to achieve better communication. Furthermore, this structure does not appear to exist for patients coming from outside LHS, where the case managers and physicians do not share an employer and physicians may not come from an organizational culture that strongly supports case management. While administrators from other health systems are willing to refer their patients to the demonstration program, it is yet unclear whether their physicians will consent readily to patient enrollment and whether their physicians and other staff members (such as hospital discharge planners) will be as receptive to and supportive of case management.

Based on the lessons of the care coordination literature and experience with evaluating other care coordination programs, the evaluation team has a few concerns about the LHS program, in addition to that already noted about potential control group contamination. These concerns are about problems that could affect program effectiveness. They are related to an apparent lack to date of physician referral of patients to the program, the shortage of community services in Albuquerque, the relatively modest prior experience providing case management of two case managers, and the suitability of program data systems to generate reports on patient outcomes.

Reaching enrollment targets is a concern to the evaluation because failure to reach these targets will decrease the ability of the evaluation to detect program effects. Thus, the evaluation is concerned about the program's lower-than-anticipated enrollment to date. Although the program has taken steps to increase enrollment by loosening eligibility criteria and by expanding the pool of eligibles by seeking referrals from other health systems, our experience suggests that active engagement of physicians as patient referral sources and as program boosters is necessary to generate adequate enrollment levels in most settings. Efforts to encourage physicians to refer patients or to personally promote the program to patients so far seem to have been modest at best. Program plans do allow physicians to refer patients. Because LHS physicians support case management and because case management programs need to engage patient physicians to succeed, it seems natural to ask LHS physicians to more actively encourage their own patients to participate. Such encouragement could be especially helpful in changing the minds of the substantial fraction of eligible patients who currently decline an introductory home visit from the program case managers. One approach to engaging physicians in this way would be for the program's medical director to act as an "opinion leader" to tell physicians about the benefit of the program to both patients and physicians.

The program has amassed an impressive list of community services to which it can refer patients who need support services. However, despite the best efforts of the program to develop a referral network, the shortage of support services in Albuquerque may limit access to some services. Personal care/homemaking services were among the services to which staff most frequently referred patients within the first three months of operations. A shortage of these services could harm patients with high levels of disability who need help with personal care. It could also have deleterious effects on patients with lower impairment levels who require help preparing meals or setting up medications, since this could reduce their ability to adhere to treatment recommendations. Unfortunately, it is probably too late for the program to include in its a design a way to increase the supply of these services to its patients (for example, by providing the service directly or by providing funds for patients to purchase them privately). On the other hand, the demonstration will test how well its care coordination model works in a service-poor environment.

The program has built a staff with impressive credentials. The director and program manager each have a number of years of case management experience, as does one of the three case managers. The other two case managers, while highly educated and experienced nurses, have limited case management experience. Their education and experience make it quite likely that they will become excellent case managers, but the evaluation team is concerned that this could take a number of months at least. The evaluation will need to be particularly attentive to the possibility that program effectiveness may increase over time for this program as case managers gain more experience with the intervention.

Finally, the ability to easily share data about patients among program staff and providers, to monitor the process of care, progress toward goals, and outcomes for patients, and to be proactive when data point to problems is critically important to program effectiveness. As noted earlier, staff reported that the program uses two main data systems (IDX and MedProfile) that have little interface and store information in narrative format and two other databases (Access and Excel) that are completely separate from the main systems to generate data for the evaluation that it does not itself use. Narrative format typically is ill suited to generating monitoring reports. The lack of interface among the systems is likely to make it difficult to develop comprehensive patient descriptions that could, for example, present reports of adverse events alongside clues to their causes from case managers' notes or care plans. Although in this first set of telephone interviews we did not collect detailed information about reports the program plans to generate to monitor patients and program activities, we are concerned that, without the assistance of information technology specialists, the program will have difficulty producing such reports, which will become all the more important as the program grows.

The Lovelace demonstration program 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 other than lower-than-anticipated enrollment, and thus has been implemented largely as planned. The program's medical director reported that case managers were doing a good job explaining the program to physicians and convincing them that it was a "win/win proposition" for them and their patients. The program director and manager reported more than 95 percent of patients meeting program eligibility criteria and participating in the introductory home visit by case managers decide to participate and subsequently are very satisfied with the services they have received. Thus, the Lovelace program has the potential to be very successful, if enough participants can be identified and impact estimates are not greatly reduced by control group participation in other case management programs.

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