

Medicaid Disease Management Programs

Findings from Three Leading US State Programs

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Abstract

Disease management emphasizes prevention of disease-related exacerbations and complications using evidence-based guidelines and patient empowerment tools. It can help manage and improve the health status of a defined patient population over the entire course of a disease.

More than 20 states in the US are developing and implementing Medicaid disease management programs. While most are in an early stage of development, a small number of states were pioneers in disease management and have already gained much insight. Among them, three states – Florida, Virginia, and West Virginia – provide some significant lessons.

In the late 1990s, Florida's Medicaid agency authorized development of disease management programs for patients with asthma, diabetes mellitus, HIV/AIDS, hemophilia, hypertension, cancer, end-stage renal disease, congestive heart failure, and sickle cell anemia. However, an analysis of results in 2001 showed significant problems (e.g. inefficiency, inconsistent care, a failure to address problems of patients with multiple diseases). These problems likely resulted from Florida trying to implement too many programs at once, using contracts with multiple vendors.

The Virginia Health Outcomes Project was shown to be effective in reducing use of emergency and urgent care services by Medicaid patients with asthma (average 42% reduction in the third to fifth quarters after introduction of the program) and increasing the appropriate use of asthma medications. It was also shown to be cost effective, with projected direct savings to Medicaid of \$US3–5 (2002 values) for every incremental dollar spent providing disease management support to physicians.

The goals of the West Virginia Health Initiatives Project were to deliver quality care, improve health status and quality of life, and ensure the efficient and appropriate utilization of resources for Medicaid patients with diabetes. The model program had two critical components: (i) adaptation of clinical treatment guidelines that are in the public domain to blend the highest quality of care with the best practical management strategies; and (ii) feedback reports that provide real-time data about patients' utilization of services to all providers involved in their care. Participating physicians and other providers received training and reimbursement for their efforts to comply with guidelines.

It would be a mistake to attempt to draw firm conclusions about disease management programs for low-income elderly or physically disabled patients in the US Medicaid program given their current stage of development. However, credit should be given to the states that are experimenting with cutting-edge programs to tackle not only their fiscal issues, but perhaps more importantly, the issue of ensuring high-quality, cost-effective healthcare for the patients they serve.

The purpose of this paper is to provide a review of the general approaches to disease management in Medicaid in the US and the value of disease management as a cost control option that can help states manage their primary care case management and fee-for-service patient populations. Nine early Medicaid disease management programs are identified, and the findings from three states are highlighted. Three generalized disease management models that states can use in fee-for-service Medicaid populations are discussed. The problems that states may encounter when implementing a disease management program are also discussed, so that states can be aware of potential problems as well as solutions. The paper concludes with growth projections for disease management in the states, the reasons for growth, and recommendations to healthcare administrators.

1. Concepts of Disease Management

The Centers for Medicare and Medicaid Services (CMS, formerly known as the Health Care Financing Administration), located in Baltimore, Maryland, USA, and the Disease Management Association of America, based in Waltham, Massachusetts, define disease management as a system of coordinated healthcare interventions and communications for populations with conditions in which patient self-care efforts are substantial.^[1,2] Disease management supports the clinician-patient relationship and plan of care, and emphasizes prevention of disease-related exacerbations and complications using evidence-based guidelines and various patient empowerment tools.^[2] Disease management also evaluates clinical, humanistic, and economic outcomes on an ongoing basis with the goal of improving overall health.^[2,3] Disease management programs can help manage and improve the health status of a defined patient population over the entire course of a disease.^[4] The more specific goals of disease management include:^[5]

- improving patient self-care through patient education, monitoring, and communication^[6]
- improving physician performance through feedback and/or reports on patient progress in compliance with protocols^[7]
- improving communication and coordination of services among patient, physician, disease management organization, and other providers^[8]
- improving access to services, including prevention services and prescription drugs as needed.^[9]

The following functions are the main components of disease management:^[2,3]

- identification of patient populations
- use of evidence-based practice guidelines
- support of adherence to evidence-based medical practice guidelines by providing practice guidelines to physicians and other providers, reporting on the patient's progress in compliance with protocols, and providing support services to assist the physician in monitoring the patient
- provision of services designed to enhance patient self-management and adherence to the patient's treatment plan
- routine reporting and feedback to the healthcare providers and to the patient
- communication and collaboration among providers, and between the patient and the patient's providers
- collection and analysis of process and outcome measures, along with a system to make necessary changes based on the findings of the process and outcome measures.

Disease management programs are used widely for many chronic diseases, but the most common diseases include asthma, congestive heart failure, HIV/AIDS, diabetes mellitus, and hypertension. Considerations in selecting a disease for disease management often include:^[2,3]

- availability of treatment guidelines with consensus about what constitutes appropriate and effective care
- presence of generally recognized problems in therapy that are well documented in the medical literature
- large practice variation and a range of drug treatment modalities
- large number of patients with the disease whose therapy could be improved
- preventable acute events that often are associated with the chronic disease (e.g. emergency department or urgent care visits)
- outcomes that can be defined and measured in standardized and objective ways and that can be modified by application of appropriate therapy (e.g. decreased number of emergency department visits or hospitalizations)
- the potential for costs savings within a short period (e.g. less than 3 years).

Two major US not-for-profit organizations whose mission is to promote quality healthcare have recognized the contribution of disease management activities to quality healthcare by establishing disease management certification or accreditation programs. The Joint Commission on Accreditation of Healthcare Organiza-

tions (JCAHO, central office based in Oakbrook Terrace, Illinois), an independent organization and the nation's predominant standard-setting and accrediting body in healthcare, offers disease-specific care program certification. Program certification is based on an assessment of compliance with consensus-based national standards, effective use of established clinical practice guidelines to manage and optimize care, and activities for performance measurement and improvement.^[10] The National Committee for Quality Assurance (NCQA) in Washington, DC, also has begun accrediting disease management programs on the basis of standards that are patient oriented, practitioner oriented, or both. It offers organizations certification for program design (i.e. content development), systems (i.e. clinical information and other support systems), and patient contact (e.g. nurse call centers and other organizations without comprehensive activities).^[11]

Disease management programs have been adopted by managed care plans and states because of a general movement toward preventive health, the reduced cost of obtaining data to implement disease management interventions, and a desire to improve the coordination of care that has become more complex to deliver.^[12,13]

Initial efforts of disease management included simple tools such as reminders to patients for diagnostic and monitoring tests.^[14] Reminders also helped patients improve adherence to complicated medication regimens. Then, customized health education materials and self-care manuals were added to programs to help patients better understand their disease and promote empowerment. Clinical protocols for disease-specific care were developed and implemented, followed by extensive case management interventions for high-cost illnesses to help reduce or limit future costs. Ultimately, these types of tools were refined and packaged together as the early disease management programs.^[15-17] Today, what constitutes a disease management program varies widely, and how each disease is managed needs to be tailored for the provider and patient. For example, for the treatment of asthma, it would be important to ensure that both the patient and healthcare provider receive appropriate education about the use of inhalers and nebulizers.^[18] In addition, the patient would receive custom-

ized education about the disease, whereas the healthcare provider would learn more about the appropriate outcome measures that need to be addressed. For the treatment of diabetes, a nutritionist or a certified diabetes educator (CDE) should be involved as part of the disease management team to help the patient learn more about proper nutrition and regulating his or her blood glucose levels and insulin requirements.^[19]

Table I describes common types of disease management programs and the diseases for which they are generally used. Such programs are now widely used in managed care and other healthcare settings and have come to the attention of Medicare and Medicaid officials because of their potential to improve quality of care and reduce costs. According to published research evaluations in scientific journals, disease management programs can reduce costs in a Medicaid population by as much as 33% (cost savings were due to reductions in emergency room visits and urgent care visits), with measured improvement in health outcomes.^[5,20] Many studies^[5,8] have demonstrated great benefits from disease management programs; however, other studies may suffer from regression to the mean¹ and may overstate the impact.

There are a myriad of papers that cite the value of implementing disease management programs and the potential they have to reduce costs in other healthcare settings.^[6,8,17] One early example that laid the groundwork for other disease management programs was a program developed by a managed care organization and a pharmaceutical company.^[21] The program built protocols around eight infectious diseases and developed treatment algorithms focused on patient outcomes. After the infrastructure of the program was developed, merged medical and pharmacy claims databases were used to identify changes in antibacterial prescribing and to determine cost savings.

The prospect of a disease management intervention that can lower cost and improve quality is more important than ever before. Medicaid programs have seen their expenditures rise approximately 28% since 1995, with an 11% cost increase in 2001 alone.^[22] In the current economic climate (created in part by the declining economy), many states anticipate that their Medicaid enrollment will rise and compete with demands for increased funding for

1 Regression to the mean refers to the tendency for a group of patients to include some patients who are sick and get well and other patients who are well and get sick. A disease management program that enrolls a certain number of individuals (panel) who are identified because they had an adverse event should find that some of them will improve, regardless of whether a disease management intervention was in place. Similarly, a disease management program will not enroll other individuals who did not have an adverse event at the beginning of a disease management intervention, and the health of some of these individuals will decline. Given enough time, studies show that one can almost never rule out regression to the mean among a high-risk and low-risk panel of Medicaid patients selected for study.

Table I. Common types of disease management programs in the US

Type of disease management program	Description	Possible candidate diseases
Pay for performance	Pay-for-performance approaches establish new rules for scope of practice or referrals and involve nontraditional providers in the care of patients with specific diseases. The nontraditional providers are paid a special fee contingent upon improving health outcomes or lowering costs. As long as freedom-of-choice provisions are not affected, pay-for-performance programs can overlay existing primary care case management programs and do not ordinarily require Medicaid waivers	Alzheimer's disease, arthritis, coronary artery disease, HIV/AIDS, hyperlipidemia, schizophrenia, otitis media
Centers of excellence	Centers of excellence focus on particular disease episodes for high-cost, high-volume diseases and select a network of hospitals, physicians, and other providers who are already organized to receive a prospective, bundled payment per episode of care. The Medicaid program decides the number of approved centers of excellence in a community or statewide. Ordinarily the criteria for a center-of-excellence designation depend on written documentation of the quality and outcomes of care for a selected disease. After meeting quality criteria, a single, bundled, prospective payment for all covered services (hospital, physician, and other health professionals) is made to a single entity. It is the responsibility of the single entity to pay the participating providers. The center of excellence is expected to track patient outcomes and report improvements in health outcomes. Medicaid waivers are required if patients are locked into care from a center of excellence	Cystic fibrosis, epilepsy, hemophilia, HIV/AIDS, multiple sclerosis, sickle cell anemia, schizophrenia
Health outcomes partnership approach	The Medicaid health outcomes partnership approach is ordinarily applied to an existing fee-for-service primary care case management program. Medicaid programs focus on high-priority diseases, offering a combination of claims-based feedback reports to providers, special physician and other professional education programs, approved medical treatment guidelines, and other support systems to help existing Medicaid providers better serve the patients assigned to them. Medicaid waivers of federal provisions are not required	Asthma, chronic obstructive pulmonary disease, depression, diabetes mellitus, gastroesophageal reflux disease, hypertension, congestive heart failure, comorbid combinations of two or more of the targeted diseases

emergency and antiterrorism preparedness. Consequently, the need to explore disease management and other potential cost-saving programs is more pronounced now than ever.

2. Growth of Disease Management Programs in US States

In addition to Medicaid disease management programs, the CMS has solicited proposals and recently awarded disease management contracts for Medicare beneficiaries with advanced-stage congestive heart failure, diabetes, or coronary artery disease.^[23] Congressional Budget Office Director, Dan Crippen, proposed that Medicare establish a disease management program that could “obviate the need for a universal Medicare pharmaceutical benefit.”^[24] CMS Chief Operating Officer and Deputy Administrator Ruben King-Shaw told members of the US House of Representatives’ Ways and Means Subcommittee on Health that disease management programs could improve the quality of care provided to seniors enrolled in fee-for-service Medicare and help strengthen

the long-term financial solvency of the program.^[25] Faced with projected spending increases ranging from 13.6–16%, employers are considering disease management programs among a number of options to address rising costs.^[26] A study by Hewitt Associates, a human resources management consulting company located in Lincolnshire, Illinois, revealed that 92% of 1020 major US employers surveyed offered some kind of health promotion program in 2001, up from 88% in 1995.^[27] Approximately 71% of employers in the study reported that they were considering or already had in place some type of disease management program to help reduce healthcare costs and keep workers healthy and productive. Most employers were looking to their health plans for assistance in this area.^[27] Disease management companies’ revenue was expected to reach \$US630 million in 2002, reflecting a 30% increase over 2001. This revenue increase was part of expected overall growth, making disease management a \$US10–15 billion industry.^[28,29]

Disease management program information reported in the literature shows that there are net savings over time. For example, the US National Jewish Center for Immunology and Respiratory

Medicine noted that its asthma disease management program resulted in an 83% reduction in hospitalizations, 82% fewer hospital days, and 45% fewer emergency department visits.^[30] The *New England Journal of Medicine* reported a 76% reduction in risk of diabetes-related retinopathy with a diabetes disease management program that was part of the Diabetes Control and Complications Trial.^[31] Cardiac Solutions, proprietary disease management company based in Buffalo Grove, Illinois, USA, has shown a 70% reduction in readmission rates of patients with congestive heart failure.^[32] The Commonwealth of Virginia in the US implemented a disease management program for asthma, and researchers found an average 42% reduction in the expected rate of asthma emergency claims.^[5]

The Tufts Center for the Study of Drug Development, in Boston, Massachusetts, recently reported that 42% of disease managers surveyed claimed that increased spending on pharmaceuticals leads to a net cost savings across all healthcare cost components.^[4] An additional 37% of disease managers said that increased drug spending has no net effect on total healthcare spending. Separately, 75% of survey participants commented that increased drug use increases outpatient and physician visits while lowering inpatient costs. The survey included disease managers at 19 of 25 leading disease management organizations in the US, representing 55% of the approximately 1.5 million individuals covered by disease management programs.^[33]

Despite the current popularity of disease management, the science of reporting its outcomes and accurately determining the true value of the outcomes is still in its infancy. As the outcomes of additional programs are evaluated, researchers may find that some programs do not show savings over time. Health care administrators need to evaluate the outcomes that are reported in the literature cautiously to determine what the true impact may be for their state or healthcare plan.

3. Medicaid Implementation of Disease Management Programs

Given the positive outcomes reported by the private sector with disease management programs in the early 1990s, Medicaid officials have been implementing similar programs in the hope they provide similar results for the Medicaid population, which is poorer, has less education, and is more likely to be physically disabled than the general population.^[34] The Virginia Health Outcomes Project (VHOP) was the first disease management effort in

fee-for-service Medicaid in the US, with a goal to develop a model program to enhance the quality of care and reduce the overall cost of care for patients in Virginia's primary care case management program (Medallion I).^[35] VHOP attempted to help physicians and patients avoid less effective medical treatments and more expensive settings for asthma, such as inpatient hospital services and emergency department visits.

Based in part on the positive results and success of VHOP, other states began to slowly adopt disease management programs. Florida implemented an extensive statewide disease management effort in 1998 with programs addressing nine diseases; this effort was implemented in two separate phases. A pilot program was undertaken in 2000 and 2001 in West Virginia to manage patients with diabetes. In addition, many other states are considering disease management implementation. More than 20 states are now engaged in developing and implementing Medicaid disease management programs for their primary care case management and fee-for-service populations.^[36,37] These programs vary widely in scope, provider involvement, and impact. Most of these programs are in an early stage of development, and some states continue to assess their data and resources to determine the best program to implement. However, a small number of states were pioneers in disease management and began implementing programs in the 1990s, and have already gained much insight.

4. Medicaid Disease Management Programs for Various US States

This paper reviews the major disease management efforts in nine states: Florida, Maryland, Mississippi, North Carolina, Texas, Utah, Virginia, Washington, and West Virginia (table II). Virginia, Florida and West Virginia provide some significant lessons for other states about how to implement successful disease management programs.

Each state is at a different point in its disease management implementation, and it is too early to know what long-term impact these programs will have. However, many of these states show short-term net savings and better management and outcomes in their patient population.

Although disease management programs vary by design, they usually include some combination of patient self-care education, counseling, call centers with a patient support system managed by nurses, appointment and medication reminder systems, programs to help educate providers about evidence-based practices, and

Table II. Examples of state Medicaid disease management programs in the US (reproduced from Wheatley,^[38] with permission)

State	Disease(s)	Dates	Findings
Florida	Asthma, HIV/AIDS, CHF, hemophilia, ESRD, diabetes mellitus, hypertension, pre-diabetes, depression	1998–present	Programs generally reduced inpatient hospital costs but often increased other costs, especially pharmacy spending Net reductions in spending were generally offset by DM program costs Results varied considerably depending on which baseline measure was used Programs produced improvements in care quality
Maryland	Diabetes	1991–1997	Average annual spending decreased by \$US1738 for aid to families with dependent children recipients but increased by \$US1147 for those eligible for supplemental security income ER visits declined; physician visits increased (for both) Program privatized to Medicaid managed care organizations in 1997
Mississippi	Asthma, diabetes, hyperlipidemia, coagulation disorders	1998–present	Preliminary findings (very small asthma sample) indicate a 96% reduction in hospital costs and a 58% reduction in ER costs Pharmaceutical and medical costs were not measured HbA _{1c} values in patients with diabetes decreased significantly Immediate savings were harder to obtain for other two diseases
North Carolina	Asthma, diabetes	1998–present	67% of pediatric patients with asthma received asthma control medication in Access II/III programs, versus 53% in HMOs
Texas	Diabetes	1999–2001	Cost effectiveness was not determined due to low participation Surveys showed measurable improvements in enrollee self-management skills and lifestyle
Utah	Hemophilia	1998–present	Blood factor utilization decreased by 134 000 units (first year) Expenditures increased by \$US140 000 during that time With case management, ER visits now 'minimal'
Virginia (1)	Asthma	1995–1997	There was a 41% reduction in ER visits for patients with DM-trained physicians (vs an 18% reduction for other physicians) Dispensing of recommended drugs increased by as much as 25% There was an estimated \$US3 in savings per \$US1 spent (net \$US659 in savings per physician trained vs \$US235 in training costs)
Virginia (2)	Diabetes, CHF/hypertension, asthma/COPD, depression, GERD	1997–2002	Vendor estimated \$US700 000 in hospital savings and a sizable reduction in 'hits' (indicating problems in patient care) Overall savings were limited, according to the state State will expand the program by adding new diseases Request for proposal released in summer 2002
West Virginia	Diabetes	2000–2001	Participation in pilot was very limited The state is seeking to extend statewide program with additional diseases in 2003, but the budget is limited
Washington	Diabetes	1999–present	Patients experienced improved blood glucose and blood pressure control The state is now contracting with two vendors (McKesson and Renaissance) to target DM services to Medicaid recipients with asthma, diabetes, CHF, and renal disease The state anticipated net savings of more than \$US600 000 (2000 values) statewide

CHF = congestive heart failure; **COPD** = chronic obstructive pulmonary disease; **DM** = disease management; **ER** = emergency room; **ESRD** = end-stage renal disease; **GERD** = gastroesophageal reflux disease; **HbA_{1c}** = glycosylated hemoglobin; **HMO** = health maintenance organization.

feedback systems to alert healthcare providers to problems that could result in serious adverse events or an emergency room visit.^[4,5]

States have choices when implementing a disease management program. A state can (i) purchase a disease management program from a vendor; (ii) build and tailor its own disease management

program; or (iii) work with pharmaceutical companies to develop net savings strategies, which often include disease management initiatives. Some states use a combination of the approaches, and vary the model depending on the patient population and disease (e.g. for a more complicated disease with which the state may not have a lot of experience, the state may elect to use a vendor; but for

a disease with which it has a lot of expertise, the state may choose to build a program).

4.1 Purchasing a Disease Management Program

Purchasing a turn-key disease management program allows a state to contract with companies that specialize in developing a program instead of building their own, which can be costly and consume a great deal of time. The purchasing option can save time, which allows the state to begin saving money more quickly as well as allowing it to select multiple vendors depending on its needs. States can choose vendors that may specialize in implementing a disease management program for certain diseases. States also can implement a disease management program with little funding since vendors are willing to put 100% of their fees at risk. Furthermore, states can also ask vendors to absorb start-up costs of a program over the course of implementing the program.

However, states choosing the purchase option face the challenge of finding a vendor with the appropriate blend of services. Moreover, contracting can be time consuming, and state rules governing how contracts can be awarded vary widely. Once a contract is awarded, someone needs to ensure that the vendor is meeting expectations and goals.

4.2 Building a Disease Management Program

Building a disease management program can be a more labor-intensive process than purchasing a disease management program; however, this option allows states to partner with their providers to improve and develop relationships. Building a program also allows states to create programs that meet the specific and unique needs of the state, instead of inserting an existing disease management program that may not be ideal for a population. To ensure adherence to evidence-based guidelines, some states train their providers in specific strategies to improve health outcomes. Other states make a more comprehensive effort to restructure the Medicaid delivery structure and establish partnerships among the health department, social services, Medicaid, and providers.

The build option requires that states hire or assign program administrators and healthcare personnel to design programs. Data experts and technology personnel are needed to design and manage measurement systems, and information technology systems are needed to measure patient progress. Some states are not able to afford to hire additional personnel or contract out these services,

so these extra tasks are assigned to already-existing personnel who may not be trained to manage the disease management process.

4.3 Working with Pharmaceutical Companies

Pharmaceutical companies are willing to develop or fund cost-saving strategies that include disease management programs. Pharmaceutical companies prefer to improve health through the appropriate use of pharmaceuticals, which can cause an initial increase in cost for the state in pharmaceutical spending.

5. Leading US State Disease Management Program Experiences

The following section outlines three US state disease management programs, discusses each state's experience, and provides a general summary of findings if available. Complete program study results are reported where they are available.

5.1 The Florida Experience

In looking for ways to adopt new quality improvement approaches to care while achieving better cost efficiencies, Florida Medicaid officials thought the use of disease management programs for selected diseases might provide the solution. They retained a healthcare consulting firm to invite all interested parties from across the nation to a series of open meetings to share ideas about disease management that might apply to Florida Medicaid. These ideas were evaluated in light of an analysis of Florida Medicaid claims data for selected high-priority diseases. In 1997, Florida's Medicaid agency was authorized by the state legislature to develop a disease management program for patients with asthma, diabetes, HIV/AIDS, and hemophilia (table III).^[39] Legislation passed in 1998 expanded the initiative to include patients with hypertension, cancer, end-stage renal disease, congestive heart failure, and sickle cell anemia. Competitive bids were invited from vendors willing to accept performance-based contracts to improve outcomes and lower costs.

5.1.1 Florida's Program Structure and Timeline

Florida uses a disease management approach that aggressively applies state-of-the-art techniques to outcomes improvement through a group of vendors with specialized expertise in the diseases they are responsible for managing (table IV). Various approaches to disease management are used by these vendors,

Table III. The legislative direction of Florida's disease management initiative^[30]

Fiscal year	Legislative authorization related to disease management	Anticipated savings (\$US, 1997 values)
1997–1998	Implement programs for asthma, diabetes mellitus, HIV/AIDS, and hemophilia	4.2 million
1998–1999	Continue programs for initial disease states	24.7 million
	Implement programs for congestive heart failure, end-stage renal disease, hypertension, cancer, and sickle cell anemia	14.7 million
2000–2001	Improve program efficiencies	23.0 million
	Expand initiative to include other diseases and population management	46.1 million
2001–2002	Allow value-added programs, including disease management, in lieu of supplemental rebates	Part of 227 million prescribed drug budget reduction

including case management, physician education on best-practice guidelines and community outreach efforts.

The state Medicaid agency coordinates outreach efforts with physicians and other providers. The disease management organizations receive a list of physicians who treat patients with the selected diseases. Physicians with eligible patients, who are identified using claims data, are contacted and their help is enlisted in encouraging eligible patients to voluntarily enroll in the disease management program. Program materials are written at or near the fourth grade (9 or 10 years of age) reading level and in several different languages (e.g. English, Spanish, Haitian-Creole).

5.1.2 Florida's Vendor Selection Process and Structure of Vendor Relationships

Table V lists the vendors selected and the diseases they were contracted to manage. Original vendors were selected following

negotiations with the state, taking into consideration specific criteria (e.g. use of a multipronged program approach with patient and provider interaction), administrative fees, program infrastructure, ability to provide in-kind resources, and staffing. A cost-saving methodology was developed through the review and procurement stages of the bid process and varies by vendor.

Disease management contracts with pharmaceutical manufacturers, including Bristol-Myers Squibb and Pfizer, were developed as an alternative to providing the price reductions on products sought by Governor John Ellis 'Jeb' Bush and the legislature in exchange for inclusion in the Medicaid formulary. Pfizer provided the state with funds to hire 60 case workers to manage a target patient population of 55 000 of the 1.5 million Florida Medicaid patients with asthma, congestive heart failure, diabetes, or high blood pressure in Broward County. Of this group, 12 000 patients

Table IV. The Florida disease management timeline^[39-41]

March 1997	Medicaid Reform Task Force formed
May 1997	Legislative authorization obtained for HIV/AIDS, asthma, diabetes mellitus, and hemophilia
September 1997	Contract with the Lewin Group, a healthcare consulting firm
May 1998	Legislative authorization obtained for ESRD and CHF
June 1998	Asthma agreement established
August 1998	Invitation to negotiate for HIV/AIDS, diabetes, and hemophilia completed
November 1998	Invitation to negotiate for ESRD and CHF completed
April 1999	Diabetes contract established
June 1999	HIV/AIDS (excluding Dade and Broward counties) and hemophilia contracts established
May 2000	Legislative authority obtained to expand program to other diseases as necessary
August 2000	COPD contract established
September 2000	ESRD and CHF contracts established
May 2001	Legislative authorization obtained for value-added programs
June 2001	Pfizer agreement established
September 2001	Bristol-Myers Squibb agreement established
December 2001	University of Florida Center for Autoimmune Disorders agreement established

CHF = congestive heart failure; **COPD** = chronic obstructive pulmonary disease; **ESRD** = end-stage renal disease.

Table V. Structure of disease management vendor relationships in Florida^[39-41]

Contractor	Disease	Area of coverage
Pfizer Health Solutions	Diabetes mellitus, asthma, hypertension	Statewide
Pfizer Health Solutions	CHF	Areas 8-11
Bristol-Myers Squibb	Diabetes; mental illness; breast, cervical, and lung cancers; HIV/AIDS	Proposed counties: Broward, Dade, Lee, Manatee, Pasco
LifeMasters Supported Self Care, Inc.	CHF	Areas 1-7
RMS Disease Management, Inc.	ESRD; chronic renal insufficiency	Statewide
AIDS Healthcare Foundation	HIV/AIDS	Statewide (except Dade and Broward counties)
Caremark, Inc.	Hemophilia	Areas 1-6
University of Florida Center for Autoimmune Disorders	Autoimmune disorders	Statewide
Coordinated Care Solutions	Diabetes	Statewide
Cybercare	COPD	Contract ended December 2001
Accordant Health Services	Hemophilia	Areas 7-11

CHF = congestive heart failure; **COPD** = chronic obstructive pulmonary disease; **ESRD** = end-stage renal disease.

with the most severe illness were assigned case workers for help with lifestyle behavior changes, medication management, and follow-up clinic visits. Pfizer has guaranteed \$US33 million (2000 values) in savings to Florida's Medicaid program over 2 years.^[40]

Bristol-Myers Squibb reached an agreement with Florida in September 2001 to develop community-based health management and disease management programs targeted to breast, cervical, and lung cancers, depression, and HIV/AIDS, guaranteeing \$US16.3 million (2001 values) in savings to Florida's Medicaid program over 2 years.^[42]

5.1.3 Results to Date and Future Steps with the Program

At the start of the disease management programs, Florida state officials projected a \$US112.7 million (2001 values) cost savings from the disease management initiatives. According to a May 2001 Florida Office of Program Policy and Analysis and Government Accountability (OPPAGA) report, the initiative had cost Florida \$US24.1 million (2001 values) by February 2001 (this

figure included money that had not been saved by February 2001).^[43]

According to OPPAGA, the state Medicaid agency failed to address significant problems that impeded the initiative. The report stated that the initiative design did not adequately address problems of the chronically ill (who often experience multiple diseases), was inefficient due to the multiple vendors involved, and fostered inconsistencies in the care provided and the administrative management. As a result, OPPAGA recommended that the state legislature direct the agency to:

- redesign the initiative from a disease-specific to a patient-focused or holistic approach and contract with fewer vendors
- establish a defensible methodology to determine cost savings and ensure that overpayments were recovered
- report on initiative progress in meeting performance expectations, including health outcomes and cost savings
- require OPPAGA to complete a second review of the initiative by December 31, 2002, which reports on whether legislative expectations regarding cost savings and program outcomes are met.

Florida finalized its contract for disease management programs with pharmaceutical manufacturers in 2001. As a result, the state Medicaid agency revised estimates of cost savings to about \$US42-49 million [table VI].^[41] It is too early in the progression

Table VI. Florida's projected cost savings (\$US, 1997 values) from disease management^a

Disease	No. of currently eligible patients ^b	Cost per member per month ^c	Expenditures	Projected savings
Asthma	32 520	258	86 443 416	5 618 822
Diabetes mellitus	15 291	780	120 618 420	7 840 197
HIV/AIDS	6694	2365	162 208 650	10 608 562
Hemophilia	129	5400	7 182 000	466 830
ESRD	3693	1700	64 722 400	4 206 956
CHF	5027	1117	57 888 525	3 762 754
Hypertension	30 000	540	160 920 000	10 459 800
Total	93 354	697	660 983 411	42 963 922

- a Disease management guarantee of savings was 6.5% annually.
- b Includes patient recipients served through value-added programs.
- c Average per member per month spending for Medicaid-eligible patients with conditions.

CHF = congestive heart failure; **ESRD** = end-stage renal disease.

of Florida's disease management program to draw conclusions about its success in improving quality of care and providing cost savings. The state's next steps with the program include:

- refining the method of savings reconciliation
- using a third party for savings reconciliation
- using value-added programs financed by drug manufacturers
- integrating disease management and service delivery
- introducing program innovations
- increasing provider buy in
- strengthening program evaluations—health outcomes and financial impacts.^[39]

Observers of the Florida experience believe that its rough start and subsequent redesign were due to attempts to implement too many programs for too many diseases simultaneously, using multiple vendors. Even detractors acknowledge that the state's efforts were well intentioned. They caution others to move forward one step at a time and appreciate that, in the long run, programs will have to become more patient-centered and accommodate comorbid conditions.^[44]

5.2 The Virginia Health Outcomes Project

The VHOP^[5] was the first disease management effort in fee-for-service Medicaid. It began in 1993 with a proposal by the Virginia Department of Medical Assistance, also commonly known as Virginia Medicaid, and the National Pharmaceutical Council (NPC, based in Reston, Virginia). Virginia used a combination effort: it built its own disease management program while partnering with the pharmaceutical industry. Leaders at Virginia Medicaid and NPC were looking for an alternative to prior drug authorization. The Virginia Medicaid agency also wanted an alternative that would improve drug dispensing and effectiveness. It sought to create a partnership between Medicaid and its professional provider community. Virginia Commonwealth University was recruited to start the program. Eventually the Virginia General Assembly, through budget language, requested a program that would involve physicians and pharmacists.

5.2.1 Virginia's Program Goals

The program goals of VHOP were to:

- improve patient health outcomes by improving the general and disease-specific communication skills of physicians and other healthcare providers
- increase physicians' use of established practice guidelines and appropriate pharmacotherapy for specific disease states.

5.2.2 Virginia's Program Structure

VHOP had three main components: the disease selection process, the intervention, and the research to determine the program's effectiveness. A key element of VHOP was to develop a systematic process for identifying the most appropriate diseases for the program using Virginia Medicaid data (claims records, enrollment files, and provider records) and clinical knowledge of disease patterns and treatment. Expert opinions from clinicians providing services were used to assess community perceptions of problems, practical barriers, and potential for improvement. Final disease selection was made by a group representing all parties working on VHOP implementation based on attributes of the disease, the study group, and the population.

5.2.3 Virginia's Intervention Model and Educational Messages

The VHOP model was designed around the 'HUB' and 'SPOKE' concept; the HUB consisted of the basic communication skills training portion of the program, and the SPOKE consisted of the clinical treatment plan for a specific disease. The disease management intervention involved (i) training physicians in the appropriate use of state-of-the-art asthma therapy; and (ii) training those physicians and other healthcare providers in proven communication methods for teaching patients how to effectively control their asthma. Approximately 33% (65 of 200) of the physicians treating asthma in an area designated as the intervention community (where 85% of all asthma claims were generated) volunteered to receive training on disease management and communication skills.

5.2.4 Virginia's Research and Outcomes Measurement

To assess program effectiveness, the program's research component measured patient health status and medical care utilization by using Medicaid payment data. In the pilot part of the program, the measurement tools used were the patients' general health status, patients' asthma-specific health status, inpatient hospital stays, and emergency and urgent care visits. Measurements were made at baseline in both intervention and control communities. Health status was measured using a household survey with standardized, validated questions administered via telephone before and 6 months after the intervention.^[45] The use of Medicaid claims data to measure outcomes had several advantages: there were no extra costs for the data collection, and the data were directly relevant to policy decisions.

5.2.5 Summary of Results from the Virginia Health Outcomes Project

VHOP showed that improving the management of asthma reduced use of emergency and urgent care services by Medicaid patients and increased the appropriate use of asthma medications. The results from the program are among the first to demonstrate that disease management benefits Medicaid patients, many of whom have chronic illnesses with the potential to respond well to disease management interventions. Researchers found an average 42% reduction in the expected rate of asthma emergency and urgent care claims (compared with the same quarter a year earlier) in the third to fifth quarters after the introduction of the disease management pilot program. The rate for the third quarter alone was 47% lower than expected.

There were 2145 patients with moderate or severe asthma in intervention communities and 4182 patients in comparison communities on average during the 2-year pilot study. Although only 33% of the eligible physicians participated in the training, community-wide effects on emergency visits and asthma drug use were observed. Emergency visits declined 6% relative to the comparison community among patients with moderate to severe asthma, while the dispensing of some reliever drugs recommended for asthma increased 25% relative to the comparison community.

A cost-effectiveness analysis projected direct savings to Medicaid of \$US3–5 (2002 values) for every incremental dollar spent providing disease management support to physicians, based on \$US839 saved per trained physician (not including drug costs) and \$US235 spent for training costs. Asthma drug costs rose \$US180 per trained physician in the intervention area. If VHOP had been implemented statewide for all primary care case management physicians during the five post-intervention quarters, it could have saved as much as \$US1.2 million in spending for emergency claims.

The VHOP approach engenders a supportive, consistent relationship between patient and provider that promotes patient self-care and has long-term benefits. The results of VHOP demonstrated the potential that this type of program has for improving healthcare provided through primary care case management networks and for managing costs of Medicaid programs in other states.

5.3 The West Virginia Experience

In 1999, the West Virginia Department of Health and Human Services' Bureaus for Medical Services and Public Health joined

with NPC in a public-private partnership to support a disease management program. The goals of the program were to deliver quality care, improve health status and quality of life, and ensure the efficient and appropriate utilization of resources for patients with diabetes within the Medicaid Physician Assured Access System (PAAS) program. PAAS is a primary care case management model program developed by the two bureaus in 1991 to improve access to quality healthcare while controlling rising Medicaid costs; 15.8% of the state's Medicaid patients were enrolled (70 000 individual recipients) as of September 2000.

5.3.1 West Virginia's Disease Management Program Summary

A pilot program, known as the West Virginia Health Initiatives Project (WVHIP), focused on eight counties (Morgan, Berkeley, Jefferson, Mineral, Hampshire, Grant, Hardy and Pendleton) known as the Eastern Panhandle and Potomac Highlands areas of West Virginia. These counties were selected because they are geographically contiguous and are part of the West Virginia Rural Health Education Partnership, a program funded by the state legislature to train health professional students in rural areas. In the spring of 1999, WVHIP:

- identified a stakeholders group representative of a broad spectrum of healthcare professionals and others interested in expanding their understanding of disease management
- formed an advisory group composed of a subset of members from the stakeholders group to assist with policy decisions and to make recommendations for changes within the provider practice community
- convened a diabetes work group (WVHIP internal work group) to study the burden of diabetes; develop or recommend clinical practice guidelines, patient case management, and intervention protocols; design provider education and training materials; and monitor patient participation. This group is composed of staff of the West Virginia Department of Health and Human Resources, the Bureau for Medical Services, the Bureau for Public Health, the West Virginia University Office of Health Services Research, and NPC.

A strategic research project was conducted in 2000 to aid in the development of WVHIP, with two focus group sessions to determine the medical community's perceptions regarding the management of patients with diabetes.

Diabetes was selected because it is a common, serious, chronic disease in West Virginia. Medicaid claims data from 1996 were used to identify 6482 recipients with diabetes. The average annual

medical care cost was \$US25 358 per diabetic recipient, a total of over \$US164.3 million, compared with the average annual cost per nondiabetic recipient of \$US3161 (1996 values). Claims data further revealed that the Medicaid population has diagnostic examinations and receives medical care less frequently than is recommended by the American Diabetes Association (ADA).^[46] In 1996, only 9.4% of diabetic Medicaid recipients in West Virginia had an eye examination, despite an ADA recommendation for annual eye exams for patients with diabetes. Only 34.1% had any type of blood test for short- or long-term glucose control (e.g. fasting blood glucose) in 1996 despite ADA standards calling for measurement of glycosylated hemoglobin (HbA_{1c}) – a measure of long-term blood glucose control – two to four times per year.

5.3.2 West Virginia Health Initiatives Project (WVHIP) Goals

The WVHIP mission is to implement a disease management program that integrates various healthcare services for Medicaid patients who have chronic illness or disease to produce the best treatment outcomes in a cost-effective manner by demonstrating quantifiable and measurable results. The WVHIP goals are to:

- identify the best scientific evidence regarding diagnostic and therapeutic procedures in order to achieve optimal outcomes
- identify the population of patients for whom the intervention works best
- assemble multidisciplinary teams, including but not limited to physicians, nurses, pharmacists, health educators, and disease specialists
- enhance communication between practitioners and patients
- promote feedback necessary for behavior modification and reinforce behaviors learned by patients and practitioners
- measure the effectiveness of interventions in terms of quality, outcomes, and utilization of resources.

5.3.3 West Virginia's Program Structure

The West Virginia Disease Management Model embraces two critical components:

- the adaptation of clinical treatment guidelines that are in the public domain to blend the highest quality of care with the best practical management strategies
- feedback reports that provide real-time data about patients' utilization of services to all providers involved in their care (i.e. practice and theory put into reality).

The PAAS physicians in the eight-county area of the pilot study were recruited to participate in WVHIP. Functions consisted of:

- training PAAS providers and their staff to use clinical guidelines recommended by the West Virginia Diabetes Advisory Committee. These guidelines were based on national clinical guidelines
- reimbursing these PAAS providers for their efforts to comply with these guidelines, which included completing the extensive documentation required of them by the project (e.g. a diabetes assessment, individualized care plan, flow sheet updates), care management services, and referral to a CDE to get more extensive diabetes education. Providers were reimbursed \$US54.37 per patient-hour for individual training and \$US32.39 (2001 values) per patient-hour for group training
- ensuring patient referrals to CDEs to improve patient self-management skills
- providing feedback reports to PAAS providers that contained current data about patients' utilization of medical services, including patient-specific cost information about each of the provider's diabetic patients; average costs for emergency room services per patient in the last quarter, compared with costs for patients of other providers in the geographic region and state; average number of emergency room visits per patient in the last quarter, compared with the number for patients of other providers in the geographic region and state; average number of inpatient days per patient in the last quarter, compared with the number of inpatient days for patients of other providers in the geographic region and state.

Primary care providers reviewed reports to identify patients with diabetes who demonstrated a pattern of high resource utilization, and scheduled follow-up office visits to improve blood glucose control.

5.3.4 WVHIP's Intervention Model and Educational Messages

Four educational seminars were held in the summer of 2000. Invitations were sent to approximately 90 PAAS provider sites in the designated eight-county area. Physicians, nurses, nurse practitioners, and physician assistants from these PAAS provider offices were invited. In addition, selected community health professionals, including medical residents, diabetes educators, and pharmacists, were invited to participate in the provider training. A total of 57 providers participated in the initial 6-hour training session. Two additional sessions were held in November 2000.

Training focused on familiarizing practitioners with evidence-based, nationally and locally accepted clinical guidelines for the treatment and monitoring of diabetes. The need for regular testing

of HbA_{1c}, retinal (eye) exams, foot exams, and nutritional management was emphasized. The seminar also included a discussion of communication techniques that could be used to encourage patient self-management or to enable the physician to recognize patient behavioral signs that might indicate problems with follow-through on appropriate and consistent self-care. A component reviewing medication management was also included.

5.3.5 WVHIP's Research and Outcomes Measures

The project ran for 1 year, from October 2000 to September 2001. The evaluation used both patient medical record reviews and Medicaid claims data, focusing on clinical outcomes, cost, and process measures.

The clinical outcome measure is HbA_{1c} values. Because laboratory test results are not included on claims, the data will be extracted from medical records. The average HbA_{1c} value for all patients tested before the pilot will be compared with the average level after the initiation of the pilot. Laboratory results from patients in the pilot counties and sites will be compared with those of patients not in the pilot study.

Process improvements include:

- percentage of diabetic patients with two or more HbA_{1c} measurements per year, before and after the pilot study. Medicaid claims data will reveal this information
- percentage of patients receiving diabetes education, either in the office or provided by a CDE. The medical records will be the source of these data
- percentage of patients who have had retinal exams, foot exams, and blood pressure testing before and after the pilot study. The data will be obtained from both the medical records and the claims database
- percentage of physician offices that have adopted the use of flow sheets, treatment plans, and referrals to CDEs. This information will be gleaned from the medical records.

For all measures, comparisons are being made with control groups, including PAAS providers in the same eight counties who did not participate in the pilot provider training; selected PAAS providers in other counties matched to pilot providers by variables such as population, education, and social and health profiles; and PAAS providers in three counties where intensive interventions were undertaken by the West Virginia Comprehensive Diabetes Program, funded by the Centers for Disease Control and Prevention.

5.3.6 Results of the WVHIP to Date

The WVHIP has been a tremendous collaborative effort in the hope of improving diabetes care for Medicaid recipients enrolled in the West Virginia PAAS program. With project implementation completed, the community at large looks forward to receiving the results of the project evaluation.

6. Limitations Associated with Implementing Disease Management Programs

There are some limitations states should consider as they implement and evaluate a disease management program. Often, because states have huge data infrastructure limitations, data can be inadequate and appropriate disease management populations cannot be properly identified. States need to work with physicians and other health facilities to screen and refer patients directly into the disease management programs.

Data and infrastructure limitations can affect research design which can affect appropriate analysis and understanding of the impact of disease management. For example, the statistical issue of regression to the mean should be addressed early in a state's disease management program due to the heavy burden of disease among Medicaid recipients. It is especially important in Medicaid, where patients are at high risk and tend to have frequent changes in eligibility. Researchers may observe only the improved side of regression to the mean and falsely attribute an improvement that would have happened anyway to disease management efforts.

The appropriate way to address regression to the mean is to capture the total effects on both those above and below the mean when the disease management program begins. This can be done by carefully designing the sample selection so that the total Medicaid program is characterized over time, and carefully selecting an appropriate comparison group. The Virginia study of asthma interventions appropriately addressed regression to the mean. However, many studies suffer from regression to the mean because they select one group of high-risk patients for a disease management program and follow only those patients and their outcomes through time. A certain number of the patients would have improved anyway. Thus, to ensure that the improvement of health outcomes and measured effect is a result of the disease management intervention and not regression to the mean, data on the low-risk patients should be added to the disease management program. As time goes on, these data should be compared with data from an appropriate comparison group of patients not receiving disease management. These should be compared in total. Regression to the

mean is a common phenomenon in studies of chronic disease, but it can be addressed in any study with careful selection of the sample of patients to be studied and the appropriate comparison group.

Physicians and patients may resist participating in the disease management program, so states must partner with physicians in designing disease management strategies and provide incentives such as continuing medical education credit. Medicaid patients also experience multiple diseases, and their diseases need to be managed concurrently as best as possible. The disease management programs that are developed need to ensure that multiple diseases can be managed and that patient life issues are addressed appropriately.

Although these potential problems may seem overwhelming, many states have already addressed them successfully. By reviewing and understanding the solutions that other states have applied to their problems, states can avoid making unnecessary mistakes and have an easier course when implementing their disease management programs.

7. Conclusions

Despite the states' bleak budget picture, disease management programs are expected to grow in 2003 and the coming years.

US states are facing the worst revenue picture they have seen in 20 years according to the National Governors Association and the National Association of State Budget Officers.^[47] Sales and income tax revenues are down and in 48 of 50 states, fiscal year revenues fell behind projections. New money to launch disease management programs obviously is not available and is not going to be a driver of disease management program implementation in the near-term.

At the same time, many state Medicaid officials are playing a game of watchful waiting. They hear and know about the progress of leading states such as Virginia, Florida, West Virginia, and others, and are using the experiences of the leading states to assess whether to move forward with implementing disease management programs in their own states. States may also accept the current conventional wisdom that we do not know enough about disease management programs, and the savings are too long-term to meet current budget emergencies. Meanwhile, federal officials have been verbally supportive of disease management programs in Medicaid, but have not made it a major initiative with federal

guidance and financial support for implementation. As a result, a number of states are on the sidelines.

Nevertheless, a growing number of states are beginning legislative and administrative studies, pilot disease management programs, and expansion of existing programs. A recent report from the Kaiser Family Foundation, Menlo Park, California, indicated that 19 states were planning or had implemented Medicaid fee-for-service disease management programs.^[37] This is due to the underlying drivers of growth in disease management programs for the states – state budget deficits and cautious Medicaid directors aside – such as:

- the size and growth of the aged, blind, and physically disabled Medicaid population
- the enormous burden of chronic disease in the Medicaid program
- the shifts in the site of care away from hospitals and nursing homes toward newer effective medications and home and community-based services
- the pace of information technology growth, which enables use of disease management tools such as decision support systems for analyzing claims,^[48] predictive modeling,^[49] and Internet and telephone interventions for patients with chronic disease.^[50]

Disease management programs are still evolving in fee-for-service Medicaid. There is no single, correct way to implement programs across patient populations. Two completely different diseases can be identified as priority diseases in adjoining states, let alone states in different parts of the country with markedly divergent ethnic and racial characteristics, as well as eligibility requirements for Medicaid. Additionally, local provider and medical market characteristics vary widely. In one state, the physicians would welcome any help they can get from a disease management vendor, and in another they would resent any involvement of a disease management vendor with their patients. The experience to date in just the states discussed in this paper illustrates that disease management programs have to be customized to meet each state's own unique needs and circumstances.

Just as in other settings,^[51] lessons can be learned from the Medicaid disease management programs that have experienced problems. Difficulties for Medicaid disease management programs include:

- having a political, economic, or social priority rather than improvement in health outcomes as a priority

- noncontinuous eligibility of patients enrolled in programs, leading to a high turnover rate and an unstable population base
- insufficient time for vendors, providers, and patients to establish the trust-based relationships needed to implement programs
- starting too big with a lack of clear differentiation among a large number of vendors, diseases, and geographies.

In 2003, there are new challenges for state disease management programs, including:

- increasing the focus on patient decision making (especially challenging with a low-income population), using applied knowledge of evidence-based medicine
- designing structures to manage comorbid conditions and multiple disease states, which are common in the Medicaid population
- increasing Medicaid program enrollments because of the economy
- defining and improving risk-contracting relationships by clearly defining and administering vendor contracts when risk contracts or performance payments are involved
- standardizing data analysis to demonstrate results, including decreased costs, increased patient satisfaction, and workforce-related outcomes.^[29]

Our analysis of three US state disease management programs for fee-for-service Medicaid populations shows that the results of these programs have been variable. This makes it difficult at this time to conclude that disease management programs can always provide across-the-board cost savings and quality-of-care improvements. The results for a state will depend upon the way the disease management program is implemented, the model used, the diseases selected, and the ability to implement purely voluntary efforts or programs with strong incentives and outcome-driven approaches.

Specifically, the structural elements that appear necessary for success include:

- developing a clearly focused pilot program first
- establishing partnerships among providers, payers, patients, and other key stakeholders
- selecting and targeting diseases carefully
- having a patient-focused program designed to improve health and not just lower costs
- defining clear educational messages and investing in provider training

- developing definitive measures for clinical, economic, and quality-of-life outcomes
- holding vendors accountable for results
- using pilot program successes to expand disease management to other populations with different diseases
- having access to needed data (e.g. medical and pharmacy claims databases and potentially the medical records from a wide number of physician offices and pharmacies, often in large geographic areas)
- collaborating with researchers who are skilled in disease management research design and data analysis.

State Medicaid programs face additional challenges beyond those encountered in the private sector because of the large burden of chronic disease among Medicaid recipients and the fragmented nature of the benefit package for dually eligible patients covered by Medicaid and Medicare. In fact, if there is any reticence on the part of Medicaid directors to jump into something so obviously geared toward better health outcomes and lower costs, it might derive from the problem of what to do with dually eligible patients. There might be a message for US federal policy makers in Washington, DC and CMS in this regard. With Medicare prescription drug coverage looming as a federal initiative and uncertainty about how it will coordinate with Medicaid coverage, the states need to have a better understanding of how any new Medicare drug coverage will work. To the credit of the federal government, important disease management demonstrations are under way, using the center-of-excellence protocol.^[1] The three Benefits Improvement and Protection Act of 2000 demonstrations are concerned with disease management of the chronically ill; significantly, they include Medicare coverage for prescription drugs. Three disease management vendors have been selected for three diseases: heart failure, diabetes, and coronary heart disease. Progressive states will want to establish their own disease management pilot programs and demonstrations to meet the changes in Medicare drug coverage that are sure to occur at some point in the future. The changes could include financial support and expansion of state prescription drug assistance programs, modeled after the successful State Children's Health Insurance Program, with enhanced federal matching funds and flexibility for the states to build their drug coverage for low-income Medicare beneficiaries.

Established disease management programs and some state Medicaid disease management pilot programs are showing promising results despite the challenges that they face. It would be a mistake to attempt to draw firm conclusions about disease man-

agement programs given their current stage of development. We are only just beginning to learn how best to conduct disease management programs for low-income women and children through pilot programs and demonstrations because we do not expect to get it right the first time.^[44] Programs for elderly and physically disabled patients on Medicaid and Medicare are only just starting to take shape. Credit should be given to the states that are experimenting with cutting-edge programs to tackle not only their fiscal issues, but perhaps more importantly, the issue of ensuring high-quality, cost-effective healthcare for the patients they serve.

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