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Will Care Management Improve the Value of U.S. Health Care?

By Robert Mechanic, M.B.A.

Public pressure is mounting for dramatic improvement in the efficiency, effectiveness and quality of U.S. health care. Spending continues to grow at double digit rates while evidence of serious deficiencies in the quality of U.S. medical care mounts.¹ Provider organizations, health insurance plans, employers, and government agencies are developing and implementing a range of strategies to improve quality and control costs. Some focus on establishing more effective processes within healthcare institutions, while others attempt to ensure that patients receive appropriate care despite failures of the delivery system. Care management programs are an important component of broad quality improvement strategies. Existing programs are diverse, but share a common goal - identify and engage patients with chronic illness or high cost conditions who will benefit from improved self-management and evidence-based treatment. Successful initiatives will improve patients' health status and reduce rates of hospitalization.

The most recognized approach for improving care through the delivery system is the chronic care model developed by Ed Wagner.² The model recognizes that a substantial portion of chronic care takes place outside of formal health delivery settings. Patient self-management, delivery system design (including information systems and decision support), and community resources are all critical components. The chronic care model has been used successfully in staff model HMOs, large group practices, and community health clinics. However, relatively few provider settings are fully prepared to execute the chronic care model. In fact, a majority of large care management programs originate outside of provider systems and are managed by health plans and disease management firms. Existing programs vary widely in scope and effectiveness. Despite limited published evidence on outcomes, purchasers now invest substantial resources in care management. Anecdotal reports suggest that many initiatives achieve positive financial and clinical results.

The economic incentives for care management are complex and vary across provider organizations, health insurance plans, employers, and government purchasers. One reason so few providers implement care management programs is that current reimbursement structures lack financial incentives for them to do so. For example, one academic medical center recently reported that a pilot project reduced annual expenses for patients with congestive heart failure from \$23,000 to \$14,000 - but had strongly negative financial consequences because it reduced profitable inpatient care while increasing use of poorly reimbursed preventive services.³

In the mid-1990s, full-risk capitation was a common form of reimbursement in some U.S. markets. Provider groups with substantial volume of full-risk contracts began to develop care management systems. As capitation has become less common, many of these groups have scaled back investment in care management. Under most reimbursement systems today, providers lack a strong business case for quality.⁴ Paying providers for performance relative to defined quality goals is a concept with widespread appeal and could lead to expansion of care management processes within the delivery system. Some health plans and purchasers now experiment with pay-for-performance systems, but these efforts are mostly small and highly diverse - with different quality measures and incentive structures.⁵ A major impediment to effective pay for performance is that most health plans are a relatively small percentage of any provider's total revenue. Unless payers can agree on consistent quality measures, reimbursement systems designed to reward quality may have little impact for all but the largest purchasers.

Health plans have stronger financial incentives to invest in care management than do providers. However, their investments in enrollee health are diminished when accounts switch to competitors during the annual open enrollment process. Therefore, health plans focus on programs thought to deliver a financial return within six to twelve months, such as congestive heart failure management or targeted high cost patient management. Many health plans also offer a broad spectrum of wellness and preventive care programs in response to demand from customers that view these initiatives through a longer-term lens. But customers are price sensitive and risk selection has a much bigger impact on premiums than care management. Therefore, most plans do not want to be known publicly as the best program for patients with complex chronic illness.

Purchasers that fund employee health benefits have a broader business case for quality improvement and care management than do health plans. Employers must consider such factors as employee productivity and long-term disability in addition to health care costs. However, developing data to accurately evaluate the combined financial impact of care management on health spending and productivity is difficult. Firms with older workers and relatively low turnover have stronger incentives to invest in long-term prevention and wellness programs.

The federal government has the clearest economic case for investing in care management. Medicare and Medicaid recipients have high rates of chronic illness and disability. Medicare can afford to take a long-term view since recipients are in the program for life. Political pressure from the recent announcement that the Medicare Trust Fund is projected to go broke in 2019 also creates short run urgency for solutions.⁶ The Center for Medicare and Medicaid Services (CMS) is a complex government agency and executing care management on a large scale will be a tremendous challenge. CMS will soon be put to the test as it implements Phase One of the chronic care improvement program recently authorized by Congress. Under the RFP issued in April 2004, CMS will entertain bids to enroll roughly 400,000 fee-for-service Medicare recipients in care management programs in ten geographic regions.

The remainder of this paper discusses the rationale for care management and the range of programs being implemented by provider systems and health plans. It briefly reviews the effectiveness literature and concludes with a discussion of future directions for care management.

1. What is Care Management?

Care management programs apply systems, science, incentives, and information to improve medical practice and help patients manage medical conditions more effectively. The goal of care management is to improve patient health status and reduce the need for expensive medical services. The principal challenge is finding effective ways to change physician and patient behavior. In a 2001 survey of 42 health plan chief medical officers, 69 percent reported physician resistance to participating in medical management programs and 52 percent reported that patients' failure to comply with program recommendations was a major barrier to success.⁷

Research supports these concerns. Physicians consistently fail to follow practice guidelines despite awareness and acceptance.⁸ It's not that most physicians don't know what to do, but rather that medical care is complex and most physicians operate in poorly supported systems. Similarly, many patients don't follow recommended plans of care. Half of diabetics fail to control blood sugar adequately; individuals with high blood pressure regularly drop out of treatment, and a quarter of kidney transplant patients don't comply with medication programs.⁹ Many factors underlie patients' failure to comply with treatment plans. Some forget doctor's orders or get confused by complex medication regimens. Some can't afford expensive drugs or stop taking them because of side effects. Others simply lack the motivation for difficult or inconvenient lifestyle changes. These problems are compounded by the lack of patient support systems outside of formal care delivery settings.

Health plans and provider organizations have a range of programs to address these problems. This paper calls these “care management programs,” but others may refer to them as disease management, population management, case management, or a variety of other terms. Some programs focus on patients with a single disease, some are designed to manage patients with multiple chronic conditions, and others target high-risk patients regardless of their clinical characteristics. Programs may interact with an entire category of patients, such as diabetics, or specific subsets of high-risk individuals. **Exhibit 1** summarizes the common elements of care management.

Exhibit 1
Components of Care Management

- Population identification processes
- Evidence-based practice guidelines
- Collaborative practice models
- Patient self-management education
- Process and outcomes measurement
- Routine reporting/feedback involving patients, physicians, plan and care team.

Source: Disease Management Association of America.

To be cost effective, care management needs to be directed at the right patients. One criterion for selecting patients is their risk for incurring high costs in the next six to twelve months. Health expenditures are highly concentrated among a small proportion of patients in any given year.¹⁰ For example, average 2003 spending per Medicare enrollee was about \$6,966.¹¹ The average cost for the one percent of Medicare recipients that incur 30 percent of program costs was more than \$200,000. For a subset of high-risk individuals, early intervention can reduce the potential for catastrophic medical events – saving money and improving quality of life. Therefore a second criterion for selecting patients is whether their problems can be improved with appropriate interventions. A patient with uncontrolled diabetes and congestive heart failure is a much better candidate than someone who has just suffered acute trauma. Finally, programs want to focus on patients who will respond to interventions. Many disease management firms evaluate patients’ behavioral profile and target resources at those believed to be receptive to change.

II. Who Does Care Management?

Provider organizations and health plans both implement care management programs. Each has strengths and weaknesses as a care management sponsor. Provider groups have face-to-face patient contact, access to detailed clinical information, and relatively high levels of patient trust. But the health “system” is highly fragmented and providers don’t share clinical information easily. Patients that need care management the most have multiple chronic conditions, numerous physicians, and a wide range of prescription medications. However, an integrated record of all care these patients receive rarely exists. Even well integrated delivery systems don’t communicate well with providers outside their networks. These gaps in information result in treatment errors and redundant care.

Health plans collect data on all services they reimburse and increasingly integrate health claims with pharmacy data, enrollee health risk assessments, and information collected by case managers. Data analysis has become a strategic advantage and some plans invest substantial resources to develop data warehouses and mine them for insight about the relationship between practice patterns, costs, and outcomes. Plans have also developed strong customer communication capabilities that help them interact effectively with members. But despite the breadth of health plan data, it lacks the richness of a medical record, and delays in claims processing limit case managers’ ability to act proactively. While plans have made progress in their

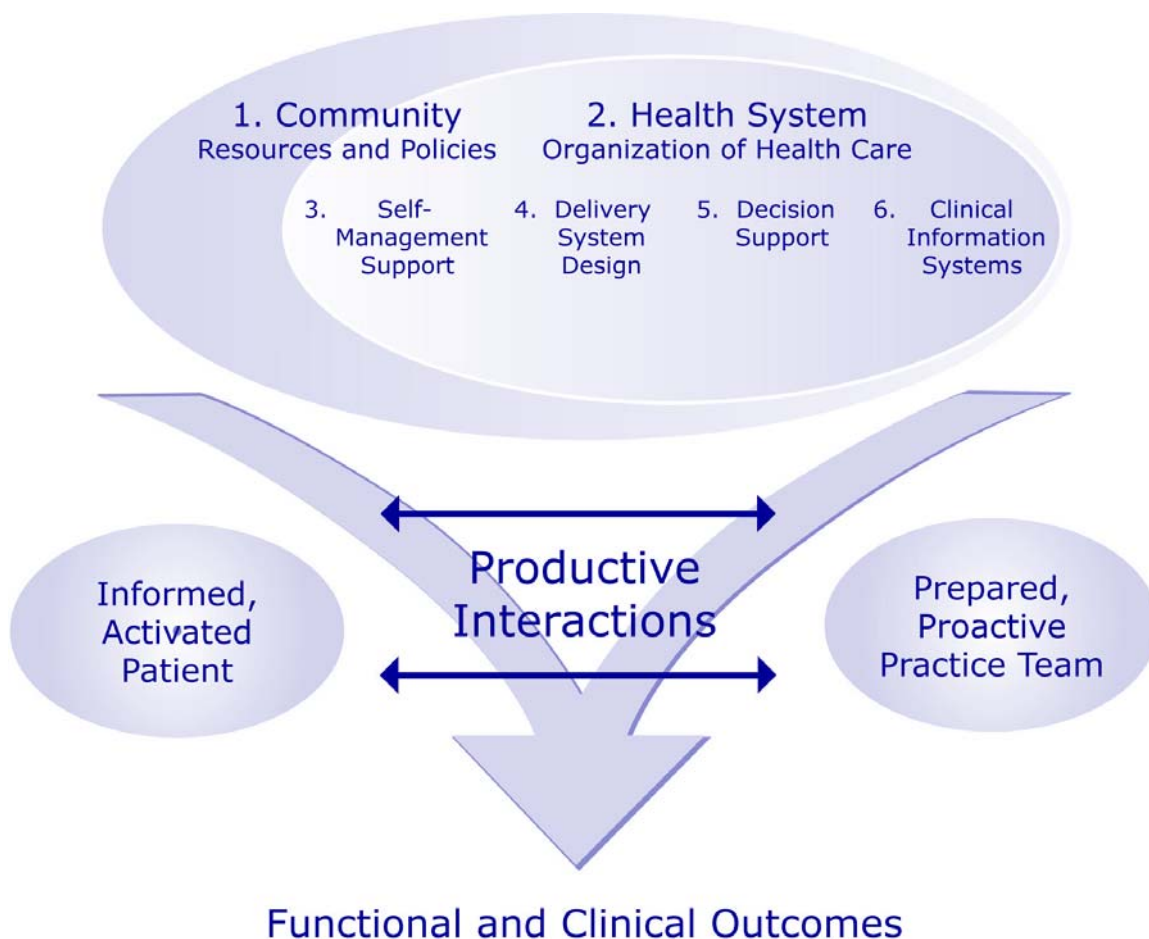
relationship with members, historical animosity and lack of real-time connectivity with medical offices systems continue to limit plans' ability to communicate with physicians.

The following section examines care management in the delivery system and discusses limitations related to information technology, infrastructure, and financial incentives. It then reviews care management in health plans and key barriers facing these programs. It concludes by discussing health plan and purchaser initiatives to create financial incentives for improved provider system performance.

Care management in the delivery system

Care management can be implemented in physician offices, community clinics, group practices, and integrated delivery systems. The chronic care model is a prototype for serving chronically ill patients through the delivery system with a focus on primary care. Six essential elements of the chronic care model are summarized in Exhibit 2. The model asserts that patients with chronic illness are themselves principal caregivers. Substantial aspects of managing these illnesses - diet, exercise, self-measurement, and medication use are under the direct control of patients. At the same time, the model calls for redesign of medical practice with care teams and a clear division of labor between acute care and planned management of chronic conditions. These activities require clinical information systems with decision support for evidence-based practice. Bodheimer and colleagues describe several organizations that have implemented the chronic care model (see Appendix A).¹²

Exhibit 2
Elements of the Chronic Care Model



Source: <http://www.improvingchroniccare.org/change/model/components.html>

Provider-based care management initiatives have evolved slowly due to inadequate information systems and lack of financial incentives. Some organizations like the Veteran's Administration report substantial gains in chronic care quality after implementing systems to support these improvements.¹³ But the majority of doctors and hospitals lack the necessary information systems to ensure that care is consistently delivered according to evidenced-based best practices. For example, electronic medical records can help provider organizations identify patients who would benefit from care management and prompt physicians to ensure that patients receive appropriate treatment. A 2002 survey found that only 17 percent of U.S. primary care physicians use electronic medical records - far less than those in many other developed nations (Exhibit 3). Only about 300 of the nation's 4,900 hospitals have implemented computerized order entry systems, which have been proven effective in reducing medical errors.¹⁴ Only 40 hospitals have fully met the standards of the Leapfrog Group which requires that 75 percent of doctors use an online system to order prescriptions and tests.¹⁵

Exhibit 3
Primary Care Physician Use of Electronic Medical Records

Country	Percent of PCPs with EMR
Sweden	90%
Netherlands	88%
Britain	58%
Finland	56%
Austria	55%
Germany	48%
Belgium	42%
Italy	37%
Ireland	28%
Greece	17%
US	17%
Spain	9%
France	6%
Portugal	5%

Source: Harris Interactive, 2002

A 2002 survey of 1,040 medical groups with 20 or more physicians found that most practices lack electronic data systems containing basic clinical information (Exhibit 4).¹⁶ Even without electronic medical records, providers can implement basic tools to support more effective chronic care management. For example, disease registries help physicians keep track of patients with chronic conditions and make sure they receive recommended tests and preventive care.¹⁷ However, the same survey found very limited use of organized care management processes (Exhibit 5). Only 8.6 percent of the practices surveyed had all four of the identified care management processes for patients with congestive heart failure and only 12.7 percent had all four for patients with diabetes.

Exhibit 4
Electronic Information Used by 1040 U.S. Physician Organizations

Electronic data system includes:	Percent of practices
Progress notes	9.4%
Medications prescribed	23.9%
Medication ordering reminders and drug interaction information	14.5%
Laboratory results	40.4%
Radiology results	30.1%

Source: Casalino et al., JAMA, January 22/29 2003.

Exhibit 5
Care Management Processes in 1,040 Physician Organizations

Process	Diabetes	Asthma	Congestive Heart Failure
1. Case management	39.7%	39.7%	43.4%
2. Feedback to physicians	24.1%	24.1%	30.5%
3. Disease registries	31.2%	31.2%	34.8%
4. Clinical guidelines with reminders	33.9%	33.9%	27.7%
Mean	33.2%	32.2%	34.1%
Practices using all 4	12.7%	7.6%	8.6%

Source: Casalino et al., JAMA, January 22/29 2003.

Casalino and colleagues also found that external incentives for quality including financial incentives and reporting requirements were strongly associated with use of care management processes (CMPs) in physician organizations (POs).¹⁸ However, receiving a bonus for scoring well on quality measures was not significantly associated with use of CMPs, possibly because POs generally reported that bonuses were small.

1. Health plan sponsored management programs

Much of the recent investment in care management programs has been made by large health plans. Some like Kaiser-Permanente and United Healthcare have developed in-house programs. Other companies use a mix of internal programs and contracted services from disease management vendors. Purchasers spent \$715 million for outsourced care management services in 2003 according to the Disease Management Purchasing Consortium.¹⁹

Disease management firms are a small but growing segment of the health care industry. The largest independent firms include American Healthways, Lifemasters Supported Self Care, CorSolutions, Matria Healthcare, and Health Dialog. These companies manage a variety of conditions and claim an integrated approach for managing patients with co-morbidities. American Healthways and Matria are publicly traded with \$165 million and \$251 million respectively in 2003 service revenues.²⁰ The other firms are privately held with revenues in the \$50 - \$100 million range. More specialized companies like Air Logix and RMS Disease Management focus on managing specific clinical areas like respiratory and renal care. Pharmaceutical firms, pharmacy benefit managers, and information system companies also offer disease management programs. Two of the more prominent companies in this category are McKesson Health Solutions which works with a number of state Medicaid programs, and Pfizer Health Solutions which is a major contractor for the State of Florida.

Most health plans report care management programs for major chronic conditions, but it is difficult to broadly characterize the landscape. Program characteristics vary greatly across plans and are evolving at a rapid pace. Some disease management programs do little more than mail educational pamphlets to patients and distribute clinical guidelines to physicians. Others use sophisticated data analysis tools, nurse case management programs, and personal monitoring devices to identify, engage, and track high-risk patients. The nation's large health plans undertake a broad range of activities (Exhibit 6) but it is difficult to draw conclusions about the scope or effectiveness of these programs from most of the summary information available.

In 2002, the Pacific Business Group on Health (PBGH) commissioned an analysis of disease management practices in health plans serving its members.²¹ The analysis concluded that all of the plans invest actively in care management, but found a wide diversity of models in a state of rapid change. It reported a lack of credible and comparable outcomes data to evaluate program performance and noted that few plans conducted program evaluations. The study team could not determine whether these programs reached the appropriate members.

The PGBH analysis observed that programs that were integrated with physicians appeared to be more successful. This reflects the ability of organizations like group model HMOs to influence practice patterns through integrated information systems, point of care decision support, financial incentives, and shared culture. Most payer-based care management focuses on members because the challenges of communicating with providers in a fragmented system are formidable. Few health plans have "real time" connections with physician offices and typically don't know that a patient has been to the doctor until they receive a claim. Payer-based programs commonly fax reports to physician offices, alerting them when patients require medical attention - for example, when a patient with congestive heart failure experiences rapid weight gain. Programs also try to influence physicians through their patients, for example, by "coaching" enrollees prior to a scheduled visit about questions they should ask their doctor.

Exhibit 6
Disease Management Activities of Selected Health Plans

Company	Diseases	Vendors	DM Volume
Aetna	Asthma, diabetes, CHF, CAD, ESRD Low back pain	Lifemasters, Optimal Renal Care	250,000 members identified for participation in 2002
Anthem	Asthma, diabetes, CHF, CAD, COPD, maternity	Health Management Corp.	NA
Cigna	Asthma, diabetes, CHF, CAD, COPD Low back pain	American Healthways	Approximately 500,000 active participants
HealthNet	CHF, ESRD, chronic kidney disease, neonatal, rare diseases	Alere, Renaissance	NA
Humana	CHF, CAD, ESRD, neonatal, rare diseases	Accordant, Padios, RMS CorSolutions	NA
Kaiser	Asthma, diabetes, CHF, CAD, elder care, cancer, chronic pain, depression, obesity	All internal	Open to the entire Kaiser Permanente Population
Pacificare	Asthma, diabetes, CHF, CAD, COPD ESRD, cancer	NA	Any members have access to population-based programs. Case-based programs offered to qualified members
WellPoint	Asthma, diabetes, CHF, CAD, cancer, maternity, musculo-skeletal	All internal	More than 87,000 members currently enrolled

Source: Atlantic Information Services.

The effectiveness of health plan attempts to influence physician decision making is unclear. Research suggests that physicians respond to timely reminders about specific clinical problems.²² But, the PBGH analysis found that patient specific reports detailing clinical information about individual patients who appear to be failing or missing aspects of appropriate care were frequently ignored. In contrast, the Florida Medicaid congestive heart failure management program reports more encouraging results, with physicians responding to roughly 75 percent of alerts within three days.²³

2. Improving quality through pay-for-performance programs

In addition to care management programs, health plans and purchasers are experimenting with new policies to reward providers for high quality care. Pay-for-performance programs are appealing to many, but their impact on quality is unproven. Rosenthal and colleagues recently reported on 37 early pay for performance initiatives; 27 for physicians and nine for hospitals.²⁴ Most of these systems are relatively new and have not been evaluated. However, the study raises important questions about their potential effectiveness. Most programs pay quality bonuses that are less than 5 percent of provider compensation. For example, Medicare's demonstration program with Premier pays a 2 percent bonus for 10 percent of hospitals with the highest performance in five clinical areas and a 1 percent bonus for the second 10 percent. It is not known whether relatively small bonuses are sufficient to encourage major changes in provider practices. Compounding this issue, most program sponsors represent less than 10 percent of the insured

population in their geographic markets. This may be insufficient market leverage unless multiple sponsors adopt consistent incentive programs. A final concern is that pay-for-performance programs are only as good as sponsors' ability to measure quality. In the short term, the number of pay-for-performance programs will increase. These initiatives are probably best viewed as one component of broader strategies to measure, report, and reward quality improvement.

III. How Effective is Care Management?

The most frequent question about care management is "does it work?" There are still many skeptics.²⁵ The body of research evaluating disease management programs over the past ten years has grown.²⁶ A number of published studies demonstrate positive financial and clinical outcomes.²⁷ One review of 27 studies that measured the impact of disease management programs on cost found savings in three of five CHF management programs, eight of thirteen asthma management programs, and seven of nine diabetes management programs.²⁸ Yet the majority of published studies report on individual programs with relatively small patient populations. Many do not examine economic aspects of the programs under study.

The number of patients enrolled in health plan sponsored care management programs has grown rapidly in the past five years. Health plans and disease management vendors evaluate these programs, but detailed study results are rarely published or released to the public.²⁹ Disease management firms assert that their programs result in positive financial outcomes. However, vendors have economic incentives to present positive findings. Early outcome evaluations have frequently contained flawed assumptions leading to biased or suspect results.

Randomized controlled trials are the gold standard for evaluating care management programs, but often are impractical in a health plan environment. Most evaluations are based on pre-post methodologies - which try to assess what costs would have been if the program being studied were not in place. Pre-post analyses can substantially overstate care management program savings if not properly designed. Fetterolf and colleagues observe that regression to the mean - the statistical tendency of a plan's most expensive enrollees to move towards the group average in the subsequent year - may account for a 20 - 30 percent reduction in care costs noted by vendors.³⁰ Other methodological problems include adding newly diagnosed members to study calculations or removing patients that die or are too sick to participate. Each of the aforementioned errors can result in additional "savings" of 10 - 15 percent according to the authors' experience. But, pre-post evaluation studies can provide valid measurements of disease management outcomes if designed correctly.

Debate over the effectiveness of care management will continue, but the lack of a standard outcomes methodology clouds the discussion. Randomized controlled trials demonstrate that evidence-based medicine improves clinical outcomes.³¹ If care management programs are "platforms" for promoting evidence-based care, then well designed programs should be capable of producing positive clinical and financial outcomes.³² The real question is not whether care management "works," but rather, what is required to achieve sustainable results on a large scale. Unless health plans are willing to publish program evaluations, a broader understanding of these programs will be slow to emerge. Evaluation of government sponsored programs will, however, be in the public domain and the Medicare coordinated care demonstrations will ultimately generate a large body of evidence that will help clarify questions about effectiveness and outcomes.

IV. What Will the Future Bring?

Chronic care management has gained momentum and will likely become a permanent feature of the health system landscape. What remains uncertain is who will manage it, how it will be executed, and what the structure of future financial incentives will be. The current body of health services research fails to reflect the state of the art, partly because care management is evolving

rapidly and partly because many of the largest initiatives are proprietary. Much of the clinical knowledge underlying care management has been available for some time. But systems required to execute it effectively have not been widespread.

Advances in information and communication technologies set the stage for more proactive personalized health care.³³ Health insurance plans and disease management firms have made large investments in predictive modeling technologies to identify patients that will benefit from care management or that are receiving clinical care that diverges from evidence-based practice.³⁴ These firms use consumer marketing techniques to engage members about the benefits of participating in health improvement programs and use nurse-educators to monitor and support high-risk patients. Nurse case management programs are effective but expensive. Therefore the most intensive programs focus on a relatively small percentage of chronic care patients. Firms use technology to extend the reach of care management resources. Clinical workflow systems help nurses manage more patients by integrating data from disparate systems and providing decision support for health coaching. Plans also offer web- and automated telephone support to all members. Presently, however, most care management services are provided by phone.

One alternative to traditional nurse-based care management is personal monitoring technology that alerts caregivers when patients' have emerging medical problems. Devices range from handheld computers, scales, and blood pressure cuffs that transmit information through patients' telephones, to wireless systems that monitor heart rhythms from implanted cardiac devices. The Veteran's Administration is currently the biggest customer for these technologies with plans to install devices in the homes of 25,000 chronically ill Veterans by the end of 2004.³⁵ The devices are expensive; those purchased by the VA cost about \$7,500 to purchase plus \$1,200 annually to operate. But the approach has many benefits: independence for persons with age or disease-related disability, peace of mind for family members, reduced need for physician visits, and faster responses when something goes wrong. Health plans are still evaluating the business case for reimbursing remote monitoring technologies, but a consumer market is also emerging. If these technologies follow the pattern of computers, wireless phones, and consumer electronics, monitoring devices could be widespread in ten years. Aging baby boomers have more disposable income and demand more from the health care system than previous generations. As they age into retirement, a convergence of consumerism and technology will begin to enable a shift in care and care management away from formal institutions and into the home.³⁶

Care management is not a "silver bullet" for health care costs or a cure for the nation's quality problems. But, it is a process that will become more valuable with time and technology. This paper has discussed approaches that require delivery system change and others that could be characterized as "external" support systems. A third path would be collaboration between health plans and providers to finance and implement effective care management systems. This already happens in integrated organizations like Kaiser Permanente. It will be a more complex proposition elsewhere given the fragmented nature of health care delivery, magnitude of capital investment required, and continuing animosity between providers and health plans over financial matters.

Although providers strive to provide high quality care, most have been unwilling or unable to develop a supporting infrastructure for the chronic care model. The problem is partly financial and partly related to the current culture emphasizing acute rather than chronic care. Improving the nation's care management infrastructure could have significant long-term clinical and financial benefits. For example, the Center for Health Information Technology Leadership (CITL) projected that national adoption of ambulatory computerized order entry systems could create annual savings of approximately \$44 billion and eliminate 2 million adverse drug events.³⁷ CITL also projects that standardized health information exchange could deliver national savings of \$87 billion annually after full implementation.³⁸ The potential benefit of these and other infrastructure improvements cry out for a more active federal government role. With federal Medicare and Medicaid spending projected to exceed \$500 billion by 2005, taxpayers as well as patients would benefit.

Some health plans have shown interest in collaborating with providers to fund clinical management infrastructure. Blue Cross Blue Shield of Massachusetts recently announced that it was considering contributing up to \$50 million to spur a cooperative capital investment program to speed adoption of electronic medical records.³⁹ It would be unwieldy and expensive for purchasers to fund systems in every physician's office - particularly in markets with few large groups. Another approach would be funding a "utility," structured as a freestanding care management organization to help providers with activities that they don't have time for or can't afford like patient education, health coaching, and case management. Purchasers could invite local providers to help design the systems and pay them to refer chronic care patients for follow up support. If successful, such an entity would begin to establish more effective information exchange between health plans and providers. A utility model would be most feasible in markets with a large dominant payer and a cohesive medical community.

In reality, there are significant barriers to improving chronic care in a complex, market-based health care system. Multiple models are necessary to address differences in local health system structures and community characteristics. But there is substantial value in many of the approaches payers and providers have initiated. The health system has sufficient resources to finance these concepts and ample knowledge to design models that would work. Whether the necessary trust and leadership can emerge remains to be seen.

Robert Mechanic, M.B.A., is Senior Fellow and Director of The Health Industry Forum.

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The Health Industry Forum is based at Brandeis University and chaired by Professor Stuart Altman. The Forum brings together public policy experts and senior executives from leading healthcare organizations to address challenging health policy issues. The Forum conducts independent, objective policy analysis and provides neutral venues where stakeholders work together to develop practical, actionable strategies to improve the quality and value of the US healthcare system.

*Health Industry Forum ♦ Heller School for Social Policy and Management ♦ Brandeis University
415 South Street, MS035, Waltham, MA 02454 ♦ (781) 736-8479 ♦ (781) 736-3306 (fax) ♦ www.healthindustryforum.org*

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