

Impact of Disease Management on Cost-Effectiveness of Medicare Spending

Joshua Cohen, PhD
Senior Research Fellow

Cherie Paquette, AB
Research Assistant

Tufts Center for the Study of
Drug Development, Boston,
Massachusetts

Findings from the third annual Tufts Center for the Study of Drug Development survey of 22 leading disease and pharmacy benefits managers suggest that incorporation of disease management into Medicare would lower hospital inpatient costs. However, it is unclear whether hospital cost savings would be sufficient to offset increases in pharmacy, physician, and outpatient expenditures as a result of an added combination disease management and pharmacy benefit. Furthermore, the survey indicates that the Centers for Medicare & Medicaid Services (CMS) would likely struggle in recruit-

ing disease managers due to their limited enrollment of Medicare beneficiaries, relative inexperience with contracts that put disease managers at risk, and only sporadic use of randomized design studies to test and prove the efficacy of disease management interventions. Thirteen of the 22 survey respondents are currently considered early compliers per accreditation standards developed by the National Committee on Quality Assurance. However, none of the 22 survey respondents comply with the stringent CMS requirements described in the solicitation for the 2002 disease management demonstration.

Key Words

Disease management;
Medicare;
CMS demonstration project;
Cost-effectiveness;
Pharmacy benefit

Correspondence Address

Joshua Cohen,
Senior Research Fellow,
Tufts Center for the Study of
Drug Development,
192 South St., Suite 550,
Boston, MA 02111
(e-mail:
Joshua.Cohen@tufts.edu).

Presented (by Joshua
Cohen) at the DIA Annual
Meeting, June 2002,
Chicago, Illinois.

INTRODUCTION

Ideally, disease managers identify and then deliver the most cost-effective combination of healthcare resources for the prevention and treatment of chronic disease within selected patient populations. Rather than contain individual cost components, such as pharmacy and physician services, without accounting for the impact on total healthcare costs, disease management offers an alternative method of cost control: assessment of total healthcare costs across cost categories, focusing on cost-effectiveness of spending instead of cost-minimization. As such, disease managers do not consider drug costs a separate budget silo, but instead, a relatively modest, potentially cost-effective share of total healthcare spending.

This paper provides a rationale for improved Medicare chronic care management, with a view to increasing disease managers' participation in government-funded demonstration projects. We will present findings from a Tufts Center for the Study of Drug Development survey of 22 leading United States disease managers that highlight potential respondent compliance with requirements enumerated in CMS solicitations for demonstration project applicants as well as Na-

tional Committee on Quality Assurance standards of accreditation. CMS is currently funding several pilot projects that combine disease management services with a full prescription drug benefit, aimed at producing cost savings in the Medicare program. Early compliers with National Committee on Quality Assurance standards would appear poised to gain favor with CMS as prospective candidates to be selected for the 2002 demonstration.

It is uncertain whether or not disease management services will consistently yield actual cost savings among the Medicare population, as this is a group with a high rate of chronic disease. Our survey indicates the main area of savings achieved by disease managers is hospital inpatient cost, which accounts for the largest share of healthcare spending. It is unclear, however, whether these savings are offset by increases in spending on pharmaceuticals, and/or physician and outpatient services.

In addition, disease managers do not appear inclined to accept fully capitated contracts of the kind that CMS envisions. Indeed, it seems unrealistic to impose insurance risk on disease managers by demanding net cost reductions when they do not have sufficient leverage over physicians' prescribing patterns or hospital cost

management policies. The capitation, reinsurance, and cost savings aspects of the CMS solicitation will require disease managers to take on inordinate risk in order to prove the benefits of their programs to Medicare.

ACUTE CARE BIAS IN MEDICARE

The Medicare fee-for-service (FFS) program has traditionally been more generous in terms of reimbursement of acute care, such as hospitalization and physician visits, and less so with respect to financing long-term care, home health, and preventive services. However, the primary needs of Medicare beneficiaries have been gradually moving from predominantly acute, episodic care, toward care for chronic conditions. Following Pareto's rule, a high proportion of Medicare hospital admissions and other expenditures (60%) is currently accounted for by a small number (10%) of chronically ill Medicare beneficiaries (1). Arthritis and hypertension affect more than 21 and 13 million Medicare enrollees, respectively. Ten million Medicare enrollees have heart disease, four mil-

lion suffer from diabetes, and 300000 have end-stage renal disease (2).

In response to the growing percentage of chronically ill beneficiaries, Medicare has become increasingly oriented toward long-term care (3). A comparison of the distribution of Medicare spending in 2000 versus that of 1980 illustrates the shift in emphasis from acute to chronic care, notably in the shift from 67% of the Medicare dollars spent on inpatient care in 1980 to 34% in 2000 (see Figures 1a and 1b).

In spite of incremental changes in spending patterns, Medicare reimbursement remains comparatively biased toward acute care. In the traditional Medicare FFS system (in which 85% of beneficiaries are enrolled) each medical service is typically delivered, billed, and reimbursed separately. This functional and financial separation of medical service components may have inhibited a more efficient approach to healthcare billing and reimbursement. Theoretically, a shift to a capitated system of reimbursement would diminish incentives for an acute care bias. Capitation implies risk transfer from

FIGURE 1A

Where the Medicare Dollar Went in 1980.
Source: Centers for Medicare & Medicaid Services, July 2000 (4).

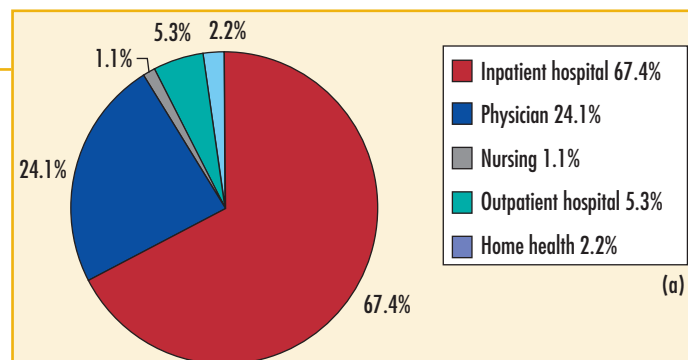
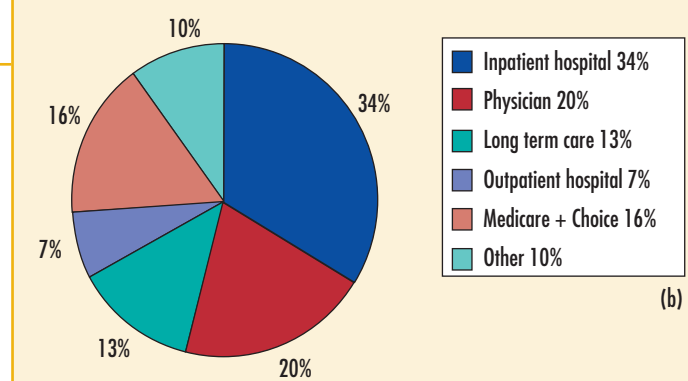


FIGURE 1B

Where the Medicare Dollar Went in 2000.
Source: MEDPAC Report to the Congress: Medicare Payment Policy, March 2002 (5).



public payers and employers to health plans and providers and encourages management of high-risk, high-cost groups who tend to be chronically ill (6). In order to be cost-effective, disease management services could be provided up to the point at which the added costs of disease management are equal to the added benefit produced. Benefit can be measured in terms of reduction in overall costs as well as improvements in the quality of care.

There have been marginal reforms to Medicare's system of reimbursement since its inception. For example, in 1983, Medicare introduced a prospective method for payment of hospital inpatient services, called diagnosis-related groups (DRGs). The DRG system classifies patients into groups based on principal diagnosis, type of surgical procedure, and presence or absence of significant comorbidities or complications (7). In a further move to improve the reimbursement mechanism, the Balanced Budget Act of 1997 established Medicare + Choice; this expanded the Medicare risk-contract program, enabling a wide array of managed care plans to contract with Medicare using an actuarial model that estimates expected spending for all covered services on a fixed per-member-per-month basis. Notwithstanding these incremental changes, the fact that DRGs are narrowly focused on the hospital inpatient cost category, and the limited reach of Medicare + Choice owing to low enrollment (in 2001 fewer than 15% of Medicare beneficiaries enrolled in Medicare + Choice), means that Medicare FFS is virtually intact (8).

CLINICAL RATIONALE FOR IMPROVED CHRONIC CARE MANAGEMENT

As more than one-third of Medicare beneficiaries lack prescription drug coverage (9), improving beneficiaries' access to drugs has remained a salient item on policymakers' agendas. Lack of coverage is particularly detrimental to the chronically ill Medicare subpopulation, which often needs prescription medications on a daily and continuous basis to avoid progression toward acute care status. The political debate has

centered on the administration of a Medicare prescription drug benefit, specifically, on the role that pharmacy benefits managers would play in obtaining price concessions from drug manufacturers and designing incentive-based formularies. However, administering a prescription drug benefit is a necessary, but not sufficient condition to providing access to *pharmaceutical care*.

We define access to pharmaceutical care as a function of both pharmaceutical coverage and drug therapy management (10). The Medicare population is not only vulnerable to the high costs of prescription drugs, but also to inappropriate usage of pharmaceuticals. Administrators of a drug benefit could delineate degrees of access to pharmaceutical care at the levels of:

- Benefit plan design—Which therapeutic categories are included in the prescription drug coverage package,
- Formulary—Within each therapeutic category, which drugs are covered and what kind of copay arrangements are in place,
- Prior authorization—Which mechanism exists for obtaining authorization from the plan sponsor (eg, Medicare) to dispense certain off-the-formulary drugs,
- Drug utilization review—Which quantities of authorized drugs are deemed appropriate and whether drug-drug interactions have been reviewed, and
- Disease management—How care is coordinated along the continuum of disease and across health-care settings.

On the basis of a 2000 Tufts Center for the Study of Drug Development survey of 31 leading disease managers, we distilled the following definition of disease management (11): A continuous, coordinated healthcare process that seeks to manage and improve the health status of a carefully defined patient population over the entire course of a disease. The patient populations targeted are high-risk, high-cost patients with chronic conditions that typically depend on appropriate pharmaceuticals and therapies for proper maintenance. Disease management services encompass disease prevention efforts as well as specific protocols once disease states

have developed. Patient behavior is targeted, including poor medication compliance, deficient self-care skills, and lack of adherence to recommended lifestyle changes. Furthermore, disease management aims at altering provider behavior, including failure to prescribe the most cost-effective medications, poor coordination of care across providers as well as the preventive, acute, and follow-up phases of care, and lack of adherence to disease-specific standards of care.

A prescription drug benefit on its own serves merely as a subsidy to purchase drugs at a steep discount. Cost-effective implementation of a drug benefit would additionally imply improved drug therapy management, particularly for those Medicare beneficiaries taking continuous multiple medications. The House of Representatives recently passed a Medicare prescription drug benefit bill that includes a disease management component (12). Under a “pharmacy assistance program” provision stipulated in the bill, individual states can apply for \$600 million in federal grants to operate disease management programs aimed at reducing adverse drug reactions as well as medical errors, and improving prospective drug review.

To improve chronic care management, disease and pharmacy benefits managers can apply an evidence-based approach that integrates caregiver experience with large numbers of patients over prolonged periods of time, preferences elicited from patients, and valid and current clinical research evidence (13). This approach takes into account appropriate indications, contraindications, dose, coexisting therapies, and measurement of outcomes. The challenge to pharmacy benefit and disease managers is to employ their data management systems to enhance the quality of clinical decision making, while containing cost growth to payers of health insurance. Their data management systems can measure appropriate use of pharmaceuticals, related to both desired and adverse consequences, defined in terms of laboratory values (eg, cholesterol levels or elevated liver function tests), office visit data (eg, blood pressure), or outcomes (eg, increased life expectancy, im-

proved quality of life indicators). Online reminders can detect suboptimal prescribing choices as they are made and offer suggested alternatives, laying the groundwork for targeted educational outreach interventions. Similarly, information systems can track how consistently a patient fills prescriptions, which facilitates targeted interventions toward noncompliant patients.

Chronically ill beneficiaries are especially vulnerable to the adverse health consequences of missed and/or inappropriate drug treatments (14). Increasingly, elderly patients are affected by the prescriptions that they are not receiving. Angiotensin-converting enzyme inhibitors reduce mortality in beneficiaries with congestive heart failure, but are only prescribed to a minority (approximately 36% to 40%) of elderly hypertensive patients with congestive heart failure (15). Aspirin, diuretics, and beta-blockers can prevent recurrent cardiac events in patients with past myocardial infarction, but are frequently omitted from the medication regimens of elderly patients, even when these drugs are not contraindicated (16,17).

ECONOMIC RATIONALE FOR IMPROVED CHRONIC CARE MANAGEMENT

From a health policymaker’s perspective, the key to addressing the cost-effectiveness of a Medicare drug benefit may lie in providing quantitative evidence of the broader medical savings that may be attributed to increased appropriate pharmaceutical use. Empirical estimates vary, but it is generally acknowledged that increases in appropriate prescription drug spending lead to decreases in hospital inpatient spending as well as improved quality of life and life expectancy (18). Proponents of pharmaceutical value argue that appropriate drug therapies yield fewer hospitalizations and shorter stays due to disease prevention and improved functioning, ultimately reducing overall medical costs (19).

As the need for long-term care has grown, the portion of healthcare resources allocated to

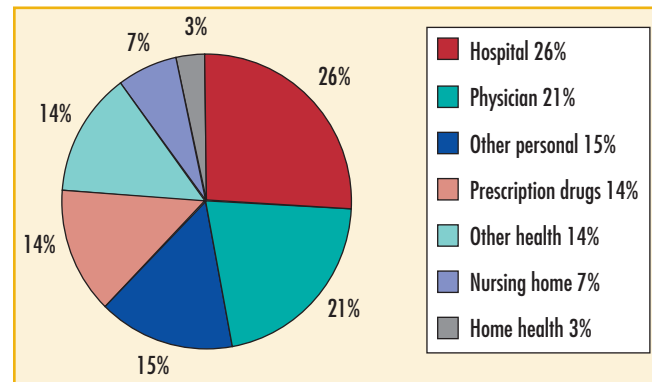


FIGURE 2

Relative Contribution of Cost Categories to Total Growth (1990–2000).
Source: Centers for Medicare & Medicaid Services (24).

hospital care has declined, while that expended on pharmaceuticals has risen dramatically. Presently, prescription drugs account for close to 20% of health spending increases (20). Nevertheless, physician, outpatient, and hospital care remain the largest contributors to growth in spending on health services overall, although the proportion of national health expenditures devoted to these services declined from 1990 to 2000 (see Figure 2). Notably, hospital inpatient and outpatient costs, at 43%, accounted for the largest portion of medical cost increases in 2000 (21).

DEMONSTRATION PROJECTS AND ACCREDITATION

CMS is currently generating cost-effectiveness data on a combined Medicare drug benefit and disease management component through analysis of demonstration projects. Medicare demonstration projects have been in existence since the inception of the program in 1965, and the results of these studies have been used as supporting evidence in Medicare policy changes of the past. Ongoing demonstrations for management of chronic illnesses comprise large-scale projects authorized by the Balanced Budget Act of 1997 such as the 2000 Coordinated Care Demonstration. This project seeks to manage the expenditures of Medicare parts A (hospital) and B (physician) using interventions targeted at chronically ill beneficiaries.

On February 2, 2002, CMS announced a three-year demonstration project for three dis-

ease management organizations to cover up to 30000 chronically ill Medicare beneficiaries. The 2002 disease management demonstration expands significantly upon the 2000 demonstration by including a pharmacy benefit in addition to disease management services. The goal is the same as that of the 2000 demonstration: to improve the cost-effectiveness of Medicare spending under parts A and B. The disease managers will use measures including: disease-specific diagnostic tests, medications, and education of patients and physicians to promote appropriate medication intake and compliance. CMS is soliciting proposals from disease management organizations with expertise in congestive heart failure, chronic obstructive pulmonary disorder, end-stage renal disease, and diabetes mellitus. CMS will pay the disease managers a capitated monthly premium for provision of coordinated care services and for the cost of prescription drugs. Capitation was chosen as a payment method because it would presumably create economic incentives to move the focus of care away from high-cost, acute care settings (such as hospitals) to healthcare services that can better affect the incidence of disease in the first place.

The most recent CMS demonstration differs significantly from its predecessors in that the legislation stipulates that the participants must cover all prescription drugs for the chronic care enrollees, regardless of whether or not the drugs pertain directly to the disease in question. The legislation also requires each selected organization to accept risk, that is, to suffer losses if it is

unable to reduce aggregate Medicare program expenditures. This implies that, over the course of a demonstration project, aggregate Medicare payments for disease management services may be no greater than expected savings from the demonstration project.

In addition to CMS efforts to examine the cost-effectiveness of disease management, there is a national trend toward accreditation of disease managers through the National Committee on Quality Assurance (NCQA). NCQA is a leader in healthcare performance measurement and oversight and currently accredits more than half of the nation's HMOs (22). NCQA has broad support among the employer community—about 75% of the nation's large employers use NCQA accreditation to guide their health plan choices. In December 2001, NCQA released its set of final standards for disease management accreditation (23). Earning accreditation could help disease managers gain credibility with prospective customers.

NCQA standards address the following areas:

- Program content—Use of disease-specific evidence-based guidelines,
- Patient services—Provision of information, patient participation, patient feedback, and patients' rights and responsibilities,
- Practitioner services—Provision of information, decision support, and practitioner feedback,
- Clinical data systems—Coordination of information across healthcare settings and processes used to identify and stratify patients, and
- Measurement of program performance—Clinical outcomes benchmarked against national standards, and financial outcomes measurement and reporting.

As of June 2002, 13 of the 22 disease managers we surveyed were considered early compliers by NCQA and American Healthways was the only disease manager to have earned full accreditation after a review of its programs targeting diabetes, congestive heart failure, coronary artery disease, and chronic obstructive pulmonary disorder. Fourteen of the survey respondents at that time were committed to NCQA reviews, and as of May 1, 2003, eight more of the

survey respondents had received NCQA full accreditation.

TUFTS CENTER FOR THE STUDY OF DRUG DEVELOPMENT SURVEY

In the fall of 2001, we initiated the third annual survey of leading disease and pharmacy benefit managers (10,25,26). The 2001 survey was conducted using a three-page questionnaire. Thirty-eight disease managers were surveyed; 22 responded with completed questionnaires.

This survey focused on identifying areas where disease managers could generate cost savings in Medicare in line with the CMS demonstration project and NCQA accreditation requirements. Keeping in mind the demographics of the Medicare population as well as the disease focus of CMS demonstration projects, we gathered data on chronic conditions highly prevalent among the Medicare population (congestive heart failure, chronic obstructive pulmonary disorder, end-stage renal disease, and diabetes mellitus). The survey included 22 of the 30 leading disease management organizations in the United States, representing approximately 55% of the total disease management market. Included among survey respondents were 13 independent disease management vendors, 7 managed care plans, and 2 pharmacy benefit managers.

Across the United States, approximately 100 entities offer disease management services to approximately 1.6 million enrollees, of which only about 25 have more than 1000 enrollees. Sixty-eight of the 100 entities offering disease management services are considered viable, with revenues around or above \$1 million and a sustainable number of accounts, according to the Disease Management Purchasing Consortium (27). Only 33 of these viable companies have programs in the four Medicare-prevalent chronic conditions here in question, and our survey included approximately half of them.

Survey respondents enroll 800000 covered lives in total; 300000 of the enrollees are Medicare beneficiaries. About two-thirds of these Medicare beneficiaries are enrolled in

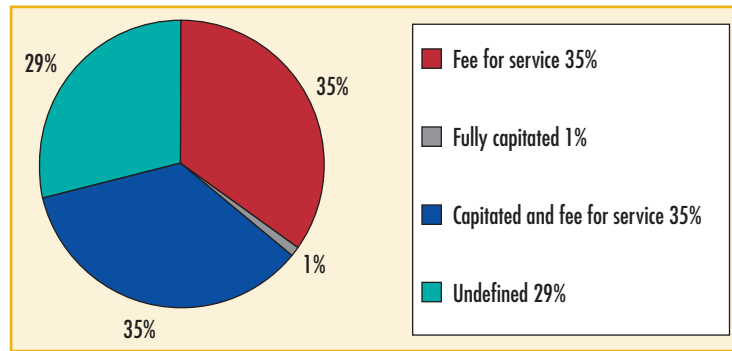


FIGURE 3

Disease Management Contract Type Based on Weighted Averages.
 Source: Tufts Center for the Study of Drug Development 2001 Disease Management Survey

Medicare + Choice plans. This is a relatively small portion of the Medicare population of 40 million, given that there are up to 10 million Medicare beneficiaries with serious chronic conditions that would presumably benefit from better management (2).

According to the survey responses, FFS contracts were far more prevalent than a fully capitated structure. Only seven of the 22 respondents reported a majority of fully capitated contracts in their portfolio of the kind that CMS wants implemented. Moreover, the seven companies with fully capitated contracts are relatively small (fewer than 5000 enrollees). If we weight contracts according to number of enrollees per contract, only 1% of the weighted average is fully capitated (see Figure 3). This reflects a definite trend away from fully capitated contracts in the managed care industry, which is a departure from the capitation model more prevalent in the 1990s (20).

On a per contract basis, 32% are with managed care organizations (MCOs), 28% with employers, and 16% with government agencies.

However, if we weight contracts for number of covered lives, 44% of disease management contracts are with MCOs, 37% are with employers, and only 9% are with government agencies such as FFS Medicare and Medicaid (see Figure 4).

SURVEY RESULTS MEASURED AGAINST CMS REQUIREMENTS

Eight of the survey respondents have been involved in previous CMS demonstration projects. However, the 2002 demonstration is novel in terms of its stringent participation requirements, so much so that, according to CMS, “it is unlikely that many disease management organizations would be eligible to participate. . . . [w]e expect fewer than 10 organizations to submit proposals” (3).

The 2002 CMS demonstration would require disease management organizations to:

1. “Supplement their programs with full prescription drug coverage”—Very few of the survey respondents do this; only the seven MCO disease managers do,

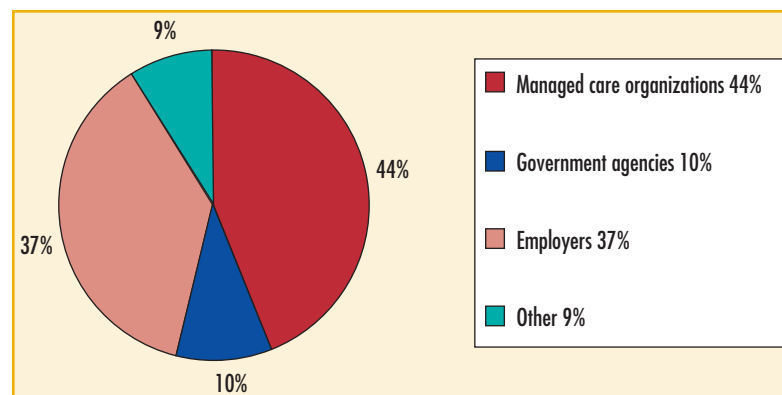


FIGURE 4

Disease Management Clients Based on Weighted Averages.
 Source: Tufts Center for the Study of Drug Development 2001 Disease Management Survey

2. Provide reinsurance to guarantee reduced aggregate Medicare program expenditures”—None of the survey respondents perform a reinsurance function, which is not surprising given that government usually serves as the insurer of last resort, that is, as reinsurer, for the highest cost tier of beneficiaries,
3. “Recruit and serve at least 5000 appropriately targeted Medicare beneficiaries”—Only eight of the 22 respondents currently have more than 5000 Medicare beneficiaries enrolled in their programs, and
4. Prove efficacy of disease management programs—To do this, CMS requests that a “randomized experimental design be used with a concurrent treatment group that receives disease management services and a control group that receives usual care”—only three of the organizations surveyed use these methods to prove disease management efficacy.

Sixteen of the 22 survey respondents include disease management implementation costs in their cost savings calculations, while 15 out of 22 calculate cost savings across cost categories. Forty-two percent of the disease managers surveyed claim that increased pharmaceutical spending leads to net healthcare cost savings (see Figure 5). Yet, the majority (58%) report

that increased prescription drug spending does *not* yield net cost savings, but rather hospital inpatient cost decreases are being offset by increases in physician and outpatient costs.

For the four disease states—congestive heart failure, chronic obstructive pulmonary disorder, diabetes, and end-stage renal disease—we selected a representative sample of high-impact disease-specific tests and drug therapies (Table 1). In our survey, we asked disease managers whether the implementation of the standard tests and therapies in question would increase, decrease, or not affect the individual cost categories of pharmacy, physician, outpatient, and inpatient. According to the survey respondents, all of the standard tests and drug therapies selected in the table yield lower inpatient costs. However, 75% of the tests and therapies are associated with higher outpatient and physician costs. It is not known what the aggregate (net) effect would be of implementing this set of tests and therapies as standard practice.

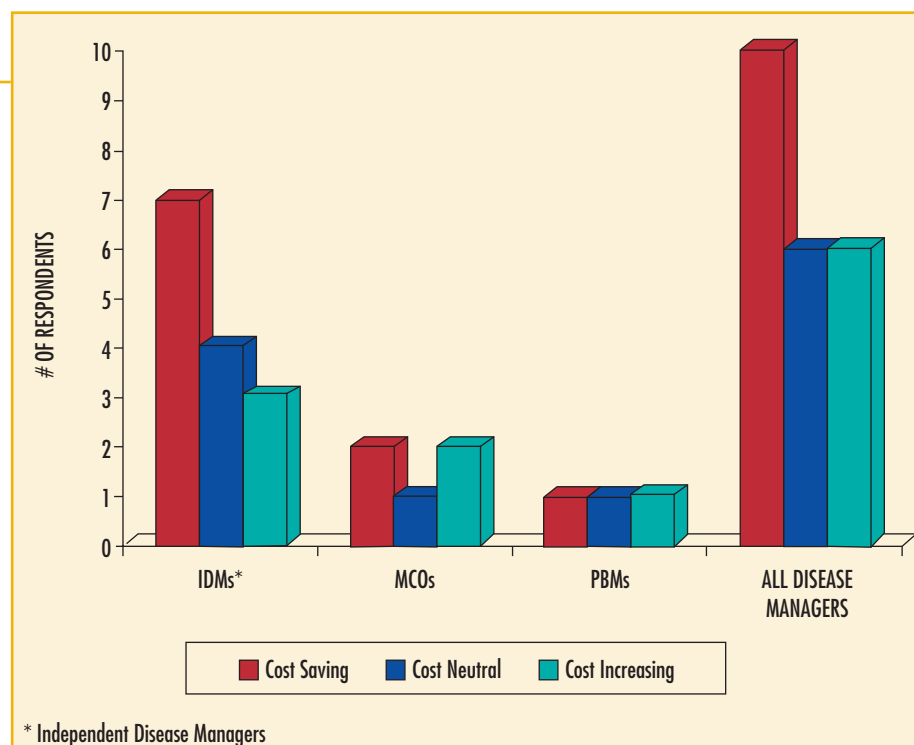
POLICY IMPLICATIONS

A number of influential politicians endorse the premise that improved pharmaceutical care can reduce overall healthcare costs. For example, as

FIGURE 5

Cost Impact of Increased Spending on Appropriate Prescription Drugs.

Source: Tufts Center for the Study of Drug Development 2001 Disease Management Survey



Disease States and Associated Standard Tests and Drug Therapies

TABLE 1

Disease State	Standard Tests	Drug Therapies
Congestive heart failure (CHF) (N ₁ = 10)	Cholesterol Left ventricular function K level Serum electrolyte Kidney function	ACE inhibitors Diuretics Vasodilators Ca ⁺ channel blockers β blockers
Chronic obstructive pulmonary disease (COPD) (N ₂ = 7)	Spirometry	Corticosteroids Bronchodilators Opioids
Diabetes (N ₃ = 12)	HbA _{1c} screening Serum creatinine Micro-albumin Lipid profile	Insulin (all forms) Thiazolidinediones α-glucosidase inhibitors Sulfonylureas
End-stage renal disease (ESRD)* (N ₄ = 5)	Hematocrit K level Urinalysis	

*For ESRD, there are no *disease-specific* drug therapies used by the disease managers surveyed.
N₁, N₂, N₃, and N₄ refer to number of survey respondents with respective disease management programs.
Some tests, such as the kidney function tests, are used for CHF and ESRD patients. Likewise, influenza vaccines are used for CHF, COPD, and diabetes patients.

part of an ambitious legislative agenda outlined during a National Press Club address on June 18, 2002, Senator Edward Kennedy spoke of two disease management proposals that would encourage broader use of pharmaceuticals in order to reduce overall healthcare spending. One of the bills, the "STOP Stroke Act," would "fund a Department of Health and Human Services educational campaign to increase the number of stroke patients who seek immediate treatment. The premise of the bill is that more rapid treatment with thrombolytic agents will reduce the disability and costs associated with strokes" (28). Senator Kennedy, who was in the Senate when Medicare was enacted in 1965, also supports one of the most comprehensive, universal Medicare prescription drug benefit bills currently being debated in Congress (29).

Establishing disease management programs to achieve cost savings is a laudable goal, and would yield political benefits to the legislators involved. However, our survey suggests that the objective of net cost savings may be unrealistic. A majority of the survey respondents report that implementation of disease management coupled with an increase in appropriate drug spending will not lead to net cost savings,

notwithstanding decreases in hospital inpatient spending. Furthermore, a sizable minority of the disease managers surveyed (approximately 30%) does not calculate net cost savings, nor do they include disease management implementation costs in their cost savings calculations, making it impossible for them to detect net cost effects. Moreover, disease managers report that without being provided gatekeeper authority to control access to or reimbursement for benefits under Medicare parts A and B as well as a prescription drug benefit, they cannot guarantee reductions in overall expenditures.

This helps to explain their evident reluctance to sign at-risk contracts of the kind CMS envisions. As a consequence it would seem highly unlikely that the CMS requirements, as described in the 2002 demonstration project solicitation, will be met by any of the country's leading disease managers. A further reason for skepticism regarding the CMS requirement of aggregate cost savings is the empirical relationship between medical expenditures and aging. As the Medicare population ages and the baby boomer generation joins the Medicare ranks, medical expenditures are liable to increase on both a total and a per capita basis, in part be-

cause “[s]uccess in preventing and curing diseases has raised life expectancy but at the same time exposed people to a new range of degenerative diseases during an old age they would not previously have reached” (30).

In order to avoid policymaker tunnel vision where the only light at the end is cost savings, the debate on the merits of a drug and disease management benefit should turn toward cost-effectiveness; promote provision of pharmacy and disease management services up to the point at which marginal service costs are equal to marginal benefits. Cost-effectiveness does not imply cost savings. Yet, as a policy objective, cost-effectiveness provides a *realistic* guideline for disease managers to follow as they measure their programs’ outcomes, particularly outcomes pertaining to programs (eg, diabetes) that yield positive results in the longer run, but do not tend to produce short-term cost savings. In this respect, policymakers could view demonstration projects as control/intervention experiments, where traditional FFS Medicare beneficiaries serve as controls and demonstration participants as interventions. At the end of a demonstration, the control and intervention groups could be compared in terms of the cost-effectiveness of healthcare dollars spent. Demonstration projects would continue subject to a *cost-effectiveness* constraint imposed by CMS.

CONCLUSIONS

CMS is currently testing models of disease management combined with a full prescription drug benefit. Early compliers with NCQA standards appear poised to gain favor with CMS as prospective candidates for the most recent demonstration project. Similar to previous demonstrations, this project aims to yield net cost savings for the Medicare program.

Our survey of 22 leading disease managers indicates that the main area of savings disease managers can achieve is hospital inpatient costs, which accounts for the largest share of healthcare spending. However, the majority of disease managers surveyed report that disease management coupled with an increase in ap-

propriate drug spending will not lower net costs. Therefore, it is uncertain whether hospital cost savings would be sufficient to offset increases in pharmacy, physician, and outpatient expenditures as a result of a disease management and pharmacy benefit. Furthermore, very few disease managers appear willing to accept fully capitated contracts of the kind CMS envisions. Indeed, it seems unrealistic to demand net cost reductions from disease managers when they do not have much leverage over physicians’ prescribing patterns or hospital cost management policies.

In brief, the 2001 survey of 22 leading disease managers indicates problems CMS would have recruiting disease managers, due to limited enrollment of Medicare beneficiaries, relative lack of experience with government contracts that put disease managers at risk, and sporadic use of randomized design studies to prove efficacy of disease management interventions. Currently, 13 of the 22 survey respondents are early compliers with standards laid out by NCQA, but even these industry leaders do not comply with the CMS requirements as described in the solicitation for the 2002 disease management demonstration.

REFERENCES

1. Mueller C, Schur C, O’Connell J. Prescription drug spending: the impact of age and chronic disease status. *Am J Public Health*. 1997 Oct; 87(10):1626–1629.
2. *Medicare Chart Book*. 2d edition. Henry J. Kaiser Family Foundation. Fall 2001. <http://www.kff.org/>. Accessed July 2002.
3. Medicare program: solicitation for proposals for the demonstration project for disease management for severely chronically ill Medicare beneficiaries with congestive heart failure, diabetes, and coronary heart disease. *Federal Register*. 2002 February 22; 67(36):8267–8270.
4. Where the Medicare dollar went, 1980 and 1998. *Medicare 2000: 35 years of improving Americans’ health and security*. Health Care Financing Administration. <http://cms.hhs.gov/statistics/>. Accessed July 2002.
5. Medicare Payment Advisory Commission (MED-PAC). *Report to the Congress: Medicare Payment*

- Policy. Washington, DC: Medicare Payment Advisory Commission; March 2002.
6. *Capitation Sourcebook: A Practical Guide to Managing At-Risk Arrangements*. Boland P, ed. Berkeley, CA: Boland Healthcare; 1996.
 7. Medicare Payment Advisory Commission (MED-PAC). *Report to the Congress: Medicare Payment Policy*. Washington, DC: Medicare Payment Advisory Commission; March 1999.
 8. The Medicare program: Medicare and prescription drugs (Fact Sheet). Henry J. Kaiser Family Foundation, March 2002. <http://www.kff.org/>. Accessed July 2002.
 9. Davis M, Poisal J, Chulis G, Zarabozo C, Cooper B. Prescription drug coverage, utilization, and spending among Medicare beneficiaries. *Health Aff*. 1999 Jan–Feb;18(1):231–243.
 10. Cohen J, Chee J. Pharmacy benefit managers' role in facilitating Medicare beneficiary access to pharmaceutical care. *Dis Manage Health Outcomes*. 2002;10(4):221–227.
 11. Cohen J. Are commercial disease managers willing and prepared to enter the Medicare market? *Drug Inf J*. 2002;36(2):445–452.
 12. Congressional Budget Office cost estimate: H.R. 4954: Medicare Modernization and Prescription Drug Act of 2002. <http://www.cbo.gov/>. Accessed July 2002.
 13. Ellrodt G, Cook DJ, Lee J, Cho M, Hunt D, Weingarten S. Evidence-based disease management. *JAMA*. 1997 Nov 26;278(20):1687–1692.
 14. Avorn J. Improving drug use in elderly patients: getting to the next level. *JAMA*. 2001 Dec 12;286(22):2866–2868.
 15. Health Care Financing Administration. Heart Failure National Project Overview:17. http://www.cmrica.org/healthcare_docs/CHF/chf_cms_description.pdf. Accessed October 2002.
 16. Health Care Financing Administration. Acute Myocardial Infarction National Project Overview:5. http://www.cmri-ca.org/healthcare_docs/AMInational.pdf. Accessed October 2002.
 17. Brookes L. Hypertension update: ALLHAT—results and reactions—plus new guidelines, new approvals, and the ethics of journal publishing. *Medscape Cardiology*. 2003;7(1). <http://www.medscape.com/viewarticle/447590>. Accessed April 2003.
 18. Lichtenberg FR. Are the benefits of newer drugs worth their cost? Evidence from the 1996 MEPS. *Health Aff*. 2001 Sep–Oct;20(5):241–251.
 19. Lichtenberg FR. The benefits and costs of newer drugs: evidence from the 1996 Medical Expenditure Panel survey. National Bureau of Economic Research [NBER working paper No. w8147] March 2001. <http://papers.nber.org/papers/W8147>. Accessed July 2002.
 20. Robinson JC, Casalino LP. Reevaluation of capitation contracting in New York and California. *Health Aff*. 2001;Suppl Web Exclusives: W11–9. <http://www.healthaffairs.org/2004Robinson2.pdf>. Accessed July 2002.
 21. Kaiser Family Foundation. *Trends and indicators in the changing health care marketplace: chartbook*. May 2002. http://www.kff.org/content/2002/3161/marketplace2002_finalc.pdf. Accessed July 2002.
 22. National Committee on Quality Assurance. Disease management accreditation & certification status list. www.ncqa.org/programs/accreditation/DM/dmaccrstatus.htm. Accessed May 28, 2002.
 23. National Committee on Quality Assurance. American Healthways becomes nation's first NCQA-accredited disease management organization. *NCQA News*. 2002 Jun 10. www.ncqa.org/Communications/News/amhcdmaccr.htm. Accessed June 2002.
 24. Centers for Medicare & Medicaid Services. <http://www.hcfa.gov/stats/nhe-oact/tables/t2.html>. Accessed June 15, 2002.
 25. Cohen JP. PBMs and a Medicare prescription drug benefit. *Food & Drug Law J*. 2000;55(3):311–320.
 26. Cohen J, Chee J. Pharmacy benefit managers and Medicare beneficiary access to prescription drugs. *Drug Inf J*. 2001; 35(2):569–576.
 27. *Complete Disease Management Vendor Listings, December 31, 2001*. Wellesley MA: Disease Management Purchasing Consortium & Advisory Council LLC; 2002.
 28. Kennedy health care agenda accepts premise of Rx cost-effectiveness. *Pink Sheet*. 2002 June 24;64(25):14.
 29. Kennedy EM. Health—America's Forgotten Health Care Agenda: A Call For Action. <http://kennedy.senate.gov/spotlightnpc061802.html>. Accessed October 2002.
 30. Jackson WA. Age, health, and medical expenditure. Chapter 8 in *The Social Economics of Health Care*. Davis JB, ed. London and New York: Routledge; 2001:195–218