



**IMPROVING QUALITY**  
*and VALUE in the U.S.*

# Health Care System

August 2009



BIPARTISAN POLICY CENTER



## Preamble

The Bipartisan Policy Center (BPC) is a public policy advocacy organization founded by former U.S. Senate Majority Leaders Howard Baker, Tom Daschle, Bob Dole, and George Mitchell. Its mission is to develop and promote solutions that can attract the public support and political momentum to achieve real progress. The BPC acts as an incubator for policy efforts that engage top political figures, advocates, academics, and business leaders in the art of principled compromise.

This report is part of a series commissioned by the BPC to advance the substantive work of the Leaders' Project on the State of American Health Care. It is intended to explore policy trade-offs and analyze the major decisions involved in improving health care delivery, and discuss them in the broader context of health reform. It does not necessarily reflect the views or opinions of Senators Baker, Daschle, and Dole or the BPC's Board of Directors.

The Leaders' Project was launched in March 2008. Co-Directed by Mark B. McClellan and Chris Jennings, its mission is (1) to create a bipartisan plan for health reform that can be used to transform the U.S. health care system, and (2) to demonstrate that health reform is an achievable political reality. Over the course of the project, Senators Baker, Daschle, and Dole hosted public policy forums across the country, and orchestrated a targeted outreach campaign to Members of Congress, the Administration, and key health care constituencies. In June 2009, they released the Project's final report entitled, *Crossing Our Lines: Working Together to Reform the U.S. Health System*, which includes a slate of comprehensive policy recommendations to address the delivery, cost, coverage, and financing challenges facing the nation's health system. For more information, please visit [www.bipartisanpolicy.org](http://www.bipartisanpolicy.org)

The BPC is honored to have the support of the Robert Wood Johnson Foundation (RWJF). RWJF is working to ensure that all Americans have stable, affordable health care coverage.



Robert Wood Johnson Foundation

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## **Crossing Our Lines: Working Together to Reform the U.S. Health System**

*Crossing Our Lines* is a bipartisan agreement for comprehensive health reform reached by Senators Howard Baker, Tom Daschle, and Bob Dole. It is the culmination of an inclusive year-and-a-half effort that included strategic outreach to key health care stakeholders, a series of state-based public policy forums, and months of personal deliberations by

the Senators. Taken together, the recommendations ensure that all Americans have quality, affordable health coverage, while improving health care quality and reining in skyrocketing costs. Organized around four “pillars” of health reform, the policies are inextricably intertwined, and consequently work together to achieve more significant improvements in the health care system than could be achieved if they were considered in an isolated manner.

- I. Promoting High-Quality, High-Value Care**
- II. Making Health Insurance Available, Meaningful and Affordable**
- III. Emphasizing and Supporting Personal Responsibility and Healthy Choices**
- IV. Developing a Workable and Sustainable Approach to Health Care Financing**

To download a copy of the key recommendations or the full report, please visit [www.bipartisanpolicy.org](http://www.bipartisanpolicy.org).

# Executive Summary

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The U.S. health care system faces significant challenges that clearly indicate the urgent need for reform. Attention has rightly focused on the approximately 46 million Americans who are uninsured, and on the many insured Americans who face rapid increases in premiums and out-of-pocket costs. As Congress and the Obama Administration consider ways to invest new funds to reduce the number of Americans without insurance coverage, we must simultaneously address shortfalls in the quality and efficiency of care that lead to higher costs and to poor health outcomes. To do otherwise casts doubt on the feasibility and sustainability of coverage expansions and also ensures that our current health care system will continue to have large gaps — even for those with access to insurance coverage.

There is broad evidence that Americans often do not get the care they need even though the United States spends more money per person on health care than any other nation in the world. Preventive care is underutilized, resulting in higher spending on complex, advanced diseases. Patients with chronic diseases such as hypertension, heart disease, and diabetes all too often do not receive proven and effective treatments such as drug therapies or self-management services to help them more effectively manage their conditions. This is true for insured,

uninsured, and under-insured Americans. These problems are exacerbated by a lack of coordination of care for patients with chronic diseases. The underlying fragmentation of the health care system is not surprising given that health care providers do not have the payment support or other tools they need to communicate and work together effectively to improve patient care.

While many patients often do not receive medically necessary care, others receive care that may be unnecessary, or even harmful. Research has documented tremendous variation in hospital inpatient lengths of stay, visits to specialists, procedures and testing, and costs — not only by different geographic areas of the United States, but also from hospital to hospital in the same town. This variation has no apparent impact on the health of the populations being treated. Limited evidence on which treatments and procedures are most effective, limited evidence on how to inform providers about the effectiveness of different treatments, and failures to detect and reduce errors further contribute to gaps in the quality and efficiency of care. These issues are particularly relevant to lower-income Americans and to members of diverse ethnic and demographic groups who often face great disparities in health and health care.

Reforming our health care delivery system to improve the quality and value of care is essential to address escalating costs, poor quality, and increasing numbers of Americans without health insurance coverage. Reforms should improve access to the right care at the right time in the right setting. They should keep people healthy and prevent common, avoidable complications of illnesses to the greatest extent possible. Thoughtfully constructed reforms would support greater access to health-improving care — in contrast to the current system, which encourages more tests, procedures, and treatments that are at best unnecessary and at worst harmful.

This report reviews the evidence on a range of payment and delivery system reforms designed to improve quality and value. It reaches several conclusions:

**1. While there is ongoing debate about the ability of various delivery system reforms to increase value, there are clear attributes of different approaches to reform that are more likely than others to improve health and slow cost growth.**

*Chronic Disease Management, Primary Care Coordination, and Health Information Technology (HIT)* — There is strong evidence that particular approaches or programs in these areas can improve quality and health outcomes. Some interventions also show evidence of lowering total cost growth. At the same time, these reforms, as implemented, have been very heterogeneous, and improvements in value and especially reductions in cost have not been automatic. While we find promising evidence that delivery system interventions can help slow the growth of health care costs, we argue that it should be possible to achieve larger and more certain savings by having meaningful risk-adjusted accountability incentives and requirements in place.

These incentives and requirements should also be tied to particular quality improvement steps.

*Comparative Effectiveness Research (CER)* — Investment in CER holds promise for improving the value of health care over the longer term. Contrary to some common definitions of CER that focus narrowly on supporting and disseminating more head-to-head trials for particular treatments, CER could have a much larger impact if it is more broadly focused on (1) comparing the risks, benefits, and costs of different health care practice; (2) evaluating and revising policies that influence practices; and (3) developing strategies for targeting practices to specific groups of patients. This more broadly conceived approach to CER can support continuing improvements in the delivery system and reduce disparities in health care based on race, geography, and other factors.

**2. Interventions that are targeted to specific patient populations and clinical areas typically have a greater impact on quality improvement and cost containment than broader approaches.**

Targeting treatments to the appropriate patients is increasingly important in medical science, and particularly important to promoting quality and value. Using predictors — such as high utilization, complexity of conditions, or other clinical and personal characteristics — may improve the returns from delivery system investments. Research has found that certain groups, including individuals with multiple chronic diseases, low-income and minority populations, and patients undergoing care transitions, are particularly vulnerable and are more likely to benefit from certain interventions. Further, chronic care management programs can have a substantial impact on frail patients and

those with multiple chronic diseases via improved health outcomes, patient and family satisfaction, and reduced costs. Unfortunately, these sub-populations often have the least access to effective care management programs. Developing better evidence and analytic capabilities for targeting delivery system interventions appropriately will be particularly important for future reforms.

**3. Delivery system reforms are most effective when they are integrated and ensure real accountability from providers and patients to improve results.**

Evidence suggests that multiple approaches to delivery system reform may be necessary to bend the cost curve and improve care quality. For example, the effectiveness of a single disease management program may be limited for patients who have multiple chronic conditions and who require coordinated care from many specialists. Moreover, efforts to coordinate care will be less effective without the use of electronic medical records and more comprehensive decision support for both patient and provider. Alone, sophisticated HIT systems will be ineffective if providers do not have payment and other incentives to promote systematic coordination of care. Finally, providers will not be as successful as they can be over the long term if they do not have access to practical evidence on which clinical practices work best in particular cases or which patients need timely interventions. Evaluations of past efforts to integrate delivery system reforms show promising results. Delivery system reforms must be implemented in concert with other reforms to provide the tools, resources, and incentives (for patients and providers) needed to assure better patient outcomes.

**4. Reforms are needed to transition provider reimbursement away from volume and intensity of services and toward quality and value.**

*Changing provider reimbursement* — Moving away from a focus on the volume and intensity of services provided and toward accountability for overall cost and quality is essential for supporting integrated delivery system reforms. Many valuable services that providers already deliver, such as effective preventive care or coordinated post-hospitalization care, are generally underprovided because doctors and hospitals do not have adequate financial or other support to provide them. The current system creates incentives for providing more care and more intensive treatments, with little regard to the effectiveness of these treatments in terms of improving health at the lowest possible cost. A reformed system should reward value before volume, quality before quantity, and organized delivery over disorganized care. Without payment reforms that give providers the support they need to be increasingly accountable for delivering better care at lower overall cost, individual, incremental delivery reforms or interventions are unlikely to be adequate to address the major gaps in quality and value that currently exist in the U.S. health system.

*Changing benefit designs* — Assuring that cost is not a barrier to care is a critical component of designing health benefits. When faced with significant out-of-pocket expenses, patients are just as likely to forego necessary care as they are to forego unnecessary care. Cost-sharing requirements and coverage should be designed to encourage patients to utilize cost-effective primary care and preventive services that can delay or prevent the onset of costly chronic conditions.

At the same time, patients should be encouraged to choose high quality care at a lower overall cost, and should have access to information to help them make well-informed decisions. Often, patients cannot get reliable information on the important outcomes and overall costs of their treatment options. With better information on value — outcomes, satisfaction, and costs — patients could make more confident decisions about getting the care they need while spending no more than necessary. This is important because, in many insurance plans today, patients with chronic diseases incur substantial out-of-pocket costs. And in the frequent cases where they have reached the out-of-pocket spending limit in their plan, they do not stand to share in any of the savings that could be achieved if they get less costly care that meets their needs. Enabling such patients to pay less when they get better care that lowers overall costs would provide better support for effective integrated care.

These findings also suggest that efforts to support integrated delivery reforms through provider payment and benefit reforms should be *combined with* expanded health care coverage to improve the performance of the overall system in a feasible and sustainable way.

**5. To be most effective, changes in the delivery system and coverage expansions should be implemented together.**

Reforming health care payment and delivery and expanding coverage are not only complementary; each is critical to achieving the other. Coverage expansion is critical to fully address the underuse of effective care, a problem that is particularly severe among the uninsured. At the same time, successful payment and delivery reform is needed to increase

the value of health care, with better quality care and slower cost growth. These improvements will likely induce more Americans to purchase health insurance coverage as it becomes more affordable and valuable. Modeling results presented in this paper predict that if delivery system reforms can help achieve reasonable increases in value, millions of additional Americans could obtain health insurance coverage by 2019, even absent expansions in coverage. Of course, delivery system reforms alone will not ensure universal coverage; major steps must be taken to explicitly ensure coverage for every American. Yet substantial progress toward effective delivery system reform is critical to achieving goals with respect to expanded coverage.

These findings have several implications for policy actions by Congress and the Administration:


- Lead with Medicare by implementing a clear vision for transitioning payments to promote greater accountability for improving the value of health care. Efforts to promote delivery reform that do not include Medicare cannot have a major impact on the environment of medical practice.
- Develop and promote the consistent, meaningful use of valid and widely available information on the quality and cost of health care, with a particular emphasis on measuring health outcomes and overall costs at the level of episodes of care and at the level of individual patients. This includes using HIT systems to simplify data collection and reporting, and building better evidence on which delivery approaches best work.
- Promote an integrated approach to delivery reform by giving providers a feasible pathway for organizing local delivery systems around the

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principle of accountability. Simultaneously work to (1) implement and continually improve HIT and quality measurement infrastructure, (2) provide better systems for the coordination of primary care and the delivery of preventive care, and (3) introduce new payment systems to support reductions in cost growth and improvements in quality.

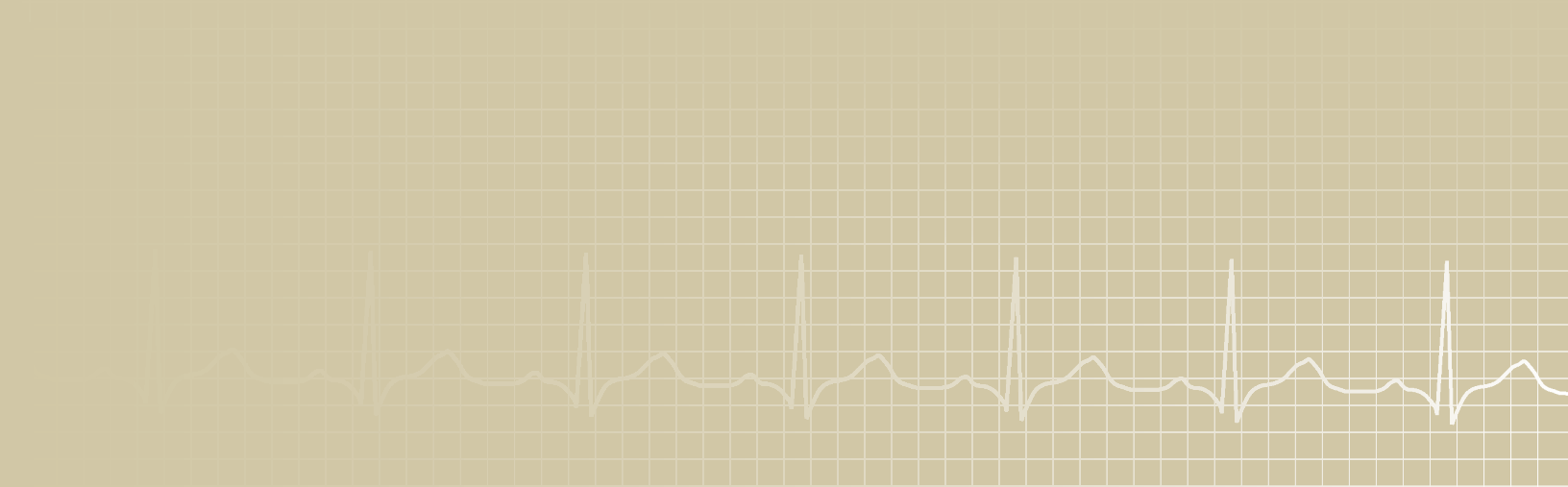
- Encourage efforts at the state and regional levels to enable public and private payers, including Medicaid and Medicare, to participate in private-public initiatives aimed at using better, outcome-focused performance measures to support payment and benefit reforms that promote accountability for greater value.

More detailed conclusions and recommendations are included in the final section of this report and in a separate report that summarizes the Leaders' comprehensive health care reform package.



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While there is ongoing debate about the ability of various delivery system reforms to increase value, there are clear attributes of different approaches to reform that are more likely than others to improve health and slow cost growth.



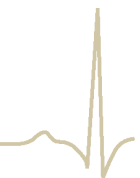
# I Introduction

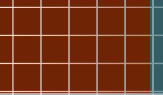
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Understandably, conversations about health care reform have centered on the growing number of uninsured Americans and the rising cost of health care. Outside the circle of health care experts and policy leaders, however, less is heard about growing evidence of problems in the quality and efficiency of care provided and the lack of support to health care providers who understand the importance of prevention and disease and care management for persons who have (or at risk of developing) chronic conditions. While the U.S. health care system is widely recognized as having some of the best hospitals, doctors, and nurses in the world — who in turn can offer the latest technology in almost every community — the system is not efficient, nor does it deliver the improved health outcomes that are being realized in other industrialized nations.

Reforming the U.S. health care system requires identifying and addressing its current shortcomings in an effort to achieve higher quality and value without reducing access to necessary care — and making the system more efficient in the process.

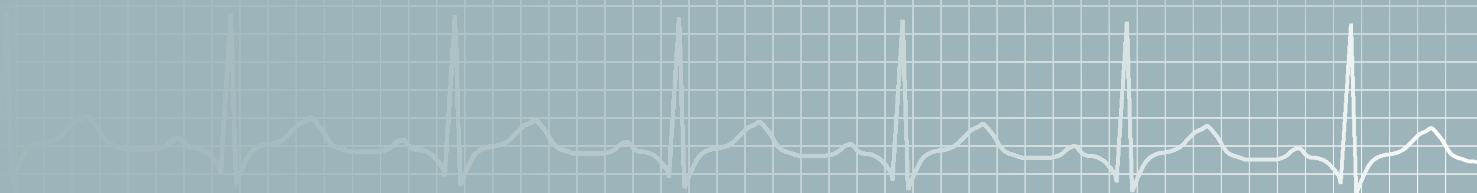
While there is broad agreement about these objectives, policy makers have been frustrated by the lack of progress in achieving them. Efforts have been made to improve quality and value through programs such as disease management and HIT, but they have had mixed success because of design flaws or interactions with problems in our health care system. This report examines the evidence on a range of delivery system reform options that could improve quality and value in the U.S. health care system, with the goal of slowing the rate of cost growth. We summarize the existing evidence on value-improving interventions that have been tested by public and private purchasers and providers, including disease management, care coordination, comparative effectiveness research, and HIT. We also examine financing reforms that could enable these steps to have a greater impact, including: provider payment reforms and insurance benefit reforms that promote value. Based on this evidence, our report concludes with a review of policy steps that show the most promise for improving quality and slowing the rate of cost growth.





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Interventions that are targeted to specific patient populations and clinical areas typically have a greater impact on quality improvement and cost containment than broader approaches.



# III

## The Need to Improve Quality and Increase Value in the U.S. Health System

### Opportunities to Increase Efficiency and Quality

In 2007, U.S. health care spending totaled \$2.2 trillion or 16.2 percent of gross domestic product (GDP) — more than \$7,400 for each American.<sup>1</sup> By 2017, health care spending is projected to exceed 19 percent of GDP.<sup>2</sup> Health care spending will also consume an increasing share of the federal budget. Over the past three decades, federal spending on Medicare and Medicaid has more than tripled as a share of GDP, from 1.3 percent of GDP in 1975 to about 4 percent today. If Medicare and Medicaid spending growth continue at historical rates, these two programs will comprise 12 percent of GDP by 2050. The combined cost of the health care entitlement programs and the “tax expenditure” or foregone revenue associated with the individual deduction of employer-provided health insurance are projected to consume a significant percentage of overall future increases in federal revenues.<sup>3</sup>

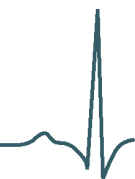
While population demographics and inflation explain a portion of spending growth, the most important driver of growing health care costs is more intensive treatment of more patients. According to the Congressional Budget Office (CBO), increases in per-capita costs, not the aging of the population, will drive the majority of future spending growth.<sup>4</sup> Historically, population aging explains about 2 percent of growth, while price growth above general inflation accounts for no more than 22 percent of past and projected increased spending. In stark contrast, researchers estimate that the development and availability of

new technologies account for at least half the growth in health care spending over the last few decades.<sup>5</sup> These advances have resulted in new standards of care. For example, where historically a physician might have treated a heart attack patient with bed rest and medications like aspirin, the new standard of care consists of angioplasty and bypass surgery. Advances in technology can also lead to higher patient demand by improving the outcomes of care and by reducing the pain and disability associated with treatments.<sup>6</sup>

Unquestionably, improvements in medical technology have led to substantial health benefits, and many more technological breakthroughs may be possible in the years ahead — genomics, proteomics, personalized medicine, and nanotechnology are just some examples. However, the nation continues to lag on measures of quality and efficiency, and the higher cost of treatment has limited access for those who cannot afford care. Numerous studies have produced extensive evidence of inefficiencies in the current system related to the overuse, underuse, and misuse of health care. These findings suggest that reforming the delivery of health care has the potential to substantially improve its value.

Several important findings from this literature are worth highlighting:

- Numerous high-cost services are overused or used inappropriately. A review of research by RAND in the 1990s found that about one-third of all surgical procedures in the United States are clinically inappropriate or are of equivocal value. The



percentage of procedures that had questionable value ranged from 11 percent for cataract removal to 65 percent for carotid endarterectomy.<sup>7</sup>

- Overuse or misuse of care is evident in the regional variation of spending patterns. Areas with large differences in medical expenditures show small differences in quality of care or outcomes. Researchers at Dartmouth College have consistently found dramatic differences in Medicare spending across the country. According to the Dartmouth Atlas of Health Care 2008, Medicare spending per beneficiary for people with severe chronic illness in the last two years of life varies dramatically by state and hospital referral region, even when controlling for underlying differences in patient populations. For example, spending was more than 20 percent higher than the national average of \$46,412 in California, New Jersey, and New York. But spending was \$35,000 or less per person in Iowa, North Dakota, and South Dakota. These spending differences were independent of the type or severity of the illness and were instead related to geographical variation in practice patterns. More recently, Dartmouth research has also identified considerable variation among regions in per capita Medicare spending for the period 1992–2006.<sup>8</sup>
- A Dartmouth study of end-of-life care found that patients in high-spending regions received about 60 percent more care due to differences in practice patterns, such as more frequent physician visits, more frequent tests, greater use of specialists, and more hospitalizations. Yet higher spending did not lead to higher quality of care, greater access to care, improved health outcomes, or higher patient satisfaction.<sup>9</sup> Evidence from the nation’s best teaching hospitals supports the same conclusions. The Medicare program spent \$93,842 for beneficiaries with severe chronic illness who were treated at the UCLA Medical Center in Los Angeles, California compared to \$53,432 at the Mayo Clinic in Rochester, Minnesota. Yet this higher level of spending was not associated with better quality care or reduced mortality.<sup>10</sup>
- Another significant problem in the health care system is the underuse of health care options that are known to be effective. According to RAND research using information from interviews and reviews of medical charts, Americans receive just 55 percent of recommended treatments for preventive care, acute care, and chronic care management. For example, just 24 percent of diabetes patients received all recommended HbA1c testing; 45 percent of heart attack patients received potentially life-saving beta-blocker medication; and 64 percent of elderly patients were offered a vaccine to protect against pneumonia, an important cause of death.<sup>11</sup> Similar research found that children received just 47 percent of recommended ambulatory care, including 41 percent of preventive care.<sup>12</sup>
- Rates of recommended care received by Medicare patients show similar shortfalls. Among 22 treatment quality measures, the typical state showed just a 73 percent rate of adherence to clinical guidelines in 2000 and 2001. Some treatments were given fairly consistently, such as aspirin following a heart attack (85 percent), while other recommended care like pneumonia immunizations (65 percent) and breast cancer screening (60 percent) showed lower adherence. Across-the-board increases in treatment adherence rates between 1998–1999 and 2000–2001 suggest that improvements are feasible if the delivery system focuses more on quality of care.<sup>13</sup>
- The U.S. health care system also suffers from fragmentation and lack of accountability, which together limit the effectiveness of care. An analysis of Medicare claims data from 2000–2002 showed that the median beneficiary saw two primary care physicians (PCPs) and five specialists, scattered

across multiple practices.<sup>14</sup> The paper-based record system limits communication among patients' several doctors and leads to unnecessary hospitalizations, especially among the 65 percent of Medicare beneficiaries with multiple chronic illnesses.<sup>15</sup> Patients are particularly vulnerable during medical transitions when physician accountability is ambiguous. For instance, one study found that about 14 percent of elderly patients transitioning home from a hospital stay experienced medication discrepancies, which more than doubled the probability that they would be readmitted.<sup>16</sup> These preventable adverse events are detrimental to patients' health and expensive for the health care system, suggesting that reforms have the potential to significantly improve quality and reduce costs.

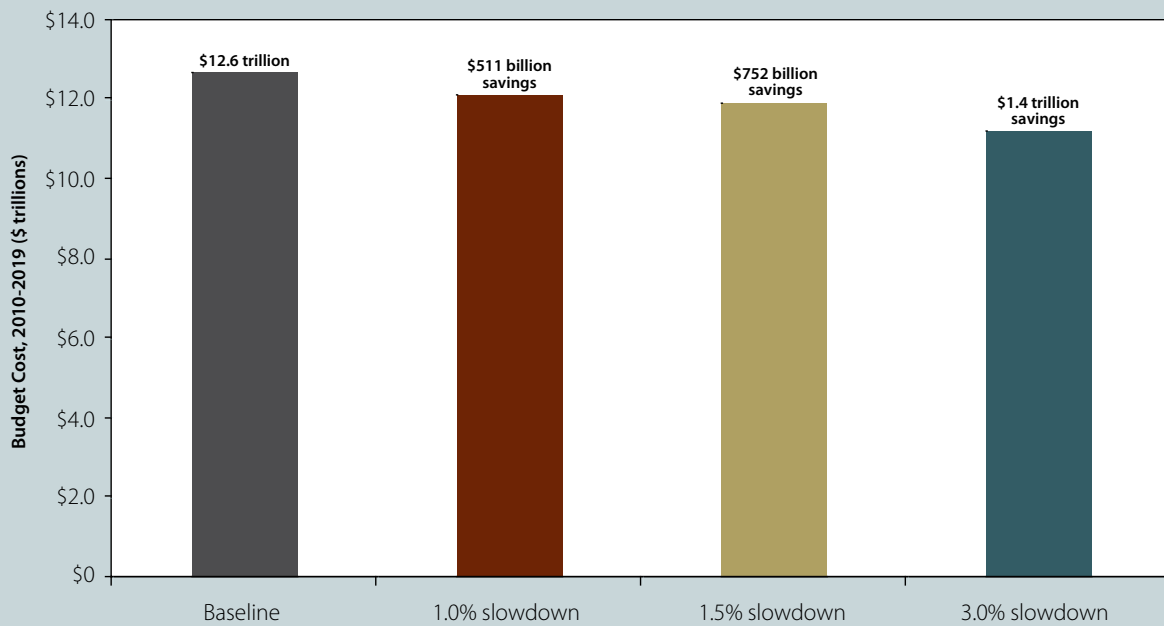
## Coverage and Delivery System Reforms Together

Central to improving quality and value in our health care system is assuring that the approximately 46 million Americans (15 percent of the population) who are uninsured have access to appropriate medical care. The uninsured are very likely to go without valuable care due to the financial burden of purchasing care without insurance.<sup>17</sup>

Despite growing bipartisan interest in reform, enacting a broad expansion of health insurance coverage has been viewed as especially challenging given the federal fiscal outlook. But the issues of poor value in our health care system and high rates of uninsurance are linked. Fundamental reforms in the delivery of health care that lower cost growth while improving quality will support parallel reforms to sustainably expand coverage. In turn, broader coverage will ensure that more individuals have regular access to valuable preventive and primary care services.

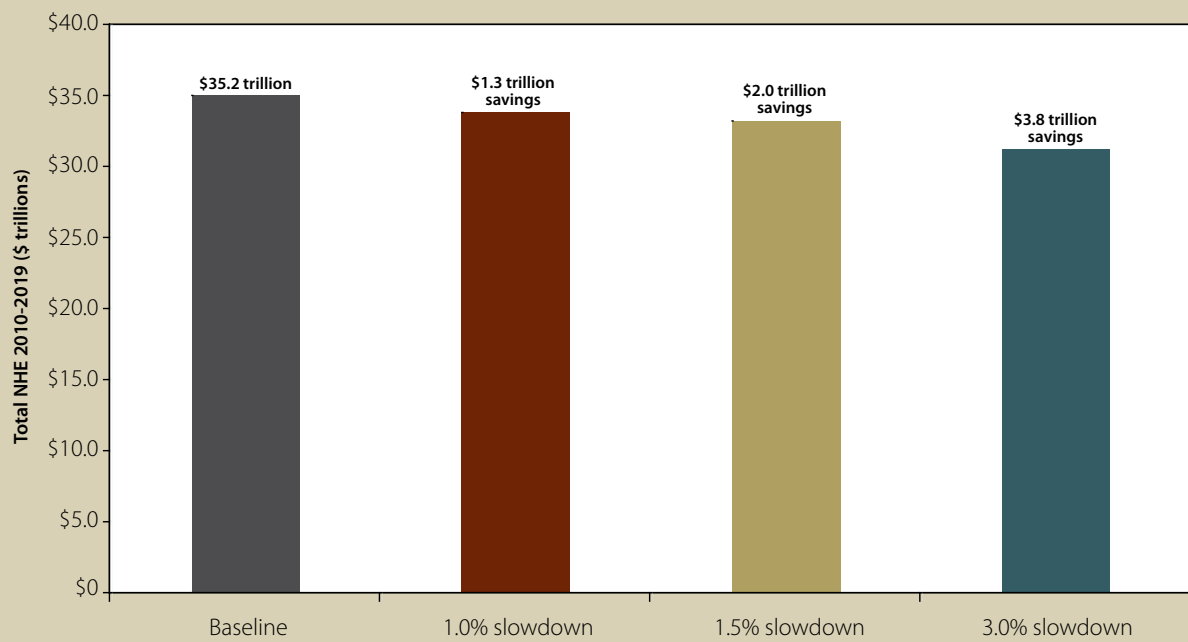
To illustrate the links between delivery reforms and coverage, consider three hypothetical scenarios in which reforms to the delivery system reduce annual health care cost growth by 1.0, 1.5, and 3.0 percentage points starting in 2012 (to allow delivery reforms several years to begin achieving savings), without lowering care quality. Such cost reductions would have tremendous impacts on the federal budget, as shown in Figure 1. Under the current budget baseline, federal spending on Medicare and Medicaid and foregone federal revenue from the health insurance tax exclusion are together projected to account for \$12.6 trillion over the ten years from 2010 to 2019 (see Figure 1). Modest growth reductions of 1.0 and 1.5 percentage points would reduce federal outlays and lost tax revenues by \$511 billion and \$752 billion over the period 2010–2019. More substantial reductions of 3.0 percentage points would lessen federal outlays and lost tax revenues by \$1.4 trillion over ten years. These savings could help pay for major coverage expansions or support other important public or private priorities.

*Figure 1*  
**Federal Budget Effect of Medicare, Medicaid, and  
Employer Coverage Tax Exclusion (2010-2019)**




**Note:** Cost growth slowdowns start in 2012 to account for lag in effectiveness of reforms.

*Figure 2*  
**Total National Health Expenditures (2010-2019) with Cost Growth Slowdown**



**Notes:** All cost growth slowdowns start in 2012 to account for lags in the effectiveness of delivery system reforms. National health expenditure projections through 2018 are from the Centers for Medicare and Medicaid Services, and 2019 expenditures were projected using the average growth from 2015-2018.



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Delivery system reforms are most effective when they are integrated and ensure real accountability from providers and patients to improve results.



# III

## Health Care Delivery Reforms

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This section summarizes the available evidence for many delivery system reforms that have received considerable attention in recent years. They include chronic disease management, care coordination, the adoption of HIT, consumer incentives to improve value and reduce costs, reimbursement reforms, and evidence-based treatment. This section also identifies some of the critical components that may influence the effectiveness of reforms, as well as considerations for implementation alone or in combination with broader coverage reforms. The reform options included in this section combine steps focused on providers and consumers, recognizing that deficiencies in health care delivery may respond to changes that affect both.

Overall, we find strong evidence that delivery reforms can improve quality of treatment and health outcomes, often substantially. Evidence on cost is less conclusive, in part because most studies do not rigorously analyze changes in spending. Often, the only measures reported are changes in utilization, particularly hospitalizations. But utilization measures are only a proxy for spending changes and are not easy to measure against the cost of the intervention. In other cases, spending reductions are reported, but are not compared to the cost of the intervention. Where the cost impacts of delivery reforms have been analyzed, the evidence on their ability to reduce spending is more mixed than is the evidence for quality improvements. While some forms of targeted disease management, care coordination, insurance cost-sharing to improve patient adherence to medication plans,

and HIT interventions show promise for reducing cost, many other specific interventions do not. But even when costs are not reduced, the interventions are often cost-effective; meaning the value of the health improvements they deliver exceeds the extra cost.

The companion technical appendix released with this report provides details on the studies discussed in this section.

### **MANAGING CHRONIC DISEASE OVERVIEW**

Interventions to improve the management of chronic disease are essential. The U.S. health system spends significant resources treating chronic diseases, and at the same time, overwhelming evidence indicates that these diseases are poorly managed. More than 80 percent of elderly Medicare beneficiaries have at least one chronic condition and about two-thirds have multiple conditions.<sup>19</sup> About three-quarters of U.S. health care spending is related to treating chronic illnesses.<sup>20</sup> Strong evidence suggests that the management and treatment of chronic diseases by patients and physicians falls short on many outcomes, such as preventable hospitalizations.<sup>21</sup>

While chronic disease management programs vary, they generally include interventions for populations with chronic conditions, or for individuals at risk of developing such conditions. Programs range from more passive interventions, such as establishing consumer



websites that contain health and disease information to telephone or web-based health coaching. Other programs are designed to more actively intervene into patient care; they include in-person community-based peer or direct provider training and education.

Disease management (DM) programs are typically designed to ensure that (1) preventive measures are taken when appropriate (e.g., screening tests) and (2) complications that could result in costly hospitalizations or emergency room visits are avoided. Providing better communications, management, and follow-up for certain patients has the potential to improve patient health and reduce overall costs via reducing hospital stays, emergency room visits, and by changing other aspects of care use.

## EVIDENCE

A large body of evidence<sup>22</sup> shows that DM can improve quality of care. Evidence on the impact of DM programs on overall health care costs varies depending on the targeted condition, the populations included, and the types of interventions used. While some programs have not proven cost-effective, other interventions have the potential to improve quality and reduce costs. Changes in federal programs should be focused on those models that have proven cost-effective. Below we include a brief summary of the estimated cost savings potential of DM programs targeting three common health conditions.

### ***Asthma***

Our review identified nine recent, well-designed studies suggesting that a range of asthma DM programs can produce short-term cost savings, primarily by reducing emergency department visits and enabling fewer and shorter hospitalizations. Studied interventions include a range of self-management resources,<sup>23</sup> the use of asthma nurse specialists,<sup>24</sup> personalized telephone and web-based health coaching,<sup>25</sup> and home-based health

action plans<sup>26</sup>. Only two studies we reviewed followed patients for longer than one year.<sup>27</sup> Future studies should track patients over time to examine how and whether savings can be sustained by continuing with different levels of intervention.

Overall, the evidence for asthma DM programs appears mixed, as three other recent studies reported no statistically significant differences in hospitalizations, ER visits, and other cost-related outcomes for patients that used these programs compared to control groups. The negative studies likewise include a broad range of interventions, including home-based asthma education,<sup>28</sup> physician peer interventions,<sup>29</sup> and telephone-based coaching.<sup>30</sup> This suggests that policy makers should continue to carefully determine which programs were cost-effective prior to including them in federal programs.

### ***Congestive Heart Failure***

DM programs for congestive heart failure (CHF) patients have shown potential for short-term cost savings accompanied by quality improvements. Our search found 11 recent studies that demonstrate a reduction in hospital readmission rates or length of hospital stay ranging from 21 to 50 percent, with average reductions ranging from 35 to 45 percent.<sup>31</sup> In general, most CHF DM programs focused on patient education by nurses, advanced practitioners, or pharmacists, with follow-up education over a period ranging from six months to three years. Of the three studies that analyzed cost savings relative to program expenditures, return on investment (ROI) was significantly greater than 1 and as high as 5.0.<sup>32</sup>

In particular, one study by Rich and colleagues reported dramatically lower hospital readmission rates for all causes within 90 days of discharge — 36 percent readmission for those in the DM program versus 46 percent for the control group. When only readmissions

for CHF were considered, the difference was even more impressive (17 percent readmission for the DM group versus 38 percent for the control group; suggesting that the intervention reduced disease-related hospital readmission by 56 percent).<sup>33</sup> The study also found that hospital stays for patients in the treatment group were 36 percent shorter on average than hospital stays for the control group. This resulted in an overall cost of care that was about 9 percent lower per patient per month than the cost of care for patients who were not in the treatment group, with a ROI of 1.37.

Research shows that, as with chronic disease management programs for asthma patients, program design is critical for achieving both improved outcomes and cost-effectiveness. Six studies that examined a mix of CHF interventions, ranging from telephone management, online medical record access and provider education, all demonstrated no appreciable differences in hospitalizations or emergency department visits and associated costs.<sup>34</sup> A recent randomized control study by Galbreath and others of a telephone program for CHF patients found no observable savings in the intervention group but did show an increased survival probability, with improvement greatest for the sickest patients.<sup>35</sup>

While numerous studies have documented significant savings from DM CHF programs, several researchers suggest that the presence and magnitude of savings may be associated with the risk status of the target population as well as the intervention. In general, programs that target patients with more severe forms of CHF are more likely to be associated with reduced costs and utilization than programs that provide more modest interventions targeted to a patient base with mixed disease severity.<sup>36</sup> Thus, effectively targeting DM to higher-risk CHF patients will be important to achieving maximum gains.

### *Diabetes*

There is strong evidence that DM programs for diabetes can lead to measurable and significant clinical improvements. Aubert and colleagues found that nurse case management for diabetics resulted in an average drop in HbA1c of 1.7 points for intervention groups compared to 0.6 for control groups.<sup>37</sup> Likewise, Domurat

**“More than 80 percent of elderly Medicare beneficiaries have at least one chronic condition and about two-thirds have multiple conditions. About three-quarters of U.S. health care spending is related to treating chronic illnesses.”**

demonstrated a lowering of HbA1c, serum lipids, and urinary protein in DM patients compared to the control group.<sup>38</sup> While the study notes statistically significant reductions in inpatient utilization, no data were presented concerning the costs of the intervention.

As in CHF management programs, studies suggest that the clinical and financial efficacy of diabetes interventions may depend on the specific populations being targeted and the types of the interventions used. Hospitalization and emergency department visits have been shown to decline with diabetes DM in a number of studies.<sup>39</sup> Four studies specifically found direct savings from DM,<sup>40</sup> including a program that targets preconception care in diabetic women.<sup>41</sup> In a more general example, Sidorov and colleagues found that when nurse educators promoted diabetes guidelines

to physicians and patients, resulting savings averaged \$107 per member per month over a two-year period.<sup>42</sup> Likewise a systematic review of the existing evidence by Norris and others concludes that “improving care for people with diabetes results in cost savings for health care organizations.”<sup>43</sup> However, none of the studies that Norris cites demonstrated direct cost savings from improved glycemic control, except for a retrospective cohort study by Wagner which did not include a control group.<sup>44</sup>

A study from the Centers for Disease Control and Prevention (CDC) examined the effects of intensive blood pressure management as well as glycemic control on outcomes and costs using a Markov model.<sup>45</sup> The model predicted that intensive glycemic control would lead to the addition of 0.19 quality-adjusted life years (QALY) at a cost of \$41,384 per incremental QALY — well below standard QALY valuations. Similarly intensive management of hypertension resulted in an increase of 0.4 QALY with an incremental cost of -\$1,959, meaning that the intervention would actually save money compared to the control group and increase QALYs. According to this model, intensive glycemic control will result in greater expenditures and increased life years, thus the intervention would not pay for itself in pure dollar terms. Similarly, a review by Klonoff and Schwartz looked at 17 DM interventions for diabetes and found that improved glycemic control was cost-effective, but did not result in net cost savings.<sup>46</sup>

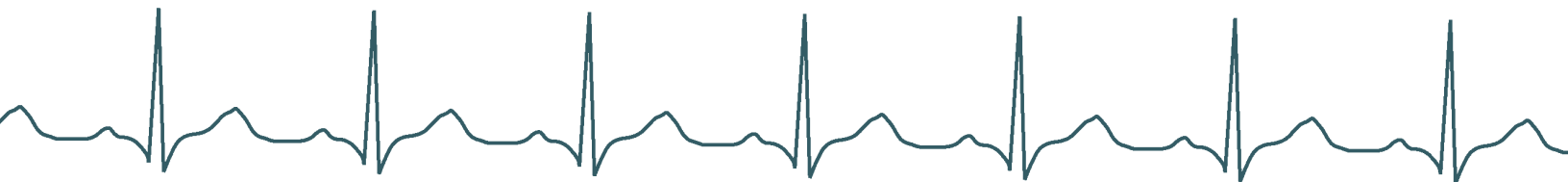
Finally, evidence suggests that those programs designed to manage patient conditions over time are more

effective than short-term interventions. Bodenheimer and others have noted mixed results from studies of cost savings associated with diabetes DM. These studies generally follow patients for one to two years only; thus, evidence of cost savings may be limited in part because the time period for cost savings to materialize from diabetes interventions is longer than in the case of heart failure or asthma.<sup>47</sup> Others have noted concerns about the possibility that initially favorable results can be reversed over time. For example, in a study by Domurat, patients discharged from the intensive management program reverted to their pre-program status, suggesting that sustained reforms will be much more effective than one-time interventions.<sup>48</sup>

### *Medicare Disease Management Programs*

Medicare has conducted several demonstrations in recent years that test the potential for chronic disease management programs to improve care and reduce costs for Medicare beneficiaries. These demonstrations have produced mostly negative results.<sup>49</sup>

Results from the Medicare Coordinated Care Demonstration, a set of randomized controlled trials that began in 2002, showed neither improved outcomes nor lower cost.<sup>50</sup> Among the 15 separate DM interventions built into the current Medicare structure, very few achieved statistically significant improvements in treatment or outcome quality, and none of the programs achieved net cost savings. Several study limitations, including small sample sizes, limited in-person contact, and minimal engagement and communication with physicians may have reduced



the effectiveness of the interventions. Though the programs targeted high-utilization beneficiaries, there was some evidence that more selective targeting would have achieved cost savings.

The Medicare Health Support pilot programs, which provided telephone-based DM with pay-for-performance accountability, also failed to show substantial positive results. While there were modest improvements in some process measures of care, rates of hospitalization and readmission showed no significant improvement relative to the control group. None of the pilots showed statistically significant reductions in health care costs, despite large sample sizes, and none of the pilots were able to achieve budget neutrality in the sense that savings were at least equal to the cost of the intervention. The enrolled population was healthier and less costly than the total Medicare population, suggesting that poor targeting may have hindered cost reduction.<sup>51</sup>

Several other DM-related demonstrations showed similar results, with some ability to improve process measures of quality but little success at reducing costs or improving patient satisfaction. These include the Disease Management for Severely Chronically Ill Medicare Beneficiaries demonstration, which terminated early due to an inability to achieve budget neutrality; the Informatics for Diabetes Education and Telemedicine demonstration; and the Case Management for Heart Failure and Diabetes demonstration.<sup>52</sup> Common problems included difficulties with targeting populations that could receive the greatest benefit, smaller baseline gaps in appropriate care than had been anticipated, and difficulties motivating beneficiaries to improve self management.<sup>53</sup>

## DISCUSSION

To date, DM approaches show some promise for improving the delivery of care and improving health,

and have significant potential for improving quality and value. To achieve both of these outcomes, however, policymakers should ensure that DM programs include successful components. First, most DM evaluations monitor program and patient performance across relatively short periods of time, often one to two years or less. As noted, it may take longer than that for savings from DM programs to materialize.<sup>54</sup> In addition, programs vary in the eligibility criteria used to identify and enroll patients: some programs are available to patients with mixed disease severity and others target high-risk populations. Targeting specific patients that have a significant potential for improvement, and using multiple interventions, may increase the overall cost containment potential of DM compared to programs that are broadly available.<sup>55</sup> Such targeting may also help reduce health disparities, given that the effectiveness of different treatment options and delivery models can vary based on clinical settings and patient populations. Effectively targeting programs may necessitate the use of more sophisticated strategies to identify high-risk patients, such as predictive modeling techniques coupled with coordinated combinations of interventions.

Indeed, given substantial heterogeneity in the types of DM programs and intervention conditions being evaluated, the magnitude of quality and value improvement may increase if payers can access better evidence for identifying particularly effective models of DM — including models that show the most promise for improving quality and reducing costs across different patient populations and clinical settings. Based on a meta-analysis covering a wide range of DM studies, Krause and others have noted that specific types of DM interventions are associated with better results than others and for different patient populations.<sup>56</sup> For example, “team-based interventions” were shown to be more effective than nurse-based approaches, and both team- and nurse-based approaches were more effective than programs designed merely to improve patient

self-management. In turn, the severity of the disease in different patients may be linked to the effectiveness of different types of intervention. Where relevant, policies that promote DM should encourage the use of team-based interventions with appropriate patients.

Improving patients' ability to self-manage chronic disease has presented a challenge but is critical to achieving lasting gains. Successful DM interventions

**“These demonstrations also illustrate the need for improved patient targeting, more contact with beneficiaries, and greater integration of programs into the primary care system.”**

have generally shown improved patient management — as evidenced, for instance, in improved HbA1c scores for diabetics. Recognizing the importance of self-management, Medicare began reimbursing physicians for training diabetic patients in self-management. However, onerous certification requirements and a perception that reimbursement is inadequate have limited access to this service, particularly in rural areas.<sup>57</sup>

Finally, DM interventions have largely been developed in isolation from other reforms. Coupling these interventions other interventions that enhance the information infrastructure and support providers' participation could further improve the effectiveness of DM programs. Limited success in improving quality or reducing costs through Medicare DM demonstrations shows the difficulty of instituting such programs in an incremental or “add-on” manner, particularly in the context of fee-for-service. These demonstrations also

illustrate the need for improved patient targeting, more contact with beneficiaries, and greater integration of programs into the primary care system.

While promising opportunities exist to increase the efficacy and value of DM programs, there is also a need for better evaluation of these programs and their impacts. Overall, as CBO and others have noted, there is a paucity of high-quality studies on their cost-effectiveness.<sup>58</sup> While it is understandable for health services researchers to focus on the relative clinical effectiveness of varying programs, the DM literature tends to offer limited information about cost impacts, net of intervention costs. Such information could be useful for identifying the best models for improving the overall value of health care delivery. As Congress moves toward implementing chronic disease management in Medicare and Medicaid, policy makers should recognize that program design will determine success in improving quality and lowering costs.

## **IMPROVING THE COORDINATION OF CARE**

Care coordination refers to a range of reforms that reorganize primary care and add resources, with the goals of improving preventive care, transitions from one care setting to another, and information exchange as patients navigate the health care system. In particular, care coordination is intended to address not just one but multiple chronic illnesses that often occur together, particularly in patients at high risk for costly complications. Care coordination differs from DM in its focus on primary care. A typical care coordination intervention involves assigning a primary care manager to educate and check on patients between visits, coordinate treatments and record-sharing among each patient's several doctors, and remind doctors and patients about important, cost-effective treatment steps that need to be taken to improve patient outcomes.

These types of interventions have the potential to improve value because the current system of reimbursement does not promote coordination of treatment among providers, which can result in duplicative or unnecessary treatment.<sup>59</sup> Further, proponents argue that care coordination is underprovided because the current payment system rewards technology-intensive specialty services.<sup>60</sup> With relatively less favorable payment trends for PCPs relative to specialists, PCPs have shortened patient visits and allocated a smaller share of their resources towards care coordination.<sup>61</sup>

At the same time, an aging population and an increase in the incidence of chronic diseases have increased the demand for medical services. An analysis of Medicare claims data from 2000–2002 showed that the median beneficiary saw two PCPs and five specialists, scattered across multiple physician practices. The physician who a patient saw most frequently accounted for just one-third of the patient's total doctor visits.<sup>62</sup> This suggests that there may be quality gains and cost reductions that could be achieved by (1) improving information flows between patients and their many physicians and (2) ensuring that patients follow coordinated treatment regimens.

Advocates of care coordination have proposed a variety of reforms that generally fit into three categories, based on their approach to systematic change. The first category of reform focuses on giving PCPs more resources, for example, by increasing payments for coordination activities generally or by providing fee-for-service payments for services like follow-up phone calls and emails to patients. The second type of reform attempts to improve PCP efficiency and promote care coordination by providing more support for nurse care managers and HIT. The third type of reform type builds on the first two and involves a more fundamental reorganization of the primary care system around

models such as the Chronic Care Model (CCM) and the patient-centered medical home (PCMH).

## EVIDENCE

While many studies have analyzed the effects of improvements in the management of individual diseases, several studies have also focused on the effects of better coordination through primary care. These studies find that primary care coordination generally produces improvements in the quality of care, while some programs have also proven to be cost-effective.

Suggestive evidence on the value of primary care coordination comes from reviews of the significant body of literature on this topic by Starfield, Shi, and Macinko.<sup>63</sup> It supports three points: (1) geographic areas — including nations, states, metropolitan areas, etc. — that have a greater concentration of PCPs have better health outcomes; (2) people who receive primary care experience better health, and (3) greater delivery of primary care components such as screenings and immunizations is correlated with better health care outcomes. In addition to better health, areas with a higher concentration of PCPs have lower health costs.<sup>64</sup> While suggestive, these studies only examine correlations between primary care and health, so it may still be possible that their results reflect reverse causation or omitted factors.

Studies that examine primary care reforms may present more direct evidence on the consequences of expanding primary care through PCPs. Evidence from efforts to coordinate physician care in Iowa suggests net cost savings of 3.8 percent for the Medicaid program, though this figure may be biased upward due to limitations in the study design.<sup>65</sup> Evidence from a randomized controlled trial with a similar PCP gatekeeping intervention supports the finding that greater coordination can result in decreased utilization

of specialist and hospital services, though a formal cost analysis was not performed.<sup>66</sup>

Better evidence exists for the efficacy of the second type of care coordination reforms — those that focus on expanding care coordination responsibilities through nurses and on providing greater support from HIT. Nine studies with strong intervention-control group designs<sup>67</sup> (seven of them randomized) provide evidence that care coordination results in quality or health improvements, while just two (one randomized) found no effects.<sup>68</sup> A key common factor in these studies was the attempt to target patient populations that might be particularly in need of care coordination, such as low-income<sup>69</sup> or elderly individuals,<sup>70</sup> or individuals with one or more chronic conditions.<sup>71</sup> Two particularly successful programs studied by Coleman and colleagues targeted elderly individuals who were transitioning home after a hospital stay to ensure that they understood and followed treatment regimens.<sup>72</sup>

Overall, the evidence on costs again suggests the importance of targeting interventions in care coordination to those individuals who are at a high risk for an acute episode. In these cases, intervention is likely to pay off in the form of fewer hospitalizations. However, most studies do not report cost savings from lower resource use or from reduced expenses due to the intervention. Just four of the studies considered above analyzed overall costs savings: Two found significant net cost savings,<sup>73</sup> one found gross cost savings of about the same size as the cost of the intervention,<sup>74</sup> and one found a net cost increase after factoring in the cost of the intervention.<sup>75</sup> Both the studies that found negative and positive results included small-scale interventions and larger-scale policy experiments, suggesting that effective program design and targeting of resources are more important than program size for achieving success.

**“Research shows that care coordination can improve quality and may lower cost, particularly when it is targeted at high-risk groups — including individuals who are low-income, have multiple chronic diseases, and were recently hospitalized.”**

In an attempt to exceed the incremental gains in care coordination that have been achieved within the current provider and payment system, some have called for more far-reaching reforms modeled on the patient-centered medical home<sup>76</sup> or the Chronic Care Model.<sup>77</sup> Both models involve fundamentally reorganizing the primary care delivery system around teams of nurses and physicians — supported by greater use of HIT for communication and decision making and a reorientation of practice culture towards quality improvement. Both models also aim to achieve cost savings by preventing expensive hospitalizations and ER visits: The medical home model includes 24-hour access to primary care and the Chronic Care Model features primary care oriented around optimal disease management for patients with one or more chronic illnesses.

Because of the difficulty of enacting comprehensive reforms, these models have received less study, though limited evidence from North Carolina’s Medicaid reform and from integrated health systems such as Geisinger Health System and HealthPartners Medical Group is encouraging.<sup>78</sup> As CBO recently noted, studies showing cost savings tend to evaluate the effectiveness of particular aspects of the medical home model rather

than the “complete” approach.<sup>79</sup> Bodenheimer and colleagues — in an article advocating the Chronic Care Model — reviewed past studies where elements of this model have been enacted to manage specific diseases. They found strongly positive results in terms of improved health outcome measures in 20 of the 28 studies, as well as improved treatment process measures in 16 of 20 studies. However, most of these studies did not report the net effect on health care costs.<sup>80</sup>

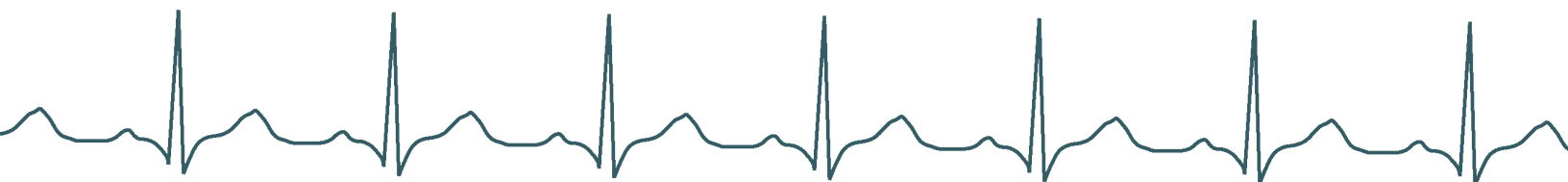
Two studies that used the Chronic Care Model in controlled intervention experiments (one randomized, one with a strong nonrandom control group) found impressive results. For the first study, Piatt and others implemented a broad change in the primary care system for diabetes patients, including physician and patient education, self-management support, and delivery system improvements. They found significant improvements in HbA1c levels, cholesterol levels, and blood glucose monitoring, though they did not analyze cost savings.<sup>81</sup> A second study by Dorr and colleagues examined an even broader reform for multiple types of chronic diseases among patients at a managed care organization.<sup>82</sup> In just the first year of the study, diabetic patients saw significant improvements in process and outcome measures compared to patients in the control group, and treatment costs for depression were lower. The study estimated net cost savings, weighing the value of increased physician productivity, reduced hospitalizations for diabetes patients, and reduced costs for treating depression against the cost of the intervention. The result was a substantial savings of \$28,930 per physician, though this excludes the

cost of HIT investments, which were already in place at more sophisticated clinics. Even with this level of savings, however, the providers would have lost money on the intervention, since most of the savings would have accrued to payers. This result suggests that care coordination programs should be linked to broader payment reforms so that any financial benefits from better management and coordination do not accrue to payers alone.

## DISCUSSION

Research shows that care coordination can improve quality and may lower cost, particularly when it is targeted at high-risk groups — including individuals who are low-income, have multiple chronic diseases, and were recently hospitalized. It will be particularly important to examine the research results of programs that combine medical home reforms with other steps to support integrated care, since more integrated health care delivery systems appear to be able to achieve more significant impacts. Reforms like the North Carolina Medicaid-led effort, which is now being extended to other payers, may be particularly informative in this regard. As care coordination programs expand, future evaluations should analyze the cost of these interventions and compare their costs to the savings that result. Future evaluations should also analyze the cost per QALY gained to account for the importance of health improvements.

Care coordination reforms may be more likely to succeed if they are coupled with fundamental payment reforms that promote coordination and integration.



Current Medicare reimbursements for evaluation and management services are relatively low when compared with reimbursement for other interventions. Nevertheless, care coordination, by easing the burden on PCPs, may still increase the capacity of PCPs to provide effective preventive care, even if payment incentives are not fully aligned. (For example, Berenson presents case-study evidence that care coordination can work within a fee-for-service system).<sup>83</sup>

A second potential obstacle to reform is that any gains from care coordination are diffused among many parts of the health care system, while the costs are concentrated with providers. A good illustration can be found in the results of Dorr and colleagues.<sup>84</sup> Despite the impressive net cost savings reported from care coordination, provider clinics actually lost money because the gains from fewer hospitalizations and lower depression treatment costs accrued to insurance companies and patients rather than the clinics. Thus, coupling care coordination with broader payment reforms that enable providers who work together to share in the savings may result in larger impacts.

Further, care coordination appears to be most effective when coupled with the effective implementation of HIT to help identify at-risk patients, manage information related to patients with multiple chronic illnesses, and remind caregivers of appropriate treatments. Thus, support for HIT in American Recovery and Reinvestment Act of 2009 (ARRA) should be implemented in ways that incentivize meaningful use of technology to coordinate care. Combining care coordination with effective use of HIT may result in greater gains than either reform would alone.

A final problem that impedes care coordination is the decline in relative income for PCPs compared to specialists and the resulting decline in the number of medical students entering the primary care field. In

one sense, this imbalance provides the impetus for care coordination reforms, many of which shift more of the effort of primary care to nurses and to HIT, thereby increasing physician productivity (a result supported by Dorr and others<sup>85</sup>). However, the decline in relative PCP income also impedes reform by deterring top medical students from entering primary care and by depriving PCPs of funding for improvements (such as HIT and nurse training) that are critical for implementing reforms. Thus, there is a strong case for payers to provide up-front funding to support greater care coordination in return for greater monitoring and reporting of results, as has been done in North Carolina Medicaid.<sup>86</sup> In addition, further reforms with respect to reimbursement and graduate medical education should be undertaken to ensure an adequate workforce of PCPs, nurses, and other allied health professionals.

The medical home is a promising reform model because it expands care coordination while addressing two of these impediments by (1) requiring use of HIT and (2) increasing payments to PCPs. For this reason, The Medicare Payment Advisory Commission (MedPAC) has recommended that Medicare implement a nationwide medical home pilot and also consider integrating pay-for-performance incentives for medical homes to reduce their patients' overall utilization.<sup>87</sup> CBO recently scored a similar proposal that would pay for a medical home for any fee-for-service (FFS) Medicare beneficiary with two or more chronic illnesses. The designated medical home would receive, on average, a fee of \$34 per member per month to coordinate the beneficiary's care; provided the home met the criteria being used in the upcoming Medicare medical home demonstration (these criteria are more detailed than MedPAC's criteria and allow for two tiers of medical homes with higher payments for the more stringent tier). CBO estimates that only a small fraction (1 percent) of eligible providers would initially meet the qualifications necessary to become a medical home, though this percentage would increase over time.

Moreover, selecting a specific provider for a “medical home” would be a significant change for beneficiaries in FFS Medicare. Given the limited evidence on cost savings generated by large-scale care coordination programs, CBO did not estimate the net effects of the program on Medicare spending.<sup>88</sup> However, evidence from the medical home demonstration, which begins in January 2010, should shed light on whether medical homes can improve quality and reduce costs in FFS Medicare.

## INVESTING IN HEALTH INFORMATION TECHNOLOGY

### OVERVIEW

HIT is a vital part of the health care infrastructure that can support efforts to improve delivery of care. HIT commonly refers to the use of computers and electronic devices in administering and documenting care. Common applications of HIT s include electronic medical records (EMRs) and personal health records (PHRs), as well as computerized physician order entry (CPOE), decision support (DS), and electronic prescribing (eRx).<sup>89</sup> HIT has the potential to facilitate many types of improvements in health care delivery, including reducing medical errors; improving access to timely information, thereby enabling patients to become more actively engaged in — and responsible for — their own care; reducing paperwork and other administrative costs; and collecting and disseminating quality metrics that can improve the evidence base for medical decisions.

Despite the potential for HIT to facilitate a broad range of quality improvements and cost reductions, HIT initiatives are often proposed as isolated technology investments. Most reform proposals focus on how the federal government should promote common “interoperability” standards for the exchange of health information, or should support hardware or software

investments by providers. But the actual evidence on the impact of HIT to date suggests that its benefits will not be consistent or as large as possible unless (1) HIT is integrated with other delivery reforms and (2) the policy objective involves actually using HIT to make demonstrated improvements in health and health care.

### EVIDENCE

A large body of evidence concerning the impact of information technology on health care quality, efficiency, and cost suggests that HIT may be promising if used in conjunction with other delivery system reforms. HIT can have a major effect on quality of care by increasing adherence to guidelines or protocol-based care. DS, usually in the form of computerized reminders, is often embedded in EMR or CPOE systems and adherence to preventive measures seems to improve with the use of these systems. For example, studies show influenza vaccination rates improving from 12 to 18 percentage points, pneumococcal vaccination rates improving from 20 to 33 percentage points, and colorectal cancer screening rates improving from 12 to 33 percentage points with the use of HIT tools.<sup>90</sup>

Hospitals have been able to deploy CPOE and DS to improve adherence to medication plans,<sup>91</sup> reduce medication errors, and prevent the ordering of redundant tests.<sup>92</sup> A study of the use of CPOE in a hospital showed a reduction in antibiotic-associated adverse drug events (from 28 events to 4 events), a reduction in the average length of a hospital stay (from 13 to 10 days), and a drop in total per-patient hospital costs from \$35,283 to \$26,315.<sup>93</sup>

A number of integrated delivery systems, including Intermountain Healthcare, Geisinger Health System, and Partners HealthCare, have implemented EHRs across their organizations and as a result they are beginning to show improvements in the efficiency and quality of the

care. For example, recent research demonstrates that EMRs and DS can help to improve the management of common chronic conditions, such as diabetes and hypertension.<sup>94</sup> Significant gains were seen in markers of diabetes quality of care over a 12-month period in a Geisinger Health System study that tested the use of EMRs to improve compliance with diabetes performance measures. The study found that the combined use of HIT and quality measurement improved the percentage of patients with ideal glucose control from 32.2 percent to 34.8 percent and ideal blood pressure control from 39.7 percent to 43.9 percent.<sup>95</sup>

**“CBO did find, however, that adopting HIT could generate system-wide savings if it was linked to other policy reforms that change the environment for delivering care.”**

In another study, researchers found that the ongoing use of a health information system to scan the medical records of enrollees in a Midwestern health plan reduced hospital use, unnecessary medical care, and morbidity. The researchers found that for every one dollar of investment in the plan’s HIT system, more than eight dollars of avoidable medical costs were saved during the first year of the investment.<sup>96</sup>

## DISCUSSION

Although quality and efficiency gains from HIT use have been demonstrated in individual studies, translating those gains to the entire U.S. health care system is difficult. For example, one study estimated that system-wide implementation of electronic

medical recordkeeping in primary care settings would save on average more than \$85,000 per provider after five years. Across the U.S. health care system, this could result in over \$70 billion in savings.<sup>97</sup> However, given variations across practices and differences in delivery mechanisms from provider to provider, such estimates are difficult to generalize.

In two recent reform simulations, the RAND Corporation and CBO assessed the opportunity to improve quality and reduce costs through greater investments in HIT. RAND’s review of the existing evidence found that the widespread implementation of HIT can generate dramatic efficiency savings through increased safety and improved delivery of care. Specifically, RAND reported that if 90 percent of hospitals and physicians adopted HIT, the potential savings could be about \$80 billion per year. Savings would come from reduced hospitalizations, reduced nurse administrative time, and more efficient prescription and use of drugs. Moreover, increased safety and improved delivery of care would generate additional savings.<sup>98</sup>

In contrast, CBO did not find significant savings from the expanded use of HIT alone. CBO did find, however, that adopting HIT could generate system-wide savings if it was linked to other policy reforms that change the environment for delivering care. CBO’s review found that HIT could improve patient safety and overall quality of care through clinical DS systems that support physicians in adhering to evidence-based guidelines, avoiding preventable errors, and reducing the use of low clinical value procedures, thereby potentially reducing costs. In addition, HIT can offer new sources of health care data that in turn would enable comparative effectiveness research on medical treatments. Such research could produce savings throughout the health care system if the findings are coupled with meaningful reimbursement reforms.<sup>99</sup>

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To realize these potential savings a series of barriers to the greater use of HIT must be overcome. Congress has taken action to reduce some of these barriers through a series of incentives and penalties enacted as part of ARRA. In addition, the Administration has pledged to work to assure that appropriate federal standards are in place to facilitate the adoption of HIT. Nevertheless, it is still useful to outline these barriers.

Financial barriers are most frequently cited as the primary obstacle to expanded adoption of HIT. The cost to providers (both physicians and hospitals), especially for independent or rural providers, can be prohibitive given current reimbursement mechanisms. CBO estimates the total cost to implement EHRs for office-based physicians ranges from \$25,000 to \$45,000, with annual ongoing costs ranging from \$3,000 to \$9,000.<sup>100</sup> In addition to the cost of HIT systems, uncertainty regarding the return on HIT investments and the value they ultimately deliver limits adoption. Although providers may reap efficiency gains individually, the greatest benefits are often derived at a health plan or system level. It is estimated that as much as 80 percent of the potential savings generated through HIT accrues to insurers and health care group purchasers. These savings could translate into lower premiums but there is no mechanism to enable providers who make the HIT investments to recoup their costs.<sup>101</sup> Further, for individual practitioners and small physician practices, payoff depends on the adoption and coordinated use of consistent systems by other providers with whom they generally do not coordinate care decisions, adding to uncertainty about the benefits of HIT investments.

Financial incentives will likely make some providers more willing to invest in high-quality HIT systems. CBO recently outlined additional methods of stimulating HIT adoption, including offering physician bonuses through Medicare, reducing Medicare payments to providers who fail to adopt HIT, combining these

rewards and penalties, mandating that providers have HIT systems in order to receive Medicare payments, and creating “regional markets” for HIT.<sup>102</sup> Loans or grants to providers who make HIT investments have also been proposed.

Organizational and legal barriers — real and perceived — also inhibit the adoption of HIT. Compliance with laws and regulations such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA) may be perceived by providers as an added cost and risk associated with maintaining personal health information. In 2006, 62 percent of the public said “the use of EMRs makes it more difficult to ensure patients’ privacy.” The same survey also indicated that 42 percent of the public felt that the privacy risks of EMRs outweigh the potential benefits.<sup>103</sup>

As with any new technology, there are barriers to the diffusion of HIT. Concerns about availability, ease of use, obsolescence, compatibility, and interoperability all plague broader adoption. The federal government has taken action to address some of these concerns: The Department of Health and Human Services (HHS) has endorsed certification bodies for interoperability standards and, in 2006, President George W. Bush issued an Executive Order requiring HHS and all federal agencies to implement interoperable HIT systems.<sup>104</sup> A related issue is that interoperable standards may need further support in the form of actual protocols for data exchange in order to provide a clear path to actual data exchange.<sup>105</sup>

Further, the organization of delivery systems significantly affects the rate of HIT adoption and its consequences. Existing evidence, for example, suggests that the adoption of major HIT systems in academic hospitals is more than twice as great as in nonacademic hospitals. Small, rural hospitals have very low adoption rates.<sup>106</sup>

At the level of individual physicians, practice size is a very important predictor for HIT adoption. Practices with over 30 physicians are three times as likely to adopt an EMR system as are solo practitioners. EMR adoption rates also vary by the type of ambulatory practice. The leaders in EMR adoption are multi-specialty clinics, which have an EMR adoption rate of 33 percent — more than two times higher than adoption rate in single-specialty practices or primary care practices.<sup>107</sup> This likely relates to the greater capacity of larger systems today to provide coordinated care, and thus to realize the benefits of unified HIT adoption. Indeed, the most influential factors driving HIT adoption in hospitals and doctors' offices are (1) whether the provider participates in a managed care plan, particularly a health maintenance organization (HMO), and (2) whether the provider is part of an integrated delivery system.<sup>108</sup> Providers with greater potential to benefit from coordinating clinical and payment information have greater incentives to invest in HIT. This strong evidence suggests that policy incentives to promote greater HIT adoption should be closely linked with efforts to support greater coordination and integration in the delivery system more generally.

Notwithstanding the challenges outlined above, many, if not most of these barriers will likely be resolved in the coming 36 to 48 months as the Administration implements the HIT provisions adopted as part of ARRA. CBO estimates that the incentives provided under this legislation will result in an HIT adoption rate of 85 percent for physicians and 55 percent for hospitals in 2014, more than double the estimated rate of adoption under prior to the law.<sup>109</sup> As noted by CBO and discussed in the following section, however, the full potential of HIT will not be realized without greater integration of the U.S. health care system.

## INTEGRATED DELIVERY REFORMS

Each of the delivery reforms reviewed in this paper addresses only some of a range of complex problems in the U.S. health care system. For instance, DM is designed to improve patient and physician management of chronic illnesses. But while DM itself comprises a diverse set of possible interventions, with different impacts depending on the disease and the characteristics of patient; it is not designed to solve all the gaps in care quality for chronically ill individuals. If a patient has multiple chronic illnesses and sees multiple specialists, a care coordinator who facilitates communication among these physicians and with the patient may also be improving health outcomes and reducing health care costs. And if a patient is not taking advantage of steps to prevent other, related illnesses, then education and wellness programs that promote prevention may also be valuable.

The delivery reforms discussed in this paper should be seen as tools for improving health and delivering health-improving care at a lower cost. While each tool can be used to address a problem or multiple problems, combining these tools may be more effective in achieving the goals of improved quality and reduced health care cost growth. And providers must have financial incentives for using these tools to improve health outcomes and reduce overall costs. Combining strategies such as DM, care coordination, improved benefit design, adoption of HIT and accountable payment reforms has the potential to achieve better integration in our health care system, leading to improved patient outcomes and less waste, duplication, and poor quality care.

While most studies reviewed in this paper examine a single type of intervention, a few compare a more integrated set of interventions against usual care. These

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studies show positive results and sometimes dramatic improvements. They also provide several lessons about how integrated reforms can work together to improve care and lower costs. Together, these studies suggest

“While each tool can be used to address a problem or multiple problems, combining these tools may be more effective in achieving the goals of improved quality and reduced health care cost growth.”

that integrating reforms has the potential to be highly effective, though they do not isolate the impact of the particular interventions that make up the integrated approach. This section reviews evidence comparing integrated reforms against usual care.

## EVIDENCE

Eight studies reviewed in other sections of this paper used interventions that integrated more than one type of reform.<sup>110</sup> The most common combinations involved investments in HIT to aid DM or care coordination interventions. Just one study reported on delivery models that combine payment reform with other interventions, and no studies considered interventions that integrated changes in insurance design with other reforms. The most extensive reforms involved implementing the CCM in primary care settings, which included elements of care coordination, DM, HIT, and shifts in organizational culture. Notably, all but one of the eight studies focused on improving care and saving money on chronically ill individuals, whose care is expensive and often substandard.

Seven of the eight studies reviewed here were successful in improving targeted health outcomes and process measures of care.<sup>111</sup> Three of the studies reported particularly dramatic improvements relative to controls, one in process measures for common chronic diseases<sup>112</sup> and two in large declines in hospitalizations.<sup>113</sup> Seven of the studies examined changes in costs or utilization, showing strongly positive results. Three studies found cost reductions, net of intervention costs, ranging from \$300 to \$1,200 per patient per year.<sup>114</sup> Four more did not analyze costs but reported declines in hospital admissions, which are often an important source of cost savings.<sup>115</sup> Overall, these integrated delivery reform studies showed substantially positive results. It is more difficult to assess whether the fact that reforms were integrated caused the more positive outcomes. Though evidence from studies of non-integrated reforms was more mixed, as described in the previous section, other variations in study design may explain part of the difference.

Examining these studies more closely reveals several lessons about how integrating delivery reforms can make them more successful. HIT systems were used as a tool in most of the studies and appeared to have several benefits. Goma, Morrow, and Muntendam (2001) emphasize that HIT can lower the cost of a DM program by reducing the number of nurse case managers needed to administer it. By using technology to conduct many of the day-to-day tasks of the program, such as monitoring symptoms and providing reminders to patients, nurse labor can be saved for more difficult tasks. Several studies also found that HIT was useful for identifying the highest risk patients and enrolling them in DM programs to augment effectiveness.<sup>116</sup> Electronic health records that tracked treatment progress and changes in symptoms also aided communication among DM care team members and care coordination interventions; electronic records could also provide decision support tailored to a patient's condition.<sup>117</sup>

Some of the most extensive evidence on integrated reforms comes from efforts to implement the CCM, which specifies a number of steps to improve care for chronic illnesses. These steps include redesigning delivery systems around coordinated primary care teams; working with patients to improve self-management; using HIT to aid record keeping, progress tracking, and decision support; and reorienting the organizational culture towards quality improvement (often using payment incentives, though not in these studies). Two studies have looked at efforts to implement the CCM, one in primary care practices in a low-income area<sup>118</sup> and one in sophisticated multipayer clinics.<sup>119</sup> The program in the former study was more limited in its use of HIT because of its low-income setting, but it was nevertheless successful in terms of significantly improving clinical outcomes (HbA1c, LDL and HDL levels) and process measures for diabetes (costs were not evaluated). The latter study involved more comprehensive reforms to promote care coordination; including making use of the HIT that was already in place at Intermountain Health Care's clinics. Results were strongly positive, with improved clinical outcomes and net cost savings of about \$1,200 per patient, or about \$29,000 per physician. Because the same IT systems were in place at control clinics as well, this study showed that HIT could be effective in complementing other reforms even when it is not part of the intervention. But despite sizeable cost savings, the clinics lost money because they bore most of the costs of CCM implementation while most of the savings went to insurance payers and to patients. This illustrates a significant challenge in effecting cost-saving reforms absent significant changes in payment practices to make those reforms sustainable outside of vertically integrated, capitated group and staff HMOs.

Despite its potential importance, the integration of payment reforms with other changes has received little formal study. However, one study has looked at results

after Geisinger Health System instituted a decision support system for heart bypass surgery embedded in electronic health records, and charged a risk-adjusted bundled payment for all related care within 90 days of the surgery.<sup>120</sup> Surgeon compliance with all 40 treatment standards jumped from 60 percent to 100 percent by the end of the year-long trial, showing the effectiveness of the decision support software. Clinical outcomes, including hospital readmission rates, improved almost across the board, though statistical insignificance due to tiny sample sizes and lack of a concurrent control group makes it difficult to interpret these results causally. Nonetheless, greater "bundling" of payments appears promising as part of a larger set of reforms because it can overcome the problem of providers facing all of the costs and receiving few of the financial benefits of cost-saving quality improvements.

## DISCUSSION

Integrated delivery reforms have shown positive and sometimes dramatic results in the several controlled studies. Yet significant barriers hinder widespread implementation. Most of these barriers reflect fragmentation in delivery and financing. Provider-insurer fragmentation limits the sustainability of cost-saving reforms, because efforts to integrate delivery usually require investments by providers that pay off primarily in lower payments for insurers and lower premiums for patients. Fragmentation among providers is also important, because innovations like electronic records, decision support software, and care coordination services exhibit increasing returns to scale. Thus, larger medical groups have adopted these systems and practices more readily, though far from universally.<sup>121</sup> Fragmentation among insurers hinders their willingness to pay providers for valuable investments and services when another insurer (whether a public or private plan) may capture the gains. In addition, adverse selection limits the

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profitability of steps insurers might take to improve care for expensive, chronically ill individuals.

Addressing the problem of fragmentation thus requires fundamental payment reforms to better align incentives among providers, insurers, and patients. Such reforms can enable providers to share in some of the value gained from more integrated care. Such reforms can also enable consumers — particularly those with chronic diseases — to get effective care at a lower cost.

## **DEVELOPING VALUE-BASED CONSUMER INCENTIVES**

### **OVERVIEW**

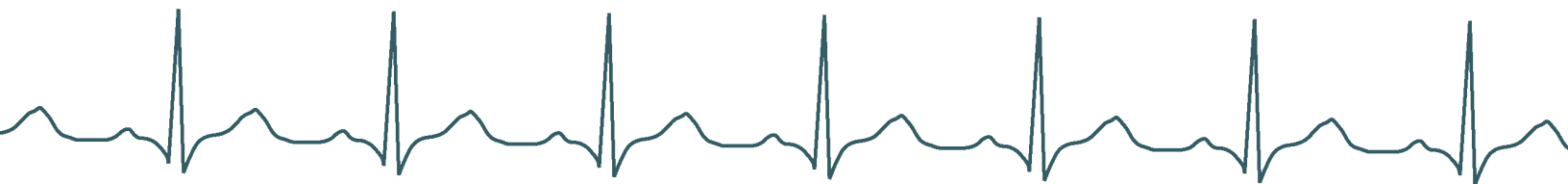
Public and private health care purchasers and payers can play an important role in encouraging consumers to make choices that are more consistent with high quality and efficient care. As care becomes more personalized, individual characteristics and preferences are increasingly important. Financing and benefit reforms could provide much better support for individual patients, their caregivers, and their providers as they make increasingly important decisions to receive better care at lower cost.

Numerous innovations in health insurance coverage may encourage individuals to make better health care choices consistent with higher quality and lower costs. This includes benefit reforms that support wellness and self-management programs, patient education, and health literacy improvement programs. However, simply adding these benefits to existing plans may not

discourage inefficient approaches to care, and may add to costs. This section focuses on two related strategies that use benefit design or cost-sharing arrangements to influence consumer behavior, including consumer decisions concerning the use of particular high-value services and the selection of high-quality, efficient hospitals and physicians.

Value-based insurance design (VBID) involves lowering or eliminating the consumer cost requirement for specific “clinically valuable” services that are recognized to provide benefits for patients with certain conditions. A related VBID option involves establishing different cost-sharing provisions, based on patient characteristics, to promote patient adherence to treatments that can improve outcomes and lower overall costs given the patient’s particular clinical characteristics. VBID could include reducing the patient cost sharing for certain treatments, often pharmaceuticals that are highly cost effective. Proponents of this approach argue that reductions in out-of-pocket spending can increase the utilization of valuable services that improve outcomes and may ultimately lower overall health care costs. Such VBID reforms have been most widely used for patients with diabetes or coronary disease.

A related strategy involves the use of high-performance networks (HPN) to improve value and promote quality by reducing cost sharing requirements when consumers select hospitals and physicians that provide high quality, efficient care. Under HPNs, high-performing providers are placed in a “preferred” or lower cost-sharing tier while other in-network providers



are placed in “non-preferred” or higher cost-sharing tiers. HPNs are designed to establish value-increasing incentives for both consumers and providers. Consumers face lower out-of-pocket costs when they choose more efficient providers. At the same time, providers who deliver efficient, high-quality care get a competitive advantage through the preferred designation. This may enable providers to invest in quality or efficiency improvements, such as HIT; under this new set of incentives, delivering higher-value care is more likely to pay off.

## EVIDENCE

Several recent studies that focus on adherence to drug treatment plans and related spending provide new evidence on value-based insurance benefits. Estimates of savings from VBID come from evaluations of programs implemented by large employers, including Pitney Bowes and the City of Asheville, North Carolina. In 2000, Pitney Bowes significantly lowered co-payments on brand-name drugs used to manage chronic conditions. According to an internal company evaluation, this program began to produce savings two to three years after it was instituted. Net costs per participant were \$2,500 below the industry standard, although the firm’s annual per-employee pharmacy costs increased slightly.<sup>122</sup> The City of Asheville implemented benefit reforms along with disease management programs in 1997. For beneficiaries who underwent diabetes education with participating pharmacists, the city waived co-payments for diabetes-related drugs and devices. A 2003 evaluation of this program revealed that the expanded pharmaceutical care services reduced total mean direct medical costs from \$1,872 to \$1,200 per patient per year.<sup>123</sup> In light of these results, the program was broadened to include free drugs for other chronic conditions, like asthma. Though spending on asthma medications increased, direct cost savings averaged \$725 per asthma patient per year.<sup>124</sup>

Recently, Chernew and colleagues used data from two large employers to measure the effects of pharmacy policy on patient adherence to medication plans. The authors compared employee drug compliance at a company that switched to a plan with lower copayments for certain types of drugs with employee compliance at another company that did not reduce out-of-pocket costs for those drugs. Employee data for

**“Early implementation of value-based benefit design appears to improve clinically appropriate care, particularly with respect to the use of pharmaceuticals.”**

the year before and the year after the benefit change show that non-adherence rates in four of the five drug classes studied fell by 7 to 13 percentage points when copayments declined.<sup>125</sup> However, the study did not document the overall financial effects of the program. Huskamp and others took a similar approach, comparing employee utilization of five classes of drugs at two companies, one of which switched from a two-tier to a three-tier plan and one of which switched from a one-tier to a three-tier formulary. This study also found that changes in pharmacy plans, particularly low copayments for evidence-based drugs, can significantly enhance adherence and utilization.<sup>126</sup> The negative association between out-of-pocket cost and adherence to medication plans has been documented in other studies as well.<sup>127</sup> However, these findings do not necessarily mean that lowering copayments will produce cost savings: Although overall costs may decline for patients who otherwise would not adhere and would therefore risk costly complications as a result, lowering copays for patients with chronic

diseases who were already complying means higher costs to insurers and employers.

To address these issues, other studies have simulated the more comprehensive effects of VBID. Choudhry and colleagues created a model to estimate changes in event rates and health care spending if individuals 65 and older who were previously hospitalized for a heart attack were able to receive drugs to prevent further heart problems at no out-of-pocket cost.<sup>128</sup> Goldman, Joyce, and Karaca-Mandic similarly modeled changes in compliance, emergency department visits, and hospitalization rates if co-payments for statins were eliminated for individuals with a high risk of developing cardiovascular disease. The results of both studies indicate that potential savings from VBID — even when taking into account increased spending on drugs by insurers — could total more than \$1 billion.<sup>129</sup> However, when Choudhry and others further investigated the hypothetical effects of full drug coverage for those who had experienced heart attacks, they determined that such coverage would be cost-effective but not cost-saving for Medicare.<sup>130</sup> Similarly, Rosen and colleagues found that full Medicare coverage of angiotensin-converting enzyme (ACE) inhibitors for diabetic Medicare enrollees would be cost-effective, but might ultimately lead to increased Medicare spending as diabetic beneficiaries would live longer and incur more medical costs.<sup>131</sup>

The use of HPNs is new and largely confined to select markets nationwide. A recent comprehensive survey by the Center for Studying Health System Change (HSC) found that while HPNs were being implemented in many areas by private health plans, no formal evaluations of their impact on health care utilization were publicly available yet.

However, one recent study by Scanlon, Lindrooth, and Christianson — published after the HSC report was

completed — examined how the implementation of a tiered hospital benefit affected employee decision-making at a large manufacturing firm.<sup>132</sup> From 2004 to 2006, employees who were members of either the machinists' or engineers' union paid no out-of-pocket costs if they were admitted to "preferred" hospitals that were compliant with Leapfrog Group safety recommendations. Otherwise, these employees had to make copayments, averaging about \$400, for hospital care received. With this tier structure in place, the study identified a large and significant increase in the probability that patients affiliated with the engineers' union would select a preferred hospital, with the probability increasing from 12 percent in the pre-reform period to 26 percent in the post-reform period. The study did not assess the financial impact of this incentive program on the employer. Other, informal assessments from health plan executives that have experimented with their own HPNs suggest that employers' total premium savings from HPNs might be in the range of at least 3 percent.<sup>133</sup>

## DISCUSSION

Early implementation of VBID appears to improve clinically appropriate care, particularly with respect to the use of pharmaceuticals. Based on available studies to date, however, the impact on health care spending is less clear. While research indicates that increased use of clinically valuable drugs or other health care services does result in other spending reductions, there is limited evidence on whether resulting cost savings are sufficient to offset the additional spending associated with this increased use. Some employers who are considering effects on other costs (e.g., absenteeism, employee productivity, and workers' compensation claims) and who implement VBID reforms as part of a comprehensive strategy for improving employee health have a very positive view of these reforms.<sup>134</sup>

Likewise, while HPNs are intuitively appealing, implementing this option has been technically difficult. Provider groups have been critical of the use of non-standardized, incomplete measures and limited data (e.g., from only one or a few insurers) to establish “preferred” and “non-preferred” tiers. To be effective, HPNs must use significantly differentiated cost-sharing between tiers to drive consumer behavior. Without broad support and confidence in the performance measures used to assign providers to different tiers, one recent report suggests that insurance plans and employers are unwilling to aggressively use this approach at this time.<sup>135</sup> A framework for using quality and cost measures to construct tiers has been developed collaboratively between physician groups and health plans,<sup>136</sup> and steps are underway now to implement measures that reflect these principles.<sup>137</sup> Accelerating the availability of more comprehensive quality and cost measures would allow benefits from this type of insurance reform to be realized more quickly.

Efforts to use cost sharing and related incentives to inform consumers about high-quality, cost-efficient providers and health plans are most likely to succeed if complementary financing reforms are introduced. Because consumers with group-based insurance typically only pay a small proportion of their health care costs, most people have little knowledge about the true magnitude of those costs. Moreover, even if consumers do know what their insurance costs, they typically have little ability or incentive to act on the information. Steps to stimulate cost consciousness among consumers can thus be combined with progress on improving the availability and use of information about provider quality and cost. This approach would create more confidence that consumers are not forgoing medically necessary care — indeed they are likely to get better care — by choosing lower-cost providers. For example, with good information on quality, insurance exchanges or public programs can implement consumer choice models in

which consumers who select lower-cost health plans can keep the savings that result from a less costly choice.<sup>138</sup> In addition, patients who chose high-quality, low-cost “Centers of Excellence” providers for elective surgeries could receive rebates on their premiums.

## REALIGNING REIMBURSEMENT TO HEALTH CARE PROVIDERS

### OVERVIEW

Current reimbursement rules fail to adequately compensate the medical profession for many services that are known to constitute good medical practice, including patient evaluation, patient management, patient education, and coordination of patient care. Most FFS reimbursement rules also do not support or reward innovative steps by providers to deliver excellent care at a lower cost. Because most FFS systems pay providers for each service rendered, they create incentives to provide more care, even when fewer services or less intensive care would be as or more beneficial. Therefore, many reform proposals attempt to design payment models that reward quality, encourage coordination of care, and ultimately, control the cost of care. Evaluating and effectively implementing these reforms is a key priority for improving the health care delivery system.

Conceptually, proposals for payment reform modify current volume- and intensity-based reimbursement systems either by paying for specific quality improvements or by moving toward overall accountability for quality and cost. Pay-for-performance (P4P), ties a portion of the provider’s fee to one or more objective measures of performance. Performance is most commonly defined using measures of treatment quality, generally referred to as process measures. For example, PCPs may be paid for conducting breast cancer screening on a

higher proportion of their at-risk female patients, or for coordinating care. Rewarding improvements in outcome measures, such as cholesterol levels for patients with heart disease, is also possible.

“Shared savings” reforms enable providers to share in any savings achieved through better coordination of care or other delivery system improvements, so long as quality benchmarks are met or exceeded. For example, if a group of providers adopts an interoperable HIT system and uses it to achieve better results and lower costs, the group could keep a share of the savings achieved. While shared savings could be implemented in conjunction with existing FFS-based payments, a “bundled” payment approach could provide even stronger incentives for providers to limit costs. Examples of the patient-based approach include payments linked to episodes of care or (to avoid creating incentives for a greater number of episodes) even patient-level capitation payments. Because these payments are de-linked from specific services delivered, providers have flexibility to allocate resources towards monitoring chronically ill patients and coordinating care among multiple physicians. However, past steps to implement capitated payments in the context of managed-care reforms were not popular with consumers due to concerns about reduced access to needed treatments, particularly for vulnerable and high-risk populations. Thus, steps to increase provider accountability for reducing overall costs must be matched with steps to assure that quality is improving.

## EVIDENCE

Most P4P experiments to date have shown some evidence of small improvements in measured quality of care, but little evidence of cost savings. Capitated or bundled patient-based payments, particularly bundled fees for hospital treatments and related care, have shown potential for significant cost savings, but raise more concerns about quality. The shared savings

model, a version of which was tested in the Medicare Physician Group Practice Demonstration, aims to change this by explicitly paying for cost reductions.

An important piece of background evidence in the study of payment reform is the performance of integrated health plans. HMOs and similar closed-panel health plans traditionally structure physician payments to involve greater capitated or bundled and performance-based

**“Most FFS reimbursement rules also do not support or reward innovative steps by providers to deliver excellent care at a lower cost. Because most FFS systems pay providers for each service rendered, they create incentives to provide more care, even when fewer services or less intensive care would be as or more beneficial.”**

reimbursements than do traditional FFS insurance plans. Studies comparing closed-panel managed care and FFS plans have found significantly lower spending and utilization in managed care. Hellinger has reviewed this large literature and found agreement on this result across almost all studies, even with multiple different study designs.<sup>139</sup> The RAND health insurance experiment, which randomly assigned patients to different providers, also supports these results. Annual spending on patients assigned to an HMO was 28 percent lower and days in the hospital were 41 percent fewer compared with patients assigned to a FFS plan

with a zero percent coinsurance rate.<sup>140</sup> Because there are many other differences between managed care and FFS systems besides reimbursement incentives, it would be inappropriate to attribute all of these cost savings to payment differences. However, with meaningful quality measures, integrated health plans may provide an alternative to payment reforms that promote integrated care by providers.

### *Performance-Based Payments*

A number of controlled trials and large-scale demonstrations have been used to examine the effects of performance-based payment reform. Most of these trials have paid physicians for quality improvements — usually measured by the rate of delivery of treatments in appropriate circumstances, such as mammograms for women who are at-risk for breast cancer — rather than cost containment. These studies have featured incremental pay-for-performance incentives, usually involving a modest percentage of providers' overall fees, and have generally found some quality improvements in the relevant measures. However, there has been little evidence of a strong link between the size of the monetary incentive and the magnitude of the results, suggesting either that larger payments alone may not be a solution or that there are important thresholds below which physicians will not expend efforts to modify their practices. Further, the incentive payments tend to offset any reductions in the cost of preventable complications and unnecessary services, resulting in very limited effects on overall costs.

A comprehensive review of randomized, P4P experiments by Dudley and colleagues revealed small but usually positive results.<sup>141</sup> As of 2004, just eight randomly controlled P4P trials had been conducted, so the evidence was limited. Of the ten treatment measures studied (some studies examined multiple measures), six showed statistically significant quality

improvements above the control group. Where the results were positive, the effects were usually small and the success of the trials was not correlated with the size of the incentives.

One problem with experimental interventions is that physicians may respond less to temporary incentives imposed through an outside research program than to permanent incentives imposed by payers. To address

**“Despite these potential difficulties, bundled payments for episodes of care have been tested in a number of small-scale experiments and have shown promising results, particularly for surgical episodes.”**

this issue, two recent studies have examined natural experiments in which P4P was introduced by health plans. These studies again found mixed results or small positive quality improvements. The first study by Pearson and others examined the state-mandated introduction of payment reform in Massachusetts and found very limited quality improvements among included physician groups compared to control groups.<sup>142</sup> The second study by Rosenthal and colleagues examined the introduction of P4P to California medical groups in the PacifiCare Health System, comparing their performance to Oregon and Washington medical groups in the PacifiCare system that were not subject to the incentives. A small but significant improvement of 3.6 percent was found in the rate of cervical cancer screening, but any quality improvements for mammography and HbA1c testing were not statistically significant.<sup>143</sup>

CMS partnered with Premier in a demonstration to evaluate P4P in Premier not-for-profit hospitals. Hospitals were paid for improving performance in the top two deciles of participants, or for achieving large improvements in quality measures for five common conditions. Unfortunately, the demonstration did not include a control group, so distinguishing the effect of the intervention from performance trends over time has been difficult. The best two studies on this demonstration by Glickman and colleagues and Lindenauer and colleagues reach conflicting conclusions on whether the incentives resulted in improved performance.<sup>144</sup> Lindenauer and colleagues, who found a significant positive effect — overall and on treatments for heart failure, acute myocardial infarction, and pneumonia — reported that the improvement was relatively modest: just 2.6 to 4.1 percentage points.<sup>145</sup> Though there are no formal estimates of the cost effects of the CMS/Premier demonstration, the fact that it was required to achieve budget neutrality suggests that P4P interventions can be designed to hold constant or even reduce overall costs.

### *Bundled Payments, Shared Savings, and Capitation*

Though intended to reduce unnecessary care, capitated payments are blunt instruments. The same can be said about bundled payments that are less related to volume and intensity more generally: Alone, such reforms create incentives to reduce both necessary and unnecessary care. By contrast, good information on quality — whether tied directly to payments or used effectively by consumers to choose high-quality providers — can help avoid reductions in valuable care. Such information should account for both the severity of the illness and the impact of different treatment options in terms of improving outcomes.

A large body of literature has documented significant reductions in resource use when physicians are paid with capitation. Compared with capitation, FFS-reimbursed physicians order substantially more tests, elective procedures, consultations, and their patients are hospitalized and see specialists more often.<sup>146</sup> However, several problems with capitation have emerged. For example, most experts agree that capitated payments must be risk-adjusted to avoid giving physicians an incentive to limit their service to the healthiest patients, but the risk adjustment methodologies are imperfect. In addition, past experience with greater use of capitation payments during the rise of managed care in the 1990s left many patients dissatisfied with the gatekeeping and other care restrictions imposed by such systems to reduce costs.

“Bundled” payments, which are already widely used by Medicare, represent a partial step toward limiting incentives for more services. An early example of payment reform is the Medicare prospective payment system (PPS), which pays hospitals based on diagnoses at the time of admission. A large literature has studied the introduction of PPS in the mid-1980s. This reform reduced hospital admissions, lengths of stay, and intensity of treatment during stays. Although a portion of this reduced treatment was shifted to outpatient and post-acute care settings, there was a significant overall reduction in the rate of Medicare spending growth.<sup>147</sup> Quality of care did not appear to decline after PPS was introduced, though there were some adverse effects on subgroups of patients and hospitals. Overall mortality was unaffected or even declined after the introduction of PPS, but in hospitals that faced declining average reimbursements, the timing of mortality in the first year post-discharge shifted forward (mortality after one year was not affected).<sup>148</sup> There was also evidence of improvement in process measures of care, which led to lower mortality, but this was accompanied by an increase in the rate of patient impairment at discharge.<sup>149</sup>

Despite some benefits over pure FFS payments, bundled payments do not necessarily promote high-quality, coordinated care. Payments across providers are often not coordinated; in addition, providers may have incentives to increase the number of episodes or switch to services that are outside the scope of the bundle. For example, past PPS reforms have sometimes created a misalignment in incentives between hospital administrators and doctors, who were still paid on a per-procedure basis. To address this problem, some payers have implemented “gainsharing” arrangements.<sup>150</sup> Gainsharing effectively represents additional bundling of payments across hospitals, physicians, and in some cases other providers, around a set of treatments for individual patients. The Medicare Participating Heart Bypass Center Demonstration (also known as the CABG demonstration) provided significant evidence of the effectiveness of this type of bundling. At several hospitals in the early 1990s, Medicare negotiated global payment rates for all inpatient hospital and physician charges related to coronary artery bypass graft surgery (hence the acronym “CABG”), including any related readmissions. Cost results were positive across the board: Medicare spending through 90 days post-discharge was 10 percent lower, which also meant coinsurance costs to beneficiaries and secondary insurers were lower. And hospitals benefitted by cutting costs even more significantly. Though outcomes also improved, these results were more difficult to interpret because the lack of a control group made it difficult to establish causality for observed declines in mortality and length of hospital stay (mortality and hospitalization lengths fell nationwide during the same period).<sup>151</sup> Despite the generally positive results of the CABG demonstration, gainsharing between physicians and hospitals effectively ended when the practice was interpreted to be illegal.<sup>152</sup>

Despite these potential difficulties, bundled payments for episodes of care have been tested in a number of

small-scale experiments and have shown promising results, particularly for surgical episodes. One study by Johnson and Becke examined results for a surgeon who provided arthroscopic surgery with a two-year “warranty” on any resulting complications in return for a single payment.<sup>153</sup> Because the surgeon was accountable for complications related to operating on inappropriate candidates, surgical recommendations declined significantly, which in turn reduced insurer costs. However, both the doctor and the associated hospital were able to earn more because of higher up-front payments. Another study by Casale and colleagues examined a bundled payment plus P4P approach for CABG surgery patients at Geisinger Health System.<sup>154</sup> Relative to a comparison group that received ordinary care, clinical outcomes improved nearly across the board, though the sample was too small to be statistically significant and overall costs were not analyzed. These two studies provide preliminary evidence of the potential for payment reforms based on episodes of care, but their small sizes and imperfect research designs mean that more rigorous study will be needed to properly evaluate this potential in the future.

Episodes-of-care, gainsharing, and other capitated or bundled payment reforms are the subjects of several ongoing Medicare demonstrations and provider initiatives — the results of which will be important for testing these reforms. Three Medicare demonstrations are currently underway that target the misalignment of incentives between FFS-compensated physicians and PPS-compensated hospitals. The upcoming Medicare Acute Care Episode (ACE) Demonstration will pay global rates to physician–hospital organizations for all care related to certain orthopedic and cardiovascular procedures.<sup>155</sup> The Hospital Gainsharing Demonstration, which started in 2007, exempts hospitals from anti-gainsharing laws, allowing them to pay physicians for shared savings under PPS, as in the CABG demonstration.<sup>156</sup> Similarly, the Physician–Hospital

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Collaboration Demonstration (included in Section 646 of the Medicare Modernization Act) will allow gainsharing between hospitals and physicians as well as structural reforms to improve the efficiency of care.<sup>157</sup> Both demonstrations will track quality measures — including outcome measures — to help assure that cost reductions are the result of efficiency gains and quality improvements, not reductions in needed services.

Recent reform proposals have considered bundling payments for a broader range of episodes. For instance, a PCP or a group practice treating a patient with diabetes would receive a lump-sum bundled-care payment in return for being accountable for all primary and acute complications arising from the patient's diabetes over a set period of time. As a result, the physician assigned to the diabetes "episode" has the incentive to provide high-quality care, to avoid expensive, and to avoid acute complications. And importantly, the physician is granted greater flexibility to engage in DM techniques that are not reimbursed under the current FFS system. However, the episodes-of-care reform model presents several technical challenges, including defining a method for assigning patient-episodes to specific physicians, dealing with the problem of outliers, and managing problems associated with imperfect risk adjustment.<sup>158</sup> Two private sector initiatives — the Prometheus Payment pilots<sup>159</sup> and expansions of Geisinger's ProvenCare<sup>160</sup> — have been launched to address these issues. The outcomes of these experiments will be crucial in testing whether reforms based on episodes of care can reduce costs and improve health care quality.

While broad-based episode payments can help align providers' incentives to improve care for surgeries or for the treatment of discrete diseases, they may not provide support for avoiding unnecessary episodes or for coordinating care across episodes. Accountability for care at the whole patient level would address this issue, but as noted previously, many practical concerns arise

in moving to full patient-level capitation. Consequently, payment reforms that take more incremental steps toward patient-level accountability are being developed and evaluated.

One version is "shared savings" payment systems that enable providers to keep a portion of the overall savings they generate, while improving quality and outcomes at the level of a patient population. Shared savings does not eliminate current reimbursement payments, but establishes a component of reimbursement related to the accountability of all providers involved in the care of a group of individuals.<sup>161</sup>

One illustration of the shared-savings approach is the three-year CMS Physician Group Practice (PGP) demonstration, which began in April 2005. Because CMS was best suited to taking on overall accountability for quality and cost of care, CMS sought to enroll multi-specialty physician groups with at least 200 or more full-time equivalent physicians and organizations with capacity to provide and/or coordinate both Part A and Part B services through Medicare-participating or approved providers.<sup>162</sup> Other participation criteria in this instance included well-developed information, clinical and management systems for quality assurance, and process and outcome improvement. The demonstration consists of ten physician groups, representing about 5,000 physicians and 220,000 Medicare FFS beneficiaries.

Shared savings payments in the PGP demonstration are based on significant reductions in overall per-capita cost, combined with significant measured improvements in quality (including outcomes) for preventive care and care for common chronic diseases in the "accountable" beneficiary population. To determine accountability for individual patients, the PGP demonstration assigned each Medicare beneficiary who received at least one evaluation and management (E&M) service to the PGP that conducted the largest

share of E&M services (measured in Medicare charges) for that patient.<sup>163</sup> These patients formed the treatment group for purposes of evaluating the effectiveness of different PGPs. Medicare also needed to identify a “control” group to assess baseline trends over time. Beneficiaries were assigned to a PGP’s comparison group if they: (1) received at least one E&M service from

**“Nonetheless, long-run savings must ultimately come from encouraging reforms that improve efficiency and decrease utilization, since the feasibility of reducing payment rates alone is limited.”**

some physician in the given year; (2) did not receive any of those services from the PGP that year; (3) were not part of the PGP’s treatment group in any demonstration year; and (4) resided in the PGP’s market area.

CMS set case-year expenditures for each PGP equal to its average FFS payments, derived from all Part A and Part B claims, for beneficiaries assigned to the PGP in the base year. Target expenditures for the performance year equaled the PGP-specific base-year expenditures, adjusted by growth in per-capita expenditures in the PGP’s comparison population between the base and performance years.<sup>164</sup> Benchmarks were adjusted for population risk.

If a PGP kept expenditures for its assigned beneficiaries to more than 2 percent below its target expenditures, it was eligible for a performance payment.<sup>165</sup> The shared savings rate, the maximum proportion of the Medicare

savings paid to the PGP as a bonus, was 80 percent. Therefore, the total bonus pool was 80 percent of total Medicare savings generated by the PGP, multiplied by the number of assigned beneficiaries.<sup>166</sup> The amount of the performance payment equaled the total bonus earned — 70 percent of the bonus pool for cost performance and up to 30 percent of the bonus pool for quality performance — minus the withhold, or 75 percent of the total bonus.

Results from the first two years of the demonstration show that all participating groups improved quality, and some of them achieved cost savings. Two PGPs earned performance payments in the first year and four PGPs earned performance payments in the second year, suggesting a divergence of trends in cost growth over time.<sup>167</sup> CMS reports that additional groups also achieved lower rates of growth in Medicare spending but these reductions were not sufficient to meet the 2-percent savings threshold.

## DISCUSSION

Of the two general categories of payment reform, the available evidence suggests that episode-based and person-based provider payments produce stronger incentives for cost reductions than incremental performance-based payments. These types of reforms have also shown greater evidence of cost reductions. By contrast, P4P reforms, which target specific quality and cost outcomes for additional payments, have achieved some positive results on quality measures but provide more limited evidence of cost reductions. These results, however, would not preclude policymakers from designing a P4P program that did result in more significant cost savings in federal programs such as Medicare. Pay-for-performance may yield greater spending reductions if it follows the incentive structure of the pay-for-reporting Hospital Quality Initiative, which reduces Medicare payment rates for hospitals that fail

to report quality measures. By contrast, the Physician Quality Reporting Initiative, which pays physicians an additional lump-sum fee for reporting quality measures, makes reducing total Medicare spending more difficult because of the additional spending on incentive payments. Nonetheless, long-run savings must ultimately come from encouraging reforms that improve efficiency and decrease utilization, since the feasibility of reducing payment rates alone is limited.

Proposals for capitated or bundled payment systems based on hospitalization episodes have expanded in scope because of their perceived ability to cut costs. Medicare's hospital PPS started in the mid-1980s by bundling all hospital services conducted between admission and discharge; subsequently most other provider payment systems, except for physician and outpatient services, have moved toward provider-specific bundled payments. More recent efforts are focusing on providing integrated incentives for efficiency and coordination across providers. Experimentation with gainsharing in the early 1990s, including in the CABG demonstration, added inpatient physician services and related readmission costs to the hospital payment bundle for certain high-cost surgeries. More recent proposals involving episode-of-care payments suggest adding post-acute care services to the bundle. In addition, episodes have been defined even more broadly to include all inpatient and outpatient care for chronically ill patients over an interval of time. CBO's recent report on health care reform options shows the possibilities for capitated and bundled payment reforms. Proposals covered in that report include restoring gainsharing incentives for some elective surgeries at "Centers of Excellence" hospitals, bundling payments for inpatient and post-acute care, penalizing hospitals for high readmission rates, and paying PCPs partially capitated fees with bonuses and penalties for the total Medicare utilization of their patients.<sup>168</sup>

Capitated, bundled, and performance payments shift more financial risk to providers with the aim of strengthening incentives for high-quality, efficient care. In general, there is a tradeoff between maximizing incentives for good care and keeping provider reimbursement risk from getting too large. Establishing the optimal size of incentive payments in light of this tradeoff will be an important design question for future payment reforms. A related issue is the timing of payments, because coordinating care requires new kinds of investments, for example in HIT systems, registries, or other steps that can improve care at the patient level. Physicians with limited margins under current payment systems may face resource constraints that hinder their ability to make the capital investments needed to improve performance. After-the-fact incentive payments do not address this problem.<sup>169</sup> Thus, initial up-front investments may be needed to allow providers, particularly in medically underserved areas, to move toward improving performance.

Some specific steps could be taken immediately to begin addressing these challenges, while also creating a foundation for more fundamental payment changes to accompany further reforms in care delivery over time. Better risk-adjustment methods would improve the link between physician effort and results, while limiting the financial risk to physicians if they treat sicker patients (thereby also reducing the problem of adverse selection). Tying incentive payments to outcomes for groups of patients over longer time periods to smooth out random variations in costs and quality can also help. Finally, incremental versions of accountability, such as starting by adding a shared-savings component to existing payment systems, would limit any initial "downside" financial risks faced by providers. A recent proposal for "Accountable Care Organizations" (ACOs) applies these practical transition ideas to hospitals and their affiliated physicians. Most Medicare beneficiaries receive most of their care from a limited set

of physicians, hospitals, and other providers, yet these providers generally deliver care in a fragmented way. The ACO model proposes to allow providers to form voluntary collaborative organizations that would measure and report on the quality of care provided to its patient population. These collaborative organizations could receive shared savings bonuses for lowering cost growth conditional on attaining quality goals. A similar proposal was studied by CBO and was projected to produce \$5.3 billion of savings for Medicare in the first seven years after implementation,<sup>170</sup> even with only limited nationwide participation. To accelerate and expand cost savings, short-term payments or other incentives that are now being considered by Congress could be tied to immediate steps aimed at increasing person-level accountability for quality and costs. For example, payments for HIT or “medical homes” could be linked to providing information for patient-level quality monitoring and to the actual exchange of data for care coordination.

## **INVESTING IN BETTER EVIDENCE ON WHAT WORKS**

An important challenge for the U.S. health system is the lack of evidence regarding (1) the clinical effectiveness of different treatments and health care practices and (2) the impact of payment and other policies that seem to influence practice strategies. Relevant evidence on the effectiveness of many treatment alternatives is limited.<sup>171</sup>

There is considerable support for increased investment in comparative effectiveness research (CER) that would generate more evidence on benefits, risks, and potentially costs to support health care decision-making.<sup>172</sup> A standard definition of CER refers to clinical and economic evaluations of different medical interventions compared to alternatives for selected clinical indications and for particular patient populations. This includes comparisons of diagnostic and therapeutic

interventions, for example comparing the effects of drug A to the effects of drug B for a given clinical issue or type of patient, as well as alternative approaches to care for particular patients in similar clinical contexts. Other types of evidence on comparative effectiveness may also be very useful for formulating policy. For example, since most of the variations in practice that account for variations in cost do not relate to specific differences in treatments, defining CER more broadly to include comparisons of practice strategies could also provide more direct and useful guidance for influencing those practices. In fact, since even when evidence has been developed it is not widely used, more evidence is needed to compare the benefit, payment, and other policies that influence treatment decisions and practices. A broader conception of CER holds promise for pursuing increased value and accountability by comparing different care delivery, disease management, and care coordination models. Many efforts are already underway to develop evidence on comparative effectiveness at all of these levels; however, much more could be done.

Recently, major CER legislation was proposed in both the U.S. House and U.S. Senate. In July 2007, the House of Representatives passed the Children’s Health and Medicare Protection Act of 2007 (CHAMP). The bill authorizes a Center for Comparative Effectiveness Research within the Agency for Healthcare Research and Quality (AHRQ) to conduct original research and systematic reviews on drugs, devices, and procedures, but does not provide for broader comparisons of practice strategies or delivery models. In July 2008, Sens. Baucus (D-MT) and Conrad (D-ND) introduced the Comparative Effectiveness Research Act of 2008. This bill would create a private, nonprofit Healthcare Comparative Effectiveness Research Institute to research the relative outcomes, effectiveness, and appropriateness of medical treatments, services, and items. In addition, ARRA includes \$1.1 billion in funding for CER.

“Another way CER can benefit care delivery is by identifying the clinical services that achieve the same (or better) clinical outcomes than other similar services at a lower cost.”

## EVIDENCE

While a wide range of proposals to expand CER have been developed in both the public and private sectors, the evidence regarding cost and health care impacts from CER is limited. The hope is that better evidence through CER could help reduce the overutilization of unnecessary or unproven medical services for certain patient populations. For example, research has shown clinically inappropriate over-utilization of hysterectomy,<sup>173</sup> continued use of pulmonary artery catheters in patients with heart failure despite an absence of mortality improvement, and an increased rate of adverse events,<sup>174</sup> as well as significant regional variation in the utilization of coronary angiography despite the absence of any discernible health advantages from greater utilization.<sup>175</sup>

Another way CER can benefit care delivery is by identifying the clinical services that achieve the same (or better) clinical outcomes than other similar services at a lower cost. Examples of such services include:

- Use of generic nonselective nonsteroidal anti-inflammatory drugs (NSAIDs), rather than more expensive Cyclooxygenase-2 (COX-2) Selective Inhibitors, for pain relief in average-risk arthritis patients;<sup>176</sup>
- Use of diuretics, rather than calcium-channel blockers, for patients with hypertension and one or more coronary heart disease risk factors;<sup>177</sup>

- Use of reflex DNA testing, rather than other less cost-effective management approaches, for women diagnosed with having atypical squamous cells of undetermined significance; and<sup>178</sup>
- Reduced use of Olanzapine, which, when compared with haloperidol, does not provide clear, additional benefits for the treatment of schizophrenia but costs the Veteran’s Administration substantially more per patient per year.<sup>179</sup>

If the benefits of a more expensive treatment or practice strategy can be achieved by using more cost-effective options, patients and clinicians should have information on these options so that they can be more prudent purchasers of health care services. This will make the overall delivery system more efficient. However, with increasing evidence that average response rates may not fully capture patient experience, both across individuals and over time for a particular patient, designing CER studies in ways that can account for the differential responses of individual patients is increasingly important. As health care becomes increasingly personalized, a more robust CER infrastructure in the United States could help improve understanding of important differences in effects and risks for subgroups of patients. In addition to improving overall care quality and value in the health system, this could lead to important new advances in reducing underlying health care disparities.

In addition to head-to-head comparison of specific pharmaceuticals or medical devices, understanding which practice strategies achieve the same (or better) clinical outcomes with less costly interventions is critical. Using more intensive medication therapy for patients with severe emphysema, instead of surgery, which may not improve overall survival,<sup>180</sup> and using non-invasive approaches for managing non-Q-wave myocardial infarction, rather than an invasive strategy of coronary

angiography and revascularization,<sup>181</sup> are examples of treatment and practice strategies that save money while also improving quality of life for patients. Again, because responses to different treatment strategies may differ across individual patients, methods that detect whether flexibility in treatment choice can improve outcomes for a treated population will be increasingly important.

**“Regions with lower per-beneficiary Medicare spending have been shown to provide similar care quality on average and achieve equal or better health outcomes and patient satisfaction than higher spending regions.”**

At the same time, CER can help identify medical services that could prevent costly complications and thereby improve outcomes. Research has shown that Medicare beneficiaries underutilize services such as immunizations for influenza and pneumonia and screening for breast and cervical cancer.<sup>182</sup> Although these steps may not reduce total health care costs, they can support progress toward a more prevention-oriented health care system that delivers higher value through better health outcomes.

Clearly, however, better evidence on alternative treatments and medical practices is not enough, by itself, to bring about the systematic changes required to substantially increase value. More research is needed to identify the practice strategies, delivery methods, payment systems, and benefit designs that

will yield higher quality and lower cost services and treatments. For example, studies that have examined the suboptimal uptake of evidence-based practice guidelines show that placing financial disincentives at the patient level will make adherence to guidelines more difficult. In contrast, aligning clinical and financial incentives will help promote needed reforms in the delivery of care.<sup>183</sup> These types of CER evaluations fit directly with the payment, benefit, and other reforms discussed previously in this paper.

These specific examples show that a range of types of CER could improve outcomes and reduce costs. However, evidence is limited on the link between performing more CER studies (at least traditional head-to-head studies) and producing an overall impact on health care costs and outcomes. Many of these trials are time-consuming, aim at moving targets in terms of technological change, and do not necessarily lead to timely changes in practice when they are completed. CBO evaluated the CER provision of the CHAMP bill and estimated that it would reduce total spending for health care services by public and private purchasers through changes in physicians’ practices, and to a lesser extent through changes in coverage rules over a ten-year window. Although CER may generate cost savings, those savings are offset by the cost of the new research. Thus, CBO estimated that net federal direct spending would increase by \$500 million over five years and \$1.1 billion over ten years for Medicare, Medicaid, and the Federal Employees Health Benefit programs.<sup>184</sup> More recently, CBO estimated that \$2.8 billion in federal funding for CER over the next ten years would increase the federal deficit by \$860 million in net (after producing \$1.9 billion in offsetting budget savings) and would reduce national health care expenditures — in the absence of other policy changes — by \$8 billion during the same time frame.<sup>185</sup>

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## DISCUSSION

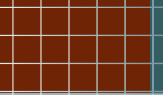
Importantly, the CER proposals evaluated by CBO are not linked to value-enhancing reforms in Medicare and Medicaid, or in the benefits provided by private insurers. Nor do the proposals include significant new strategies to disseminate research findings and encourage other payers to use the findings to inform medical decision-making. Finally, the CER contemplated in the proposals was focused on more traditional head-to-head studies of alternative treatments — not on a broader set of practice strategies, policies, and delivery models that account for large variations in health care spending and spending growth. Thus, significantly larger savings may be possible if (1) CER is expanded and linked to other reforms that affect health care delivery and (2) CER studies are refocused to more directly address how policy changes could influence treatment decisions and practice styles, along with their health and cost consequences for patients.

For example, the geographic variation literature has repeatedly demonstrated that per patient costs vary significantly in different regions of the United States with no discernible relationship to overall quality of care. Regions with lower per-beneficiary Medicare spending have been shown to provide similar care quality on average and achieve equal or better health outcomes and patient satisfaction than higher spending regions.<sup>186</sup> The additional spending in higher cost regions is mostly devoted to greater use of discretionary “supply-sensitive” services, including greater use of the hospital as a site of care, more frequent physician office visits and more referrals to specialists, and greater use of diagnostic testing for minor procedures.<sup>187</sup> Focusing simply on head-to-head trials of prescription drugs, medical devices, and other treatments will not address these consistent and systemic variations in spending and quality outcomes unless CER is conceived more broadly to include

rigorous comparative evaluations of practice strategies and payment and other delivery models.

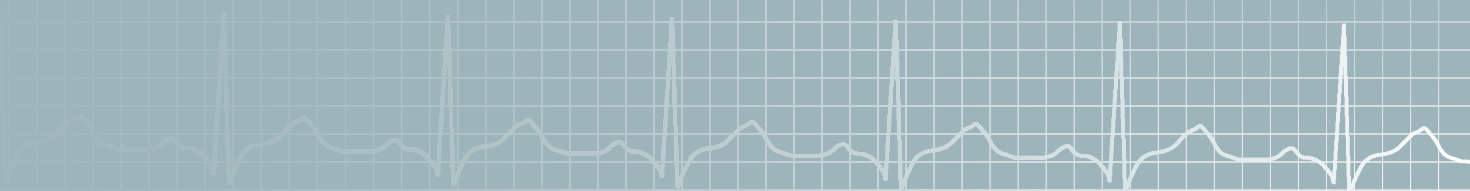
Similarly, many private health plans have implemented tiered formulary designs that provide stronger financial incentives than traditional insurance plans to switch to “cost-effective” drugs, such as generics or “preferred” brand-name drugs where multiple drugs are available in a particular class. Evaluations of the comparative effectiveness of alternative formulary designs in influencing drug choices, patient outcomes, and costs could provide very useful guidance for policy changes to improve value.

Increased collection and standardized reporting of consensus-based quality measures would also improve CER, particularly if such measures go beyond process measures to include information on clinical outcomes and episode-based costs of care. The wider use and dissemination of improved quality measures can help in formulating comparisons between practice strategies and policies — comparisons that should be included in a comprehensive CER agenda. While these measures are not widely used today, investments in the development of measures by the National Quality Forum and AHRQ and in the implementation of measures by providers can be supported by federal funding.<sup>188</sup> In addition, some pay-for-reporting linked to Medicare payment incentives, along the lines of the Hospital Quality Initiative, may be required.



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Reforms are needed to transition provider reimbursement away from volume and intensity of services and toward quality and value.



# IV

## Modeling the Coverage Implications of Cost Savings

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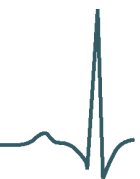
The problem of inefficient health care delivery is related to the problem that approximately 46 million Americans are uninsured. Greater health care expenditures on inefficient services increase health insurance premiums, which in turn makes insurance unaffordable for more individuals and families. Thus, delivery system reforms that promote greater quality care and lower overall costs have the potential to increase insurance coverage. Cost-saving delivery reform also frees up resources to pay for expanded coverage, though this section focuses only on the direct effect of lower premiums on coverage.

This section models the coverage effects of three hypothetical scenarios in which the rate of growth in health insurance premiums slows due to the effects of delivery reforms: (1) a small reduction of 1 percentage point in real annual cost growth, (2) an intermediate reduction of 1.5 percentage points, and (3) a larger reduction of 3 percentage points. Our preceding analysis indicates that achieving these levels of reductions in growth rates will require significant reforms that link payments and benefits to accountability for actually achieving improved outcomes and reduced costs. For each of these scenarios, we estimate the direct effect of slowing costs on different forms of public and private health insurance coverage over ten years.<sup>189</sup> Our analysis of the size of the uninsured population focuses on the nonelderly, since Medicare covers nearly all Americans over 65.<sup>190</sup>

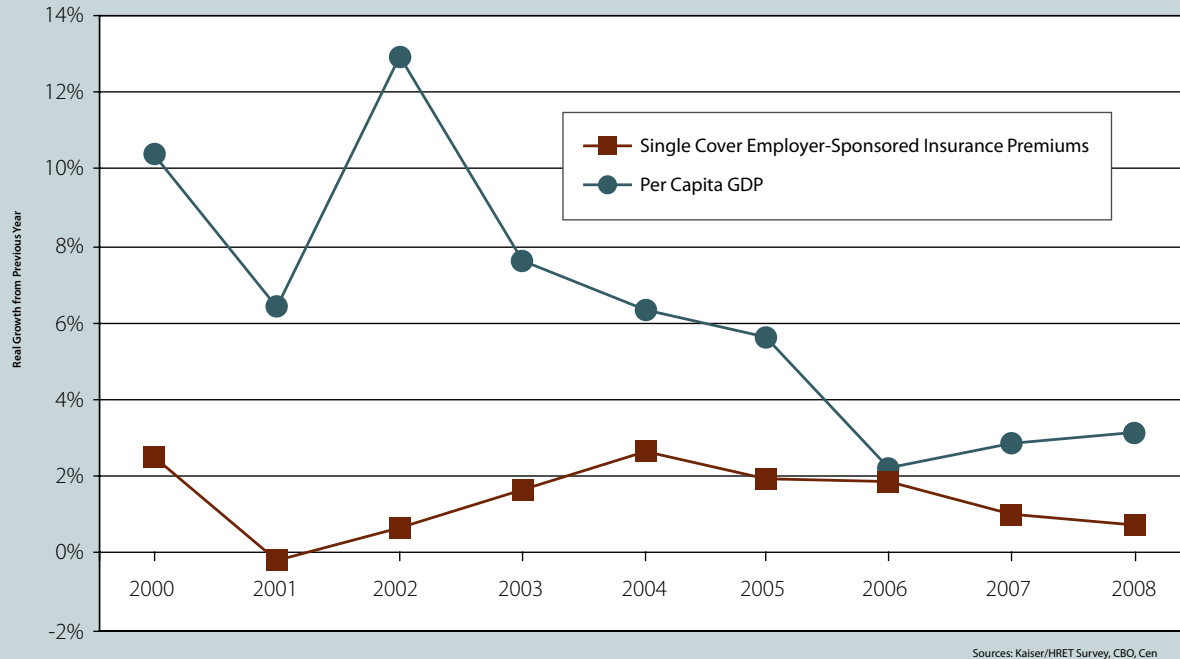
To put these premium reductions in context, Figure 3 shows past and projected premium growth. Inflation-

adjusted premiums grew extremely rapidly — more than 8 percent per year — from 1999 to 2005; thereafter growth slowed to just under 3 percent from 2005 to 2008. Over the next ten years, CBO projects that premium growth will be slightly above 4 percent — in the middle of the extremes of the past decade. The baseline scenario developed for this analysis uses the CBO projection for premium growth over the next decade. Thus, the 3-point growth slowdown scenario will keep inflation-adjusted premium growth down to just over 1 percent per year, which is below expected income growth. So while health insurance premiums would still be increasing in real terms, Americans could set aside a smaller share of their incomes for premiums. Since affordability is measured relative to income, this would mean that insurance would become more affordable (as a share of income) over the next ten years. By contrast, the small and intermediate cost reductions of 1.0 and 1.5 percentage points would keep annual growth down to about 3 percent, similar to the growth rate from 2005 to 2008, but still above projected income growth.

The model's predictions for changes in the uninsured population over the next ten years under the different cost reduction scenarios are shown in Figure 4. Under the baseline scenario, the number of uninsured Americans rises by 6.2 million from 48.9 million to 55.1 million in 2019. Compared to this baseline, the large (3 percent per year) cost reduction scenario reduces the number of uninsured by 3.1 million, while the small and intermediate scenarios show proportionately smaller reductions of 1.0 million and 1.5 million. While none of the scenarios



**Figure 3**  
**Health Insurance Premium and Income Growth, Historical and Projected**



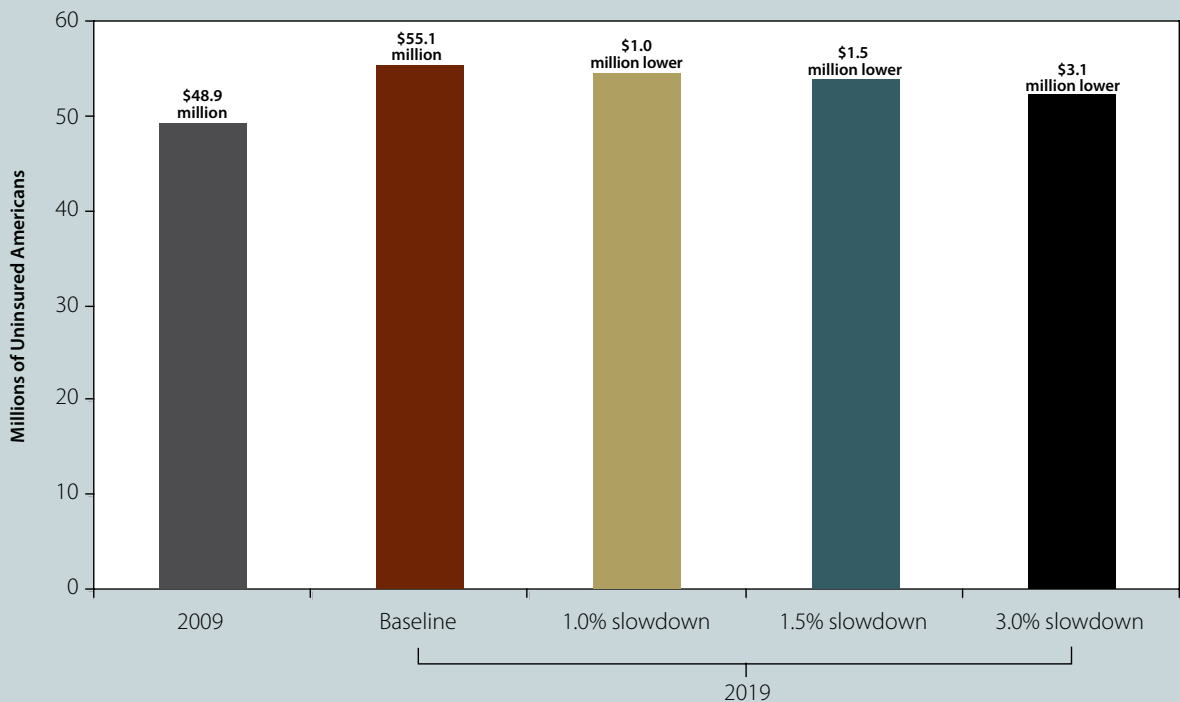
**Notes:** All growth figures are stated in real terms, deflated using the GDP deflator (or CBO's projection for it), for consistency. The projected premium and income growth rates are for slightly different measures than the historical data. Projected premium growth is for all employer-sponsored insurance (ESI), while the historical data (from the Kaiser Family Foundation/HRET annual survey of employer health insurance benefits) is only for single coverage ESI plans. Growth rates for family and single-coverage ESI plans have historically been similar. Historical per capita GDP growth numbers (from the BEA and Census) are for the full population, while projected per capita income growth is only for the under-65 population, since the model excludes the elderly. The implicit assumption is that income growth will be even across the age distribution.

comes close to achieving universal coverage, the large cost reduction scenario reflects a substantial reduction in the number of uninsured. Moreover, a lower rate of cost growth would make any further steps toward expanding coverage more feasible and sustainable.

Figure 5 breaks down changes in the insurance status of the non-elderly population by type of coverage under the different scenarios. In the baseline scenario, the fraction of the non-elderly population with nongroup and Medicaid coverage declines from 2009 to 2019. Some of this reduction is offset by growth in group coverage, but most is reflected in an increase in the number of uninsured by 6.2 million people, or 1.2 percentage points. But in the cost reduction scenarios, private coverage expands compared to the baseline

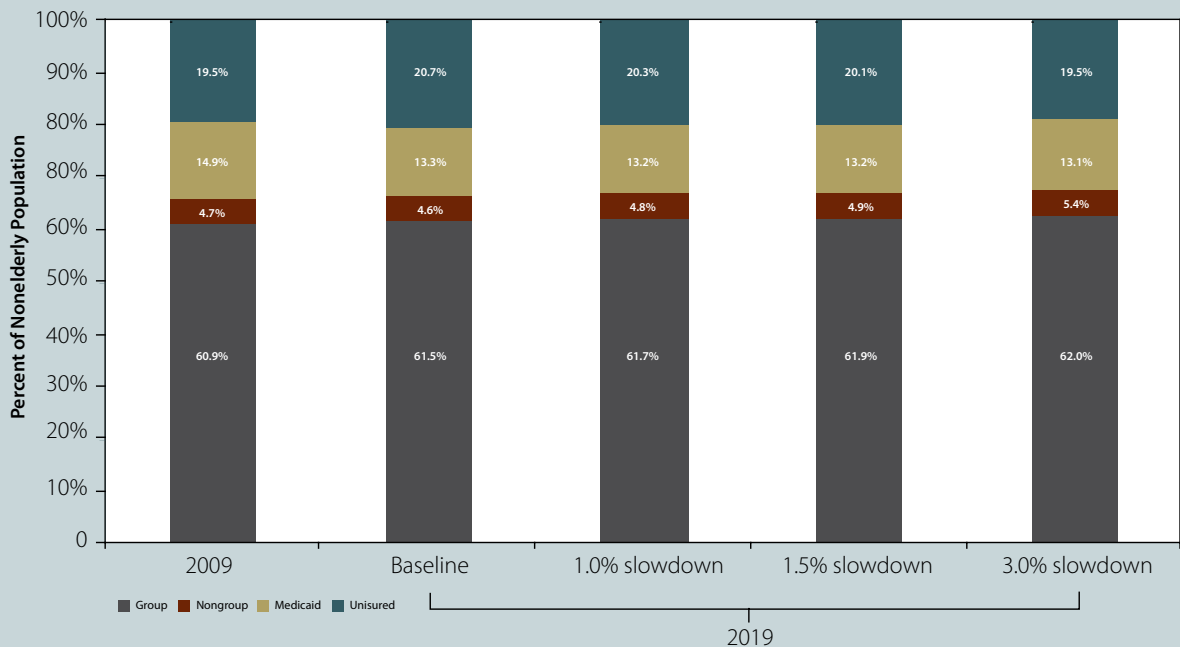
outcome, more than offsetting a contraction in Medicaid coverage. For instance, in the 1.5 percentage point reduction scenario, group and nongroup coverage expand by 0.4 and 0.3 percentage points, respectively, offsetting a 0.1 point decline in Medicaid enrollment. These net changes are composed of several direct movements between types of insurance. The most important movement involves people changing from uninsured status to group and nongroup coverage. There is also a small net movement from nongroup to group coverage as additional employers are induced to offer health insurance, offsetting the slightly larger numbers who move from being uninsured to nongroup coverage. Medicaid enrollment declines mostly because more firms offer insurance and some Medicaid enrollees choose to take up newly available employer coverage.

**Figure 4**  
**Uninsurance with Cost Growth Slowdown**




**Note:** The graph shows predictions of uninsurance in 2009 and 2019 when health care costs grow at the baseline rate (on average 4.3 percent above inflation) or by 1.0, 1.5, and 3.0 percentage points below baseline starting in 2012 (to account for lags in implementation and effectiveness of delivery reforms).

**Figure 5**  
**Nonelderly Coverage Breakdown with Cost Growth Reduction**



**Note:** All cost growth slowdowns start in 2012 to account for lags in the effectiveness of delivery reforms.



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To be most effective, changes in the delivery system and coverage expansions should be implemented together.



# V

## Conclusions and Recommendations

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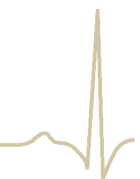
This report has reviewed many efforts to reform health care delivery that hold considerable promise for improving the performance of the U.S. health care system. Some reforms achieved significant health improvements and cost savings over a period of years, indicating the potential to reduce growth in health care spending. However, there is no magic bullet. In particular, the evidence is mixed for most delivery reforms that involve up-front investments intended to save money and improve care through incremental “add-ons” to the existing health care delivery and payment system. Consequently, modest expectations about the impacts of expanding these initiatives are understandable, particularly if these interventions are not linked in any meaningful way to accountability for achieving better health outcomes and lower costs. In contrast, there is less available evidence on systematic reforms that link comprehensive changes in the delivery of care with reforms in provider payments and insurance benefits that are designed to pay for greater value rather than more services. The limited evidence that exists, however, suggests a path toward real health care reform that avoids unnecessary costs and makes coverage more affordable and sustainable.

By linking investments to improve health care delivery with clear steps to increase accountability for using these investments to achieve better care and lower costs, and by promoting a system-wide strategy to implement reforms, there is a much greater likelihood of actually improving care and avoiding cost increases. This is not a recommendation for a government-run strategy, but rather for an approach in which the public and private

sectors both take actions to move — incrementally but deliberately — toward supporting value rather than volume and intensity of medical services.

What is needed is a framework that steadily implements effective reforms in payments, benefits, and regulation to accompany effective reforms in the delivery of care. Delivery reforms will require new investments in, for example, systems like electronic records and registries. But such investments must be tied to incentives for using these tools to improve care through new accountability for value. This framework includes:

- Implementing increasingly sophisticated person-centered measures of quality (emphasizing health outcomes and care experience) and cost, to identify high-value care when it occurs and to enable better financial and regulatory support for the most effective delivery models. This will require some government support for infrastructure investment to measure quality and cost, but public-private collaboration is needed, since private-sector data, experience, and leadership are essential to success. With good, consistent measures of outcomes and cost that span the health care system, both the public and private sectors can use these measures to support reforms tailored to their own programs, while creating new public-private system-wide synergies.
- Concurrently reforming public and private financing and delivery. Changes in provider payments and insurance benefits that create incentives for value can be implemented nationally through incremental



reforms and through bolder pilot programs to guide the way for further steps. Medicare and Medicaid should help lead this process, but reform initiatives should be tailored to local conditions. In this framework, Medicare, Medicaid, and private payers could each implement their own specific accountability reforms. Because they will be using consistent cost and quality measures to support innovative local efforts, however, they will provide much stronger support for broad-based reform than would initiatives that use measures limited to a single payer. This framework can build on current multi-payer regional initiatives (in some cases including Medicare) that are already piloting this approach.

- Investing in activities to support coordinated, high-value care in conjunction with payment and benefit reforms, particularly by (1) providing subsidies and other financial support for the adoption and use of effective HIT and other infrastructure to enable better integrated care, and (2) developing enhanced evidence on effective medical practices. These investments must be linked to new accountability for improving quality and lowering costs such as “shared savings” payments, or scheduled future payment reductions for providers who do not achieve care improvements. Because such investments can support the delivery of coordinated care, they should accelerate the adoption of accountability reforms in public and private insurance.

### **Providing Better Performance Measures to Promote Reform and Build Evidence**

Effective delivery reform requires that valid information on the quality and cost of health care, at the level of a patient or an episode of care, is widely available and consistently applied, with a particular emphasis on

health outcomes. Much work is underway to develop and disseminate such measures, but more support is needed to make available not just process-oriented measures tied to particular settings of care, but person- and episode-level measures that focus on health outcomes, total cost, and overall patient experience. When implemented more broadly and consistently, these measures can, in turn, provide a stronger foundation for reforming payments, benefits, and regulations in ways that support innovative efforts by providers and patients to improve health.

While major steps toward delivery reforms and accompanying payment reforms can begin now, the government should support public-private efforts that are already underway to (1) develop and implement consistent, outcomes-oriented, and person-centered performance measures and (2) promote their consistent use across public and private payers.

- The implementation of more complete, reliable, and consistent performance measures can support value-based financing and help identify payment system reforms and other interventions that lead to improvements in health care performance.
- A major focus should be the implementation of measures that can describe and show ways to address racial, ethnic, and socioeconomic disparities in health care quality. This includes the direct collection of information about race and ethnicity and the stratification of quality and experience measures by race and ethnicity.
- Collaborative, multi-payer regional approaches to delivery system reform, including Medicare and Medicaid, can help augment and improve the use of such measures to improve care locally.
- Further, the consistent use of performance measures representing all parts of the health care system can

support an important component of comparative effectiveness research — one that focuses not just on head-to-head comparisons of different treatments, but also on comparisons of payment and benefit reforms, such as many of the options discussed in this paper. Such research would help determine which approaches achieve better outcomes and lower costs for affected populations — and could help address the main causes of cost variation across areas.

### **Accountability for Quality Improvement, Cost Reduction, and Value**

To change how care is delivered, a critical element of health care reform involves transitioning toward payment systems for providers and benefit systems for patients that directly support better value.

This report has highlighted several examples of promising new approaches to provider reimbursement, including the shared savings approach used in Medicare’s PGP demonstration, which rewarded providers when they documented actual improvements in the health of the population served while simultaneously lowering overall health care spending through better prevention, chronic disease management, care coordination, HIT, and other efforts. The multispecialty groups that participated in the PGP demonstration showed significant improvements in quality, and many showed impacts on cost trends that have continued to increase over time. This is a good example of how coordinated delivery system reforms are most effective when provider payment incentives are also changed to support greater accountability for quality and overall costs.

Moreover, shared savings can be implemented without taking away from existing payments, thereby creating

a transition path toward increased accountability for all providers.<sup>191</sup> Over time, payments should be tied more closely to quality improvement and cost reductions, rather than volume and intensity of services provided, as in some of the reforms that Blue Cross Blue Shield of Massachusetts has started to implement.<sup>192</sup>

Medicare must support the transition to paying for value, otherwise delivery system reform efforts will not succeed. There are several short-term opportunities:

- Congress should realign payments by increasing reimbursements for primary care and for other non-physician personnel who can better coordinate and manage the care of patients. This new support for primary care could be implemented through care coordination programs that do not simply increase payments for primary care physicians, but that also transition toward greater accountability for achieving the cost reductions and improved outcomes that should be achievable through better care coordination and integration. This is in contrast to models that would simply pay providers to perform more coordination services and it can complement other needed steps to improve the primary care infrastructure and workforce.<sup>193</sup>
- In addition to implementing reforms that promote better and more coordinated, high-quality primary care in the short run, Medicare should develop and implement a phased transition from provider reimbursement toward accountability for cost and quality at the population level.
  - A range of payment methods already being tested in different contexts can be adopted to help achieve these goals, including shared savings models, bundled or episode-based payments, and partial capitation for providers in which a portion of overall compensation is tied to demonstrated results in improving value.

- Accountability payments should be risk-adjusted to ensure that health care providers and organizations who serve patients with significant health and socioeconomic issues are not penalized for treating higher-risk patients.
- Accountability payments should be tied to provider efforts to collect and report on increasingly sophisticated episode- and person-level measures for covered populations. These measures will support quality and cost improvement while improving accountability for results.
- Appropriate protections, including the use of risk-adjustment methods and payments linked to the achievement of measured quality goals (including measures that focus on disparities), should be included and monitored to ensure that medical care is improving and that providers have positive incentives to serve the most complex and difficult patients.

Other specific steps to transition the payment system toward greater accountability for cost and quality of care — leading with Medicare — could include:

- Develop new payment incentives — in the form of bonuses and reductions based on hospital readmission rates — to discourage readmissions associated with preventable complications and to encourage the provision of care for discretionary hospitalizations in more appropriate clinical settings. Savings could be achieved by assuming that the introduction of complementary delivery system reforms such as more coordinated care, better medication counseling, and transition care, should lead to reductions in the rate of avoidable readmissions.
- Adopt acute episode payments that combine physician and hospital payments, accompanied by episode-based measures of quality of care.

Over time, this could include bundled post-acute treatments including any hospital readmissions. Such an approach could offer higher base payments in conjunction with reduced payments for readmissions over time. Higher up-front payments and efforts to monitor care quality could lead to further reductions in readmissions and create stronger incentives for coordinating transition care and taking other steps to improve health.

- Encourage the development of Accountable Care Organization payment models for providers willing to have part of their compensation linked to the overall health care quality and costs of the population of patients they treat. This could allow key elements of the Medicare PGP demonstration and other private sector innovations to be put into practice in markets and care settings where there are fewer well-integrated, multispecialty provider groups.
- Reform insurance benefits to enable patients to save money when they get the care they need at a lower overall cost.
  - Tiered benefits, that provide for reduced or zero copayments when patients obtain care from high-quality, low-cost providers who form a high-performance network or from “Centers of Excellence” facilities, and higher copayments for providers who cost more without delivering measurably better quality.
  - Greater coverage and reduced copayments for valuable preventive care services.

### **Make Investments to Support Coordinated, High-Value Care**

Investments are needed to provide an infrastructure to support more integrated, higher-value care. To ensure that these investments pay off, they should ultimately be

tied to actual improvements in care and cost reduction, thereby producing greater accountability for value.

An important step toward increasing investments that are tied to accountability was taken in the HIT provisions of ARRA. The law provided for \$33 billion of investments in HIT infrastructure, administered through a National Coordinator for HIT whose office is directed to use the money to improve care coordination, create a nationwide health information exchange, and promote universal adoption of electronic health records. In addition, ARRA ties Medicare and Medicaid payment rates to the adoption and meaningful use of qualifying HIT. This gives providers incentives to integrate HIT into their systems of practice and to use HIT to better coordinate care. Any future investments in care coordination infrastructure should follow similar principles:

- Government grants or loans to promote infrastructure investments should subsequently be linked to Medicare and Medicaid payments, following the example of the ARRA's HIT provisions and of other recent legislation that provides for electronic drug prescribing. In the latter case, Medicare initially provides a subsidy and subsequently introduces a payment penalty for providers who do not use eRx to fill most of their patients' prescriptions.
- Funds should be used to promote greater coordination of care and better sharing of clinical information across treatment settings. This could include the use of support systems that enable solo practitioners and small groups to track and improve the care of the patients they share. Again, any subsidies should be tied to actual use of the infrastructure for care coordination and decision support, and — over time — to the achievement of better outcomes at lower cost.

- Once broader HIT and greater coordination of care have been implemented, Medicare should transition from subsidies and penalties based on provider use of these services to a greater emphasis on payments tied to patient outcomes and overall costs, as discussed above.

### **Encourage regional, multi-stakeholder approaches to reforming health care delivery**

Individual payers should continue to develop their own strategic priorities for delivery reforms that increase value for their patient populations and for changes in benefit design that also focus on value. However, some efforts by individual payers will be more effective if they coordinate with other payers. For example, health insurers and employers may achieve better returns on their support for delivery reforms by agreeing to use similar cost and quality measures that send more consistent signals to providers who treat patients covered by several payers. With good quality and cost measures that accurately reflect the experience of a broad range of patients, such consistency can help each payer support the kind of delivery reforms that most benefit their patient populations. In turn, multi-payer coordination can assist providers by reducing the range of heterogeneous payer-specific programs in which providers participate.

Policy makers should encourage new state- and regional-level efforts by public and private payers, including Medicare and Medicaid, to promote more consistent measurement, payment, benefit, and other policy reforms that support coordinated, higher-value care.

To support these efforts, Congress should give Medicare and Medicaid greater authority to participate in multi-stakeholder initiatives at the state and

regional levels that promote greater accountability at the population level. Eligibility to participate in such initiatives should depend on meeting actuarial conditions to assure that Medicare savings are limited to organizations with a demonstrated capacity to improve care, particularly among the vulnerable Medicare population. For example, conditions for participation could include the ability to report on adequate measures of patient-centered care to ensure that providers have meaningful information with which to actually improve care.

These conditions could be standardized, similar to the “model waivers” or demonstration templates that CMS has developed in other contexts. Effective multi-payer regional initiatives can serve as pilots for more widespread adoption.

While each payer can implement value-based insurance reforms on its own, regional initiatives could also promote consistent preventive, wellness, and health improvement steps across multiple payers. This could include payers tying into regional public health initiatives. For example, to support regional initiatives to reduce smoking and increase exercise, multiple payers could introduce consistent benefit reforms that enable nonsmokers and individuals who participate in wellness or exercise programs to save money.

### **Support for Comparative Effectiveness Research**

To maximize the effectiveness of delivery reform policies and interventions, better evidence is needed on what medical treatments and practices work best. To expand this evidence base and to use it optimally, a comprehensive comparative effectiveness research agenda is needed. This agenda should build on the \$1.1 billion in CER funding included in ARRA by incorporating several features:

- An inventory and analysis of existing CER programs in the public and private sectors that have emerged in response to natural incentives for such research. These include AHRQ’s Effective Healthcare Program, the Food and Drug Administration’s requirements for evidence to support comparative label claims, CMS’s coverage with evidence development policy, and private payer technology assessments for coverage decisions. The optimal CER agenda would include coordinating with these efforts and creating additional incentives for public and private sector investment in such research.
- The development of priorities for better evidence that is tied not only to evaluations of alternative drugs and other treatments, but also to alternative strategies for the prevention, diagnosis, and management of clinical conditions. Better evidence is also needed on the impact of policies, like payment incentives or benefit designs, on the outcomes and costs of care for affected patient populations.
- This research strategy should emphasize targeting — that is, differentiating the effects of treatments, combinations of treatments, and practices and policies that influence the use of treatments on particular subgroups of patients who may respond differently. This is particularly important for patients with limited means and multiple complex illnesses, as well as for patients from racial and ethnic minority groups.
- More infrastructure investment is needed to efficiently gather CER evidence from actual practice and from research studies that can be performed more easily in real world practice settings. This should involve collaboration between the private and public sectors as in recent work on post-market monitoring of drug safety.

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## Expanding Coverage and Reforming Delivery Together

Reform proposals often focus solely on extending coverage to uninsured Americans, but coverage expansions will be less expensive and more beneficial if they are paired with delivery reforms. Conversely, the effectiveness of delivery reform will be limited if it does not address the substantial underuse of valuable care among the uninsured. Thus, coverage expansions and delivery reforms should be pursued together.

Integrated delivery reforms are likely to increase health care quality and reduce cost growth. These improvements would induce some uninsured Americans to purchase coverage and some Americans on Medicaid to switch to private insurance. Modeling results presented in this paper predict that several million additional Americans would gain coverage by 2019 if delivery reforms are reasonably successful. In addition, even modest reductions in the rate of growth of health care costs would significantly reduce government outlays on Medicare, Medicaid, and the tax exemption for employer-provided insurance. While such reductions are by no means automatic, well-targeted, integrated delivery reforms are very likely to achieve budget savings. To help assure that such reforms are well-targeted and effective, concurrent reforms in financing and regulation are needed that support the achievement of cost reductions along with care improvements. Because expanding coverage is likely to require large subsidies, achieving these savings will be essential for the sustainability of efforts to reduce the number of Americans who are uninsured. Accordingly, reforms should be implemented in conjunction with any steps to expand subsidies.

## Conclusion

The evidence on reforming health care delivery in the United States shows that while there is tremendous potential for improving outcomes and saving money, reform efforts do not fully achieve these objectives if they are not well targeted or if they are implemented as incremental or “add-on” steps in the context of a fragmented health care system that creates financial incentives for maximizing the volume and intensity of medical services provided. While incremental reforms may lead to incremental improvements in care, they are unlikely to support the more fundamental changes in delivery needed to increase value and address the major gaps in cost and quality that currently exist in the U.S. health care system. Incremental steps are also unlikely to substantially reduce disparities in quality of care.

In contrast, systematic initiatives to use care coordination and better evidence have the potential to significantly improve outcomes and reduce costs. To help assure that such initiatives capture this potential, financing and other reforms are needed to support better outcomes at a lower cost. While these steps together may not be sufficient by themselves to create a sustainable health care system, the evidence suggests that they can have a significant impact on spending. Even an impact of 1 or 2 percent per year would, over time, substantially increase coverage and reduce program costs, thereby making coverage more affordable for all Americans. Moreover, these reforms would help assure that the public is getting what it wants in health care: the best possible outcomes at a significantly lower overall cost.

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- M.W. Battersby and the SA HealthPlus Team, "Health Reform through Coordinated Care: SA HealthPlus," *British Medical Journal* 330 (2005): 662-665.
  - M.S. Bauer et al., "Collaborative Care for Bipolar Disorder: Part II. Impact on Clinical Outcome, Function, and Costs," *Psychiatric Services* 57, no. 7 (2006): 937-945.
  - P.A. Buescher et al., "An Evaluation of the Impact of Maternity Care Coordination on Medicaid Birth Outcomes in North Carolina," *American Journal of Public Health* 81, no. 12 (1991): 1625-1629.
  - E.A. Coleman et al., "Preparing Patients and Caregivers to Participate in Care Delivered Across Settings: The Care Transitions Intervention," *Journal of American Geriatric Society* 52, no. 11 (2004): 1817-1825.
  - E.A. Coleman et al., "The Care Transitions Intervention: Results of a Randomized Controlled Trial," *Archives of Internal Medicine* 166, no. 17 (2006): 1822-1828.
  - S.R. Counsell et al., "Geriatric Care Management for Low-Income Seniors: A Randomized Controlled Trial," *Journal of the American Medical Association* 298, no. 22 (2007): 2623-2633.
  - M. Dwight-Johnson, K. Ell, and P. Lee, "Can Collaborative Care Address the Needs of Low-Income Latinas with Comorbid Depression and Cancer? Results from a Randomized Pilot Study," *Psychosomatics* 46, no. 3 (2005): 224-232.
  - R. Kobb et al., "Enhancing Elder Chronic Care through Technology and Care Coordination: Report from a Pilot," *Telemedicine Journal and e-Health* 9, no. 2 (2003): 189-195.
  - P. Lozano et al., "A Multisite Randomized Trial of the Effects of Physician Education and Organizational Change in Chronic-Asthma Care," *Archives of Pediatrics and Adolescent Medicine* 158, no. 9 (2004): 875-883.
- The two studies showing no quality improvements were:
- N.R. Chumbler et al., "Health Services Utilization of Care Coordination/Home-Telehealth Program for Veterans with Diabetes," *Journal of Ambulatory Care Management* 28, no. 3 (2005): 230-240.
  - E.Z. Oddone et al., "Enhanced Access to Primary Care for Patients with Congestive Heart Failure: Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission," *Effective Clinical Practices* 2, no. 5 (1999): 201-209.
- <sup>69</sup> Buescher et al., "An Evaluation of the Impact of Maternity Care Coordination on Medicaid Birth Outcomes in North Carolina."; Counsell et al., "Geriatric Care Management for Low-Income Seniors: A Randomized Controlled Trial."; Dwight-Johnson, Ell, and Lee, "Can Collaborative Care Address the Needs of Low-Income Latinas with Comorbid Depression and Cancer? Results from a Randomized Pilot Study."
- <sup>70</sup> Coleman et al., "Preparing Patients and Caregivers to Participate in Care Delivered Across Settings: The Care Transitions Intervention"; Counsell et al., "Geriatric Care Management for Low-Income Seniors: A Randomized Controlled Trial."
- <sup>71</sup> Battersby and the SA HealthPlus Team, "Health Reform through Coordinated Care: SA HealthPlus."; Bauer et al., "Collaborative Care for Bipolar Disorder: Part II. Impact on Clinical Outcome, Function, and Costs."; Chumbler et al., "Health Services Utilization of Care Coordination/Home-Telehealth Program for Veterans with Diabetes."; Dwight-Johnson, Ell, and Lee, "Can Collaborative Care Address the Needs of Low-Income Latinas with Comorbid Depression and Cancer? Results from a Randomized Pilot Study."; Kobb et al., "Enhancing Elder Chronic Care through Technology and Care Coordination: Report from a Pilot"; Lozano et al., "A Multisite Randomized Trial of the Effects of Physician Education and Organizational Change in Chronic-Asthma Care."; and Oddone et al., "Enhanced Access to Primary Care for Patients with Congestive Heart Failure: Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission."
- <sup>72</sup> Coleman et al., "Preparing Patients and Caregivers to Participate in Care Delivered Across Settings: The Care Transitions Intervention"; Coleman et al., "The Care Transitions Intervention: Results of a Randomized Controlled Trial." The interventions resulted in substantially fewer hospital readmissions (16 percent reduction in one study, 28 percent reduction in the other) in the six months after the first hospitalization, thus lowering overall costs. The effects were even larger — approaching 50 percent reductions — for rehospitalization for the same condition.
- <sup>73</sup> Coleman et al., "The Care Transitions Intervention: Results of a Randomized Controlled Trial." Coleman found cost savings of \$290 per patient. Buescher et al., "An Evaluation of the Impact of Maternity Care Coordination on Medicaid Birth Outcomes in North Carolina." Buescher documented savings of \$140 per patient with a return-on-investment ratio of 2.02.
- <sup>74</sup> Bauer et al., "Collaborative Care for Bipolar Disorder: Part II. Impact on Clinical Outcome, Function, and Costs."
- <sup>75</sup> Battersby and the SA HealthPlus Team, "Health Reform through Coordinated Care: SA HealthPlus." This was more realistic than the other studies estimating cost savings because it considered a large-scale, partially randomized policy experiment for chronically ill patients in Australia, while the others targeted more specific groups. When the study looked at subgroups of patients who had recently been hospitalized, it found significant non-care coordination cost savings, but not large enough to pay for the care coordination costs
- <sup>76</sup> The Medicare Payment Advisory Commission (MedPAC) describes a patient-centered medical home as a physician or a medical group who: 1) furnishes primary care; 2) conducts care management; 3) uses health IT for active clinical decision support; 4) has a formal quality improvement program; 5) maintains 24-hour patient communication and rapid access; 6) keeps up-to-date records of beneficiaries' advance directive; and 7) maintains a written understanding with each beneficiary designating the provider as a medical home. Medicare Payment

- Advisory Commission, "Promoting the Use of Primary Care," *Report to Congress: Reforming the Delivery System*, June 2008: 23-51.
- <sup>77</sup> The Chronic Care Model involves improving primary care for chronically ill patients by 1) engaging community resources, 2) reorganizing the health care organization's goals and payment structures, 3) teaching patients better self-management, 4) restructuring care to use practice teams composed of physicians and nurses, 5) providing decision support to providers through reminders of clinical guidelines, and 6) health IT systems to facilitate decision support, performance feedback, and disease registries. Bodenheimer, Wagner, and Grumbach, "Improving Primary Care for Patients with Chronic Illness."
- <sup>78</sup> Bodenheimer, Wagner, and Grumbach, "Improving Primary Care for Patients with Chronic Illness"; B.D. Steiner et al., "Community Care of North Carolina: Improving Care through Community Health Networks," *Annals of Family Medicine* 6, no. 4 (2008): 361-367; R.A. Paulus, K.Davis, and G.D. Steele, "Continuous Innovation in Health Care: Implications of the Geisinger Experience." *Health Affairs* 27, no. 5 (2008): 1235-1245.
- <sup>79</sup> Congressional Budget Office, *Budget Options, Volume 1: Health Care*, December 2008, <http://www.cbo.gov/ftpdocs/99xx/doc9925/12-18-HealthOptions.pdf>.
- <sup>80</sup> T. Bodenheimer, et al, "Improving Primary Care for Patients with Chronic Illness: The Chronic Care Model, Part 2," *Journal of the American Medical Association* 288, no. 15 (2002): 1909-1914.
- <sup>81</sup> G.A. Piatt et al., "Translating the Chronic Care Model into the Community," *Diabetes Care* 29, no. 4 (2006): 811-817.
- <sup>82</sup> D.A. Dorr et al., "Implementing a Multi-disease Chronic Care Model in Primary Care Using People and Technology," *Disease Management* 9, no. 1 (2006): 1-15.
- <sup>83</sup> R.A. Berenson, "Challenging the Status Quo in Chronic Disease Care: Seven Case Studies," California Health Care Foundation, September 2006, <http://www.chcf.org/documents/chronicdisease/ChallengingStatusQuoCaseStudies.pdf>.
- <sup>84</sup> Dorr et al., "Implementing a Multi-disease Chronic Care Model in Primary Care Using People and Technology."
- <sup>85</sup> Dorr et al., "Implementing a Multi-disease Chronic Care Model in Primary Care Using People and Technology."
- <sup>86</sup> T. Bodenheimer, "North Carolina Medicaid: A Fruitful Payer-Practice Collaboration," *Annals of Family Medicine* 6, no. 4 (2008): 292-294.
- <sup>87</sup> MedPAC Report to Congress (June 2008).
- <sup>88</sup> Congressional Budget Office, *Budget Options, Volume 1: Health Care*, December 2008.
- <sup>89</sup> U.S. Department of Health and Human Services, Office of the National Coordinator for Health Information Technology created a glossary of selected terms in its 2004 Health IT Strategic Framework available at <http://www.hhs.gov/healthit/glossary.html>. EHRs are real-time patient health records with access to decision support tools that can aid clinicians in decision-making. EHRs also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting. PHRs are an electronic application that allows individuals to maintain and manage their own health information. CPOE allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically and warns about potential problems. DS tools assist physicians in clinical decisions by providing evidence-based knowledge in the context of patient-specific data. eRx uses handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy.
- <sup>90</sup> P.R. Dexter et al., "Inpatient computer-based standing orders vs physician reminders to increase influenza and pneumococcal vaccination rates: a randomized trial," *Journal of the American Medical Association* 292, no. 19 (2004):2366-2371; D.K Litzelman et al., "Requiring physicians to respond to computerized reminders improves their compliance with preventive care protocols," *Journal of General Internal Medicine* 8, no. 6 (1993):311-317; and W.M. Tierney, S.L. Hui, and C.J. McDonald, "Delayed feedback of physician performance versus immediate reminders to perform preventive care. Effects on physician compliance," *Medical Care* 24, no. 8 (1986): 659-666.
- <sup>91</sup> J.M. Teich et al., "Effects of computerized physician order entry on prescribing practices," *Archives of Internal Medicine* 160, no. 18 (2000):2741-2777.
- <sup>92</sup> G.M. Chertow et al., "Guided medication dosing for inpatients with renal insufficiency," *Journal of the American Medical Association* 286, no. 22 (2001):2839-2844; and D.W. Bates et al., "The impact of computerized physician order entry on medication error prevention," *Journal of the American Medical Informatics Association* 6, no. 4 (1999):313-21.
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- <sup>94</sup> L.S. Hicks et al., "Impact of computerized decision support on blood pressure management and control: a randomized clinical trial," *Journal of General Internal Medicine* 23, no.4 (2008): 429-441; and V. Weber et al., "Employing the electronic health record to improve diabetes care: a multi-faceted intervention in an integrated delivery system," *Journal of General Internal Medicine* 23, no. 4 (2008): 379-382.
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- <sup>97</sup> S.J. Wang et al., "A Cost-Benefit Analysis of Electronic Medical Records in Primary Care," *American Journal of Medicine* 114, no. 5 (2003): 397-403.
- <sup>98</sup> R. Hillestad et al., "Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs," *Health Affairs* 24, no. 5 (2005): 1103-1117; A.G. Bower, "The Diffusion and Value of Healthcare Information Technology," RAND Corporation 2005, [http://www.rand.org/pubs/monographs/2006/RAND\\_MG272-1.pdf](http://www.rand.org/pubs/monographs/2006/RAND_MG272-1.pdf). J.H. Bigelow et al., "Analysis of Healthcare Interventions That Change Patient Trajectories," RAND Corporation, 2005; K. Fonkych and R. Taylor, "The State and Pattern of Health Information Technology Adoption," RAND Corporation, 2005, <http://www.rand.org/publications/MG/MG409>; F. Girosi, R. Meili, and R. Scoville, "Extrapolating Evidence of Health Information Technology Savings and Costs," RAND Corporation, 2005, [http://www.rand.org/pubs/monographs/2005/RAND\\_MG410.pdf](http://www.rand.org/pubs/monographs/2005/RAND_MG410.pdf).
- <sup>99</sup> Congressional Budget Office, *Evidence on the Costs and Benefits of Health Information Technology*, May 2008, <http://www.cbo.gov/ftpdocs/91xx/doc9168/05-20-HealthIT.pdf>.
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- <sup>101</sup> D. Blumenthal et al., "Health Information Technology in the United States: The Information Base for Progress," Robert Wood Johnson Foundation, 2006, <http://www.rwjf.org/files/publications/other/EHRReport0609.pdf>.
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- <sup>106</sup> K. Fonkych and R. Taylor, "The State and Pattern of Health Information Technology Adoption."
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- <sup>109</sup>Congressional Budget Office, "Estimated Effect on Direct Spending and Revenues of Title IV of Division B of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5): Health Information Technology," January 2009, <http://www.cbo.gov/budget/factsheets/2009b/health1.pdf>.
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  - N.R. Chumber et al., "Health Services Utilization of Care Coordination/Home-Telehealth Program for Veterans with Diabetes," *Journal of Ambulatory Care Management* 28, no. 3 (2005): 230-240.
  - E. S. Domurat, "Diabetes Managed Care and Clinical Outcomes: The Harbor City, California Kaiser Permanente Diabetes Care System," *American Journal of Managed Care* no. 5 (1999): 1299-1307.
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  - W.H. Gomaa, Thomas Morrow and Pieter Muntendam, "Technology-Based Disease Management, a Low-Cost, High-Value Solution for the Management of Chronic Disease," *Disease Management Health Outcomes* 9, no. 10 (2001): 577-588.
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  - G.A. Piatt et al., "Translating the Chronic Care Model into the Community," *Diabetes Care* 29, no. 4 (2006): 811-7.
  - B. Riegel, et al., "Effect of a Standardized Nurse Case-Management Telephone Intervention on Resource Use in Patients with Chronic Heart Failure," *Archives of Internal Medicine* 162, no. 6 (2002): 705-712.
- <sup>111</sup>Only Chumber, et al., "Health Services Utilization of Care Coordination/Home-Telehealth Program for Veterans with Diabetes," showed more mixed results, with the hospitalization rate falling slightly but total hospital days and emergency department visits increasing slightly.
- <sup>112</sup>Gomaa, Morrow and Muntendam, "Technology-Based Disease Management, a Low-Cost, High-Value Solution for the Management of Chronic Disease."
- <sup>113</sup>Kobb et al., "Enhancing Elder Chronic Care through Technology and Care Coordination: Report from a Pilot."; and Riegel, et al., "Effect of a Standardized Nurse Case-Management Telephone Intervention on Resource Use in Patients with Chronic Heart Failure."
- <sup>114</sup>Gomaa, Morrow, and Muntendam, 2001, reported savings of \$300 to \$1000 per member per year depending on the chronic disease state; Riegel et al., 2002, reported net savings of \$551 (a 25 percent reduction from usual care patients' costs) over six months of congestive heart failure treatment; Dorr, et al., 2006, reported net savings of \$28,930 per primary care physician per year or \$1196 per patient per year, and gross savings were about three times as large as intervention costs.
- <sup>115</sup>Domurat, "Diabetes Managed Care and Clinical Outcomes: The Harbor City, California Kaiser Permanente Diabetes Care System."; Kobb et al., "Enhancing Elder Chronic Care through Technology and Care Coordination: Report from a Pilot."; and Casale et al., "ProvenCare: A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care"; Chumber, et al., "Health Services Utilization of Care Coordination/Home-Telehealth Program for Veterans with Diabetes," though total hospital days increased in this study even as the hospitalization rate fell.
- <sup>116</sup>Domurat, "Diabetes Managed Care and Clinical Outcomes: The Harbor City, California Kaiser Permanente Diabetes Care System."; Riegel et al., "Effect of a Standardized Nurse Case-Management Telephone Intervention on Resource Use in Patients with Chronic Heart Failure"; and Gomaa, Thomas Morrow and Pieter Muntendam, "Technology-Based Disease Management, a Low-Cost, High-Value Solution for the Management of Chronic Disease."
- <sup>117</sup>Domurat, "Diabetes Managed Care and Clinical Outcomes: The Harbor City, California Kaiser Permanente Diabetes Care System"; Riegel, et al., "Effect of a Standardized Nurse Case-Management Telephone Intervention on Resource Use in Patients with Chronic Heart Failure"; Dorr et al., "Implementing a Multidisease Chronic Care Model in Primary Care Using People and Technology"; and Casale et al., "ProvenCare: A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care."
- <sup>118</sup>Piatt et al., "Translating the Chronic Care Model into the Community."
- <sup>119</sup>Dorr et al., "Implementing a Multidisease Chronic Care Model in Primary Care Using People and Technology."
- <sup>120</sup>Casale et al., "ProvenCare: A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care."
- <sup>121</sup>T.G. Rundall et al., "As good as it gets? Chronic care management in nine leading U.S. physician organizations," *British Medical Journal* 325 (2002): 958-61.
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- <sup>124</sup>B.A. Bunting and C.W. Cranor, "The Asheville Project: Long-Term Clinical, Humanistic, and Economic Outcomes of a Community-Based Medication Therapy Management Program for Asthma," *Journal of the American Pharmaceutical Association* 46, no. 2 (2006): 133-147.
- <sup>125</sup>M.E. Chermew et al., "Impact of Decreasing Copayments on Medication Adherence within a Disease Management Environment," *Health Affairs* 27, no. 1 (2008): 103-112.
- <sup>126</sup>H.A. Huskamp et al., "The Effect of Incentive-Based Formularies on Prescription-Drug Utilization and Spending," *New England Journal of Medicine* 349, no. 23 (2003): 2224-2232.
- <sup>127</sup>See B.H. Gilman and J. Kautter, "Consumer Response to Dual Incentives Under Multitiered Drug Formularies," *The American Journal of Managed Care* 13, no. 6 (2007): 353-359; D.P. Goldman et al., "Pharmacy Benefits and the Use of Drugs by the Chronically Ill," *Journal of the American Medical Association* 291, no. 19 (2004): 2344-2350; R. Tamblin et al., "Adverse Events Associated With Prescription Drug Cost-Sharing Among Poor and Elderly Patients," *Journal of the American Medical Association* 285, no. 4 (2001): 421-429; and M.D. Wong, "Effects of Cost Sharing on Care Seeking and Health Status: Results From the Medical Outcomes Study," *American Journal of Public Health* 91, no. 11 (2001): 1889-1894.
- <sup>128</sup>N.K. Choudhry et al., "Should Patients Receive Secondary Prevention Medications for Free after a Myocardial Infarction? An Economic Analysis," *Health Affairs* 26, no. 1 (2007): 186-194.
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- <sup>132</sup>D.P. Scanlon, R.C. Lindrooth, and J.B. Christianson, "Steering Patients to Safer Hospitals? The Effect of a Tiered Network on Hospital Admissions," *Health Services Research* 43, no. 5 (2008) (published online 29 August 2008; <http://www.hsr.org/hsr/aboutret/content/hsrtheme.pdf>).
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- <sup>140</sup>W.G. Manning, et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *American Economic Review* 77, no. 3 (1987): 251-277.
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- <sup>142</sup>S. Pearson et al., "Impact of Pay-for-Performance on Health Care Quality in Massachusetts, 2001-2003," *Health Affairs* 27, no. 4 (2008): 1167-1176.
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- S.W. Glickman et al., "Pay for Performance, Quality of Care, and Outcomes in Acute Myocardial Infarction," *Journal of the American Medical Association* 297, no. 21 (2007): 2373-2380.
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- Both examine results of surveys of several hundred hospitals (the surveys were conducted separately from the CMS/Premier demonstration) in which some surveyed hospitals participated in the demonstration and others didn't. Lindenauer, et al., which finds the positive result, has a slightly better study design, since it statistically adjusts for baseline differences between demonstration and non-demonstration hospitals. For another study on the CMS/Premier demonstration that found quality improvement in a much smaller sample of four intervention and six control hospitals, see: S.R. Grossbart, "What's the Return? Assessing the Effect of 'Pay-for-Performance' Initiatives on the Quality of Care Delivery," *Medical Care Research and Review* 63, no. 1 supplement (2006): 29S-48S.
- <sup>145</sup>Lindenauer, et al., "Public Reporting and Pay for Performance in Hospital Quality Improvement."
- <sup>146</sup>For a review of capitation, see J.D. Goodson, "The Future of Capitation: The Physician Role in Managing Change in Practice," *Journal of General Internal Medicine* 16, no. 4. (2001): 250-256.
- <sup>147</sup>For a review of the PPS literature, see R.F. Coulam and G.L. Gaumer, "Medicare's Prospective Payment System: A Critical Appraisal," *Health Care Financing Review* annual supplement (1991): 45-77.
- <sup>148</sup>D.M. Cutler, "The Incidence of Adverse Medical Outcomes under Prospective Payment," NBER Working Paper 4300 (1993).
- <sup>149</sup>K.L. Kahn, et al., "The Effects of the DRG-Based Prospective Payment System on Quality of Care for Hospitalized Medicare Patients," (and related articles), *JAMA* 264, no. 15 (1990): 1953-94. (The entire series can be accessed at: <http://www.rand.org/pubs/notes/2007/N3132.pdf>)
- <sup>150</sup>G.R. Wilensky, N. Wolter, and M.M. Fischer, "Gain Sharing: A Good Concept Getting a Bad Name?" *Health Affairs* 26, no. 1 (2007): w58-w57.
- <sup>151</sup>The national fall in mortality was larger than the fall reported among demonstration hospitals, but this difference may have occurred because the demonstration hospitals were above average quality so had lower baseline mortality. J. Cromwell, et al., "Medicare Participating Heart Bypass Center Demonstration: Final Report," *Health Economics Research* (1998).
- <sup>152</sup>Wilensky, Wolter, and Fischer, "Gain Sharing: A Good Concept Getting a Bad Name?"
- <sup>153</sup>L.L. Johnson and R.L. Becker, "An Alternative Health-Care Reimbursement System — Application of Arthroscopy and Financial Warranty: Results of a 2-Year Pilot Study," *Journal of Arthroscopic and Related Surgery* 10, no. 4 (1994): 462-470.
- <sup>154</sup>A.S. Casale, et al., "ProvenCare: A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care," *Annals of Surgery* 246, no. 4 (2007): 613-623.
- <sup>155</sup>Centers for Medicare & Medicaid Services, "Solicitation for Applications: Acute Care Episode Demonstration," <http://www.cms.hhs.gov/DemoProjectsEvalRpts/downloads/ACESolicitation.pdf>.
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- <sup>163</sup>E&M services were defined as CPT codes 99201-99205 and 99211-99215.
- <sup>164</sup>The base year of the demonstration was January 1, 2004 to December 31, 2004. There was no rebasing in expenditure calculations during the three-year demonstration. Both the base-year expenditures and the comparison group's expenditures were adjusted for case-mix, using the concurrent DCG-HCC model.
- <sup>165</sup>Since the threshold for bonus payment was set at 2 percent, no performance bonus was paid if the difference between the PGP and target expenditure growth rates was less than 2 percent. Above the threshold, the full bonus amount was paid given that the PGP met all quality benchmarks.
- <sup>166</sup>The remaining 20 percent was accrued to the Medicare Trust Funds. The annual bonus payment was adjusted by a 25-percent withholding rate. In the case of cost outliers, a beneficiary's annual expenditures were capped at \$100,000 in calculating savings.
- <sup>167</sup>In the first year (April 1, 2005 to March 31, 2006), Marshfield Clinic and University of Michigan Faculty Group Practice earned performance payments of \$7.3 million. (Total savings to the Medicare program were \$9.5 million.) In the second year, four PGPs — Dartmouth-Hitchcock Clinic, the Everett Clinic, Marshfield Clinic, and the University of Michigan Faculty Group Practice — earned \$13.8 million in performance payments, with \$17.4 million in Medicare savings. Centers for Medicare and Medicaid Studies, "Physician Groups Earn Performance Payments for Improving Quality of Care for Patients with Chronic Illnesses," Press Release (August 14, 2008).

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