The Healthcare Imperative: Lowering Costs and Improving Outcomes: Workshop Series Summary

DETAILS

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THE LEARNING HEALTH SYSTEM SERIES

ROUNDTABLE ON VALUE & SCIENCE-DRIVEN HEALTH CARE

THE HEALTHCARE IMPERATIVE

Lowering Costs and Improving Outcomes

Workshop Series Summary

Pierre L. Yong, Robert S. Saunders, and LeighAnne Olsen, *Editors*

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Willing is not enough; we must do."
—Goethe

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[1] Formerly the Roundtable on Evidence-Based Medicine. IOM forums and roundtables do not issue, review, or approve individual documents. The responsibility for the published workshop summary rests with the workshop rapporteurs and the institution.

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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this report:

Helen Darling, National Business Group on Health
Robert S. Mecklenberg, Virginia Mason Medical Center
Sheila Smith, Office of the Actuary
Sean Tunis, Center for Medical Technology Policy

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the final draft of the report before its release. The review of this report was overseen by **Floyd Bloom**. Appointed by the National Research Council and the Institute of Medicine, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the editors and the institution.

Institute of Medicine
Roundtable on Value & Science-Driven Health Care[1]
Charter and Vision Statement

The Institute of Medicine's Roundtable on Value & Science-Driven Health Care has been convened to help transform the way evidence on clinical effectiveness is generated and used to improve health and health care. Participants have set a goal that, by the year 2020, 90 percent of clinical decisions will be supported by accurate, timely, and up-to-date clinical information, and will reflect the best available evidence. Roundtable members will work with their colleagues to identify the issues not being adequately addressed, the nature of the barriers and possible solutions, and the priorities for action, and will marshal the resources of the sectors represented on the Roundtable to work for sustained public-private cooperation for change.

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The Institute of Medicine's Roundtable on Value & Science-Driven Health Care has been convened to help transform the way evidence on clinical effectiveness is generated and used to improve health and health care. We seek the development of a ***learning health system*** that is designed to generate and apply the best evidence for the collaborative healthcare choices of each patient and provider; to drive the process of discovery as a natural outgrowth of patient care, and to ensure innovation, quality, safety, and value in health care.

Vision: Our vision is for a healthcare system that draws on the best evidence to provide the care most appropriate to each patient, emphasizes prevention and health promotion, delivers the most value, adds to learning throughout the delivery of care, and leads to improvements in the nation's health.

Goal: By the year 2020, 90 percent of clinical decisions will be supported by accurate, timely, and up-to-date clinical information, and will reflect the best available evidence. We feel that this presents a tangible focus for progress toward our vision, that Americans ought to expect at least this level of performance, that it should be feasible with existing resources and emerging tools, and that measures can be developed to track and stimulate progress.

Context: As unprecedented developments in the diagnosis, treatment, and long-term management of disease bring Americans closer than ever to the promise of personalized health care, we are faced with similarly unprecedented challenges to identify and deliver the care most appropriate for individual needs and conditions. Care that is important is often not delivered. Care that is delivered is often not important. In part, this is due to our failure to apply the evidence we have about the medical care that is most effective—a failure related to shortfalls in provider knowledge and accountability, inadequate care coordination and support, lack of insurance, poorly aligned payment incen-

[1] Formerly the Roundtable on Evidence-Based Medicine.

tives, and misplaced patient expectations. Increasingly, it is also a result of our limited capacity for timely generation of evidence on the relative effectiveness, efficiency, and safety of available and emerging interventions. Improving the value of the return on our healthcare investment is a vital imperative that will require much greater capacity to evaluate high priority clinical interventions, stronger links between clinical research and practice, and reorientation of the incentives to apply new insights. We must quicken our efforts to position evidence development and application as natural outgrowths of clinical care—to foster health care that learns.

Approach: The IOM Roundtable on Value & Science-Driven Health Care serves as a forum to facilitate the collaborative assessment and action around issues central to achieving the vision and goal stated. The challenges are myriad and include issues that must be addressed to improve evidence development, evidence application, and the capacity to advance progress on both dimensions. To address these challenges, as leaders in their fields, Roundtable members will work with their colleagues to identify the issues not being adequately addressed, the nature of the barriers and possible solutions, and the priorities for action, and will marshal the resources of the sectors represented on the Roundtable to work for sustained public-private cooperation for change.

Activities include collaborative exploration of new and expedited approaches to assessing the effectiveness of diagnostic and treatment interventions, better use of the patient care experience to generate evidence on effectiveness, identification of assessment priorities, and communication strategies to enhance provider and patient understanding and support for interventions proven to work best and deliver value in health care.

Core concepts and principles: For the purpose of the Roundtable activities, we define science-driven health care broadly to mean that, ***to the greatest extent possible, the decisions that shape the health and health care of Americans—by patients, providers, payers, and policymakers alike—will be grounded on a reliable evidence base, will account appropriately for individual variation in patient needs, and will support the generation of new insights on clinical effectiveness.*** Evidence is generally considered to be information from clinical experience that has met some established test of validity, and the appropriate standard is determined according to the requirements of the intervention and clinical circumstance. Processes that involve the development and use of evidence should be accessible and transparent to all stakeholders.

A common commitment to certain principles and priorities guides the activities of the Roundtable and its members, including the commitment to: the right health care for each person; putting the best evidence into practice; establishing the effectiveness, efficiency, and safety of medical care delivered; building constant measurement into our healthcare investments; the establishment of healthcare data as a public good; shared responsibility distributed equitably across stakeholders, both public and private; collaborative stakeholder involvement in priority setting; transparency in the execution of activities and reporting of results; and subjugation of individual political or stakeholder perspectives in favor of the common good.

Foreword

Health reform is driven by the needs of the 47 million uninsured in this country and is also propelled by the central issue of cost. Escalating national healthcare expenditures engulf a rapidly enlarging fraction of the federal budget. Businesses pass part of the soaring costs on to their employees in the form of rising health insurance premiums. Families struggle to pay their healthcare bills, and many have delayed seeking necessary and important care.

Since 2006, the Institute of Medicine has assembled the diverse leadership across the health care system—including patient and consumer, provider, manufacturer, payer, research and policy representatives—under the auspices of our Roundtable on Value & Science-Driven Health Care (formerly the Roundtable on Evidence-Based Medicine) to engage the pressing issues confronting the U.S. healthcare delivery system today. Under the guidance of its membership, the Roundtable developed the vision of a learning health system, one in which evidence development is not merely an occasional byproduct of health care, but one in which evidence capture and analysis, as well as its application, is systematically structured as an integral and natural component of the care process. Building on its efforts to enhance the value obtained from health expenditures and with the generous support of the Peter G. Peterson Foundation, the Roundtable convened stakeholders from across the healthcare field in a series of four 2-day meetings, titled The Healthcare Imperative: Lowering Costs and Improving Outcomes. These sessions were devoted to understanding the sources of excess costs in health care, reviewing what is known about ways to reduce the excess, and identifying policy solutions.

This summary highlights the presentations and discussions from these workshops, delving into the major causes of excess spending, waste, and inefficiency in health care; considering the strategies that might reduce per capita health spending in the United States while improving health outcomes and preserving innovation; and exploring the policy options that would facilitate those strategies. The ideas and observations throughout this volume are offered in the belief that health reform, now and in the future, will benefit from identifying actionable options to lower healthcare costs in ways that maximize value.

I would like to extend my personal thanks especially to the Peter G. Peterson Foundation and its President, David Walker, to the Planning Committee assembled for the series, to the Roundtable membership for their continued leadership and commitment to advancing health care in this nation, and to the Roundtable staff for their contributions in coordinating and supporting the meeting series and ongoing Roundtable activities.

Harvey V. Fineberg, M.D., Ph.D.
President, Institute of Medicine

Preface

Stimulated by the challenges facing our nation as healthcare expenditures continue to soar and threaten our fiscal future, the four-part workshop series The Healthcare Imperative: Lowering Costs and Improving Outcomes, supported by the Peter G. Peterson Foundation, explored in detail the sources and implications of waste and excess cost in health care, as well as the strategies and policies necessary to address the issues. This volume summarizes the workshops, which were convened in May, July, September, and December of 2009 by the Institute of Medicine (IOM) Roundtable on Value & Science-Driven Health Care (formerly the Roundtable on Evidence-Based Medicine), as part of its *Learning Health System* workshop series. These meetings offered a forum for the broad spectrum of stakeholders in health to discuss the range of issues pertinent to reducing health spending without compromising health status, quality of care, or valued innovation. The discussion summary and its related presentations reflect the contributions of experts from multiple sectors involved in leadership, policy, practice, and innovation on behalf of better value in health care.

Guided by its membership, the vision of the IOM Roundtable on Value & Science-Driven Health Care is to catalyze the development of a *learning health system*—a system in which the processes and systems utilized by the healthcare system enable both the natural delivery of best care practices and the real-time generation and application of new evidence. With the support of senior leadership from the country's key healthcare sectors, the Roundtable has furthered its vision through collaborative initiatives, including public workshops and published proceedings. This workshop series emerged from prior work of the Roundtable on value in health care,

as well as the ongoing dialogue on healthcare reform, and provided a forum for stakeholders to discuss their perspectives and to identify ideas and areas for further consideration.

The contributions of the workshop discussions to better understanding have been conceptual, quantitative, and qualitative. Conceptually, the approach fashioned by the Planning Committee grouped the sources of excess costs in health care into six domains: unnecessary services (volume), services delivered inefficiently, prices that are too high, excessive administrative costs, missed prevention opportunities, and fraud. Except for the last, the sessions organized by the Committee for the first workshop reviewed these domains in detail, and, while much work remains, the workshop presentations have offered a substantially enhanced understanding of the nature and size of the problems in each of those domains. Two things are clear: (1) each is an important contributor to excessive healthcare costs, and (2) the amount of excessive costs incurred from each is tremendous.

In discussions about potential cost control strategies and policy options, key levers for change were identified and considered in the second and third workshops, as vehicles for initiatives of particular policy relevance, including payment transformation, governance streamlining, transparency, knowledge development, care system redesign, and community health capacity. The nature, barriers, and potential impact of the various measures were extensively explored. At the request of the Planning Committee, a fourth workshop was scheduled to focus solely on the Series' motivating proposition: reducing healthcare costs by 10 percent within 10 years, without compromising health outcomes or valued innovation.

Throughout the progression of the meetings, a number of opportunities and challenges were also identified around which the engagement of stakeholders such as those represented on the Roundtable, might be especially important and facilitative. These issues will be explored through future workshops, commissioned papers, collaborative activities, and public communication efforts.

We are especially indebted to the members of the Planning Committee, which crafted this unusually productive and path-breaking discussion series. The members of this stellar group were: Arnold Milstein (Pacific Business Group on Health, Committee Chair), Kathleen Buto (Johnson & Johnson), Robert S. Galvin (Global Healthcare/General Electric), Paul B. Ginsburg (Center for Studying Health System Change), Eric Jensen (McKinsey Global Institute), James Mathews (Medicare Payment Advisory Commission), Nancy H. Nielsen (American Medical Association), Steven D. Pearson (Institute for Clinical and Economic Review), Gail Shearer (Consumers Union), and Reed V. Tuckson (UnitedHealth Group).

Multiple other individuals and organizations donated their valuable time toward the development of this publication. We naturally also ac-

knowledge and offer strong appreciation for the contributors to this volume, for the care and thought that went into their analyses and presentations, for the ideas and observations they shared at the workshops, and for their contributions to this summary publication. In this respect, we should underscore that this volume contains a collection of individually authored papers and intends to convey only the views and beliefs of those participating in the workshops, not the express opinions of the Roundtable on Value & Science-Driven Health Care, its members, its sponsors, or the Institute of Medicine.

A number of Roundtable staff played instrumental roles in coordinating the workshops and translating the workshop proceedings into this summary, including Pierre L. Yong (the staff officer with primary responsibility), Catherine Zweig, LeighAnne Olsen, Kate Vasconi, Jane Fredell, China Dickerson, Chanda Ijames, Patrick Burke, Christie Bell, and Ruth Strommen. Franklin A. Cruz also contributed substantially to publication development. We would also like to thank Vilija Teel, Jordan Wyndelts, Michele de la Menardiere, and Jackie Turner for helping to coordinate the various aspects of review, production, and publication.

Clearly, successfully addressing the challenges of lowering healthcare expenditures while preserving outcomes and innovation will require significant effort and collaboration. We believe the dialogue emerging from *The Healthcare Imperative* begins to define the opportunities and options for successfully tackling this challenge, and look forward to continued learning from its insights.

Denis A. Cortese
Chair, Roundtable on Value & Science-Driven Health Care

J. Michael McGinnis
Executive Director, Roundtable on Value & Science-Driven Health Care

Arnold Milstein
Planning Committee Chair

Contents

SECTION II: STRATEGIES THAT WORK

SECTION III: THE POLICY AGENDA

*Appendixes A-D are not printed in this book. They are available online at http://www.nap.edu/catalog.php?record_id=12750.

Synopsis and Overview

Framing synopsis. Healthcare cost increases continue to outpace the price and spending growth rates for the rest of the economy by a considerable margin (Bureau of Labor Statistics, 2009). At $2.5 trillion and 17 percent of the nation's gross domestic product in 2009 (CMS, 2009), health spending in the United States commanded twice the per capita expenditures of the average for other developed nations, and concerns have never been higher on the economic implications for individuals, families, businesses, and even the overall capacity and fiscal integrity of critical functions for government at the federal, state, and local levels (Kaiser Family Foundation, 2009a; National Association of State Budget Officers, 2009; Orszag, 2007; Peterson and Burton, 2008).

Moreover, there are compelling signals that much of health spending does little to improve health, and, in certain circumstances, may be associated with poorer health outcomes. Between 2000 and 2006, for example, Medicare spending on imaging services more than doubled, with an over 25 percent increase in use of advanced imaging modalities such as nuclear medicine and CT scans compared to an 18 percent increase in readily available standard imaging modalities such as X-rays and ultrasounds, despite the increased risks associated with advanced imaging services (GAO, 2008). Several recent assessments of institutional and regional variation in costs and volume of treatment services indicate that, in many cases, care profiles that are 60 percent more expensive have no quality advantage (Fisher et al., 2003). Medicare spending per capita by hospital referral region, for example, varied more than threefold—from $5,000 to over $16,000—yet there appeared to be an inverse relationship between healthcare spending and quality scores.

In the face of these urgent challenges, the Institute of Medicine (IOM)—with the support and encouragement of the Peter G. Peterson Foundation—convened four meetings throughout 2009, under the umbrella theme *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. These meetings explored in detail the nature of excess health costs, current evidence on the effectiveness of

approaches to their control, the primary opportunities for improvement in the near- and long-terms, and the policy levers necessary to engage. The motivating proposition for the series of meetings was *to reduce healthcare costs by 10 percent within 10 years without compromising patient safety, health outcomes, or valued innovation*. Leading experts from across the nation presented papers and participated in the discussions reflected in this summary publication. The ideas encapsulated throughout this summary reflect only the presentations, discussions, and suggestions that coursed throughout the workshops and should not be construed as consensus or recommendations on specific numbers or actions.

As defined in the meeting planning and presentations, excess health costs derive from the dynamics at play in six overlapping domains of activity.

- Unnecessary services
- Services inefficiently delivered
- Prices that are too high
- Excess administrative costs
- Missed prevention opportunities
- Medical fraud

Because of the overlaps, the difficulty of measurement, and the subjectivity inherent in estimates made under conditions of scientific uncertainty, precision was elusive for estimates of the total amount of excess in the costs of health care. It was, however, notable that estimated totals from three separate approaches discussed in the workshops—extrapolation from observed geographic variation within the United States, contrasting overall U.S. expenditure levels with those of member countries in the Organisation of Economic Co-operation and Development (OECD), and summing the lower bounds of the various estimates for the six domains considered in the IOM workshops—amounted to approximately $750 billion, $760 billion, and $765 billion, respectively, for excess U.S. healthcare costs in 2009.

As meeting discussions focused on the factors at play that give rise to patterns of unnecessary costs, certain elements were most commonly discussed as prominent drivers, noted below and generally working in a mutually reinforcing fashion.

- Scientific uncertainty
- Perverse economic and practice incentives
- System fragmentation
- Opacity as to cost, quality, and outcomes
- Changes in the population's health status
- Lack of patient engagement in decisions
- Under-investment in population health

Discussions on strategies and policies shown in limited assessments to offer solid prospects for simultaneously lowering costs and improving health outcomes included a number of key levers to address the drivers of excess costs.

- Streamlined and harmonized health insurance regulation
- Administrative simplification and consistency
- Payment redesign to focus incentives on results and value
- Quality and consistency in treatment, with a focus on the medically complex
- Evidence that is timely, independent, and understandable

- Transparency requirements as to cost, quality, and outcomes
- Clinical records that are reliable, sharable, and secure
- Data that are protected, but accessible for continuous learning
- Culture and activities framed by patient perspective
- Medical liability reform
- Prevention at the personal and population levels

These are listed in approximate order of the frequency with which they were discussed and do not necessarily reflect an order of priority. For example, the workshop series focus was primarily on medical treatment, and not on prevention, although the latter was clearly discussed as a major strategy of importance. Similarly, medical fraud was specifically not a focus of these discussions but also clearly important to address. In addition, often mentioned was the fact that, like the drivers, they too are interactive with each other, underscoring the fragility of strategies that are singular in nature.

Certain of the participants, invited to offer insights specific to the challenge of reducing healthcare costs by 10 percent within 10 years, individually identified the approaches below as prime candidates for strategy and policy attention to lower costs while improving outcomes, given what is currently known about both the nature of the problems and the availability of potential solutions.

Care-related costs

- Prevent medical errors
- Prevent avoidable hospital admissions
- Prevent avoidable hospital readmissions
- Improve hospital efficiency
- Decrease costs of episodes of care
- Improve targeting of costly services
- Increase shared decision-making

Administrative costs

- Use common billing and claims forms

Related reforms

- Medical liability reform
- Prevent fraud and abuse

Finally, meeting participants identified a number of possible issues and activities for follow-up attention of the Institute of Medicine and its Roundtable on Value & Science-Driven Health Care (formerly the Roundtable on Evidence-Based Medicine), including: consideration of what a strategic roadmap might look like for action priorities and cooperative engagement by Roundtable members; improving the methodologies for estimating the nature and implications of unnecessary healthcare costs; assessing the approaches and potential impact of greater transparency as to healthcare costs, outcomes, and value; and strategies and approaches for providing better perspective to the public on the nature and potential impact of measures to lower costs and improve outcomes of health care in the United States.

National health expenditures are projected to be about $2.5 trillion in 2009, and with growth highly likely to continue to surpass rates for inflation (CMS, 2009), the economic consequences grow increasingly serious for individuals, families, and businesses, as well as states and the federal government. While the consumer price index—a measure estimating the average price of consumer goods and services purchased by households in the United States—*decreased* by 1.5 percent between August 2008 and August 2009, prices for medical services *increased* by 3.3 percent over the same time period (Bureau of Labor Statistics, 2009). As concerns have increased amidst an economic recession, a dominant theme in the health reform dialogue has been the need to control healthcare spending.

It was in this context that the Institute of Medicine's (IOM's) Roundtable on Value & Science-Driven Health Care (formerly the Roundtable on Evidence-Based Medicine), with the support of the Peter G. Peterson Foundation, hosted the four-part series *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. This Summary presents the insights and perspectives arising during the workshop discussions, which explored the drivers of spending, the promising methods of cost control, and the opportunities and barriers to implementing policies. ***The motivating goal of the series was to identify ways to reduce healthcare spending by 10 percent from projected expenditures in the United States within the next decade—without compromising health status, quality of care, or valued innovation.***

Part of the National Academies, the IOM has served as the congressionally chartered adviser to the nation on matters of health and health care since its establishment in 1970. With a dedicated commitment to improving the quality of care delivered in the United States, the IOM has conducted a number of highly influential studies—such as *To Err Is Human* (IOM, 2000), *Crossing the Quality Chasm: A New Health System for the 21st Century* (IOM, 2001), and *Rewarding Provider Performance: Aligning Incentives in Medicare* (IOM, 2007)—which have drawn attention to key shortfalls in the performance of the healthcare system, led to demonstrable changes in policy, and helped identify priorities for improving the delivery system.

Similarly, the Peter G. Peterson Foundation acts as an independent, nonpartisan convener and facilitator devoted to the mission of increasing public awareness of the nature and urgency of key economic challenges threatening the nation's fiscal future, and accelerating action by identifying sensible, sustainable solutions. Engaging the range of issues—from debts and deficits to excessive energy consumption and a lagging educational system—threatening the nation's financial future, the Peterson Foundation has committed significant resources and attention to the area of healthcare costs and solutions given health care's direct impact on the economy, including their support for this workshop series.

THE BURDEN OF RISING COST

With projected expenditures of $4.4 trillion in 2018, national health spending could potentially grow more than 300 percent over the course of just 18 years (CMS, 2009). According to projections from the Congressional Budget Office (CBO), federal spending on Medicare and Medicaid alone will increase from about 5 percent of gross domestic product (GDP) in 2009 to more than 6 percent in 2019 and approximately 12 percent by 2050, mostly from growth in per capita costs (Elmendorf, 2009b). If healthcare costs grow at just 2.5 percent more than GDP per capita, by 2050 Medicare and Medicaid expenditures will account for nearly a quarter of the entire U.S. economy (Orszag, 2007).

The costs of health care have therefore not just strained the federal budget; they have affected state governments and the private sector as well. In 2008, Medicaid spending accounted for approximately 21 percent of total state spending and represented the single largest component of state spending (National Association of State Budget Officers, 2009). These levels of healthcare expenditures have restricted the ability of state and local governments to fund other priorities, most prominently the needed investments in education (The White House, 2009).

In the private sector, healthcare costs have contributed to slowing the growth in wages and jobs (National Coalition on Health Care, 2008). While health insurance prices rapidly escalated and employers cut back on the provision of health insurance benefits (Kaiser Family Foundation, 2009b), the number of uninsured rose from 45.7 million in 2007 to 46.3 million in 2008 (U.S. Census Bureau, 2009).

On the individual level, the average cost of annual health insurance premiums for a family of four exceeded $13,000 in 2009, growing five percent in just a single year (Kaiser Family Foundation, 2009a). Health insurance premium increases have consistently exceeded inflation and the growth in worker's wages, forcing individuals to spend increasing amounts of their income simply to maintain health coverage (Kaiser Family Foundation, 2009b). Estimates of the real increase in per capita income devoted to health spending over the next 8 decades have been calculated to be almost 120 percent (Chernew et al., 2009). Fifty-three percent of Americans said their family limited their medical care in the past 12 months because of cost concerns, 19 percent reported serious financial problems due to medical bills, with 13 percent depleting all or most of their savings and 7 percent unable to pay for basic necessities such as food, heat, or housing (Kaiser Family Foundation, 2009c).

While the United States has the highest per capita spending on health care of any industrialized nation—50 percent greater than the second highest and twice as high as the average for Europe (Peterson and Burton, 2008), it continually lags behind other nations on many healthcare out-

comes, including life expectancy and infant mortality (Anderson and Frogner, 2008; Docteur and Berenson, 2009). Employers and employees in other industrialized countries spend about 63 percent of what the United States spends on health care, but U.S. workforce health trails by about 10 percent. Indeed, the emerging economies of Brazil, India, and China rank behind the United States by about 5 percent on workforce health measures, but these countries spend only a fraction—about 15 percent—of what the United States spends on health care (Milstein, 2009). The relatively poor performance in health outcomes relative to investment suggests ample opportunity for improvement on both costs and outcomes. This prospect is supported by findings that high spending areas in the United States—spending $6,304 per capita compared to $3,922 per capita in the lowest spending quintile in 1996—utilize sixty percent more frequent physician and hospital visits, testing, and use of procedures yet achieve no quality advantage (Fisher et al., 2003). Together, these findings underscore the opportunities to lower costs without impacting clinical outcomes.

About the Discussion Series

To explore the issues and opportunities central to lowering healthcare expenditures in the United States, the IOM Roundtable on Value & Science-Driven Health Care convened the four-part series *The Healthcare Imperative: Lowering Costs and Improving Outcomes* in May, July, September, and December of 2009 at the National Academies in Washington, DC. These meetings were part of the Roundtable's *Learning Health System* series. The series aimed to gather stakeholders in a trusted venue to engage the issues and concerns needed to facilitate the development of a healthcare system that not only delivers best practices and adds value with each clinical encounter, but adds seamlessly to the knowledge base for health improvement. Motivated by the proposition noted above of reducing per capita health spending in the country by 10 percent within 10 years without compromising health status, quality of care, or innovation, the meeting objectives included: characterizing and discussing the major causes of excess healthcare spending, waste, and inefficiency in the United States; considering the strategies that might reduce per capita health spending in the United States while improving health outcomes; and exploring policy options relevant to those strategies.

With the guidance of a planning committee consisting of leaders representing the various healthcare stakeholders, four meetings were organized:

- The first workshop, titled *Understanding the Targets* and convened on May 21-22, explored the major drivers of healthcare spending

growth, focusing on five broad categories: unnecessary services; inefficiently delivered services; excess administrative costs; prices that are too high; and missed prevention opportunities.

- The second workshop, titled *Strategies That Work* and held on July 16-17, focused on the potential of various strategies to lower healthcare spending while improving outcomes, including knowledge enhancement-based strategies; care culture and system redesign-based strategies; transparency of cost and performance; payment and payer-based strategies; community-based and transitional care strategies; and entrepreneurial strategies and potential changes in the state of play.
- The third workshop in the series, titled *The Policy Agenda* and held on September 9-10, explored the policy options to speed adoption of previously discussed strategies to control the drivers of healthcare spending.
- The final meeting in the series, titled *Getting to 10 percent: Opportunities and Requirements* and held on December 15-16, explored in greater detail the priority elements and strategies key to achieving 10 percent savings in healthcare expenditures within 10 years, without compromising health status, quality of care, or valued innovation.

In addition, a commissioned paper was made available as a resource for discussion at the third workshop. This paper placed the preliminary cost estimates offered by presenters at the first two workshops in the context of additional national estimates in the literature. The commissioned paper along with an accompanying summary table, workshop agendas, planning committee and speaker biosketches, and listing of participants are included as appendixes to this publication.

COMMON THEMES

As might be expected for a meeting series exploring—somewhat uniquely—the full range of issues as complex as those involved in understanding and engaging the nature of excessive health costs, discussions throughout the meeting were rich, informative, enlightening, provocative, and, in some cases, even startling. Workshops are explicitly designed to highlight the views of individual participants, and not to seek consensus. Such is certainly the case with the structure of the presentations and discussions in *The Healthcare Imperative: Lowering Costs and Improving Outcomes*. Nonetheless, a number of oft-mentioned—and general—recurring themes coursed throughout the discussion, noted in Box S-1 and summarized below, related to the broad challenges, drivers, and possible levers.

BOX S-1
Common Themes

Cost and outcome challenges

- Health cost excesses with personal, institutional, and national consequences
- Health outcomes far short of expectations
- Fragmented decision points, inconsistent principles, political distortions

Drivers of the shortfalls

- Scientific uncertainty
- Perverse economic and practice incentives
- System fragmentation
- Opacity as to cost, quality, and outcomes
- Changes in the population's health status
- Lack of patient engagement in decisions
- Under-investment in population health

Levers to address the drivers

- Streamlined and harmonized health insurance regulation
- Administrative simplification and consistency
- Payment redesign to focus incentives on results and value
- Quality and consistency in treatment, with a focus on the medically complex
- Evidence that is timely, independent, and understandable
- Transparency requirements as to cost, quality, and outcomes
- Clinical records that are reliable, sharable, and secure
- Data that are protected, but accessible for continuous learning
- Culture and activities framed by patient perspective
- Medical liability reform
- Prevention at the personal and population levels

The Challenges

Health Cost Excesses with Personal, Institutional, and National Consequences

Discussions underscored the expense of our country's healthcare spending both quantitatively and qualitatively. Peter R. Orszag, in his keynote address in *Understanding the Targets*, explained that federal spending on Medicare and Medicaid would grow to unprecedented levels over the coming decades if cost growth continued at uncontrolled levels. He highlighted that Medicare spending per capita by hospital referral region varied more than threefold—from $5,000 to over $16,000—and that this very sub-

stantial variation in cost per beneficiary in Medicare is not correlated with overall health outcomes—and, in fact, that the opposite may be the case. Describing the relationship between growing healthcare costs and other sectors of the economy, he also discussed how increasing demands placed on states by Medicaid costs have crowded out other state priorities and limited growth in state appropriations for public education, putting, for example, public universities at risk and at clear competitive disadvantage with their private counterparts in faculty recruitment.

Health Outcomes Far Short of Expectations

Several participants also identified and underscored that not only do our high expenditure levels have a negative impact on families' household budgets and personal health, but the significant variation in care intensity (and expenditures) occurring across the country does not yield notably different outcomes. Indeed, some of the facilities with the best outcomes have lower costs. Often noted was that despite our spending patterns, clinical outcomes, such as life expectancy at birth and care for chronic disease, fall behind in comparison to other countries. Racial disparities in access lead to poorer outcomes, lost productivity, and lower quality of life, which, when compared to groups with the best health outcomes, cost the United States an estimated $229 billion between 2003 and 2006 in direct and indirect medical costs and in the costs of premature death (Laveist et al., 2009). While portions of the population are able to navigate and obtain care almost on demand, others need to rely on the safety net of emergency rooms for the entirety of their care. Even for the insured, the costs of care, geographical impracticalities, and cultural barriers hinder access to care (Devoe et al., 2007; Ngo-Metzger et al., 2003).

Fragmented Decision Points, Inconsistent Principles, Political Distortions

Clear from the discussions was the multifaceted nature of the problem, ranging from poor care coordination, lack of consistent evidence-based guidelines, and medical errors resulting from multiple handoffs, to inconsistencies in the policies of health insurance regulators, payment systems that encourage volume over value, and political influences that sometimes overturn scientific determinations. The clearest common denominator is the level of fragmentation in key system decision points, which challenges both the timely marshaling of evidence for decisions and consistency of its application. While almost two-thirds of consumers believe that their care is already evidence-based (Brownlee, 2009), many participants identified the lack of consistency with which evidence-based medicine is truly prac-

ticed. Individual attendees cited inconsistent guideline application as leading to variations in clinical decisions and practice patterns. To address the interests of the various stakeholders in health care, who frequently fail to harmonize in the best interests of patients, attendees asserted the need for multipronged solutions. Suggestions to effectively address the root causes of spending growth in the nation ranged from regulatory policy reform to provider and consumer-based initiatives.

The Drivers

Discussions identified a number of factors driving expenditure growth, noting several in particular.

Scientific Uncertainty

Many participants remarked that the development of clinical evidence needed significant investments, given the continuous emergence of new therapies, pharmaceuticals, and technologies. Despite the work of various medical and scientific organizations, the gap between practice needs and available guidance was described as growing. An additional level of near-term complexity was introduced by emerging insights from the field of genomics (Farnham, 2009; U.S. Department of Energy Biological and Environmental Research Program, 2009). Discoveries about genetic variation clearly increase the amount of information needed to properly target diagnostic and therapeutic interventions. When tools are available to appropriately triage insights from research into application for targeting, care should eventually become much more specific and effective (Pollack, 2008).

Perverse Economic and Practice Incentives

Various attendees cited the current, predominantly fee-for-service reimbursement system as providing perverse incentives, rewarding volume of services over the delivery of high-value services. Citing the variable rates of back surgeries, invasive cardiac interventions, and rates of specialist consultations between hospitals, states, and regions that yielded no discernible quality differences (Delaune and Everett, 2008), many participants discussed the need to shift the focus to patient-centered value. Compounding the problem of economic incentives promoting volume over value, the implicit pressures of the medical liability environment and defensive medicine were noted as contributing substantially to the delivery of unnecessary services. Much higher reimbursement levels for specialty over primary care further distort the incentives for certain services.

System Fragmentation

Discussions highlighted the pervasive fragmentation of the healthcare system on virtually every dimension—providers, payers, regulators, consumers—as a fundamental challenge to efficient and effective care. Fragmented communication between providers, duplicative testing and the absence of vital information compromise both outcomes and economic prospects—discontinuities that pose costs to both patients and society (Valenstein and Schifman, 1996). While patients were described as having to complete paperwork requesting the same information again and again, providers were also identified as suffering from a lack of harmonization around administrative policies and reporting requirements from payers and quality monitors. Information needed for provider credentialing was requested repeatedly by differing institutions, consuming time and resources that could otherwise be spent on patient care (Healthcare Administration Simplification Coalition, 2009).

Opacity as to Cost, Quality, and Outcomes

Without meaningful and trustworthy sources of information on healthcare costs, quality, outcomes, and value, patients were described as becoming disempowered in the decision-making process. One participant likened being a patient in the healthcare system to being a tourist in a foreign country without knowledge of the language, geography, or customs (Rein, 2007). Similarly, without reliable, publicly available information on resource use and quality, providers were identified in several discussions as lacking either an understanding of their performance relative to their peers or an impetus to improve the value of the care they deliver. Many proposed that current approaches to improving health care in the United States are grounded in market forces, but those forces cannot work properly until consumers have better information about the nature and value of the elements.

Changes in the Population's Health Status

Since 48 percent of Medicare beneficiaries have at least three chronic conditions and 21 percent have five or more conditions, it has been estimated that approximately 60 million Americans have multiple morbidities, a number that is expected to increase to 81 million by 2020 (Anderson and Horvath, 2002). Additionally, projections place levels of obesity at 41 percent by 2015 (Wang and Beydoun, 2007), with consequences for diabetes, heart disease, hypertension, cancer, and osteoarthritis. In conjunction with an aging population, several attendees suggested that the changing demography of the nation's health precipitated the need to increase prevention ef-

forts, lower the prevalence of obesity, and facilitate management of multiple co-occurring and increasingly complex chronic conditions.

Lack of Patient Engagement in Decisions

Several conversations identified patient engagement as a critical element of treatment success but emphasized that consumers may be the least informed on issues related to costs, outcomes, or value. Almost 40 percent of Americans possess only "basic" or "below-basic" health literacy skills (Kutner et al., 2006). With patients' already limited understanding of health information, their ability to engage in informed decision making becomes increasingly insufficient as the volume and complexity of data available to them increases (Greene et al., 2008). In addition, the amount of information available to patients on the Internet holds the prospect of equipping patients to be active partners with clinicians in their care, but it was suggested by some that professional culture lags behind the potential in this respect.

Under-Investment in Population Health

Given the significant dependence of health status on the dynamics of physical, behavioral, and social determinants (WHO, 2009), full attainment of each individual's health potential requires strong commitments, investment, and progress in population-wide health programs (e.g., public health and health promotion-related activities), suggested many discussants. Estimates suggest that the potential to improve the health of a group is far less a matter of the health care received than of members' experience in the other domains of health determinants. Yet the dialogue called attention to the fact that only about 6 percent of national health expenditures is spent on public and population health (CMS, 2009). Several participants identified the critical role that prevention and population health—which broadly encompasses health outcomes and their biomedical and social determinants (Kindig and Stoddart, 2003)—could play in lowering the burden of chronic illness and improving productivity and quality of life.

The Levers

Attendees spoke broadly of the key levers for catalyzing transformation of the delivery system.

Streamlined and Harmonized Health Insurance Regulation

Many participants posited that addressing system fragmentation required effective streamlining of the diverse protocols and requirements arising from interactions between insurance companies, myriad employers and

provider organizations, 51 state insurance commissions, and public payers. Streamlining techniques intended to foster simplification through regional approaches and national guidelines and standards have had burgeoning success with public–private partnerships but still have underrealized potential (Healthcare Administration Simplification Coalition, 2009; IBM Global Business Services, 2009).

Administrative Simplification and Consistency

Physicians spend a reported 43 minutes per day on average—the equivalent of 3 hours per week and nearly 3 weeks per year—on administrative interactions with health plans and not on patient care (Casalino et al., 2009). It was also noted that one assessment found surgical nurses spending about a third of their time on documentation needs rather than clinical care (Smith, 2009). Many participants characterized efforts to streamline and harmonize payment and reporting requirements as basic, straightforward, and practical prerequisites to eliminating substantial systemic administrative costs.

Payment Redesign to Focus Incentives on Results and Value

Based on encouraging signs from demonstrations and theoretical models, many attendees suggested that much may be gained (lower costs, better outcomes) from broad changes to focus payments on episodes, outcomes, and value and to better target resources to those patients at highest risk of poor outcomes. Consideration of a proposed Independent Medicare Advisory Council to issue recommendations for Medicare payment updates and broader reforms that would not increase the aggregate level of net Medicare expenditures (Orszag, 2009) was discussed as a possibility, as were incentives for team care, provider integration, and patient involvement.

Quality and Consistency in Treatment, with a Focus on the Medically Complex

With more than 3,000 guidelines from more than 280 organizations registered with the National Guideline Clearinghouse (2009), consistency in guideline recommendations was raised as a concern. Also discussed was the need for a trusted means to broker differences in recommendations and channel them into effective use. It was also noted by many that with a dedicated commitment to effectiveness studies embedded in the notion of a *learning health system* and additional measures that allowed capture of effectiveness data directly from the care process, significant insights could emerge to provide greater consistency in guideline development.

Evidence That Is Timely, Independent, and Understandable

To improve and reinforce evidence on effective care, several exchanges highlighted the need for a dedicated, unified program to fill the substantial gaps in reliable guidance, keep up with innovation and the changing science, and improve practice reliability, consistency, and impact. Mandated by the American Recovery and Reinvestment Act (ARRA) of 2009, the IOM recently recommended a priority list of the 100 top investigative topics for comparative effectiveness research (CER). Simultaneously, the newly formed Federal Coordinating Council for Comparative Effectiveness Research provided recommendations on infrastructure and organizational expenditures for CER within the federal government. In concert with the $1.1 billion appropriated to the Department of Health and Human Services for CER, various attendees voiced hope that action on these recommendations and the resulting CER research findings would guide future treatment decisions, reimbursement structures, and benefit designs by placing greater emphasis on value.

Transparency Requirements as to Cost, Quality, and Outcomes

With price and quality transparency viewed as critical elements of a consumerism strategy (Tynan et al., 2008), many participants identified pairing the development of information in accessible formats regarding cost, outcomes, and value with governance and administrative streamlining as having the potential to accelerate focus on value's key ingredients. Increasing access to practical, usable transparency information could marshal patient and consumer involvement in improving the value of care. Some participants noted a 38 percent increase in information-seeking behaviors related to health in 6 years. In 2007, for example, 56 percent of American adults—more than 122 million people—sought information about a personal health concern, with particularly notable increases in use of the Internet as a source of health information (Hu and Cohen, 2008).

Clinical Records That Are Reliable, Sharable, and Secure

Use of electronic health records was noted throughout the discussions, not as a panacea, but as a tool to enhance the effectiveness and efficiency of medical care, facilitate patient handoffs, provide decision prompts at the point of choice, and strengthen patient involvement in the care process. The attention and resources dedicated to health information technology in recent legislation reflect the significant potential for electronic health records (EHRs) to facilitate care coordination and minimize medical errors (CBO,

2008b). Discussions underscored the need to facilitate the technical aspects of adoption and utilization while simultaneously expanding the research capacity of EHRs.

Data That Are Protected But Accessible for Continuous Learning

With more than 30 billion healthcare transactions occurring verbally, on paper, and electronically each year (Menduno, 1999), participants discussed the concept of harnessing the power of information generated from current clinical care. Many suggested that not only might electronic records improve clinical decision making and handoffs, but clinical data should be considered a knowledge utility. As a resource for real-time monitoring of the results of treatment and ongoing generation of new evidence for effective care, several individuals suggested that electronic health records have the ability to facilitate continuous improvement in the quality of care delivered.

Culture and Activities Framed by Patient Perspective

With 25 percent of Medicare expenditures attributed to unwanted variation in preference-sensitive care (Wennberg, 2008), it was noted by many participants that much of healthcare delivery has been shaped over the past generation with the primary convenience and interests of the clinician, not the patient, in mind. Yet, not only for patient satisfaction, but for better patient outcomes, attendees noted that the lens has to focus on patient perspectives and needs. Several participants suggested that shared decision making utilizing patient-centric decision aids have been demonstrated not only to facilitate patient engagement and understanding but also to ensure that the personal preferences of patients are reflected in the ultimate treatment choice.

Medical Liability Reform

While the number of medical malpractice payments reached almost 16,000 in 2006 with mean payments to plaintiffs of approximately $312,000 (National Practitioner Data Bank, 2006), malpractice premiums have continued to increase relentlessly, in some states by up to 73 percent in 2002 (Thorpe, 2004). Because defensive medicine appears to be a significant driver of unnecessary services, many participants referenced reforms—such as the notion of a "safe harbor" for best evidence practices, caps on noneconomic damages, and specialized tribunals—as important to reducing costs.

Prevention at the Personal and Population Levels

Many discussants often referred to the cost, now and in the future, of obesity among Americans, which if unchecked might lead to Medicare expenditures that are a third higher for obese patients than for those of normal weight (Lakdawalla et al., 2005). They also spoke of the burdens of chronic conditions, whose treatment consumes 96 cents per dollar for Medicare and 83 cents per dollar for Medicaid (Partnership to Fight Chronic Disease, 2009). While discussing possible solutions ranging from clinical preventive services to community health, several participants suggested that the distinctions between wellness, prevention, and treatment of chronic diseases were artificial because all were essential and required strong community initiative.

Because the discussion series took place during a period of active focus and debate related to health reform, the discussion during the third meeting, which was devoted to drawing from insights of prior presentations, was particularly helpful in offering framing considerations of the broad implications for reform. Participants at that meeting variously articulated a number of observations providing a constructive context for considering the common themes noted above, as well as the individual summaries in the chapters that follow. They include issues related to reorientation to patient-centered value; payment reform; multimodality of approach; specificity of responsibilities; incrementalism; transparency and accountability; and collaboration.

WORKSHOP ONE: UNDERSTANDING THE TARGETS

The first workshop, titled Understanding the Targets explored the major drivers of excess spending in health care, focusing on the categories below:

- Unnecessary services;
- Inefficiently delivered medical services;
- Excess administrative costs;
- Prices that are too high; and
- Missed prevention opportunities

As noted earlier, Office of Management and Budget Director Orszag led off the workshop and the series with a keynote address that emphasized the compelling challenges to the nation's fiscal integrity, focusing on the growth of health costs and individual and societal consequences. He underscored the importance of understanding, engaging, and controlling the waste and excess that were the focus of the workshop framework.

Within this framework, presenters provided qualitative descriptions of

the nature of the issue and its most important elements, quantitative dollar estimates of the respective contribution to overall unnecessary health costs, and a sense of the relative importance of the major contributors within the category. Given the complexity of the issues, participants also identified further issues for refinement in order to maximize the accuracy and completeness of the calculations, including additional accounting for overlaps between areas to minimize double-counting and the multifaceted nature of the issues discussed, such as the relative impacts and differences among commercially- and publicly-insured beneficiaries. For example, there are areas of overlap and interaction between the costs of uncoordinated care and the overuse of discretionary services that are difficult to disentangle. It was clear from the presentations that no single issue dominates healthcare spending growth, and that it is the result of multiple forces at play in a fragmented delivery system. Below brief summaries of the individual presentations are presented.

Unnecessary Services

Speakers in this session examined the provision of unnecessary services, highlighting the consequences of scientific uncertainty, perverse economic and practice incentives, and lack of patient engagement in decisions (Chapter 2).

Cost of Overuse: Services Provided Beyond Evidence-Established Levels

Amitabh Chandra examined the relationship between mortality and spending in hospitals. Using mortality as a quality measure and Medicare spending per beneficiary as the expenditure measure, he explained that if lower performing hospitals could be made to perform like higher performing ones, this would result in 8 percent reductions in both cost and mortality for three high-mortality conditions (acute myocardial infarction, hip fracture, and colon cancer). This is the equivalent of over $1 billion annually and over 11,500 patients receiving at least one more year of life. While this analysis was limited by the author's ability to adequately risk-adjust claims data, it was suggested that with savings of this magnitude for just three conditions, the potential across all conditions and populations could be substantial. Chandra concluded that these findings support a broader message that, despite the inefficiencies within the American healthcare system, it is possible to save both money and lives.

Cost of Discretionary Use Beyond Benchmarks

Focusing on services for which evidence indicated are unjustified, Elliott S. Fisher discussed the considerable regional variation in both practice and

spending occurring across the nation, identifying the over-utilization of discretionary services as a main contributing factor. Such services included more frequent visits to physicians, greater use of the hospital as a site of care, and greater use of imaging, diagnostic tests, and minor procedures. Using the lowest spending regions as benchmarks to estimate the magnitude of potential savings that could be achieved within the U.S. healthcare system, his analyses suggested that hospital utilization could decline by between 23 percent and 28 percent, primary care visits by 12 percent to 16 percent and medical specialist visits by 37 percent to 44 percent. Fisher acknowledged that this analysis was based solely on Medicare data and did not account for the significant variation that occurs within regions, but he estimated that should all spending regions achieve the benchmarks set by the lowest spending regions, savings to the Medicare program alone could total 18 percent to 20 percent of current spending, or $48 billion to $54 billion per year. Therefore, Fisher suggested, a gradual transition toward a more frugal healthcare system is not only possible, but it could in his view yield substantial savings without lowering quality.

Cost of Unnecessary Choice of Higher Cost Services

David Wennberg discussed the large variation in preference sensitive care—which accounts for 25 percent of all Medicare expenditures—and how this may be rooted in frequent encouragement to have physicians drive medical decision making rather than actively sharing the decision-making process with patients. He reviewed evidence that shared decision making (SDM) with decision aids provided an effective tool to ensure that the personal values and preferences of patients were reflected in the ultimate treatment selection. Extrapolating from studies demonstrating the impact of SDM—such as a reduction in surgical procedures by 25 percent compared to usual care—he calculated that systematic use of shared decision making coupled with provider incentives and changes in benefit design could reduce unwarranted variation in service utilization and yield up to 5 percent in net savings, the equivalent of $125 billion in 2009. Wennberg cautioned that data was still needed to assess the financial impact of provider-based SDM on total expenditures, and the effect benefit designs and reimbursement models could have on increasing use of SDM. However, given the potential savings, he recommended a paradigm shift from informed patient consent to informed patient choice.

Inefficiently Delivered Services

The presenters in this session focused on the savings opportunities available if appropriate services were provided in the most efficient ways

possible, drawing clear connections to the problems resulting from underlying system fragmentation, and perverse economic and practice incentives (Chapter 3).

Cost of Mistakes (Medical Errors, Preventable Complications)

Ashish Jha focused on the challenges of medical errors and duplicative testing in U.S. hospitals. Using a comprehensive literature review to identify rates of adverse events and redundant tests in hospitals and data from the National Inpatient Sample, he determined that over 3 million preventable adverse events occur in hospitals annually, with over half of these due to hospital-acquired infections and adverse drug events. He estimated that, in 2004 alone, eliminating readily preventable adverse events would result in direct savings of over $16 billion (6 percent of total inpatient costs) while eliminating redundant tests would save an additional $8 billion (3 percent of total inpatient costs). In describing the limitations of his analysis, he highlighted in particular that the estimates were based on data that were several years old, and therefore may not reflect current costs, and that data were not available for all patient populations (e.g., women admitted to the hospital for labor and delivery). Jha concluded by suggesting that improving quality of care while saving costs will require additional efforts to systematically measure and publicly report adverse event rates in U.S. hospitals.

Cost of Unnecessary Use of Higher Cost Providers

Considering the significant operating expenses due to the costs of medical labor, Gary S. Kaplan suggested that efficient use of skilled mid-level providers could reduce healthcare costs substantially for both purchasers and providers. Using the care pathway for breast nodules as an example, he explained that more than 90 percent of patients with breast nodules do not require surgery. Using an experienced Advanced Registered Nurse Practitioner (ARNP) instead of a breast surgeon for the initial office visit could reduce the cost of providing care. In the back pain care pathway, substituting an initial physician evaluation with an initial evaluation performed by a physical therapist with minimal physician support could achieve similar savings while simultaneously improving access, patient satisfaction, and the patient's return to function. Based on his experience that ARNP or Physician Assistant providers could deliver at least 50 percent of episodes of care for uncomplicated medical conditions, he surmised that use of mid-level practitioners rather than physicians could save an additional $8 billion in annual spending. In closing, he outlined key factors to affordable health care, including: accountability; efficient use of labor; use of effective

care pathways for high-cost conditions; alignment of reimbursement with value; and electronic health records embedded with evidence-based decision rules.

Cost of Operational Inefficiencies at Care Delivery Sites

Focusing on waste occurring within medical practices as a consequence of inefficient clinical and administrative processes, William F. Jessee drew upon a variety of data collected by the Medical Group Management Association (MGMA) from medical groups throughout the United States to estimate the savings potentially realizable from improving efficiency in physician offices. He offered that savings from efficiency and streamlining might approximate $6 billion annually, about 0.2 percent of total healthcare costs in the United States. While Jessee suggested that this estimate was provocative, he also cautioned that it was preliminary in nature, as it was based on limited cross-sectional survey data. Focusing on inefficiencies in hospitals, Arnold Milstein described analyses of the Medicare Payment Advisory Commission to identify hospitals ranked in the top 12 percent on a composite measure of low risk-adjusted cost per case and high quality scores. He suggested that, if the other 88 percent of U.S. hospitals replicated their attainment, their 30 day mortality could decline by 18 percent, readmissions by 4 percent, and inpatient costs by 12 percent while patients' experiences would be unaffected. This would result in an average reduction in U.S. hospital inpatient cost per case of approximately 11 percent. If these hospital cost savings were passed along to consumers, it would lower U.S. healthcare spending by approximately 2 percent. Milstein suggested that the most promising approach to reaping the savings appears to be the combination of dissemination of standardized care pathways and other successful elements of clinical process reengineering in top-performing hospitals with more pro-competitive health industry regulatory policies.

Cost of Care Fragmentation

Mary Kay Owens subsequently explored the impact of uncoordinated and fragmented health care on patients. In a review of utilization and expenditures for medical services and drugs (which included a detailed assessment of the costs of avoidable emergency department visits, duplicative and unnecessary drugs, and other types of medical services), she identified significant trends among those Medicaid patients receiving uncoordinated care. They represented less than 10 percent of patients but accounted for an average of 46 percent of drug costs, 32 percent of medical costs, and 36 percent of total costs for the population. Extrapolating to the publicly and privately insured, she calculated that, with a multiple intervention approach designed to identify patients with the most extreme uncoordinated

care and facilitate their care coordination, annual savings of $271 billion could accrue nationally by 2014. Owens emphasized that these estimates do not account for the population of uninsured, nor do they factor in future demographic trends in chronic disease or a growing elderly population.

Excess Administrative Costs

The presenters in this session approached estimating excess administrative costs from a variety of macro- and microeconomic levels, all with the goal of identifying the portion of expenditures spent on administration that could be reduced by increasing the efficiency of the delivery system, which highlighted the need for administrative simplification and harmonization (Chapter 4).

Insurance Administrative Costs Beyond Benchmarks

James G. Kahn identified a major portion of administrative costs as due to billing and insurance-related (BIR) activities undertaken to fulfill the requirements of getting paid, from contracting through collections. Building on this idea, and as noted earlier, Lawrence P. Casalino described how physicians spend the equivalent of 3 hours per week and nearly 3 weeks per year just on administrative interactions with health plans, and not on patient care. This is the equivalent of $31 billion in costs to practices, much of which is excess.

Drawing on existing research, Kahn and the other presenters in this session estimated that the BIR portion of physician revenue was estimated at 13 percent, an estimated $70 billion per year. For hospital care, they estimated BIR costs of $67 billion. The total for physicians and hospitals was calculated to be $137 billion per year. If a similar rate applied to other providers (e.g., pharmacies and nursing homes), he estimated the total BIR costs for all providers at approximately $214 billion and the total BIR costs for private insurers at $105 billion and for public programs at $42 billion. Adding each of the individual BIR estimates together, they suggested a total upper bound for BIR costs of $361 billion in 2009. However, they also encouraged caution in interpreting the results given the lack of adequate data on the BIR costs in several settings, such as in pharmacies and nursing homes.

In addition, Andrew L. Naugle considered reduction of commercial payer administrative expense as an opportunity to generate substantial financial savings for the U.S. healthcare system. For 2008, he identified approximately 11 percent ($42 billion) of total fully-insured commercial health insurance premiums as being consumed by payer administrative activities such as claim processing, customer service, medical management, and sales and marketing, as well as corporate overhead and external broker

commissions. If the average payer administrative expense level for fully-insured commercial products were reduced to approximately 8 percent of premiums—an expense level exhibited by "best practice" payers—he suggested that total payer administrative expense for these products would be reduced to approximately $29 billion, thereby generating a savings of approximately $14 billion; for the self-insured market, he estimated an additional savings of $6 billion to $9 billion could be realized. As these estimates applied data across the entire commercial marketplace, Naugle cautioned that variation in savings could occur across specific individual payers as they each will be variously impacted by their respective marketplace and organizational characteristics. Outlining opportunities to capitalize on the potential savings, he discussed possible policy options, including the elimination of manual transactions between payers and providers; simplifying the sales process; maximizing self-service capabilities and adoption; and standardizing payer and provider interaction processes and rules.

Care Site Administrative Costs Beyond Benchmarks

James L. Heffernan described physician billing costs as a substantial component of administrative costs, and comparatively higher than the costs for similar functions in other industries. Modeling the cost of administrative complexity burden of a physicians' organization by comparing the costs of the current system versus a uniform and transparent set of payment rules, he described analyses yielding an estimated administrative burden of 11 percent of net patient service revenue. Extrapolating nationally from the experience of one professional billing office, Heffernan estimated this totals $26 billion, thus suggesting that a single transparent set of payment rules in a multipayer healthcare system would potentially reduce the burdens on a provider's billing office.

Regulatory and Compliance-Imposed Costs Beyond Benchmarks

In his presentation on clinical data knowledge utilities, Peter K. Smith suggested that medical documentation requirements currently result in a vast dataset that is not relevant to patient-specific needs. In addition, he stated that current documentation considers important clinical elements relevant to a patient's specific problem to be secondary to the necessity of supporting payment requirements and ensuring the ability to defend against medical liability. He further described an analysis indicating that surgical nurses spend the greatest proportion of their time (36 percent) on documentation, compared to 19 percent on patient care activities and 21 percent on care coordination. Applying this proportion to the national health expenditure estimates, Smith estimated that nursing documentation costs an estimated $147 billion per year; reducing this documentation by 60 percent

could yield $88 billion in savings, representing 4 percent of total national health expenditures. Therefore, Smith expressed the view that the goals of the expansive clinical regulatory requirements may well be misaligned and possibly contrary to effective healthcare delivery.

Prices That Are Too High

The speakers in this session explored how current market practices result from perverse economic and practice incentives, and the opacity of cost, quality, and outcomes, yielding prices that may cost the nation billions of dollars in expenditures unnecessarily (Chapter 5).

Service Prices Beyond Competitive Benchmarks

Cory S. Capps focused on the consequences of hospital consolidations, describing recent trends and evidence from economic and health services research that found that consolidation often results in higher prices for hospital services. Using national data on the system affiliations of hospitals and other hospital characteristics and results from the existing economic literature, he quantified the likely effects of consolidation on the prices paid to hospitals for inpatient care and estimated the contribution of hospital consolidation to overall healthcare spending. Based on this analysis, he suggested that total national healthcare expenditures were roughly 0.4 percent to 0.5 percent higher ($10 billion to $12 billion in annual expenditures) than they would be absent the price increases resulting from hospital consolidation. However, he also explained that this analysis considers only broad averages and general trends, and does not indicate that any specific hospital consolidation will (or will not) result in higher or lower prices.

In addition to hospital services prices, the background material commissioned to inform the workshop series discussion identified analyses on physician pricing indicated that U.S. specialists make 6.5 times per capita GDP, compared with an average of 3.9 times for member countries of the Organisation of Economic Co-operation and Development (OECD) (Farrell et al., 2008). The analyses additionally indicated that, across all U.S. physicians, higher earnings add $64 billion in costs to the U.S. system, the sum of $49 billion more for specialists and $15 billion more for generalists.

Product Prices Beyond Competitive Benchmarks

Pharmaceuticals Jack Hoadley explored the factors involved in the pricing of medications, highlighting that drugs are priced differently across the various segments of the U.S. pharmaceutical market. As an example, he discussed how government-sponsored programs, such as the Department of Veterans Affairs and Medicaid, price drugs differently than privately

insured health plans. He also identified brand name drugs under patent protection as being priced differently than those where multiple manufacturers compete to sell the product. He also suggested that there are distinctive approaches for drugs delivered by physicians (e.g., chemotherapy drugs) or in institutional settings (e.g., hospitals or nursing homes). In looking at system-wide savings from lower prices, he estimated that a 5 percent reduction in the price of brand drugs across all payers, except those government payers already obtaining deep discounts, would yield about $9 billion in annual savings. While Hoadley cautioned that this estimate is only illustrative, as no obvious standard for an optimal drug price is available, he also explained that additional consideration of the impact price alterations could have on research and development and innovation is necessary.

Durable medical equipment Thomas J. Hoerger and Mark E. Wynn turned their attention to the pricing of durable medical equipment (DME), a category of health expenditures that includes oxygen equipment, wheelchairs, and other equipment and supplies used in the home as well as eyeglasses and hearing aids. They discussed evidence that equipment prices may be too high, including data from competitive bidding, which resulted in price reductions of 20 percent in a Medicare demonstration project from 1998 to 2002. Based on these results, Hoerger estimated a potential savings of approximately $3 billion, which equaled 28 percent of current Medicare payments for DME and converted to about 12 percent of the $255 billion total expenditures on DME and 0.1 percent of the $2 trillion in total national health expenditures in 2007. Care as to the interpretation of the amount of savings achievable was suggested by Hoerger because, while these calculations were based on competitive bidding results from the 1999-2002 demonstration projects and the 2008 national program, Medicare fees for DME have since been reduced.

Devices Jeffrey C. Lerner examined the field of medical devices and technology, exploring how fair prices could be negotiated between buyer and seller so that waste can be minimized. Based on his analyses, he estimated that hospitals, the primary purchasers of devices, would have saved approximately 3 percent or $5 billion in 2008 had they negotiated with manufacturers to achieve the average savings for every device they bought. He also acknowledged that beyond hospitals, data from outpatient medical centers and physician groups would be needed for a more complete analysis.

Missed Prevention Opportunities

These presentations explored how changing demographic trends in the population's health status and underinvestment in population health

contribute to missed prevention opportunities, and focused not simply on the potential costs of missed prevention opportunities but also on the added value of increasing the delivery of preventive efforts to patients (Chapter 6).

Primary and Secondary Prevention

Steven H. Woolf stressed the consequences of an inadequate emphasis on disease prevention, including greater morbidity and mortality and lower quality-of-life that would occur because of missed opportunities to prevent disease and injury (primary prevention) and from missed opportunities to control or reverse pre-symptomatic disease (secondary prevention). While he emphasized the importance of community- or population-based prevention services, he used obesity as a case study to demonstrate how lost opportunities in prevention result in measurable health costs and excess resource consumption. He concluded by asserting that slowing the growth of healthcare spending will ultimately necessitate redistributing current expenditures to high-value services such as prevention.

Thomas J. Flottemesch described how underutilization of preventive services represented missed opportunities for reducing future medical costs. He presented estimates on the delivery costs and potential medical savings of 20 evidence-based primary and secondary clinical preventive services using 2006 cost and utilization data. While acknowledging that certain costs could have been omitted or double-counted due to insufficient data, he suggested an estimated net medical cost savings of $7 billion or a 0.4 percent reduction in personal healthcare expenditures from increased use of recommended primary preventive services. Conversely, he found that none of the included secondary preventive services were cost saving. Flottemesch concluded that, while different types of evidence-based clinical preventive services have the potential for differential impacts depending upon current delivery rates and target populations, evidence-based preventive services should be embraced, and their use encouraged, because of their positive health impact.

Tertiary Prevention

Michael P. Pignone focused on better use of effective strategies for preventing disease progression and further adverse health events in patients with established health issues (tertiary prevention). Examining the evidence on several specific types of services, including interventions to reduce rehospitalizations for a range of conditions, disease management interventions for chronic conditions such as heart failure and diabetes, and greater use of effective therapies in patients with known coronary heart disease,

he surmised that widespread adoption of proven programs for key chronic conditions could produce substantial national savings, perhaps as much as $45 billion per year. However, he also explained that translating successful interventions to new populations and settings and realizing savings may be difficult because of the differing organizational and population needs of individual institutions and communities. Despite these limitations, he ultimately suggested that better use of effective tertiary prevention possesses strong potential for improving health and reducing spending.

International Context

Focusing on a comparison between U.S. and international trends in healthcare expenditures, this presentation underscored the nature of our system's fragmentation, changing health demographics, and perverse economic and practice incentives (Chapter 1).

Comparison to OECD Countries

Eric Jensen described analyses concluding that the United States spends nearly $650 billion more on health care than one would expect based on the nation's wealth and the experience of other OECD countries. Of this amount, he related that nearly two-thirds or $436 billion is attributable to outpatient care, which is partly due to an ongoing structural shift away from inpatient settings that should in theory reduce total system costs. However, it was estimated that the United States saves at most $100 billion to $120 billion in inpatient care costs as a consequence of our capacity to provide care in an outpatient setting, far less than the $436 billion in above expected costs. In addition to this structural change, several other factors fuel the growth in outpatient care costs, including (1) the highly profitable nature of outpatient care; (2) the judgment-based nature of physician care coupled with the fee-for-service reimbursement; (3) unit price growth linked to technological innovation; (4) demand growth linked to greater availability of supply; and (5) insurance contracts with limited out-of-pocket costs making patients relatively price-insensitive. He also explored factors driving higher than expected costs in other parts of the U.S. healthcare system including the cost of drugs ($98 billion above expected) and health administration and insurance ($91 billion above expected). Offering a framework for reform, he stated that policy makers must address supply and demand, focus on healthcare financing, and institute an effective organizational framework for implementation.

WORKSHOP TWO: STRATEGIES THAT WORK

The second workshop explored the major methods of controlling healthcare spending growth, focusing on six broad categories:

- Knowledge enhancement-based strategies;
- Care culture and system redesign-based strategies;
- Transparency of cost and results;
- Payment and payer-based strategies;
- Community-based and transitional care strategies; and
- Entrepreneurial strategies.

Laying the groundwork for subsequent presentations with his keynote address for the second workshop, titled Strategies That Work, Glenn Steele, Jr., described how Geisinger Health System has leveraged its position as both provider and payer to innovate within the current delivery system without developing new operational and financial problems. He described their pioneering work with bundled payments for cardiac surgery, which has yielded significant improvements in the delivery of evidence-based care and decreased re-hospitalizations within 30 days by 44 percent. With a focus on the high-utilizing chronic disease population, Steele relayed that their care management initiative has reduced readmission rates among the targeted population by nearly 30 percent within a year and decreased total medical costs by 4 percent—a return-on-investment of 250 percent. He also described the positive externalities arising from their innovations, citing how the teachers in Danville, Pennsylvania received an average raise of $7,000 due to Geisinger's ability to decrease health insurance costs. Identifying Geisinger's organization, local marketplace, financial health and planning, and the sociology of its catchment area as key elements of their local environment, he characterized the success of their interventions in acute and chronic care as steeped in their ability to innovate, experiment, and learn "on the fly."

Presentations throughout this workshop provided an overview of the evidence supporting the impacts of the strategy being considered and several offered quantitative dollar estimates of the savings achievable from nationwide implementation. While reflecting on the analytics, participants and a panel of economists including Dana Goldman, Eric Jensen, Len Nichols, Robert D. Reischauer, and Jonathan S. Skinner noted the need to account for possible synergies between strategies, such as the impact of tort reform and health information technology (HIT) with decision support on defensive medicine practices. Similar to the drivers of healthcare cost growth discussed in the first workshop, participants referenced the need

for multifaceted strategies in order to effectively bend the cost curve. Brief summaries of the individual presentations are presented below.

Knowledge Enhancement

Speakers in this session focused on the essential strategies to enable more efficient generation and application of knowledge during the care process, in particular highlighting tools for generating high quality, consistent treatment, with a focus on the medically complex; timely, independent, and understandable evidence; reliable, sharable, and secure clinical records; protected but accessible data; and patient-centered care (Chapter 8).

Use of Evidence-Based Clinical Practice Protocols

Lucy A. Savitz drew on experiences from Intermountain Healthcare to demonstrate the potential for evidence-based clinical protocols to improve outcomes and lower costs. She described the advantages of these protocols as: providing readily accessible references to knowledge in guidelines that have been selected for use in a specific clinical context; improving the clarity of an existing guideline; facilitating tailoring of guidelines to a patient's specific clinical state; and providing timely decision support that is specific for the patient. Using the example of a single evidence-based care process model as an example, she suggested that savings seen at Intermountain from implementation and utilization of this model for febrile infants extrapolated nationally would yield an estimated $2 billion savings annually. The system-wide and condition-wide implications, she noted, are clearly considerable if similar reliability and consistency of care could be widely harmonized. While suggesting that Intermountain's protocols could be adopted across different models of care delivery, she additionally discussed the larger challenge of sustainability of savings beyond initial implementation.

Decision Support Provided Through Electronic Health Records

With accumulating evidence that EHRs can improve the efficiency, quality, and safety of health care by providing more complete information with evidence-based decision support to physicians at the point of care, Rainu Kaushal explored the potential of EHRs to lower costs and improve outcomes. She suggested that interoperability and the inclusion of electronic prescribing functionalities are particularly important in generating value, as is extensive technical support to achieve appropriate implementation and use. She reviewed published literature estimating that adoption of nationwide interoperable EHRs could save $77 billion annually. Additional literature estimated that inpatient computer physician order entry (CPOE)

adoption could yield savings ranging from $1 million to almost $3 million annually per hospital after an initial investment, and savings from adoption of EHRs in the ambulatory setting were estimated to be $86,400 per provider over 5 years. However, Kaushal underscored that the estimates described were restrained by the limited availability of primary data and consequent heavy reliance on expert estimates. She also suggested that the critical cofactors needed for successful implementation and use of EHRs include financial support, technical support (i.e., regional extension center services), and refinement of standards.

Comparative Effectiveness Research

Carolyn M. Clancy described comparative effectiveness research as a powerful tool in providing the information needed to drive improvements in clinical care by providing information that could be used on the frontlines of treatment, and helping to make decisions more consistent, transparent, and rational. She outlined additional goals of ensuring that effectiveness data are more widely used, and promoting an open and collaborative approach to comparative effectiveness.

Capturing Clinical Data to Generate New Knowledge

Peter K. Smith suggested that clinical data be considered a knowledge utility, thus improving the ability to utilize the medical record in clinical decision making and in handoffs, improving the quality of the data, and providing essential information to better evaluate and treat the patient. He offered the example of case improvements in thoracic surgery, facilitated by a registry program for all patients introduced through the Society of Thoracic Surgeons. In order to accomplish broader use of all clinical data for new insights, he recommended a comprehensive restructuring of our clinical data collection process, including the development of universal problem lists which could facilitate patient care, quality improvement initiatives, and clinical research.

Care Culture and System Redesign

While the presentations in this session were diverse, all the strategies discussed share the central idea of shifting the current culture to one of patient-centered care through such levers as streamlined and harmonized health insurance regulation, quality and consistency in treatment with a focus on the medically complex, sharable clinical records, and medical liability reform (Chapter 9).

Team Care and Improving the Match of Clinician to Care Element

Michelle J. Lyn described strategies for using expanded teams of providers, selected to respond to local needs and resources in targeted sites across a community, to provide care earlier, more effectively, and at lower cost. Using Community Care of North Carolina (CCNC) as an example of such a strategy, she elaborated that CCNC was comprised of networks of physicians, hospitals, health departments, and social services agencies. These networks formed community-based delivery systems and collaboratively deployed teams of social workers, nurses, health educators, dieticians, community health workers, and others who work in concert with physicians to provide care management and disease management and assure appropriate access to services. Analyses estimated overall annual state savings of up to $170 million. She concluded that, despite limited experience transitioning to systems of care for an increasingly diverse, aging population, community-engaged system redesign must be part of healthcare reform.

Care Site Efficiency and Productivity Initiatives and Incentives

Drawing on the experience of the Virginia Mason Medical Center (VMMC), which applies principles from the Toyota Production System, Kim R. Pittenger explained how re-engineering of clinical services could eliminate waste and mistakes in care and thus be free of their human and dollar costs. Extrapolating nationally from VMMC's results, he estimated the sum of the clinical and patient-safety savings on a national scale from the application of such efficiency and productivity initiatives to be over $44 billion, and the operational savings through reductions in cost per relative value unit, as well as lower capital and liability costs, to be over $7 billion for medical provider groups. Similarly, Sandeep Green Vaswani described the prospects for efficiencies in reducing variability in patient flow and clinical processes. He particularly highlighted the artificial portion of variability, resulting from inappropriate management, as having negative consequences for patients, providers, private employers, and the government. Recommending what he called Variability Methodology and Operations Management, Vaswani outlined several assumptions made in calculating the potential benefits of nationwide implementation, which he estimated could range from $35 to $112 billion.

Care Site Integration Initiatives

Timothy G. Ferris discussed a 3-year Centers for Medicare & Medicaid Services care coordination demonstration based at Massachusetts General Hospital (MGH) for Medicare beneficiaries with a large number of chronic conditions. Relative to a matched control group, patients in the interven-

tion group had lower costs, fewer admissions, lower mortality, and greater use of hospice. After 2 years, the intervention showed net savings for the enrolled population of between 4 percent and 5 percent of all healthcare costs, which translated into a 1 percent to 2 percent overall savings for the total population of Medicare beneficiaries from which the intervention patients were selected. While acknowledging that several of MGH's characteristics—integration of hospital and physician services, existing electronic medical records system, extensive primary care service network—may limit generalizability, he estimated that a similar national initiative could yield between $600 million and $1 billion in Medicare savings per year. He concluded that the apparent success of the MGH Care Management Program suggests that prospective payment for the enhanced management of high-risk patients holds some promise for reducing costs.

Information Technology Initiatives to Improve Efficiency

Focusing on interoperability and health information exchange (HIE), Ashish Jha presented background data on HIE, explaining how it could help streamline, as noted earlier, the more than 30 billion healthcare transactions occurring each year in our expensive, fragmented delivery system. Describing the main mechanism for HIE in the United States, he explained that Regional Health Information Organizations bring together independent entities in a defined geographic region to create networks that will set up an electronic health information infrastructure. However, they have struggled with issues of funding and sustainability. He also reviewed literature suggesting that widespread HIE might save nearly $80 billion in annual healthcare costs, and also explored the limitations of the methods utilized to reach the estimates. Jha cited the formation of a national strategy and standardized infrastructure protocols as keys to driving the success of HIE.

Service Capacity Restrictions

Frank A. Sloan noted that since the hospital sector is the largest single care provider, previous public policies aimed at reducing service capacity have targeted hospitals largely for this reason. Whether or not service capacity restrictions could reduce spending on hospital care in particular or on personal health services in general depended on how the healthcare system was structured, he suggested. He also discussed how, if prices were set by governments, then it may be desirable to implement policies that limit capacity, and if capacity reduction lowered such cost, then lower prices of services could be achieved. However, in the past, certificate of need programs have generally neither effectively limited capacity nor contained

hospital cost growth, and their effects on patient access and quality are mixed.

Antitrust Regulations

Roger Feldman framed antitrust policy as an important tool for preserving competition, thus ensuring that markets provided goods and services at the lowest price to consumers of health care. Reviewing basic antitrust tools, he described how antitrust policy was ineffective in blocking hospital mergers because of: overly expansive definitions of the geographic and product markets for hospital care; questionable legal reasoning; and promises that the merger partners would make community payments. Suggestions to improve the impact of antitrust policy in enhancing the competitive environment included: lowering the Hart-Scott-Rodino financial triggers for pre-merger review by the Department of Justice and the Federal Trade Commission; achieving better coordination between federal and state antitrust agencies; challenging physician mergers; insisting on divestiture as a remedy; and not accepting the community payment justification for mergers.

Medical Liability Reform

Randall R. Bovbjerg suggested that conventional reforms of medical liability could be expected to reduce health spending and health insurance premiums in three ways: (1) it may directly lower malpractice premiums and other costs incurred by medical providers in responding to lawsuits; (2) it may indirectly reduce the costs of "defensive medicine," activities undertaken more for legal defense than for patient benefit; and (3) it may accrue savings from the synergy of combining tort reform with other cost-containment initiatives, both in legislation and in implementation. Based on his review of the published econometric literature, the estimated savings on premiums and defensive medicine would be approximately 0.9 percent for all personal health spending, or almost $20 billion saved in 2010 and almost $260 billion over a full decade, spread across public-sector and private-sector spending. The third type of savings, from the mutual reinforcement of malpractice reform and such other initiatives as evidence-based medicine, could well achieve synergistic savings that go further.

Transparency of Costs and Results

In this series of discussions, the presenters addressed the potential of transparency on a variety of facets of the delivery system—including cost, quality, and outcomes—to illuminate vital information for consumers,

providers, and payers and stimulate savings and quality improvements (Chapter 10).

Transparency in Prices

John Santa described functional markets as relying on transparency related to comparisons, cost, and information equity to create competition. He discussed how trust in major health industry sectors has declined significantly in part because of a lack of transparency. With specific attention to transparency approaches related to benefit design, pharmaceutical purchasing, and prescribing, he said that insisting on transparency at every step in the healthcare process can contribute to a more balanced and fair market, and, when used consistently, can reduce costs and improve outcomes.

Transparency in Comparative Value of Treatment Options

Focusing on methods of reducing healthcare spending in the United States without compromising quality of care or population health, G. Scott Gazelle discussed the requirement of careful allocation of healthcare dollars and the ability of cost-effectiveness analysis (CEA) to guide those allocation decisions. CEA, where technologies, procedures, and other healthcare interventions are compared to relevant alternatives in a manner that takes into account effects on both health outcomes and costs, provides information on the relative value of competing options to patients, providers, payers, and policy makers. Citing the example of cost-effectiveness studies of human papillomavirus (HPV) testing as a primary cervical cancer screening test in combination with cervical cytology, he described how these analyses informed national and international guideline recommendations. Incorporating the CEA results, these recommendations now suggest that screening at 2- or 3-year intervals with either liquid-based cytology or combined HPV DNA testing and cytology would provide increased protection against cervical cancer while at the same time reducing the average lifetime costs associated with screening. Gazelle suggested CEA as an essential element of any comprehensive approach that seeks to maximize the benefits from our healthcare dollars.

Transparency in Comparative Value of Clinicians

Paul B. Ginsburg discussed how transparency for price and quality of services of providers has the potential to further efficiency and improve quality of care. However, he suggested that the near-term potential of these steps have been oversold. He described patient use of quality data as stymied by the dual lack of awareness of quality variation among providers and the complexity of combining numerous process measures of quality

into an overall score. Continuing, he spoke of how a large impact of price transparency was dependent on provider payment reform and the insurance benefit structures that provided incentives for patients to choose more efficient providers.

Transparency in Comparative Value of Hospitals and Integrated Systems

Peter K. Lindenauer asserted that greater transparency of hospital quality and price information might improve the value of hospital care by catalyzing hospital improvement efforts, price competition, or patients' choice of better institutions. However, he indicated also that evidence is currently limited on the potential of transparency to lower costs. He suggested public reporting of readmission, complication, and healthcare-associated infection rates as offering the best hope of simultaneously lowering costs while improving the outcomes of care. Extrapolating from the benefits of the New York State Cardiac Surgery Reporting System, he presented estimates that this strategy could result in as much as $5 billion in annual savings, and might be strengthened by linking hospital payments directly to performance. He additionally suggested that while there is limited evidence for the benefits of transparency on hospital outcomes, assigning savings to transparency could be inherently problematic at some level, since reporting initiatives provide the stimulus for changes in care, but do not directly change care itself.

Transparency in Comparative Value of Insurance Companies

Margaret E. O'Kane posited that while quality transparency has stimulated gains in the quality of care delivered, significant gaps in reporting and accountability remain. She cited the percentage of patients in accountable health plans that receive a beta blocker after a heart attack as rising from 63 percent in 1996 to 98 percent in 2006. However, these improvements have been limited to the part of the industry that has either voluntarily focused on quality or been pushed into accountability. Identifying a number of reasons for this partial success, she suggested that, as healthcare costs have ballooned out of control, purchasers have increasingly selected plans based on cost of premiums or best provider discounts; many private purchasers have not rewarded high performing plans; consumers often have few or no choice of health plans; and many health plans have been ambivalent about their role in quality.

Payment and Payer-Based Strategies

Exploring the range of strategies targeting the payment and payer systems, these presentations underscored the ability of streamlined and harmonized health insurance regulation, administrative simplification and consistency, and payment redesign to focus incentives on results and value as sources of opportunities for lowering costs and improving outcomes (Chapter 11).

Paying by Anticipated Value

Harold D. Miller described widespread agreement that current methods of paying for health care contribute to both high costs and poor quality. Not only do current payment methods create strong incentives to increase the volume of services delivered, they often create barriers to delivering higher-value care and they can penalize providers for keeping people healthy, reducing errors and complications, and avoiding unnecessary services. This presentation identified alternative ways of paying for health care, from bundled payments to care warranties, which might enable and reward higher quality and lower costs. Also discussed were the types of patients, provider organizational structures, and market conditions that were most conducive to successful use of each payment approach.

Paying by Care Episode or Condition

Amita Rastogi focused on bundled payments as a tool for driving beneficial delivery system changes that could reduce costs and improve quality of health care. Citing the example of the Prometheus model, she described the development of evidence-informed case rates (ECRs) for acute events, procedures, and chronic care. ECRs are severity-adjusted, budgeted at the patient level, and encompass costs of all necessary care (physician visits, prescriptions, lab tests, imaging, etc.) over the course of an episode based on established clinical guidelines. Also discussed were allowances for potentially avoidable complications (PACs) that serve as a warranty against care defects. Based on their analysis of commercial insurance claims, as PACs represented about 10 percent of the total annual costs of care for a large national employer after modeling 13 ECRs, reducing their incidence to zero could save $355 billion annually for commercially insured plan members.

Managed Competition and Accountable Care Organizations

David R. Riemer drew on evidence from the Wisconsin State Employee Health Plan to describe health insurance exchanges as a powerful mecha-

nism for reducing healthcare costs and improving healthcare quality. This plan provides state employees a benefit package; offers the same benefit package regardless of whether enrollees select one of several HMOs or the fee-for-service Standard Plan; and gives employees a strong incentive to choose a low-cost plan. The Dane County model—which uses an exchange—has consistently yielded premiums that are substantially lower than those in other counties. He suggested that exchanges will be effective if they meet certain criteria, including having a large number of participants to command the attention of competing health insurance companies; using powerful incentives to induce insurers to lower their premiums; and improving the quality of the health care provided by the insurers' networks of doctors, clinics, and hospitals.

Structuring Insurance Prices According to Anticipated Value

Niteesh K. Choudhry explained that value-based insurance design (VBID) utilized copayments, coinsurance, deductibles, and other similar strategies to contain healthcare spending by encouraging patients to only consume medical services with benefits greater than their costs. Extrapolating from recent literature about the efficacy of VBID, he estimated if VBID were applied nationally to five common conditions, a potential savings of more than $2 billion per year might be possible. However, he cautioned that these preliminary estimates, by necessity, aggregate groups of conditions into single disease categories, such as "heart disease," do not account for patients with more than one related condition, and do not distinguish between the impact on patients of different disease severities. Lisa Carrara described the potential of applying VBID to providers. By designating high performing specialists based on measures of clinical quality and efficiency as a method of directing consumers to make healthcare decisions based on the overall value of care, rather than just price alone, she provided estimates of a 3 to 4 percent savings in a customer's annual claims in its first year. With ready access to information on costs, treatment options, and clinical quality, she suggested that patients will work together with their physicians to decide what care is best for them—a choice based on overall value.

Payer Harmonization, Coordination, and/or Consolidation

Robin J. Thomashauer discussed how payer harmonization was already reducing administrative burden by eliminating redundant paper-based processes, and improving the accuracy, consistency, and timeliness of electronic data transactions. Current Council for Affordable Quality Healthcare (CAQH) initiatives—the Committee on Operating Rules for Information Exchange (CORE) and the Universal Provider Datasource (UPD)—have

produced real results that could be tracked across a wide range of stakeholders. CORE is developing and promulgating operating rules built on national standards, such as HIPAA, to facilitate administrative data exchange and promote interoperability. Based upon a recent outcomes study, industry-wide implementation of the CORE Phase I rules could save the industry an estimated $3 billion over 3 years. Citing the success of this cross-industry, public–private collaboration, Thomashauer outlined the need for continued collaboration focused on both short- and long-term goals, coupled with the appropriate federal policy support. Complementing Thomashauer's estimates, David S. Wichmann identified a savings opportunity of $332 billion in national health expenditures over the next decade from the application of technology to administrative simplification, based on the experience of UnitedHealth Group. Ranging from automated eligibility verification to elimination of paper remittances, he outlined 12 options that would provide a strong foundation from which to advance an ongoing administrative simplification agenda. To achieve these savings and improve healthcare delivery, he urged shared, consistent action across all payers—commercial and governmental—in partnership with physicians and hospitals.

Community-Based and Transitional Care

Speakers participating in this session identified the critical role prevention and population health, as well as quality and consistency in treatment with a focus on the medically complex, could play in lowering the burden of chronic illness and improving productivity and quality of life (Chapter 12).

Care Management for Medically Complex Patients

Identifying a high-risk population that suffers from fragmentation and uncoordinated care, Kenneth E. Thorpe discussed the needs of medically complicated patients, demonstrating that patients with chronic disease were estimated to account for 75 percent of overall health spending. Yet, chronically ill patients receive just 55 percent of clinically recommended services, which he suggested may explain a nontrivial portion of morbidity and mortality. Positing that community health teams could work closely with providers to optimize patient self-management, he reviewed findings from a recent study on frail elders in transitional care that suggest a ten-year investment of $25 billion in transitional care could lead to $100 billion in savings over the same period.

Palliative Care

Diane E. Meier described palliative care as an interdisciplinary team-based model anchored in treatment of pain and other symptoms; expert communication with patients and families about the realities of the illness and achievable goals for care; and skilled coordination of care across the many settings traversed by these patients. As such, she explained that palliative care was highly adapted to serving the 23 percent of Medicare beneficiaries with five or more chronic conditions who drive over two-thirds of all Medicare spending. After describing the benefits of palliative care in terms of the major domains of quality, including patient-centeredness, benefit, safety, and efficiency, she suggested that savings associated with palliative care, once scaled to meet ongoing needs, were estimated to be nearly $5 billion per year.

Wellness and Community-Based Programs

Drawing on work of Trust for America's Health and the Urban Institute, Jeffrey Levi discussed the healthcare cost impact of community-based prevention programs that targeted some of the more expensive chronic diseases. Published literature suggested that community-based programs could lead to improvements in physical activity and nutrition, and could prevent smoking and other tobacco use. With the cost of many effective community-based programs at under $10 per person per year, Levi suggested that an investment of $10 per person per year in proven community-based prevention programs could result in a net annual savings of $2.8 billion in 1 to 2 years; $16.5 billion in 5 years; and $18.4 billion in 10 to 20 years. The 5-year savings would be accrued across payers, with $5.2 billion for Medicare, $1.9 billion for Medicaid, and $9.3 billion for private payers and out-of-pocket costs. Levi acknowledged that these estimates do not reflect the costs of implementation. He additionally noted a paradigm shift in the commitment to prevention efforts, reflected by the ARRA of 2009 investment of $650 million to introduce community-based prevention programs and study their impacts.

Entrepreneurial Strategies

In this session, the presenters considered entrepreneurial strategies and innovations, offering yet another host of pathways for increasing efficiency, enhancing quality, and containing costs (Chapter 13).

Reducing Stratified Clinician Restrictions

Jason Hwang relayed that, in the early stages of most industries, market demand for improved performance and efficiency leads to a centralization of expertise and resources. However, this centralization creates a model that constantly seeks to augment functionality at additional cost over time. In contrast, he described disruptive innovation as a process by which these centralized models are transformed into affordable and conveniently accessible resources. Examples of disruptive innovations in health care that he discussed included retail clinics and their use of nurse practitioners, online patient networks that depended on the collective wisdom of consumers, and expert systems software that enabled generalists to begin doing the work of specialists.

Retail Clinics

N. Marcus Thygeson explained that retail clinics (RCs) were designed to deliver a limited set of simple clinical services in a convenient setting and were typically staffed by mid-level providers with remote medical director oversight. With an average cost per episode in a RC of $55 less than in physician offices or urgent care, if all of the five most common RC-eligible episode types (approximately 250 episodes per 10,000 member months) were treated in RCs, commercially-insured population healthcare costs might decrease by $1.40 per member per month (PMPM), or 0.5 percent of total PMPM. Extrapolating nationally, he suggested that this represented potential savings of nearly $8 billion annually if all RC-eligible episodes were treated in retail clinics. However, he stressed that the actual savings may be lower if established providers maintain their revenue by increasing the number of visits per episode for their remaining patients, or charge more for non-retail clinic-eligible services.

Technological Innovation

Adam Darkins discussed the potential for technologies that incorporate health informatics, telehealth, and disease management to impact the outcomes and costs management of patients with chronic disease. Focusing on telehealth, he reviewed accumulating data that suggested such care coordination with home telehealth approaches could significantly reduce healthcare costs and improve access to care in rural communities. If taken to the national level and assuming the same level of savings could be achieved in non-VA health systems, implementation of telehealth applications in targeted areas for patients with chronic illness could translate to net cost savings of approximately $2 billion for Medicaid. Darkins also identified the

associated re-engineering of the underlying care delivery process as critical to the adoption of this technology.

Lessons from Abroad

In considering international efforts to improve quality while lowering costs, this presentation focused on the need for payment redesign to focus incentives on results and value, medical liability reform, and patient-centered care (Chapter 7).

International Examples

Drawing on examples from other countries, Gerard F. Anderson suggested that payment reforms, no fault malpractice insurance, and care coordination are transplantable strategies for lowering costs and improving outcomes in this country. Noting that specialists in the United States earn up to 300 percent more than those in other countries, that prices for branded drugs cost up to twice as much, and that hospital stays are up to 200 percent more expensive, he suggested that cost control mechanisms in other nations such as Germany have helped control spending growth and could yield significant savings if applied here. With respect to differences in medical liability costs, Anderson said that while Canada and the United Kingdom have similar types of malpractice insurance as the United States and similar rates of litigation and award levels, the no fault malpractice model in New Zealand has resulted in lower premiums and fewer lawsuits. Finally, he also discussed Germany's focus on care coordination for individuals with chronic conditions and their provider, payer and consumer incentives, which together have lead to decreasing rates of hospitalizations for this population.

WORKSHOP THREE: THE POLICY AGENDA

The third workshop, The Policy Agenda, considered the following six policies to lower costs and improve outcomes:

- Payments for value over volume;
- Care for medically complex patients;
- Delivery system integration;
- Improved delivery system efficiency;
- Administrative simplification; and
- Consumer-focused strategies.

In her workshop keynote, Karen Davis discussed priorities for policy

options to achieve cost control and affordable coverage for all. She identified the goals of health reform as: slowing growth in health spending; creating incentives for providers to take broader accountability for patient care, outcomes, and resource use; providing rewards for improved care coordination among providers; and putting in place an infrastructure to support providers in improving quality and efficiency. She discussed how these goals are driven by the current state of affairs, in which 21 percent of adults report going to the emergency room within the past 2 years for a condition that could have been treated in the office, as well as the existing three-fold spread between those in the lowest ($947) and highest quartiles ($2,911) for risk-adjusted spending for hospital readmissions after coronary bypass surgeries.

Referencing the recommendations of the Commonwealth Fund's report titled *A High Performance Health System for the United States: An Ambitious Agenda for the Next President* (The Commonwealth Fund Commission on a High Performance Health System, 2007), Davis focused particular attention on the importance of aligning financial incentives to enhance value. In discussing fundamental payment reform that rewarded physicians and other providers for achieving quality, she cited examples of successful experiments such as those at Geisinger Health System. Based on their report, the Commonwealth Fund estimated that significant savings could be achieved from implementation of their policy recommendations, with a potential of $123 billion over a decade from instituting bundled payment policies, $83 billion over 10 years from strengthening primary care and care coordination, and $70 billion from promoting HIT.

Following Davis' keynote address, the meeting turned to an update and discussion of the estimates from the previous two workshops (see "Pulling the Numbers Together" below), followed by a presentation by Joseph R. Antos on the analytical framework used by CBO in developing estimates of the impact of potential legislation on the federal budget. Known as the "score" of a proposed bill, the CBO cost estimate explains how the proposal affects federal outlays and revenues over a 5 or 10 year horizon. Depending on the specifics of the proposal, he explained that CBO may use data from Medicare, Medicaid, and other federal programs; survey data (including surveys of individuals, such as the Medicare Current Beneficiary Survey and the Medical Expenditure Panel Survey, and surveys of providers and insurers); information from clinical and delivery system experiments; and other sources of data on the health system, demographics, and the economy. Utilizing a variety of information sources, CBO analysts develop their modeling assumptions based on peer-reviewed literature; unpublished studies from reputable sources; direct observation of trends in the healthcare market; comparisons with previous analyses by CBO and others of similar proposals; and consultation with experts, including staff from the

Centers for Medicare & Medicaid Services (CMS), insurance actuaries, medical leaders, academics, and others.

Subsequent presenters turned to discussions of policy options, issues of implementation timing and phasing, the critical co-factors for success, and the options to minimize political barriers. Brief summaries of the individual presentations are presented below.

Payments for Value over Volume

While focusing specifically on bundled payments for providers, the presenters in this session revealed that although some practices are promising, there remain significant challenges for implementation (Chapter 15).

Options for Payment Redesign to Focus on Episode, Condition, or Capitation

John M. Bertko focused on the experience of the private sector with bundled payments, reviewing experiments that have occurred over the past two decades. After describing the successes of Geisinger Health System's ProvenCare™ program, under which hospital and physicians are paid a global fee, and insurers' bundled transplant programs in centers of excellence, he contrasted this with a discussion of failures, including what was called (in the late 1990s) "contact capitation" and a somewhat similar approach by the start-up firm HealthMarket. While bundled payments for acute episodes offered promise of incentives for efficiency, he suggested that there are still many unresolved questions about the scale of this promise and the practical mechanics of provider arrangements.

Complementing this presentation, Linda M. Magno discussed the experience of CMS with bundled payments. She cited the example of Medicare's inpatient prospective payment system (IPPS) for hospitals, which represented a significant step in the direction of paying a uniform price for similar services regardless of where such services were rendered and incented hospitals to improve efficiency. IPPS resulted in reduced lengths of stay and, for at least some period of time, limited investment in new technologies to those expected to be cost-reducing or revenue-enhancing. However, much of the reduction in length of stay was accompanied by a steady rise in the supply and utilization of post-acute services, for which Medicare makes additional payments over and above the diagnosis-related group price. She also drew on Medicare's experiences with three bundled payment demonstrations, indicating lessons learned and their implications for future bundled payment endeavors.

Issues for Clinicians

George J. Isham highlighted four projects in Minnesota related to bundled care as a means of demonstrating provider engagement issues. From these initiatives, he offered several lessons learned, explaining that designing and implementing bundled payment was complex and resource intensive, and that payment reform that moved in the direction of bundled payment had to be intimately associated with delivery system reform. He suggested that gaining the right balance between the roles of legislators, expert input, and engagement of physicians in local pilots may be important to successful national implementation. He additionally emphasized that the design of bundled payment models requires clear objectives from policy makers, input from providers and others, and technical assistance on management and quality improvement at the local level.

Issues for Patients

Nancy Davenport-Ennis indicated that bundled payment systems are aligned conceptually with patient interests in improved outcomes and lower healthcare costs. However, she cautioned that the selection of which services and conditions would benefit most from bundling required careful consideration. For broad disease areas like cancer, which do not have clear boundaries between beginning, intervention, and end, she suggested that bundling would need to include robust tiers of weighted payments and outliers in order to ensure patient access to care was not compromised. In considering how patients could be involved in bundled payment systems, she cited Geisinger Health System's inclusion of a "patient compact" that was designed to engage patients in ensuring favorable outcomes. In addition to ensuring recognition of variability of disease through the use of weighted payments based on factors such as age, weight, ethnicity, and comorbidities, she suggested that successful bundling systems must also find the proper balance between saving money and improving patient outcomes and care while continuing to allow for evolving personalization of health care.

Care for Medically Complex Patients

To explore the solutions needed to face these mounting challenges, presenters in this session discussed policy initiatives to facilitate care of the growing population of medically complex patients, emphasizing patient-centeredness, payment redesign, quality and consistency in treatment with a focus on the medically complex, and prevention at personal and population levels (Chapter 16).

Approaches That Work

Arnold Milstein explained that methods to lower per capita healthcare spending and improve clinical outcomes for medically complex patients have been demonstrated. However, many efforts to use provider payments to achieve these two aims in care for medically complex patients have failed. He identified two keys to success in payer efforts to date. The first involved incentives to primary care teams to intensify within- and between-visit care for patients at highest risk of near-term ER visits and unplanned inpatient admissions. A second offered incentives to hospitals to standardize inpatient care via checklists, care bundles, more systematic applications of process engineering tools, and/or assuring at least 8 hours of daily onsite (or telemediated) monitoring of ICU patients by intensivists.

Special Case of Palliative Care

Given considerable data suggesting that care for patients living with serious illness, and their families, is in need of improvement, R. Sean Morrison discussed palliative care as a method of providing the interdisciplinary care coordination and team-driven continuity of care needed to respond to the episodic and long-term nature of chronic, multifaceted illnesses. However, the number of palliative care programs in U.S. hospitals with over 50 beds was just over 50 percent in 2008. In order for palliative care to be accessible to all patients with serious illness and their families, he urged consideration of a number of key initiatives: education of patients, families, and healthcare professionals of the benefits of palliative care; emphasis that palliative care is not synonymous with end-of-life care; additional resources for workforce development to train sufficient numbers of specialists to effectively provide palliative care to patients and families in need; patient-oriented and health services research; and reimbursement structures that promote team-based care.

Issues for Healthcare Organizations

If the twin aims of lowering costs and improving population health are to be achieved, Ronald A. Paulus suggested, value-based payment models must move beyond payment for units of work or effort, and instead reward demonstrated patient- and population-level clinical impact and outcomes. He described a new approach at Geisinger Health System that seeks to optimize the closure rate for patients' "care gaps" (i.e., specific, patient-centric clinical needs) and facilitate teamwork between medical home-based primary care physicians and specialists. When supplemented by an electronic

health record with enhanced decision support, population-level data, and integrated analytics, he explained that this approach can produce marked progress in patient and population outcomes. It could also serve as a point of reference for those seeking to develop value-based payment models structured to encourage innovation, enhance patient experience, improve clinical quality, and contain costs.

Policy Needs

Anand K. Parekh identified several policy areas that could further support tertiary prevention in individuals with multiple concurrent chronic conditions. As medically complex patients have often been excluded from participation in randomized controlled clinical trials, he suggested that the external validity and generalizability of these studies to this population are limited. While identifying the importance of health professions training in the care of medically complex patients, he explained that many current evidence-based guidelines focus on individual chronic diseases, thus disregarding the coexistence of other chronic conditions in patients, and putting patients at risk of drug-drug or drug-disease adverse interactions. He additionally discussed patient engagement as playing a central role in patient management of their own care and provider payment reform as essential to the success of incentives for care coordination and management.

Delivery System Integration

Highlighting the benefits of streamlined and harmonized health insurance regulation, payment redesign, and secure, sharable clinical records, the presentations in this session targeted delivery system integration and connectivity as methods of lowering costs and improving outcomes (Chapter 17).

Organizational Initiatives to Reduce Fragmentation

John Toussaint defined care fragmentation as the lack of the necessary resources available to the patient to manage his or her condition in a timely fashion. He explained that the current care delivery system is not designed for consumers but rather for providers and hospitals, and contended that this was the result of a lack of fundamental understanding of what constitutes value from the patient perspective. Elaborating on current initiatives to improve care coordination, he cited multiple examples of success. Group Health of Puget Sound reduced emergency room visits by 29 percent by redesigning their clinical services. Thedacare's Collaborative

Care Unit lowered inpatient care costs by 25 percent. Gunderson Lutheran's care coordination process included a focus on end-of-life care, resulting in costs per Medicare enrollee that were 50 percent less expensive than the national average.

Payment Incentives to Promote Integration

Drawing on the work of the Medicare Payment Advisory Commission, Mark E. Miller described Medicare's fee-for-service (FFS) payment system as one that rewards more care, without regard to the value of that care. In addition, Medicare's payment system creates separate payment "silos" (e.g., inpatient hospitals, physicians, post-acute care providers) and fails to encourage coordination among providers within a silo or across silos. When discussing evidence demonstrating that care coordination can improve quality, he suggested that Medicare must develop new payment methods that will reward efficient use of limited resources and encourage the effective integration of care. This presentation specifically focused on approaches to payment that would encourage greater coordination of care, resulting in higher quality and lower Medicare spending: reducing preventable hospital readmissions, increasing the use of bundled payments, and holding accountable care organizations responsible for the cost and quality of the care their patients receive.

Building on these ideas, Harold S. Luft outlined alternatives to the current system that could facilitate coordination of inpatient and similar interventional care as well as coordination and effective management of ongoing chronic care. Focusing on proposals for medical homes, bundling, and evidence-based practice, he explained that these initiatives align incentives for value-enhancing care and facilitate the development and spread of the information needed by clinicians to deliver that care. Unlike global capitation, however, they retain aspects of fee-for-service where that payment approach is not problematic, thus reducing opposition from those resistant to change, avoiding the productivity problems faced in large organizations, allowing their application in communities in which highly integrated systems may be either infeasible or an antitrust concern, and engendering flexibility as medical technology and knowledge changes.

"Virtual Integration" and the Promise of Health Information Technology

Andrew M. Wiesenthal explored the potential for increased use of EHRs, coupled with effective, standards-based HIE, surmising that together they could counteract the powerful forces contributing to poor integration. Promoting EHR deployment and meaningful use are appropriate first steps for the country to take, he elaborated, followed closely by targeting improved outcomes in chronic diseases. He estimated that improving

system integration at an appropriate regional level will likely require 5 to 10 years once the work has started. National integration would be much more difficult, lengthier, and largely unneeded by most patients. He identified the business and public health communities as crucial participants for this effort. At the same time, if integration is to be achieved, he asserted that regulatory and competitive barriers, along with patient fears of data misuse, must be addressed.

Improved Delivery System Efficiency

From using market forces to effect change by empowering consumers to make informed choices to redefining who provides health care, the presenters in this session discussed innovations to improve delivery system efficiency (Chapter 18).

Policies That Promote Clinician Efficiencies

Mary D. Naylor asserted that enhancing the effectiveness and efficiency of the U.S. healthcare system was dependent upon maximizing the contributions of healthcare professionals who are not physicians. She identified a number of current barriers which limit appropriate use of such providers, including federal and state laws and regulations; opposition from healthcare systems, professional medical groups, and managed care organizations; reimbursement and other payment policies; and exclusion from demonstrations proposed as part of health reform. Policies options outlined by Naylor included: advancing regulatory reform that would revise state "scope of practice" laws where unnecessarily restrictive; including qualified providers in testing of proposed system redesign and payment reform demonstrations; payment reform that emphasizes the team as the payment unit and reinforces the team's accountability for individual and population health while promoting fair compensation for licensed independent practitioners by all payers; implementation and enforcement of "any willing provider" laws in all states; and promotion of research assessing the value and comparative effectiveness of innovative care and payment with a variety of providers.

Policies That Promote System Efficiencies

Steven J. Spear suggested that large opportunities currently exist to advance quality, access, and cost simultaneously by focusing on care delivery. Despite significant disparities between the quality of providers, patients and payers cannot distinguish which providers provide the highest quality care at affordable cost. Focusing on empowering patients and payers with this information, he explained that transparency has the ability to promote efficiency within the healthcare system.

Administrative Simplification

The presenters in this session discussed promising policy solutions to facilitate administrative simplification, ranging from leveraging technology to standardizing reporting requirements (Chapter 19).

Accelerating Administrative Streamlining Among Payers

Lewis G. Sandy reviewed the significant $332 billion opportunity in administrative savings identified by UnitedHealth Group, along with additional estimates from the peer-reviewed literature. To realize these opportunities, he suggested the following policy actions: policies that promote "spread" of existing standards and capabilities; policies that promote electronic connectivity and transaction automation; and polices that support multipayer capability development. He emphasized the importance of interoperability and progressive maturation of system capability, as opposed to emphasizing standardization alone, and the role of public–private sector coordination and harmonization in accelerating these advancements.

Accelerating Administrative Streamlining Among Providers

Linda L. Kloss stated that past efforts at healthcare administrative simplification have often not only failed to reduce costs, but have actually added complexity and cost. Real improvements and cost reductions require an end-to-end view of the business processes, not only within, but across, sectors and entities, and a commitment to uniform and standard process and continuous improvement. Drawing on the work of the Healthcare Administrative Simplification Coalition, she focused on four processes with the potential to reduce costs for providers and payers and improve service to purchasers and consumers: (1) practitioner credentialing, (2) insurance eligibility, (3) standard insurance identification cards, and (4) prior authorization. She also identified policy governance, uniform standards, education on process and conformance, and continuous improvement as four common elements among recommendations relating to claims and payment, quality reporting, terminologies and classifications, and other critical healthcare business processes.

Policy Opportunities to Accelerate Administrative Streamlining Initiatives

Harry Reynolds suggested that, through the tracking and the reporting of actual operational changes, industry-driven efforts to bring lasting change to the administrative aspects of health care were demonstrating their ability to reduce costs and increase efficiencies. On the other hand, he also

suggested that, although many in the industry are working to gain greater industry adoption of these efforts, significant challenges exist with regard to how to integrate these efforts across the healthcare system to achieve all-payer administrative simplification, public and private alike. Discussing the specific challenges and potential opportunities demonstrated through two initiatives—the Universal Provider Datasource and the Committee on Operating Rules for Information Exchange—he emphasized the critical nature of ensuring these efforts continue to be aligned with federal HIT policies, the necessity of multistakeholder support, and the barriers posed by the inevitable changes to current business practices.

Consumer-Directed Policies

To further explore the variety of policies and perspectives central to effectively engaging consumers in choosing higher-value services, panelists in this session explored such policy tools as value-based purchasing and transparency (Chapter 20).

Issues and Opportunities for Consumers

Jennifer Sweeney reviewed research revealing that consumers are seeking partnerships with their healthcare providers, information and guidance about conditions and treatments, tools and support to care for themselves, and open communication that encourages questions, dialogue, and treatment preferences and respects cultural differences. She suggested that meeting consumers' needs and recognizing their places on the activation continuum must drive any engagement strategy. However, she proposed that the healthcare system has not yet provided the tools or incentives to enable patients to fully engage in their care. Stakeholders must recognize that the majority of consumers are unaware of quality deficiencies in our healthcare system and are insulated from healthcare costs. As tools to create delivery system changes that address the needs and desires of consumers, she highlighted options including implementation of patient-centered care models, use of patient experience surveys, changes in benefit design, and consumer-friendly performance reporting.

Issues and Opportunities for Insurers

With the theoretical impact of moving all care to providers in the top tier of efficiency and quality ranging up to 5 percent of total medical costs, Dick Salmon suggested that achieving these theoretical potentials required providing patients with credible information that is easy to obtain and integrated into the healthcare experience. Additionally, individuals must

have reasonable access to preferred providers and benefit incentives. He stressed that barriers to progress include assisting the transition from the customary method of selecting a healthcare professional based on reputation to a model based, in part, on comparison of reliable information on quality and cost. Enabling and rewarding individuals to choose the existing highest value provider of care offered an immediate impact on the quality and affordability of health care for individuals today, and stimulated all healthcare providers to improve in the future. As the stimulus for future improvement based on consumer choice was limited by access issues and provider loyalty, he asserted that payment reform remains essential.

Issues and Opportunities for Purchasers

Building on these concepts, Dolores L. Mitchell described the increasing pressures faced by purchasers to engage their employees in the business of wellness and prudent healthcare choices. By demonstrating how one public employer attempted to engage both employees and providers by analyzing provider performance and giving employees financial incentives to use the results (ranging from premium increases to high deductible plans), she suggested that transparency without consequences was necessary but not sufficient to affect the delivery system. She stated that the road to meaningful patient engagement was steep but should be engaged with particular attention to shared sacrifice in the short term and shared responsibility in the long term.

A Look Back at the Numbers

J. Michael McGinnis, in comments in the "look back" session summarizing the issues and estimates from the first two meetings and in the wrap-up concluding session of the third meeting offered a broad preliminary overview of what might be observed by simply examining totals for the estimates presented in the various workshop presentations and in the background literature review prepared to inform the discussions. After cautioning that the authors' estimates were themselves still works in progress—with many gaps, overlaps, and areas of uncertainty—he noted that taking, as a constrained first approximation, the *lower bounds* of the estimates from the source material allowed some interesting observations.

First, at the very highest level—aggregate excess costs systemwide—he noted that estimates made from four analytically distinct approaches came to roughly similar approximations for the nation's total excess healthcare costs. Specifically, looking at regional variations in care costs, the Dartmouth group estimated overall excess expenditures to be about 30 percent of national health expenditures (Wennberg et al., 2002), translating to

approximately $750 billion in 2009; the analysis by McKinsey Global Institute (Farrell et al., 2008) would indicate that the excess U.S. expenditure relative to OECD countries to be approximately $760 billion (adjusted to 2009 total expenditure levels); the lower bound totals of estimates of excess expenditures identified from workshop discussions would amount to about $765 billion in 2009; and the estimated possible savings (lower bound, corrected for obvious overlaps) from full implementation of effective strategies would in 2009 be in the range of $550 billion. He also emphasized that such estimates are virtually all unvalidated extrapolations, based on assumptions from limited observations.

McGinnis noted that while many of the workshop calculations were similar to those published elsewhere and summarized in the background materials developed for the series, others were quite different, both from each other and from other published material, with respect to variations in methodology and scope of analyses—e.g., federal savings locus compared to societal locus; focus on public and/or private insurance beneficiaries; and annual versus multiyear timeframes. For example, Owens estimated that a program designed to reduce the incidence of uncoordinated care could result in $271 billion in annual national savings by 2013, while Berenson and colleagues, who looked only at dually-eligible Medicare and Medicaid beneficiaries, developed a 10-year estimate of $200 billion savings from a national effort to improve care coordination (Berenson et al., 2009). He also noted the ongoing field debate about how to best assess the returns from investments in preventive services and community-oriented chronic disease management (CBO, 2004; The Commonwealth Fund, 2009; DeVol et al., 2007; Elmendorf, 2009a; Russell, 2009; UnitedHealth Group, 2009), with many emphasizing that shortfalls in identified dollar savings does not signify that prevention lacks either cost-effectiveness or value.

Taking these various issues, differences, and analytic fragilities into account, McGinnis used the "lower bound of estimates" approach to summarize in broad terms the aggregate excess expenditures discussed at the workshop, both by the six categories that make up the broad domains of excess and by the component elements discussed for each of the domains, noting that within domain estimates often focused on only one aspect of the component elements. Approximations using this approach sum to 2009 totals of about $210 billion in excess health costs from unnecessary services, $130 billion from inefficiently delivered services, $190 billion from excess administrative costs, $105 billion from prices that are too high, $55 billion from missed prevention opportunities, and $75 billion from fraud (Box S-2).

With respect to the possibility of reducing excess expenditures by broader application of strategies showing early promise in limited studies, McGinnis underscored the difference between the level of unnecessary ex-

BOX S-2
Excess Cost Domain Estimates:
Lower bound totals from workshop discussions*

UNNECESSARY SERVICES **Total excess = $210 B***
- Overuse: services beyond evidence-established levels
- Discretionary use beyond benchmarks
  - – Defensive medicine
- Unnecessary choice of higher cost services

INEFFICIENTLY DELIVERED SERVICES **Total excess = $130 B***
- Mistakes—medical errors, preventable complications
- Care fragmentation
- Unnecessary use of higher cost providers
- Operational inefficiencies at care delivery sites
  - – Physician offices
  - – Hospitals

EXCESS ADMINISTRATIVE COSTS **Total excess = $190 B***
- Insurance-related administrative costs beyond benchmarks
  - – Insurers
  - – Physician offices
  - – Hospitals
  - – Other providers
- Insurer administrative inefficiencies
- Care documentation requirement inefficiencies

PRICES THAT ARE TOO HIGH **Total excess = $105 B***
- Service prices beyond competitive benchmarks
  - – Physician services
    - i. Specialists
    - ii. Generalists
  - – Hospital services
- Product prices beyond competitive benchmarks
  - – Pharmaceuticals
  - – Medical devices
  - – Durable medical equipment

MISSED PREVENTION OPPORTUNITIES **Total excess = $55 B***
- Primary prevention
- Secondary prevention
- Tertiary prevention

FRAUD **Total excess = $75 B***
- All sources—payer, clinician, patient

*Lower bound totals of various estimates, adjusted to 2009 total expenditure level.

penditures and the ability to capture the returns. For example, it was noted that, while an independent estimate from outside the scientific literature calculated the costs of defensive medicine at $210 billion (PriceWaterhouse-Coopers, 2008), Bovbjerg's review of the econometric literature led him to suggest that tort reform would reduce national health spending by approximately 0.9 percent, or about $20 billion in 2010. Further testament to the complexity of interpreting the estimates is that Bovbjerg's estimate focused primarily on the direct impact of reform, as opposed to the indirect influence of liability dynamics on clinicians' decisions.

Similarly, he noted that several studies on potential savings highlighted by Kaushal and Jha projected significant national savings from nationwide implementation of HIT, but CBO cautioned that, while many policy makers believe that HIT will be a necessary tool in improving the efficiency and quality of health care in the United States, overoptimistic assumptions may temper the magnitude of those estimates (CBO, 2008).

In referring to several presentations that suggested the potential for considerable savings from payment reform, McGinnis noted that Rastogi's savings estimate of $355 billion for the commercially insured from implementation of bundled payments was similar to a published estimate of $301 billion in savings from utilization of bundled payments for acute care episodes (The Commonwealth Fund, 2009); but he also noted that both estimates required validation with structured studies and experiments. It was also suggested that many potential sources of savings need more consideration than was able to be given at the workshops.

Additional areas suggested for consideration both in terms of targets and strategies included the issues such as costs of fraud and abuse, which has been estimated to cost 3 to 10 percent of total health spending (FBI, 2007), as well as the implications of the current patent system on the prices of new and emerging technologies.

Opportunities to Get to 10 Percent

The conversations and presentations occurring over the course of the workshop series, including a panel discussion with economic experts Elizabeth A. McGlynn, David O. Meltzer, and Peter J. Neumann, clearly indicated that each domain was significant, the estimates were large, and that multifaceted strategies were required to lower spending adequately over the long run. Meltzer additionally suggested that, based on the presentation analytics, that unnecessary services provided the largest area of inefficiency and waste. Meanwhile, McGlynn expressed the view that, based on modeling for Massachusetts, payment reform was the most likely to have significant impact on lowering costs, as compared to infrastructure improvements and delivery system interventions (Box S-3).

BOX S-3
Estimated 10-Year Health Cost Savings, 2010-2020
Selected approaches: one analyst's model

	Cumulative Change in National Health Spending	
	Low	High
Bundled payments	–0.1%	–5.4%
Hospital-rate regulation	0.0%	–2.0%
Health IT	+0.8%	–1.5%
Disease management	+1.0%	–1.3%
Medical homes	+0.4%	–1.2%
Retail clinics	0.0%	–0.6%
Expanded NP/PA use	–0.3%	–0.5%
Benefit design	+0.2%	–0.3%

NOTE: IT = information technology; NP = nurse practitioner; PA = physician assistant.
SOURCE: Adapted from Eibner et al., 2009. Controlling Health Care Spending in Massachusetts. Online by Eibner et al. Copyright 2009 by RAND Corporation. Reproduced with permission of RAND Corporation in the format Other book via Copyright Clearance Center.

On the other hand, panelists cautioned that estimates, extrapolated of necessity from "thought experiments," must be interpreted with caution as they may not be as informed from real life experiences and observations. While the savings benefits of infrastructure elements such as HIT and CER may be uncertain, McGlynn posited that these very tools were necessary to allow expansion of the delivery system's capacity to engage in delivery system reform. Meltzer and Neumann also suggested that incrementalism—the need for multiple small savings decisions over a single large decision—will be necessary to achieve 10 percent savings. While they indicated that the estimates needed additional refinement to account for overlaps, cross-integration, and the wave of emerging medical technologies, McGlynn also asserted that the lack of evidence supporting any particular strategy does not necessarily reflect a lack of value.

This final point was particularly relevant in the discussion of bundled payments and payment reform, as many major examples of bundling success, such as those of Geisinger and Kaiser Permanente, occur within the context of vertical integration of providers. Therefore, the discussants underscored that it remains unclear how bundled payments could be opera-

tionalized outside this formal organizational structure. Yet payment reform was thought to be so critical to delivery system reform that the panelists and many other attendees advocated expanding ongoing pilots to test its viability within non-vertical organizational structures.

The Policy Priorities and Strategies

The third workshop's concluding panel, composed of Mark B. McClellan, Joseph Onek, and Dean Rosen, specifically considered the issue of cost control in the context of current health policy discussions. McClellan spoke of the need to focus on four interrelated pillars which provide a broad framework for the discussion on costs and quality: (1) better information and tools to be more effective; (2) provider payments that reward improvements in quality and reductions in cost growth, provide support for healthcare delivery reforms that save money, and emphasize disease prevention and better coordination of care; (3) reform of health insurance markets and restructuring of government subsidies to create competition and improve incentives around value improvement rather than risk selection; and (4) greater support for individual patients for improving their health and lowering overall healthcare costs, including incentives for achieving measurable health goals. He further emphasized an idea frequently heard throughout the workshop, that reform efforts must engage a varied and differentiated approach rather than focusing on one area. Onek built on this idea, further suggesting that compartmentalizing reform facilitates blockage of reform politically. Strategically packaging reform initiatives allows a broader coalition to come in support of reform legislation. In addition to focusing on payment reform, Rosen additionally advocated further discussion on individual responsibility and personal investment as critical as consumers and providers jointly work to improve health and the untapped potential of medical liability reform to lower costs.

WORKSHOP FOUR: GETTING TO 10 PERCENT

Building on the discussions of the preceding workshops, a knowledgeable group of authorities from different stakeholder sectors convened to explore in greater detail the priority elements and strategies key to achieving 10 percent savings in healthcare expenditures within 10 years, without compromising health status, quality of care, or valued innovation. Participants, whose backgrounds drew from their experience as providers, payers, purchasers, health economists, researchers, quality analysts, and regulators, included Michael Bailit of Bailit Health Purchasing, Maureen Bisognano of the Institute for Healthcare Improvement, David M. Cutler of Harvard University, Wendy Everett of New England Healthcare Institute,

Richard J. Gilfillan of Geisinger Health System, Dolores L. Mitchell of the Massachusetts Group Insurance Commission, Meredith B. Rosenthal of Harvard University, Jonathan S. Skinner of Dartmouth College, John Toussaint of ThedaCare Center for Healthcare Value, and Reed V. Tuckson of UnitedHealth Group.

As the participants considered the opportunities present within the current delivery system to lower costs and improve outcomes, the substantial scale of the inefficiencies was underscored. While the attendees discussed published literature and earlier workshop presentations indicating that 20 to 30 percent of current expenditures could be trimmed without consequences for quality or outcomes (Fisher et al., 2003), certain attendees offered the view that, based on their experiences with ongoing improvement initiatives, the amount of waste present in the healthcare system may even be greater, perhaps in some circumstances and settings as much as 50 percent. As an example, the findings of the Health Care Value Leaders Network were discussed. Two of these findings were that: (1) 80 to 90 percent of steps in the care process were not value-additive, and (2) with the application of the Toyota Production System to streamline clinical services within an institution, systematic waste reduction could possibly trim as much as 50 percent of costs, while simultaneously improving quality.

The attendees discussed priority areas of opportunity, such as avoidable hospitalizations and readmissions and the provision of unnecessary services. They focused on high-yield strategies, ranging from decreasing the costs of episodes of care to medical liability reform to shared decision-making, as well as considering care-related costs, administrative costs, and related reforms. Several insights were offered by multiple individual attendees on the common elements of successful strategies:

- *Reorientation to patient-centered value* among all stakeholders (patients, providers, payers, manufacturers, and regulators) is necessary, and eliminating the inefficiencies and waste replete in the costs of care and healthcare administration begins with the basics: better attention to patient needs and perspectives, and payment mechanisms that drive the delivery of value over volume. However, it was also emphasized that the rewards involved must be quite large in comparison with the income at stake for providers if the effort is to both cover the implementation costs and justify the resources involved in maintaining a coordinated effort to minimize costs and improve outcomes.
- *Payment reform* provides a critical tool to realign economic incentives within the delivery system. Additionally, targeting both utilization and pricing of clinical services is needed to ensure the

full savings potential of any bundle of strategies to lower costs and improve outcomes.

- *Multimodality* should characterize health reform plans because while payment reform appears to be the most likely to yield near- to mid-term savings, infrastructure elements such as health information technology and comparative effectiveness research are necessary to facilitate and amplify the effectiveness of payment reforms. In particular, nonmedical industries provide many instructive lessons regarding successful cost-lowering practices, including use of data to inform quality improvements, incentive structures that reward value creation, and worker-driven processes and culture.
- *Specificity* with regard to policies, responsible actors, and assumptions enables focus of initiatives, not just in legislation but also through institutional leadership and public–private partnerships at both state and regional levels.
- *Incrementalism*—the need for multiple small savings decisions related to re-aligned incentives and improved system efficiency—rather than a single large decision—will be necessary to achieve 10 percent savings. Apart from large savings likely to be possible from streamlining and harmonizing administrative claims forms and reporting requirements, success of the broad reform approaches required will likely depend on smaller gains—targeting utilization, pricing, and delivery—in each of the many strategic loci.
- *Transparency and accountability* across public and private sectors can foster efficiency and quality improvement initiatives by providers, informed provider selection by patients, and value-based payments by payers.
- *Collaboration* among all those affected by healthcare reforms, including subspecialty provider societies, payers, and patients, is required to overcome inertia and fear of change.

Considering the Opportunities

Participants reviewed the range of strategies explored throughout the workshop series and, working in small groups followed by open discussion, considered opportunities for strategies aimed at providers, patients, and payers. Their discussion centered on care-related costs, administrative costs, and related reforms. Within each of these broad categories, they considered an array of specific initiatives as well as the requirements and assumptions inherent to each. In addition, the participants discussed their views on the approximate range of savings that might be achieved through

implementation of these strategies, drawing on workshop presentations and their own experiences.

Payment reform was discussed throughout the meeting as a necessary and potent component of a value-driven agenda to lower costs and improve outcomes. Many of the participants observed that payment reform may be implemented in a variety of forms, ranging from bundled payments to global payments and salaries for providers, but they emphasized payment reform as a tool and an underlying requirement for achieving many of the goals discussed at the meeting. For example, to stimulate initiatives to reduce medical errors, several attendees suggested that creation of bundled payments for hospitalizations include the costs of readmissions due to any cause within 30 days. Another form of payment reform akin to pay-for-performance included linking a portion of provider payments to documented use of decision aids to encourage shared decision-making. Regardless of the form, payment reform was noted throughout the meeting by various individuals as fundamental to aligning provider incentives with quality and efficiency.

In the discussions, the participants individually identified high-yield savings opportunities based on their own experiences. The ten cost-reduction opportunities explored in greater detail during the meeting focused primarily on care-related costs, but also included administrative costs and related reforms (Box S-4).

While acknowledging that substantial additional analytic work was required to refine and strengthen the analytics, based on estimates provided throughout previous workshops on excess costs, and informed by their own individual knowledge bases, the sum total of the individual opinions of the various participants, speaking not for all in the group but to their own areas of expertise, resulted in first approximations of $360 billion to $460 billion in annual savings, which might be achieved by 2018 (in 2009 dollars). Across the areas noted in Box S-4, participants expressed personal opinions on the range of savings opportunities, including $8 billion to $12 billion from preventing medical errors, $44 billion to $48 billion from preventing avoidable hospital admissions, $16 billion to $20 billion from preventing avoidable hospital readmissions, $38 billion to $80 billion from improving hospital efficiency, $32 billion to $53 billion from decreasing the costs of care episodes, $9 billion to $20 billion from improving targeting of costly services, $6 billion to $9 billion from increasing shared decision-making, $181 billion from utilizing common billing and claims forms, $20 billion to $30 billion from medical liability reform, and $5 billion to $10 billion from preventing fraud and abuse. To account for the increased primary care practice costs necessary to achieve implementation of several of the strategies discussed, several participants suggested that a one-third offset be employed, yielding a total savings of approximately $240 billion

BOX S-4
Estimated Health Cost Savings
Selected approaches: individual perspectives

	Estimated Savings in Year 10	
	Low	High
CARE-RELATED COSTS		
• Prevent medical errors	$8 B	$12 B
• Prevent avoidable hospital admissions	$44 B	$48 B
• Prevent avoidable hospital readmissions	$16 B	$20 B
• Improve hospital efficiency	$38 B	$80 B
• Decrease costs of episodes of care	$32 B	$53 B
• Improve targeting of costly services	$9 B	$20 B
• Increase shared decision-making	$6 B	$9 B
ADMINISTRATIVE COSTS		
• Use common billing and claims forms	$181 B	
RELATED REFORMS		
• Medical liability reform	$20 B	$30 B
• Prevent fraud and abuse	$5 B	$10 B

to $310 billion annually. Additionally, participants pointed out that the estimates discussed had not accounted for implementation and overhead costs.

Additional Considerations

The rising epidemic of obesity, an aging population with an increasing burden of chronic illness, and the influence of current health behaviors on future health status were also cited as considerations during the conversations. With levels of obesity projected to exceed 40 percent by 2015 (Wang and Beydoun, 2007) and over 80 million Americans expected to have multiple co-morbidities by 2020 (Anderson and Horvath, 2002), Cutler and Tuckson underscored the importance of considering how health demographic trends would impact future healthcare expenditures and thus the priority strategies to address them. Given the connection between health behaviors and these health trends, including the rising levels of multiple co-occurring chronic illnesses and the low rate of recommended preventive care, Everett and Mitchell drew attention to the issue of prevention, including community health programs that encourage healthy eating habits in schools, anti-tobacco legislation, and primary through tertiary preven-

tion. Acknowledging that uncertainty exists about the cost effectiveness of many prevention initiatives, Tuckson noted that, regardless of its cost effectiveness, prevention is of critical importance to making gains in public and population health.

While the participants highlighted a selection of particularly high-yield, cost-lowering strategies during the meeting, Mitchell and several others noted that many promising strategies, such as increased use of mid-level practitioners, additional ancillary providers (such as health coaches and nutritionists), salaried physicians, and a reassessment of the link between funding for medical education and hospital reimbursement, deserve further exploration and study as potential methods of lowering healthcare costs.

Attendees also explored the underlying notion of accountability as critical to improving the health of the nation and to creating a culture in health care that values efficiency and quality. They emphasized that all stakeholders in health must bear responsibility if the delivery system is to be reformed. For example, while Gilfillan and Toussaint suggested that providers bear responsibility for ensuring that care is delivered in the most efficient, safe, patient-centered manner possible, Mitchell added that patients are responsible for improving their engagement in the decision-making process. Without a mission and common understanding of collaborative engagement and accountability, Cutler noted that successful development and implementation of policies that address stakeholder concerns would fall short of their full potential.

Participant Leadership Responsibilities

Building on the idea of accountability, several attendees cited the need to identify specific entities that would assume primary responsibility for oversight of implementation and evaluation to ensure that the maximum potential savings were realized. Within the context of ongoing efforts to enact healthcare reform legislation, participants pointed to the public sector, including government at the local, state, and federal levels, as critical to providing oversight and ongoing support to the overall healthcare system infrastructure. Gilfillan stated that the role for government extended beyond the legislative branch to the executive branch as well. The Department of Health and Human Services and CMS were specifically viewed as setting important examples in payment reform and coverage, inasmuch as spending on the Medicare and Medicaid programs account for almost 40 percent of national health expenditures (CMS, 2009). Mitchell suggested that the increased provision of Medicare claims data as a public good to purchasers, plans, researchers, and the public would be a vital aid in analyses of cost and quality. Bailit termed the government, especially at the state and local levels, as critical to efforts at organizing providers and

payers to affect changes in concert with ongoing national initiatives and in improving public and population health, including the physical and social determinants of health, such as education and community safety. In addition, several participants observed that state governments play a critical role in overcoming problems in commercial insurance markets through insurance regulation. For example, Rosenthal suggested that states could adopt all-payer regulations that could align the basic structure of pay for performance or risk-sharing methods in a marketplace.

Several participants highlighted the responsibilities that healthcare providers—ranging from nurses and physicians to acute, intermediate, and long-term care facilities—and commercial payers must bear to successfully reform the delivery system. For example, Tuckson cited the Healthcare Administrative Simplification Coalition, a collaboration between providers and payers to streamline administration by simplifying the credentialing process, standardizing data exchange, and leveraging health information technology. Providers, payers, and purchasers were also seen as playing important roles in improving patient health behaviors by encouraging preventive care and educating consumers on both the value of receiving care and the impact of individual health decisions on personal and population health.

Patients and consumers were also said to bear significant responsibilities for their care. Opportunities to participate in a shared decision-making process that stimulates patients to fully understand the risks and benefits of the diagnostic and therapeutic options specific to their clinical condition could increase consumer awareness of the value of alternative treatments, suggested Bailit, Mitchell, and Everett. In addition, consumers need to gain better understanding of the evidence indicating that more is not always better, suggested another participant.

Regardless of the specific stakeholder engaged, several attendees emphasized that none of these stakeholder groups should act in isolation without consideration of the other groups. It was suggested that affecting beneficial change requires the involvement of all sectors of the healthcare system, strong accountability, and agreement on the goals of improving quality and value.

NEXT STEPS FOR THE ROUNDTABLE

Although the ideas encapsulated throughout this summary reflect only the presentations, discussions, and suggestions that coursed throughout the workshops, and should not be construed as consensus or recommendations on specific numbers or actions, many of the thoughts and potential follow-up actions fall within the scope of the Roundtable mission and provide

initial ideas for further Roundtable and field consideration, including the following:

- *Developing a strategic roadmap.* To apply the impressive and extensive information gathered throughout the various workshops, many discussed the need for a national strategic roadmap to identify the areas most likely to yield significant savings, the highest-priority strategies to realize those savings, and the specific steps needed to translate the potential into actionable recommendations that will result in truly lowered costs.
- *Improving the analytics.* While the estimates presented during the workshops represent initial steps in providing a sense of the relative amounts of inefficiency in the delivery system and the potential impact of key strategies, participants frequently emphasized that additional work will be required to refine and strengthen the accuracy of the numbers and their cross-cutting nature. Several additional facets suggested for consideration included specific delineation of estimates across the public and private sectors as well as the uninsured; consideration of areas of overlap between estimates, and of implementation and maintenance costs; and identification of the barriers to effective "spread" of successful strategies. In addition, the workshop presenters focused on the direct costs of health care, but the indirect costs of health care—ranging, for example, from those of absenteeism for unnecessary services to decreased investments in education—also warrant consideration.
- *Engaging multiple stakeholders.* Given the reality of abundant challenges and resistance to change, attendees observed that efforts to successfully control cost growth and lower spending while preserving innovation and outcomes could be achieved only with the cooperative efforts of the myriad stakeholders in health care—including patients, providers, manufacturers, payers, regulators, researchers, and policy makers, in both the private and the public sectors—aligned to improve insights, accelerate progress, and create a system grounded in delivering value to its constituents.
- *Informing health reform initiatives.* As efforts to reform the delivery system continue on both the federal and the local levels, specific attention was drawn to identifying inefficiencies in the healthcare system and the politically actionable policies to minimize them, because they carry paramount weight and clearly intersect with the goals of creating a value-based learning health system.
- *Enhancing transparency.* Building on the observations expressed by many about the lack of information as to the costs, outcomes, and value from health care, work to enhance the transparency of

system performance was viewed as particularly relevant for the Roundtable members, who represent the leadership of the key stakeholder sectors.

- *Focusing on strategies for more direct public engagement.* As heard throughout the workshops, the desire for information and engagement among health consumers has grown over the past few decades, yet the range of information exchange between the public and policy makers needs further development. Effective and efficient tools for translating technical language and information into accessible information for consumer use are required, as are methods of incorporating patient concerns and feedback into the policy decision-making process. Participants spoke of the role of education in clarifying the relationship between out-of-pocket costs and total medical spending, illustrating the impact of costs on all levels of society, and further motivating partnerships between consumers, providers, payers, and policy makers.

While the ideas summarized above reflect only the presentations, discussions, and suggestions that spanned throughout the workshops and should not be construed as consensus or recommendations on the specific numbers or opportunities, they provide informative insights into the opportunities to lower costs and improve outcomes present within the current healthcare delivery system, and represent areas needing further consideration. As these conversations continue, additional observations and suggestions are welcome and encouraged as the Roundtable continues to consider and explore these challenges and possibilities.

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Section I

Excessive Healthcare Costs

1

The Healthcare Imperative

INTRODUCTION

With projected expenditures of $4.4 trillion in 2018, national health spending could potentially grow more than 300 percent over the course of just 18 years (CMS, 2009). According to projections from the Congressional Budget Office (CBO), federal spending on Medicare and Medicaid alone will increase from about 5 percent of GDP in 2009 to more than 6 percent in 2019 and approximately 12 percent by 2050, mostly from growth in per capita costs (Elmendorf, 2009). Research indicates that, if costs per enrollee in Medicare and Medicaid grow at the same rate over the next four decades as they have over the past four, those two programs will increase from 5 percent of GDP today to 20 percent by 2050 (Figure 1-1) (CBO, 2007).

The costs of health care have therefore not just strained the federal budget; they have affected state governments and the private sector as well. In 2008, Medicaid spending accounted for approximately 21 percent of total state spending and represented the single largest component of state spending (National Association of State Budget Officers, 2009). These levels of healthcare expenditures have restricted the ability of state and local governments to fund other priorities, most prominently the needed investments in education (The White House, 2009). Beginning in the early 1980s, as healthcare costs began to rise, salaries began declining at public institutions relative to private institutions at all academic ranks, putting public universities at risk and at clear competitive disadvantage with their private counterparts in faculty recruitment (Figure 1-2) (Kane and Orszag, 2003).

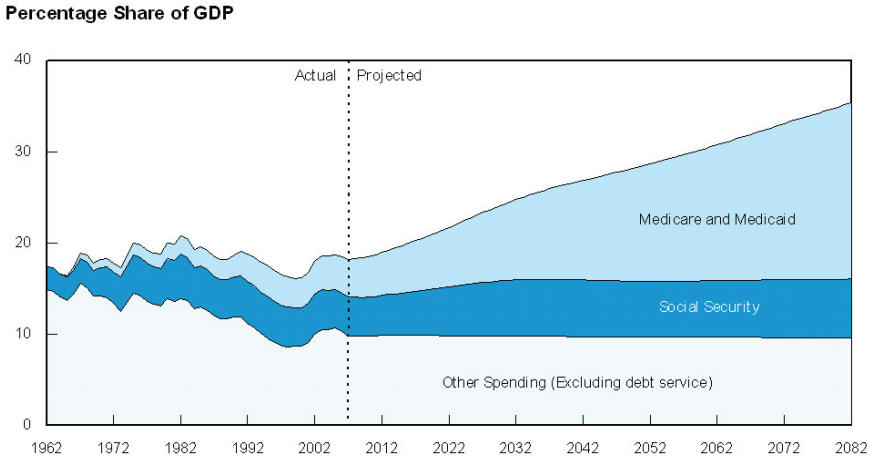

FIGURE 1-1 Long-term fiscal gap and health care costs.
SOURCE: CBO, 2007.

In the private sector, healthcare costs have contributed to slowing the growth in wages and jobs (National Coalition on Health Care, 2008). While health insurance prices rapidly escalate and employers cut back on the provision of health insurance benefits (Kaiser Family Foundation, 2009b), the number of uninsured rose from 45.7 million in 2007 to 46.3 million in 2008 (U.S. Census Bureau, 2009).

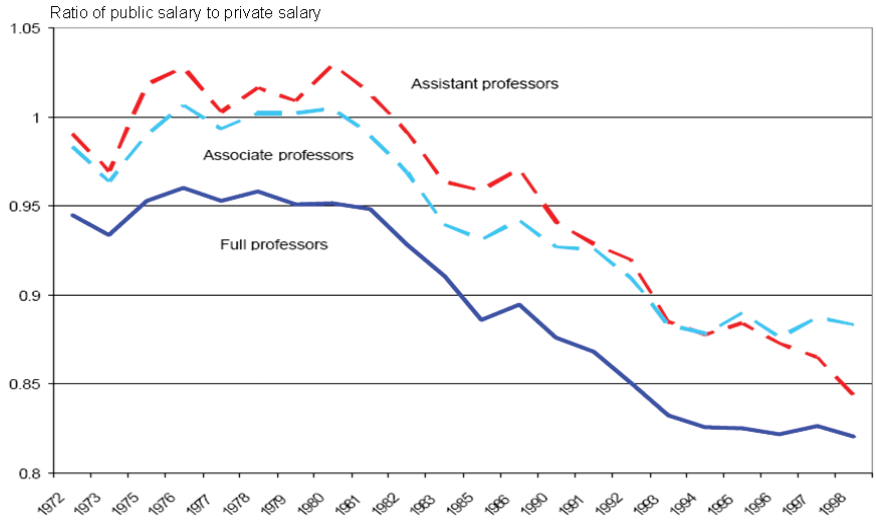

FIGURE 1-2 Ratio of public to private research university salaries.
SOURCE: Kane and Orszag, 2003.

On the individual level, the average cost of annual health insurance premiums for a family of four exceeded $13,000 in 2009, growing 5 percent in just a single year (Kaiser Family Foundation, 2009a). Health insurance premium increases have consistently exceeded inflation and the growth in worker's wages, forcing individuals to spend increasing amounts of their income simply to maintain health coverage (Kaiser Family Foundation, 2009b). Estimates of the real increase in per capita income devoted to health spending over the next 8 decades have been calculated to be almost 120 percent (Chernew et al., 2009). Fifty-three percent of Americans said their family limited their medical care in the past 12 months because of cost concerns, 19 percent reported serious financial problems due to medical bills, with 13 percent depleting all or most of their savings and 7 percent unable to pay for basic necessities such as food, heat, or housing (Kaiser Family Foundation, 2009b).

While the United States has the highest per capita spending on health care of any industrialized nation—50 percent greater than the second highest and twice as high as the average for Europe (Peterson and Burton, 2008), it continually lags behind other nations on many healthcare outcomes, including life expectancy and infant mortality (Anderson and Frogner, 2008; Docteur and Berenson, 2009). Employers and employees in other industrialized countries spend about 63 percent of what the United States spends on health care, but U.S. workforce health trails by about 10 percent. Indeed, the emerging economies of Brazil, India, and China rank behind the United States by about 5 percent on workforce health measures, but these countries spend only a fraction—about 15 percent—of what the United States spends on health care (Milstein, 2009). The relatively poor performance in health outcomes relative to investment suggests ample opportunity for improvement on both costs and outcomes. This prospect is supported by findings that high-spending areas in the United States—spending $6,304 per capita compared to $3,922 per capita in the lowest spending quintile in 1996—utilize 60 percent more frequent physician and hospital visits, testing, and use of procedures yet achieve no quality advantage (Fisher et al., 2003). Together, these findings underscore the opportunities to lower costs without impacting clinical outcomes.

The necessity of bending the cost curve stimulated the Institute of Medicine's (IOM's) Roundtable on Value & Science-Driven Health Care to partner with the Peter G. Peterson Foundation, a private philanthropy dedicated to the nation's fiscal security, in the conduct of a workshop series The Healthcare Imperative: Lowering Costs and Improving Outcomes, part of the *Learning Health System* series, in 2009. Guided by an IOM Planning Committee, the meetings were aimed at engaging participants in specifically exploring, identifying, and characterizing the major causes of excess healthcare spending, waste, and inefficiency in the United States; considering the strategies that might reduce per capita health spending in the United

States while improving health outcomes; and exploring the policy options relevant to the effective implementation of those strategies. The chapters in this book highlight common themes from the discussions and provide summaries of the presentations from a variety of perspectives.

PROMOTING EFFICIENCY AND REDUCING DISPARITIES IN HEALTH CARE

Peter R. Orszag, M.Sc., Ph.D.
Office of Management and Budget

Rising healthcare costs are not only a critical issue for employers and for both enrollees and patients who ultimately bear the costs of health insurance and health care, they also constitute the nation's central fiscal challenge.

On our current trajectory, Medicare and Medicaid will double as a share of spending on federal programs within the next 30 years (OMB, 2009). And, while the aging of the population also contributes to this rise in spending, healthcare cost growth is the primary driver over the long term (see Figure 1-3). In fact, slowing the rate of healthcare cost growth by just 0.15 percentage points per year would produce the same amount of sav-

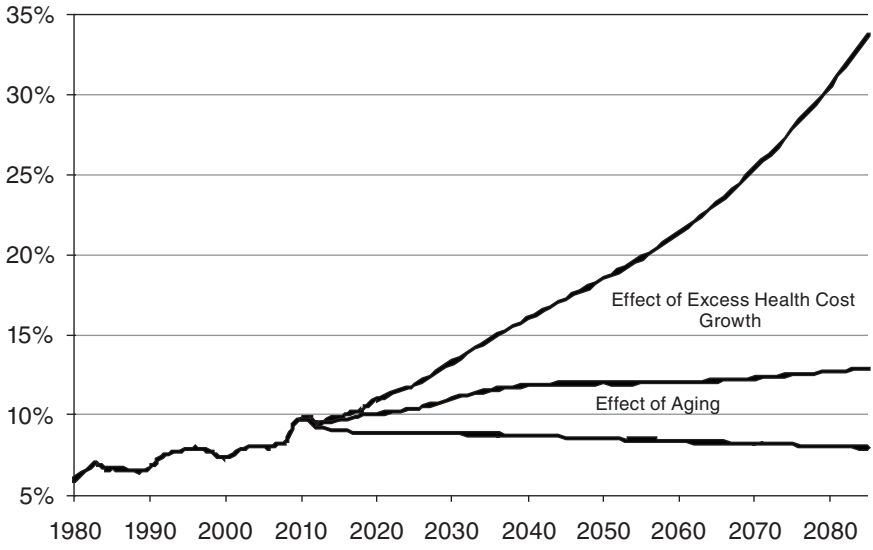

FIGURE 1-3 Sources of Projected Growth in Medicare, Medicaid and Social Security (Spending, % OF GDP).
SOURCE: OMB, 2009.

ings for the federal budget as closing the 75-year Social Security shortfall (OMB, 2009).

Put simply, if we do not act to address rising healthcare costs, anything else we do to reduce long-term federal deficits will be for naught.

Crowding Out Key Investments

While rising healthcare costs are projected to drive the federal budget toward fiscal insolvency over the long term, they also threaten to crowd out key governmental investments. State funding for higher education provides a striking example of this crowd-out effect.

Over the past several decades, state support for higher education has steadily declined. State appropriations for higher education fell from an average of roughly $8.50 per $1,000 in personal income in 1977, to an average of about $7 per $1,000 in personal income in 2002—a drop of nearly 20 percent (Kane et al., 2003). It is notable that, as this drop-off has occurred, salaries for professors in public institutions have declined steadily relative to salaries for professors in private institutions. Whereas, prior to 1980, salaries were largely comparable for professors in public and private institutions of higher education, the public/private ratio of average salaries fell to roughly 0.85 for professors by 1998 (Kane et al., 2003). Although this is only one metric, it is indicative of the strain placed on public investments.

While state investment in higher education has been declining relative to income, state spending on health care has been rising—driven by the Medicaid program, the costs of which are shared by both the federal and state governments. These are complementary trends. Research shows that, having controlled for other factors, higher education appropriations per capita are negatively related to Medicaid spending per capita. In particular, a $1 increase in real state Medicaid spending per capita is linked to a real reduction in higher-education appropriations per capita by about $.06 or $.07—a relationship that could potentially explain the vast majority of the decrease in real, higher-education spending per capita from the 1980s through the 1990s (Kane et al., 2003). Growing health costs, thus, not only threaten to hinder future economic growth by creating gaping federal budget deficits, but also by crowding key investments—such as in education—that are needed to lay a foundation for future prosperity.

Gap Between Cost and Quality

Even as we spend more on health care, we are not necessarily seeing a commensurate increase in quality. In fact, there is strong evidence that our healthcare system is riddled with inefficiency—meaning, quite simply, that we are not getting our money's worth.

Perhaps the most compelling evidence of this inefficiency is the wide variation in healthcare spending per capita across the United States. Figure 1-4 shows this variation in spending per person specifically within the Medicare system by hospital referral region, adjusting for age, sex, and race. Furthermore, this very substantial variation in cost per beneficiary in Medicare is not correlated with overall health outcomes—and, in fact, the opposite may be the case (Orszag, 2008).

Based on this evidence, researchers have found that as much as 30 percent of Medicare's costs could be saved without negatively affecting health outcomes if spending in high- and medium-cost areas could be reduced to the level in low-cost regions—and those estimates could probably be extrapolated to the healthcare system as a whole (Fisher, 2005; McGinnis, 2009; McKinsey Global Institute, 2007; Wennberg et al., 2002). This means that hundreds of billions of dollars per year in healthcare spending in the United States is not making people better off. Rather, these dollars are simply wasted.

Embedded in this troubling conclusion is a substantial opportunity: the possibility to reduce healthcare costs without adversely affecting health outcomes. This is one of the keys to healthcare reform—transforming

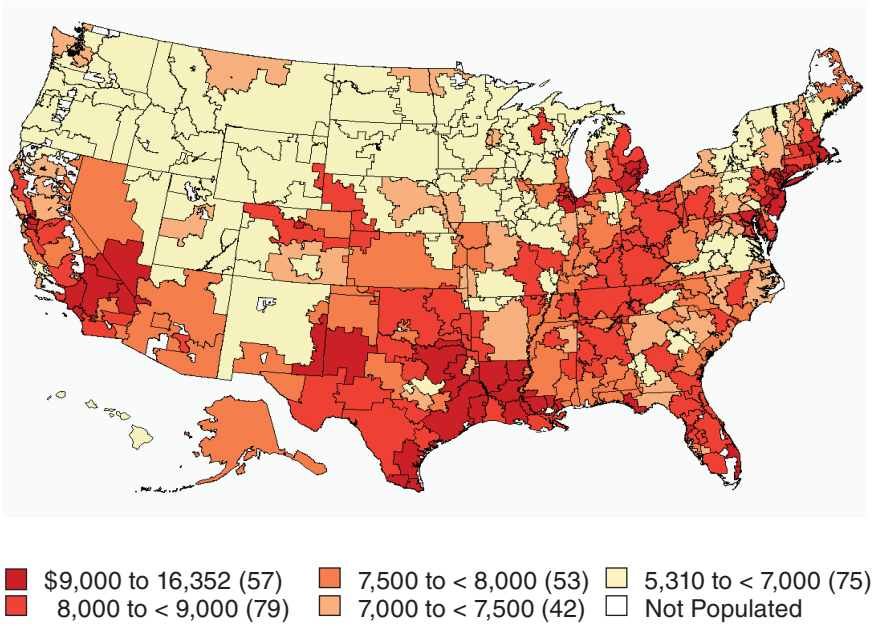

FIGURE 1-4 Medicare Spending per Capita (by Hospital Referral Region).
SOURCE: Reprinted with permission from Dartmouth Atlas of Health Care.

the healthcare system into one that emphasizes quality rather than just quantity.

Rising Inequality in Life Expectancy

As we consider how to restrain the growth of healthcare costs, it is also important to keep in mind another disturbing trend: recent gains in life expectancy have not been shared equally across socioeconomic groups. Life expectancy in the United States has been steadily increasing for the past several decades, and the gaps between women and men and between whites and African Americans have narrowed somewhat. But differences in life expectancy by educational attainment and income have been growing. In other words, socioeconomic status has become an increasingly important determinant of life expectancy, whether measured at birth or at age 65 (CBO, 2008).

Reducing this disparity in life expectancy should involve both addressing the greater incidence of unhealthy behaviors among those with lower incomes and educational attainment—such as with regard to smoking and nutrition—*and* a lack of access to quality medical care. These are two independent factors.

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Since I addressed the Institute of Medicine last May, the President worked with Congress to enact comprehensive health insurance reform. Much has and will be written about health insurance reform. But, in short, this reform addresses many of the problems that I identified in my speech last May.

Health reform uses the best available knowledge and most promising ideas from across the political spectrum to control healthcare costs by transforming the health system from one that delivers greater quality with less quantity. It does so by, among other changes:

- Imposing an excise tax on the highest-cost insurance plans, providing employers with an incentive to seek higher-quality and lower-cost health benefits;
- Reforming incentives to improve the way health care is delivered to patients throughout the country through such mechanisms as bundled payments and accountable-care organizations; and
- Creating an Independent Payment Advisory Board in Medicare so that reforming the healthcare system is not a one-time event but an ongoing process with the goal of improving care and lowering costs.

This represents the first serious piece of legislation to address the forces underlying rising healthcare costs—and it does so while giving more choice and security to those with health insurance, providing access to coverage to those without, improving the quality of health care for all, and generating the most deficit reduction of any legislation in over a decade.

WHY AMERICANS SPEND MORE FOR HEALTH CARE

Eric Jensen, M.B.A, and Lenny Mendonca, M.B.A.
McKinsey Global Institute

In 2006, the United States spent $2.1 trillion on health care, more than twice what the nation spent on food, and more than China's citizens consumed on all goods and services. With growth in healthcare costs continually exceeding growth of the gross domestic product (GDP), it begs the question: are we receiving commensurate value for the money that is spent? The McKinsey Global Institute published an updated report in December 2008 addressing this question by comparing healthcare costs in the United States to some of our peer members of the Organisation for Economic Co-operation and Development (OECD), a multinational association with one of the world's largest and most reliable sources of comparable economic and social data. This paper summarizes some of the main findings in this published update. By providing a comprehensive analysis of U.S. healthcare costs and pinpointing where spending is above expected, our objective is to make a constructive contribution to public debate and decision making on issues related to the U.S. health system.

Comparison of Healthcare Spending in the United States and Internationally

To identify the extent of spending above expected, we looked at healthcare spending on a per capita basis as a function of GDP per capita. As seen in Figure 1-5, wealth is an incredibly powerful predictor of healthcare spending for most OECD countries. The notable exception is healthcare spending in the United States, which is far off the expected regression line.

We then evaluated the gap between "estimated spending according to wealth" (ESAW) and actual spending for each component of the health system. In doing so, we found that the United States spent nearly $643 billion more than expected in 2006 given U.S. wealth levels. As seen in Figure 1-6, outpatient care, the largest and fastest-growing cost category, accounts for $436 billion, or two-thirds of spending above expected. Four other cost categories—drugs, health administration and insurance, investment in health, and inpatient care—are responsible for $279 billion in spending

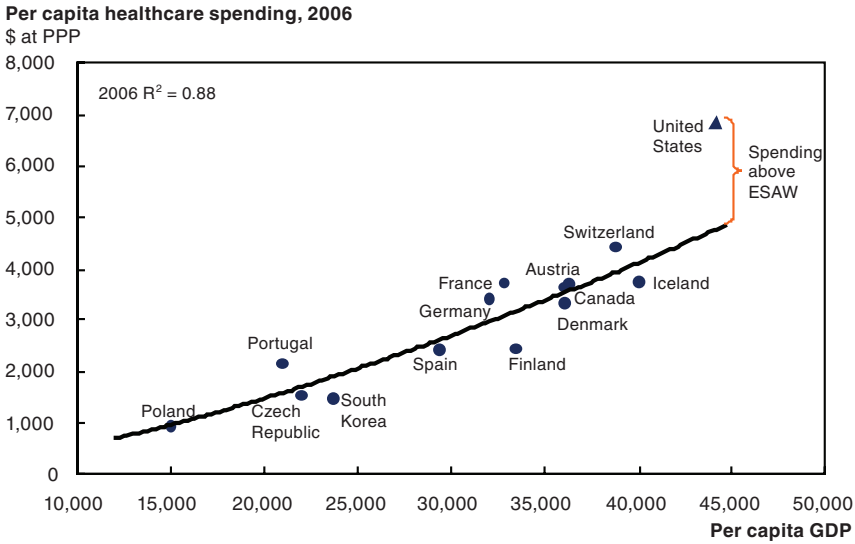

FIGURE 1-5 The U.S. spending on health care compared to other countries, adjusted for relative wealth.
NOTE: ESAW = estimated spending according to wealth; PPP = purchasing power parity.
SOURCE: Reprinted with permission from the McKinsey Global Institute.

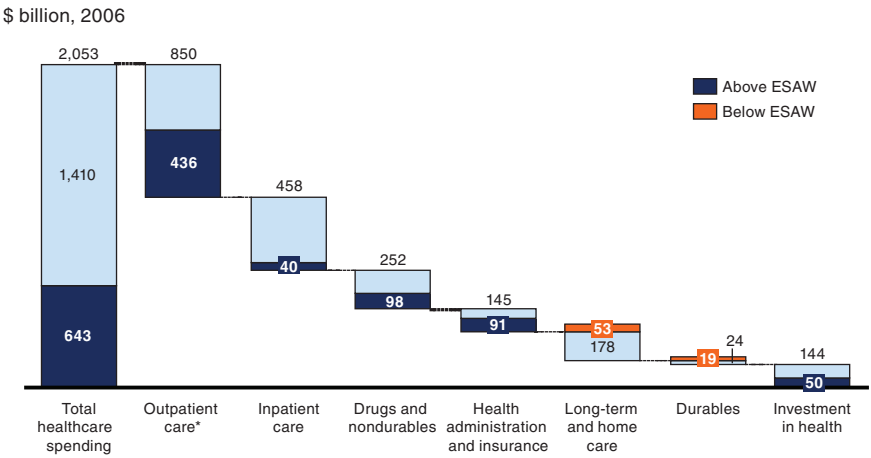

FIGURE 1-6 Spending gap between the U.S. and other OECD countries.
NOTE: ESAW = estimated spending according to wealth.
*Outpatient care includes physician and dentist offices, same-day visits to hospitals including emergency departments, ambulatory surgery and diagnostic imaging centers, and other same-day care facilities.
SOURCE: Reprinted with permission from the McKinsey Global Institute.

above expected. In the remaining two categories of long-term and home care, and durable medical equipment, U.S. spending was $72 billion less than expected.

Outpatient Care Cost Drivers

Outpatient care, which includes same-day hospital and physician office visits, was by far the largest and fastest-growing part of the U.S. healthcare system. Part of this growth has been driven by a structural shift in care delivery away from inpatient settings to outpatient settings—the United States now delivers 65 percent of care in an outpatient setting versus an OECD average of 52 percent. Theoretically this shift might save costs, because supporting fixed costs tend to be lower for outpatient care than when patients stay overnight in a hospital. Indeed, we estimated that the United States saves $100 billion to $120 billion a year on inpatient costs from shorter lengths of stay and fewer admissions. However, these savings only partly defray the $436 billion in outpatient care costs above expected, suggesting that this structural shift has increased—not decreased—total costs as a consequence of increases in consumption of healthcare services.

What underlies higher outpatient care costs and use? We identified five drivers, including (1) the highly profitable nature of outpatient care; (2) the judgment-based nature of physician care coupled with the fee-for-service nature of reimbursement; (3) unit price growth linked to technological innovation; (4) demand growth linked to greater availability of supply; and (5) relatively price-insensitive patients with limited out-of-pocket costs.

Inpatient Care Cost Drivers

As noted above, there has been a structural shift in the United States away from inpatient care, and so the above-expected spending in this category was relatively modest. The United States has shorter lengths of stay and fewer admissions than many of its OECD peers. However, the United States paid far more for each patient bed day than peer countries. Higher costs per patient bed day were driven by lower patient-to-nurse ratios, higher nursing salaries, higher supply costs, and higher hospital fixed costs.

Of note, the United States also performed more surgical procedures than OECD peer countries at 90 procedures per 1,000 population versus an OECD average of 71. Higher volumes for four procedures—percutaneous coronary intervention, coronary bypass, cardiac catheterization, and knee replacement—alone accounted for an estimated $21 billion in additional inpatient care costs.

Prescription Drug Cost Drivers

Higher U.S. drug spending was a result of lower usage rates coupled with higher prices and a more expensive drug mix. On a standard unit basis, the United States used 10 percent fewer drugs per capita than OECD peers. For equivalent drugs, prices were on average 50 percent higher in the United States than those in other OECD countries. Drug type matters in this analysis: the United States spent 77 percent more for branded drugs, 35 percent more for biologics, and 11 percent less for generics than peer countries. Maybe most important, however, is the mix of drugs used by Americans. When we factor in the effect of drug mix, the United States spent over 118 percent more for an "average" pill than peer OECD countries despite the fact that the United States used more generics.

Health Administration and Insurance Cost Drivers

Breaking down sources of above-expected spending, we found that $63 billion was attributable to private payers: $30 billion in the form of profits and tax, and $33 billion in selling, general, and administrative expenses. Public administration expenses for Medicare, Medicaid, and other programs accounted for the remaining $28 billion in U.S. spending above expected.

These higher costs were partly attributable to the diversity and number of payers as well as the multistate regulation of the U.S. healthcare system. Its structure creates additional costs and inefficiencies: redundant marketing, underwriting, claims processing, and management overhead. In other OECD countries, which have less-fragmented payment systems, these costs are much lower. Interestingly, we found that given the structure of the U.S. system, its administrative costs were actually $19 billion less than expected, suggesting that payers have had some success in restraining costs.

Exploration of Alternative Cost Drivers

Among alternative explanations for higher healthcare costs in the United States, two bear further investigation: (1) Americans are sicker than people in other OECD countries, and (2) Americans obtain more value from the health system.

In exploring the hypothesis that Americans are sicker than people in other OECD countries, we did not find this to be true. As demonstrated in Figure 1-7, the United States had lower prevalence along most of the health conditions listed. There were notable exceptions, such as diabetes and cancer, but generally the United States was in fact healthier than its

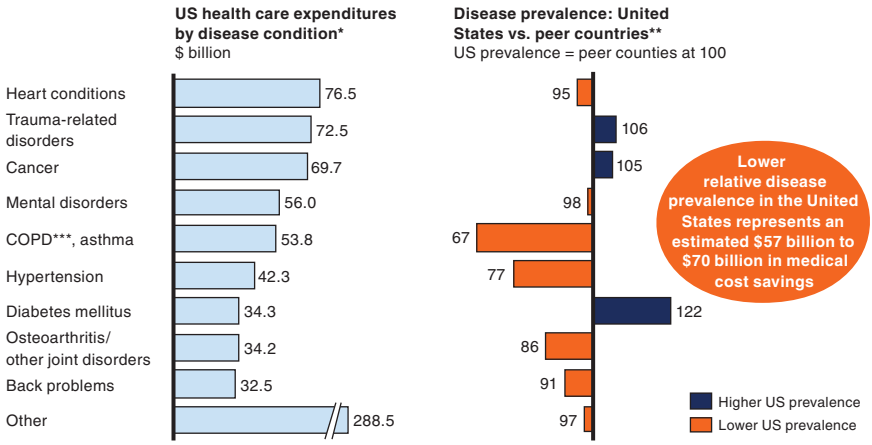

FIGURE 1-7 U.S. disease prevalence compared to peer countries.

[a]Includes 35 or 60 medical conditions surveyed by the U.S. Medical Expenditure Panel Survey; the costs of these diseases represent 35 percent of total U.S. health expenditures.

[b]Peer countries are France, Germany, Italy, Spain, and the United Kingdom.

[c]Chronic obstructive pulmonary disease.

SOURCE: Reprinted with permission from the McKinsey Global Institute.

OECD peers. This counterintuitive finding could be explained by the fact that (1) disease prevalence, particularly that of chronic disease, is growing globally and not just in the United States; (2) the younger U.S. population offset relatively higher prevalence of certain conditions in at-risk populations (such as heart disease for the over-30 population); and (3) Americans smoke far less than OECD peers and, as a consequence, have lower healthcare costs for related conditions.

On the question of whether Americans obtain more value from the health system, the evidence was mixed. Parts of the U.S. healthcare system, such as its best hospitals, are clearly world-class. Cutting-edge drugs and treatments are available earlier and waiting times to see a physician tend to be lower. Yet the United States lags behind other OECD countries on outcome measures including life expectancy and infant mortality. Furthermore, access to health care is unequal; more than 45 million Americans are uninsured.

Framework for Reform Options

The drivers of high and rising costs are widespread within the U.S. healthcare system, and if they are not addressed in broad terms, healthcare spending growth is likely to continue unabated. Indeed, the Department

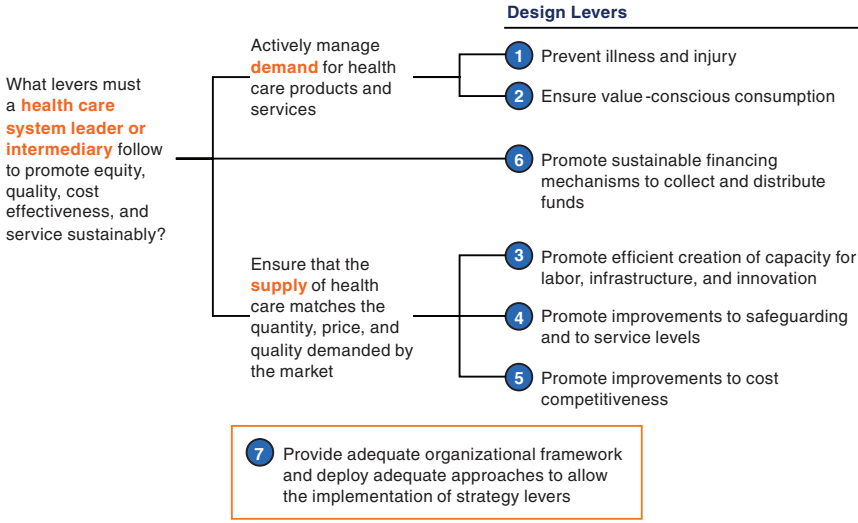

FIGURE 1-8 Framework for health reform.
SOURCE: Reprinted with permission from the McKinsey Global Institute.

of Health and Human Services projects that health spending will reach $4.3 trillion within the next 10 years.

As U.S. policy makers look at options for healthcare reform, they must consider action that addresses both supply and demand, focuses on the financing of health care, and ensures that any reform takes place within an effective organizational framework for implementation to be effective (Figure 1-8). And if the healthcare cost trajectory is going to bend, a focus on outpatient care spending is essential to that effort.

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2

Unnecessary Services

INTRODUCTION

In the 1970s, John Wennberg highlighted the variation in surgical procedures performed among similar patients in various parts of the country (Wennberg and Gittelsohn, 1973). Since then we have learned much more about these practice differences, including their impacts on spending. For example, end-of-life care spending per Medicare beneficiary in New Jersey cost $59,379, compared to $32,523 per beneficiary in North Dakota (Wennberg et al., 2008). Yet existing evidence finds no relationship between higher levels of spending and the quality of care received by patients (Baicker and Chandra, 2004; Yasaitis et al., 2009).

To further explore this area, speakers in this session examine the provision of unnecessary services, highlighting the sequelae of scientific uncertainty, perverse economic and practice incentives, and lack of patient engagement in decisions. In turn, each discusses not only the inefficiencies in the system but opportunities to improve healthcare quality and outcomes for patients. Amitabh Chandra of Harvard University examines quality and cost at the hospital level, confirming that the correlation between cost and quality was either nil or negative. Significantly, he additionally categorizes hospitals in a region by their relative costs and their relative quality based on patient mortality. Using this two-dimensional matrix, he describes the implications on cost and health outcomes should hospital practices in all hospitals mirror those of the most efficient and effective hospitals, estimating that this would not only save thousands of lives but also yield $1 billion or more in savings. While this analysis was limited by

adequate risk-adjustment of claims data, it is suggested that with savings of this magnitude for just three conditions, the potential across all conditions and populations could be substantial. Chandra concludes that these findings support a broader message that, despite the inefficiencies within the American healthcare system, it is possible to save both money and lives.

Using a similar approach of benchmarking, Elliott S. Fisher of Dartmouth College details analyses demonstrating that decreased use of discretionary services in the Medicare program could save approximately $50 billion a year, or approximately 20 percent of current spending. However, he simultaneously acknowledges that this analysis does not account for the significant variation that occurs within regions nor does it specify the policies needed to reduce the observed variations. In conclusion, Fisher suggests that therefore a gradual transition toward a more frugal healthcare system is not only possible but that it could yield substantial savings without lowering quality.

Narrowing the focus to individual clinical decisions, David Wennberg of Health Dialog discusses the use of shared decision-making models as a method for reducing costs as well as for more effectively empowering patients to take control of their treatment decisions. By empowering informed and shared choice by patients through the use of decision aides, Wennberg concludes that the use of surgical procedures, for instance, could be reduced by 20 percent compared to controls. Based on the evidence, he asserts that systematic application of shared decision making (SDM) could reduce total U.S. healthcare expenditures between 1 and 5 percent. Wennberg cautions that data are still needed to assess the financial impact of provider-based SDM on total expenditures, and the effect benefit designs and reimbursement models could have on increasing use of SDM. However, given the potential savings, he recommends a paradigm shift from informed patient consent to informed patient choice.

SAVING MONEY (AND LIVES)

Amitabh Chandra, Ph.D., Harvard University; Jonathan S. Skinner, Ph.D., M.A., and Douglas O. Staiger, Ph.D., Dartmouth College

In a climate of growing concerns about how much our country spends on health care, it is increasingly important to know what we are getting for our money. Previous research has demonstrated a negative relationship between quality and spending at the regional level. However, findings at the level of the Hospital Referral Region (HRR)—a geographic designation devised for the *Dartmouth Atlas of Health Care*, reflecting referral hospitals' typical service areas—do not lend themselves to actionable policy. This paper examines the relationship between mortality and spending at an actionable level—in hospitals.

In previous work at the hospital level, we examined whether hospitals that spent more Medicare dollars on their patients in the last 2 years of life performed better on quality indicators (Yasaitis et al., 2009). In that analysis our quality measures came from the publicly available Hospital Compare dataset for the years 2004-2007. We examined 10 measures that collectively encompass care delivered for acute myocardial infarction, congestive heart failure, and pneumonia. Our measure of spending was the portion of end-of-life spending on Medicare beneficiaries that can be attributed to differences in the intensity of use, as opposed to payments that reflect differences in price levels, Disproportionate Share Hospital payments for treating low-income patients, or graduate medical education. When we compared spending to performance on quality indicators, we found no evidence of a positive relationship, and obtained similar results when we limited our investigation to academic medical centers and when we examined the relationship between spending and quality within narrowly defined HRRs.

In this report, we extend our earlier published study by looking at survival as an outcome measure and Medicare spending per beneficiary. While in the past we looked at process-based, quality-of-care indicators, here we focus on the more relevant measure of survival, yet recognizing that it is also substantially more sensitive to risk adjustment. While HRRs, which are large geographic units, may have patients with similar illnesses, individual hospitals are more likely to vary in the degree to which they treat sick and healthy patients. Consequently, risk adjustment at the hospital level is a more important concern than at the HRR level. While we continue to make progress on this challenge, it remains an important caveat to the analysis below.

Relationship Between Spending and Outcomes

We measured 1-year survival and total costs (Medicare Parts A and B spending) at the hospital level for Medicare beneficiaries with acute myocardial infarction, hip fracture, and colon cancer in 2003-2005.[1] These conditions have higher rates of 1 year of mortality and generally require some inpatient care. Also, these conditions have a much narrower clinical area for physician discretion in diagnosis. Because our spending measure incorporates both inpatient spending and spending on physician services

[1]For each cohort of beneficiaries we first calculated risk-adjusted mortality and costs. The risk-adjustment performed used ICD-9 diagnoses codes available on the Medicare Part A claims record. These measures were filtered to adjust for the effect of sampling variability, which introduces noise in the estimates of hospital-specific measures of mortality and costs (a problem that is larger in smaller hospitals). We combined these measures into a single quality dimension and single cost dimension for the 3,804 hospitals in our sample. All spending numbers are reported in 2005 dollars.

we are unable to separate the role of factors within the hospital (such as the quality of facilities and nursing staff) from explanations that rely on physicians being responsible for the variation in outcomes. Therefore, we use the words *hospital* and *provider* interchangeably in our descriptions to reflect the joint (hospital and physician) nature of production. The relationship between total 1-year costs and survival is reported in the scatter plot shown in Figure 2-1.

We drew a horizontal line at 70 percent (average 1-year survival rate) to highlight the lack of association between spending and outcomes. Similar to the findings noted earlier, at each level of spending there are high- and low-performing providers. To quantify the magnitude of savings that would occur if it were possible to take hospitals in the lower-right corner of the above figure (high cost, high mortality) and move them to the upper-left of the figure (low cost, low mortality), we first assigned hospitals to five performance cells from highest (low cost, low mortality) to lowest (high cost, high mortality), as shown in Figure 2-2. We used quartiles of performance on costs and quality to ensure that 25 percent of patients were in each quartile of spending and mortality. Providers in the lowest performance cell are those who have the highest costs and highest mortality, while those in the highest performance cell deliver the best care at the lowest cost. Providers

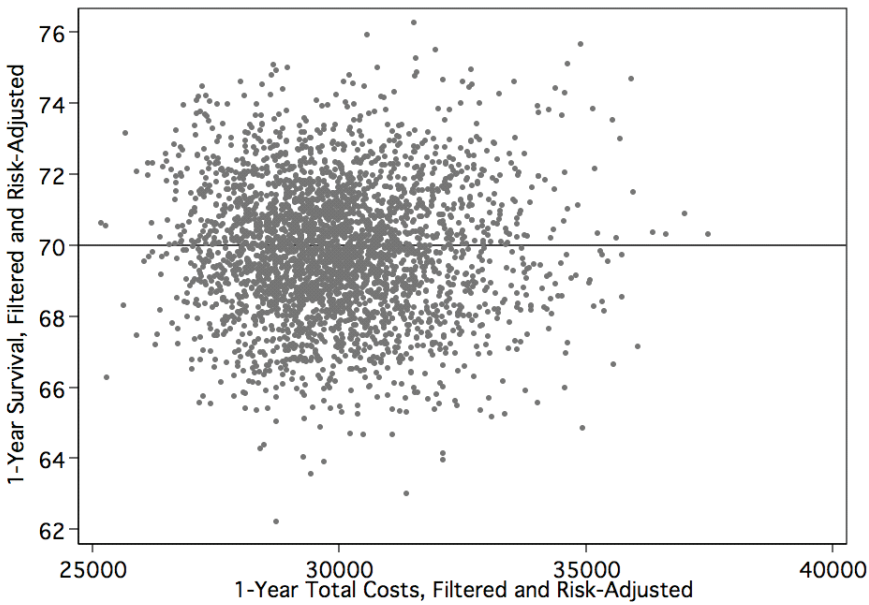

FIGURE 2-1 Relationship between 1-year survival rates and total inpatient costs for Medicare beneficiaries with three common conditions, 2003-2005.

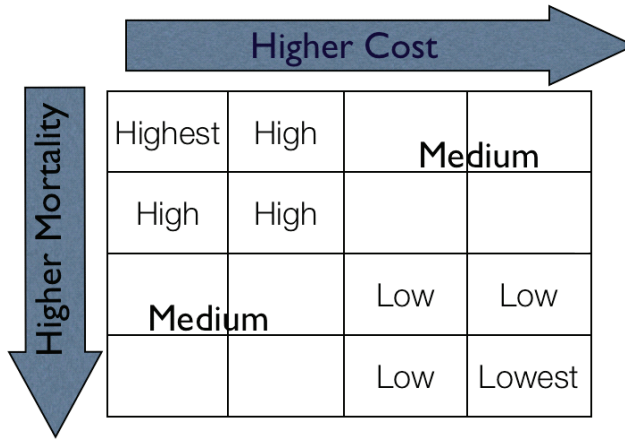

FIGURE 2-2 Conceptual intersection between cost and quality.

labeled as medium are those whose performance is difficult to rank: some do better than average on costs, but worse on outcomes. Their performance is better than those who are labeled as low or lowest, and worse than the high- and highest-performing providers, but without making further assumptions about society's willingness to accept low-quality providers who are also low cost, we cannot rank medium providers better. In this analysis, we quantify the improvement in costs and mortality when lower-performing providers are moved toward the performance of higher-performing providers (from lower right to upper left).

Figure 2-3 reports the average difference in costs, as measured by total Parts A and B spending per patient, between different types of providers (high, medium, low, and lowest) and relative to the highest-performing providers (highest, or those with the lowest costs and mortality). The lowest-performing providers spend $4,800 more per patient than the highest-performing providers. About half of this amount is a difference in the use of Part B services.

While there are substantial differences in 1-year costs (of which half are accounted for by the Part B program), the differences in mortality are even larger: a 5-percentage point difference in 1-year mortality (on a base mortality rate of 30 percent) represents a 17 percent higher mortality rate in the lower-performing hospitals relative to the best providers (Figure 2-4).

Potential for Cost Savings and Quality Improvement

Our classification permits us to simulate how many lives and how much money would be saved if hospitals not performing at the highest

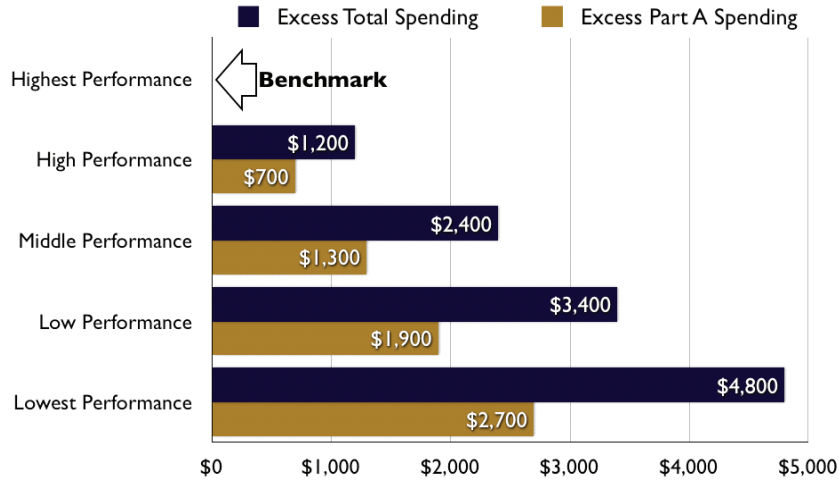

FIGURE 2-3 Average difference in costs between providers relative to those of highest performance.

level (lowest, low, middle, high) moved to the average cost and outcomes of the highest-performing group (highest). The cost savings would be a little over $1 billion annually, with half of the savings occurring as a result of efficiency improvements in the Part B program. These are gross savings as we have not priced the cost of implementing these performance improve-

FIGURE 2-4 Mortality differences between providers relative to those of highest performance.

ments. These savings may seem small given the almost $5,000 difference in 1-year spending between the highest and lowest performing providers. The key is to remember that most hospitals are in the middle group, and for these hospitals the savings are much smaller. Moving the lowest-performing providers to middle performance would yield $68 million in Medicare savings annually, and moving both the lowest- and low-performing providers to middle performance would yield $155 million annually (Figure 2-5). We report the different types of simulations because our analysis has nothing to say about the costs of improving performance: it may be easier to improve the performance of high-performing providers to the level of those with the highest performance than it is to improve that of the lowest-performing providers to the next level.

The corresponding improvement in survival from performance improvements is impressive (Figure 2-6). Moving the lowest providers to the middle-performance group would save 786 lives annually, and moving both the lowest and low providers to the middle-performance group would save 2,078 lives annually. The most significant improvements would occur if all providers were able to achieve the average performance of those in the highest group: successfully implementing such a policy would yield over $1 billion annually (for these three cohorts of patients alone) and result in over 11,500 patients receiving at least another year of life. The cost savings would be evenly distributed between Part A and B services, suggesting that even for acute high-mortality conditions, there is more to improving efficiency than simply focusing on payments to hospitals and physicians.

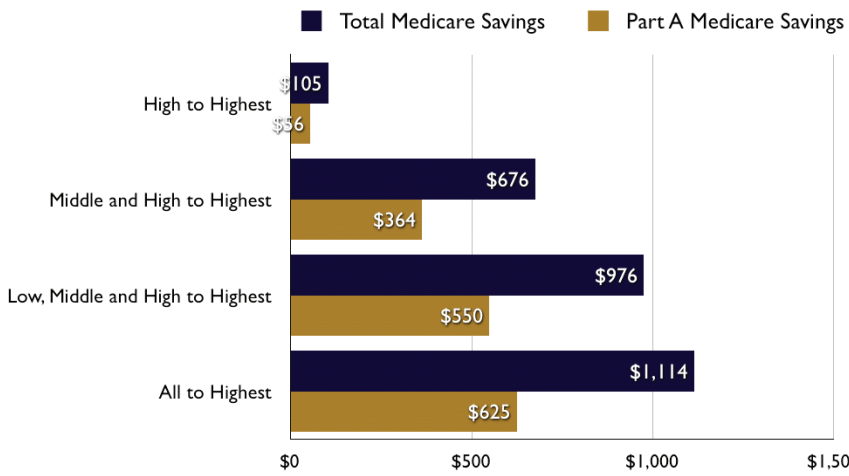

FIGURE 2-5 Potential for cost containment.

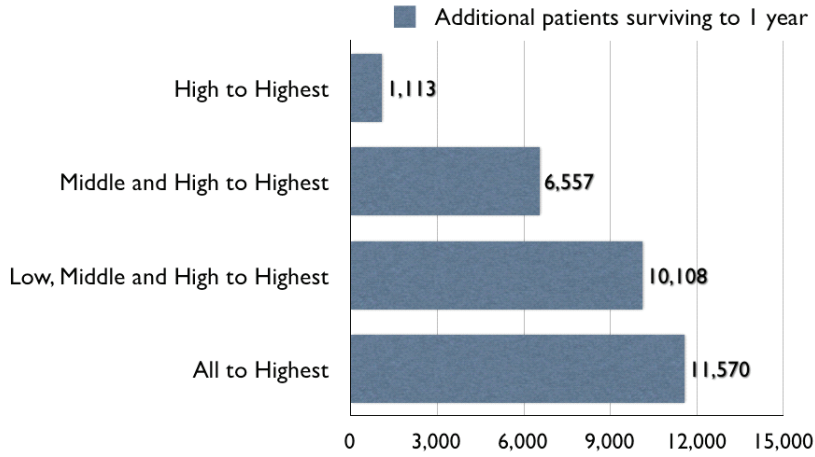

FIGURE 2-6 Potential for survival improvements.

These estimates constitute an 8 percent reduction in costs and an 8 percent reduction in mortality. Assuming that our willingness to pay for an additional life-year is $100,000, and each of these patients lived on average for 3 additional years, the survival gains alone would be worth $3.45 billion (11,500 × 3 × $100,000).

While not reported in the figures, it is also possible to ask how much of the variation in outcomes and costs is explained by HRR-level characteristics. For survival, we noted that about 75 percent of the hospital-level variation was present within HRRs, and that 50 percent of the cost variation persisted within HRRs. This suggests that policies that tried to improve the performance of providers within HRRs would be successful in realizing substantial savings to costs and mortality. These regional policies may be more palatable to providers.

Conclusion

Our analysis examined the association between 1-year survival and spending for three cohorts of Medicare patients who were admitted for acute myocardial infarction, hip fractures, and colorectal cancer. We find that even for high-mortality conditions such as heart attacks, hip fractures, and colorectal cancer, there is large hospital-level variation in outcomes (as measured by 1-year mortality) and spending (as measured by total Medicare Part A and B spending). Secondly, more intensive (and expensive) care does not result in better outcomes. Rather, as we illustrate, the relationship

between more spending and better outcomes is nil; at each level of spending there are providers who are able to deliver the exemplary care.

Whether the patterns that we note in this analysis (based on Medicare data), extend to the commercial population is not known. On the one hand, Baker and colleagues (2008) demonstrate that hospital-level resource use is similar between fee-for-service Medicare and the commercial program. This result is consistent with the "practice style" hypothesis where physicians use common decision rules to treat patients. On the other hand, there are a number of theoretical reasons to believe that Medicare's administratively set prices cause hospitals and physicians to offset pricing imperfections with increased use in the non-Medicare population. Providers' ability to offset the effects of Medicare's reimbursement policy vary with the competitiveness of local healthcare markets. We are unaware of any research that demonstrates the existence of this channel and are working on another project to evaluate its presence. For now, we assume that the common practice style hypothesis applies, and that the potential for spending and survival improvements extends to the non-Medicare population. We emphasize once again that our estimates of cost savings do not account for the costs of initiating performance improvements.

The key limitation of our analysis is our ability to risk-adjust adequately with Medicare claims data. In other work we have found that risk-adjustment for heart attack patients using chart data such as those that are available in the Cooperative Cardiovascular Project (CCP) resulted in a similar ranking of providers on mortality to those obtained from claims-level risk-adjustment. If this is a general result, then the relative distribution of mortality that we report may not be biased even if we may have understated illness severity in every hospital. More problematic for our analysis would be if the sickest patients received the most health care, which would generate a negative relationship between survival and spending. However, we do not see such a relationship in our analysis. It is also possible that we may have understated the savings as we ranked hospitals on the component of costs and mortality that was common to all three conditions. Because hospital performance is not tightly correlated across different conditions, had (some who are good for heart attack treatments may not be good at treating hip fractures) we done a separate analysis for each condition, we would have predicted greater savings.

Whether the observed correlation between spending and outcomes tips in one direction or the other may be less important than the fact that spending and quality are nearly independent of one another. This analysis, as well as earlier findings using process-based measures of quality, supports the view that (1) spending more does not seem to do much of anything, at least with our current quality measures, and (2) there is tremendous potential to both save money and save lives by moving the vast majority

of U.S. hospitals closer to the efficiency "frontier"—to the level of those hospitals able to provide high-quality care at lower costs. Finally, we also found that the efficiency with which providers deliver care is determined by more than the intensity with which patients are treated within a hospital; there is also large variation in the use of physician and outpatient services. It is instructive to consider these variations in the framework of Bentley and colleagues (2008). In this work, the authors construct a typology of waste: administrative waste, operative waste (duplication of services, inefficient processes, overly expensive inputs and errors), and clinical waste, which is health care whose marginal benefit is not larger than that of less costly alternatives. In our view, the distinction between operative and clinical waste is fuzzy; duplicate testing is operatively wasteful and offers no benefit over doing nothing. Bentley and colleagues view the "variations" literature as proving an example of clinical waste, and while we agree with that view, many features of clinical waste are also the consequence of fragmentation and operative waste.

Our finding that half of spending variation arises from the use of Part B services suggests that the greater use of bundled payments offer a way to restrain cost growth. In Chandra and Sabick (2009) we note that a substantial portion of cost growth comes from the greater use of services that are in the "gray areas" of medicine: specialist visits and greater use of diagnostic services such as CT/MRI imaging. Medical education and textbooks are largely silent on the right rate for these procedures, and while they are surely valuable in some patients, the scope for overuse is tremendous. The value of these procedures is also difficult to evaluate in a trial for they generate value on dimensions that are notoriously difficult to quantify, such as improved satisfaction or reduced anxiety. Bundled payments try to reduce the incentives to overuse care of uncertain value by combining reimbursements for inpatient, outpatient, and home health into a single payment. If bundled payments work (they did reasonably well with the introduction of the Medicare inpatient hospital prospective payment system, or PPS), we will realize fairly large one-time savings as hospitals figure out ways to cut waste in follow-up visits. But to fully realize the savings from bundled payments, bundled payments must be used over long periods of time; bundling payments for, say, the first 30 days of care assures that there will be a spike in use on day 31. Nor would relatively short bundles do anything about care provided in days 30-365 after acute care hospital admission, a large source of cost growth. The focus on bundling payments is a very different policy response than cutting payments to higher-spending providers. In other work we have argued that higher-spending providers have specialized in the type of care that they deliver and that simply cutting spending does not decrease the volume of care they provide, thereby doing little to reduce cost growth (Baicker and Chandra, 2004; Chandra and Staiger, 2007; Skinner et al., 2006).

While our analysis did not evaluate the specific policy levers that would improve survival and reduce spending, the scope for productivity improvements is large: the three conditions that we study would generate an annual savings of $1 billion to Medicare in direct cost savings. This may seem small, but if the result extends to other conditions and other populations, the savings would imply an 8 percent reduction in costs and mortality. Improvements to survival are not "scored" by the CBO, which is concerned with the long-term budget situation for the federal government. But that should not distract from the broader message that American health care is inefficient to the point that it is possible to save money *and* lives.

REGIONAL INSIGHTS AND U.S. HEALTH CARE SAVINGS

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The high and rising costs of U.S. health care limit equitable access to care and threaten the solvency of the U.S. economy (Orszag and Ellis, 2007). The sources of inefficiency in U.S. health care are many: high administrative and underwriting costs of health insurance, burdensome and complex payment and regulatory systems, and defensive medical practices driven by an onerous malpractice system.

At the same time, the marked geographic variations in spending and practice observed across U.S. hospital referral regions (HRRs) suggest that, even within the current administrative, payment, and legal systems, substantial savings might be possible. This paper applies the principles of benchmarking (Schoen et al., 2006; Weissman et al., 1999) to identify high-performing regions—and then estimates the potential savings that could be achieved in the Medicare program if all U.S. regions were able to achieve their level of performance.

Regional Variations in Spending and Quality

Spending Across Regions Differs Significantly

Two- to three-fold difference in spending have been widely and repeatedly documented since John Wennberg carried out his original small-area analyses of practice and spending in Vermont (CBO, 2008; Wennberg and Gittelsohn, 1973; Wennberg et al., 1987, 2002). While some of the differences in spending across regions can be attributed to differences in both individual health status and the prices paid for Medicare services, a number of later studies have controlled carefully for both of these factors and documented that twofold or greater differences in spending remain (CBO, 2008; Fisher et al., 2003a).

Yet Low Spending Areas Have Better Outcomes

The quality and outcomes of care achieved by low-spending U.S. regions also equal or exceed those of higher-spending regions. Studies examining the technical quality of care—for example, adherence to evidence-based practices such as the use of preventive services or proper inpatient treatment for patients with pneumonia, congestive heart failure, and heart attacks—have consistently found low-spending regions and states to provide better care (Baicker and Chandra, 2004; Fisher et al., 2003a, 2003b). Patients' reports of their experiences in ambulatory care are equal or better in low-spending regions (Fisher et al., 2003c), and hospitalized patients also rate their inpatient experiences more highly in low-spending regions. They are less likely to report problems with pain management, preparation for discharge, or whether hospital staff responded quickly (Wennberg et al., 2009). Physicians in low-spending regions are more likely than those in high-spending regions to report that their ability to provide high-quality care is better, and that they have the necessary continuity of care and quality of communication with other physicians required to deliver high-quality care (Sirovich and Fisher, 2006). Finally, health outcomes in lower-spending regions are equal to or better than those observed in high-spending regions; patients with myocardial infarction in slower-growth regions have survival rates that are as good or better than regions with rapid growth in spending (Fisher et al., 2003c; Skinner et al., 2006). Although there are clearly variations across health systems within regions (Yasaitis et al., 2009), the equal or better quality of low-spending regions suggests that these regions as a whole could provide reasonable benchmarks of performance for the U.S. healthcare system.

Spending Variation Driven by Discretionary Medical Services

Further evidence that points to the potential for substantial savings arises from studies of the content of care in different regions. Almost all of the differences in spending across regions can be explained by greater use of discretionary medical services. Following similar patients for several years after an initial hospitalization for a heart attack, hip fracture, or cancer, patients in higher-spending regions had higher hospitalization and readmission rates, more frequent physician visits, more frequent referrals to specialists, and greater use of diagnostic tests, minor procedures, and imaging services (Fisher et al., 2003a). The discretionary nature of these services was confirmed by a study that used clinical vignettes to study physician decision making in high- and low-spending regions (Sirovich et al., 2008). No differences were found across regions of differing spending levels in physicians' responses to questions where strong evidence supported a

specific treatment. But physicians in higher-spending regions were much more likely to intervene in "gray area" decisions, such as when to see a patient with well-controlled hypertension or refer a patient with heartburn to a gastroenterologist.

Estimating Potential Savings

To estimate the potential savings that could be achieved if all U.S. hospital referral regions could adopt the practice patterns of low-spending regions, we first categorized all U.S. regions according to a selected measure of cost performance that accounts for differences in both illness and price across regions. This allowed us to define our benchmarks. Then, we compared the use rates of specific services across U.S. regions sorted by this intensity measure, and estimated the savings if all U.S. regions achieved the proposed benchmarks. We ran these analyses for both specific healthcare services and for overall Medicare spending.

Prior research has indicated that, while there may be some differences in the relative prices paid by Medicare and private payers across U.S. regions, use rates for the under- and over-65 population are reasonably well correlated (Baker et al., 2008). The percentage reduction in use rates estimated using the benchmarks could thus provide at least some indication of the potential magnitude of savings in use of these services that could be achieved for the U.S. healthcare system overall. The data for the analysis were obtained from the *Dartmouth Atlas of Health Care* for 2005 and 2006 and were for Medicare beneficiaries over age 65, who were not enrolled in health management organizations (HMOs).

We used the End-of-Life Expenditure Index (EOL-EI) as our primary measure of the regional intensity of care provided to Medicare beneficiaries. The EOL-EI has been used in many prior studies examining intensity of treatment, quality of care, and comparative regional spending because it is independent of regional differences in illness and price and yet strongly predictive of differences in per capita spending (Fisher et al., 2003a; Sirovich and Fisher, 2006). The EOL-EI is calculated as the age-race-sex adjusted rate of price-standardized spending on hospital and physician services in an HRR for Medicare beneficiaries during their last 6 months of life. As this measure has been previously used in the literature, we can be relatively confident that the quality of care provided in the lowest-intensity (and thus lowest-spending) regions is equal or better to that provided in higher-spending regions.

All U.S. hospital referral regions were sorted according to the EOL-EI, with the benchmarks set at the lowest-intensity HRRs that included either 10 percent or 20 percent of the Medicare population overall. The two different percentages are required because in many benchmarking efforts,

the best performing 10 percent of providers has been used as the benchmark (Weissman et al., 1999). Where potential differences in case-mix or provider attributes may be important, the best performing 20 percent of regions or providers may be a more reasonable standard to apply (Schoen et al., 2006). The subsequent analyses estimate the savings that would be achieved with each of these benchmarks.

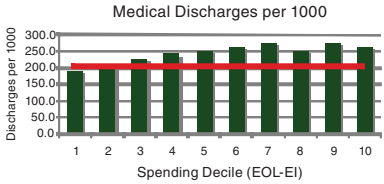
To estimate the potential savings that could be obtained if all U.S. regions achieved the performance observed in the lowest-intensity regions, we applied the use rate observed either in the best decile or the best quintile of U.S. regions to the Medicare population of all other U.S. regions and then determined how much use or spending within the other regions would have declined if the benchmark rate had prevailed. For the estimates of Medicare savings, we used total price-adjusted per capita spending in each HRR. This estimate removes any effect of regional differences in prices or policy payments (Medicare pays more to both physicians and hospitals in some regions to account for higher rents and salaries; similarly, Medicare makes additional policy-related payments for graduate medical education and for hospitals that provide care to low-income or uninsured populations).

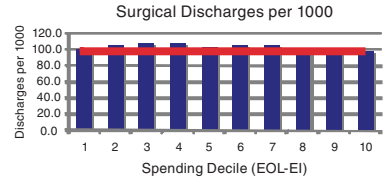
Decreasing Discretionary Service Use

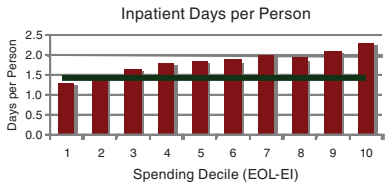
Figure 2-7 shows rates of hospital use in each decile of U.S. HRRs, sorted according to the overall intensity of care (EOL-EI). The rate of medical discharges across deciles ranges from a low of 192 per 1,000 in the best-performance decile to over 250 per 1,000 in each of the five highest deciles. As has been seen in other studies (Fisher et al., 2003a; Wennberg et al., 2002), surgical discharge rates are largely unrelated to overall per capita spending. Total inpatient days, however, are strongly related to spending, with inpatient days per person ranging from 1.3 to 2.3 across the deciles.

Figure 2-8 shows rates of use of selected physician services and how these vary across regions of differing intensity. The frequency of physician visits ranges by a factor of nearly two across the deciles (from 8.3 per person to 15.5 per person). Primary care physician visit rates are somewhat higher in high-intensity compared to low-intensity regions, but the frequency of visits to medical specialists is much higher in the higher-intensity regions (2.3 in the lowest-intensity decile to 6.6 in the highest-intensity decile).

These analyses suggest that there is in fact wide variation in the practice patterns of high-spending and low-spending regions, and that changes in use could drive cost savings. Table 2-1 summarizes the potential savings in use and Medicare spending that could be achieved if all U.S. regions adopted the practice patterns of the lowest-intensity quintile or decile of regions. Reductions in inpatient days range from 23.4 percent to 28.4 percent and reductions in physician visits range from 21.9 percent to 27.4 per-



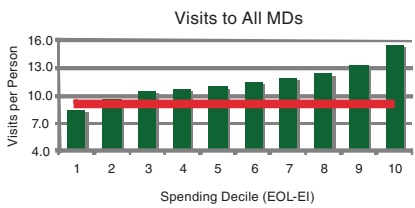


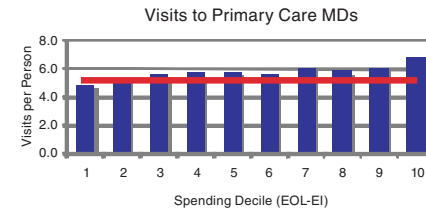


Age, sex, race, and price-adjusted Medicare spending

Medicare spending	Care intensity benchmark	
	Quintile	Decile
Highest	$11,705	$12,688
Lowest	$7,761	$7,538

FIGURE 2-7 Medicare use rates for hospital services across deciles of care intensity.
NOTE: Each vertical bar shows the rate of the specific service in U.S. hospital referral regions grouped according to increasing care intensity, measured by the EOL-EI. Age, sex, race, and price-adjusted per capita spending varied from $7,538 in the lowest-intensity decile (decile 1) to $12,688 in the highest-spending decile. The horizontal line is placed at the level of the benchmark for the highest-performing quintiles.





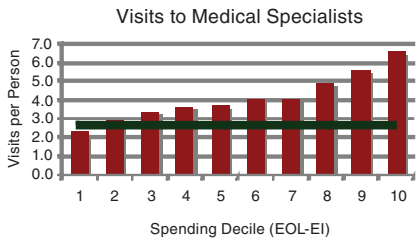


FIGURE 2-8 Medicare use rates for physician services across deciles of care intensity.
NOTE: Each vertical bar shows the rate of physician visits in U.S. hospital referral regions grouped according to increasing care intensity, measured by the EOL-EI.

TABLE 2-1 Potential Reductions in Overall Medicare Use Rates for Specific Services if All U.S. Regions Adopted the Practice Patterns of Best-Performing Quintile or Decile of Regions

	Care Intensity Benchmark	
	Best Quintile (%)	Best Decile (%)
Medical discharges	17.8	21.3
Inpatient days	23.4	28.4
Physician visits (overall)	21.9	27.4
Primary care visits	11.7	16.1
Medical specialist visits	37.2	44.1

cent. In each case, these suggest that reductions in use of nearly 30 percent would be possible. The potential reductions in medical specialist visits are substantially larger—with declines of over 40 percent possible if the best decile of performance is used as the standard.

Likewise, estimates of the potential dollar savings to Medicare if all regions could achieve best decile or best quintile levels of performance are shown in Table 2-2. Estimated savings are in the range of $50 billion per year: an 18 percent to 20 percent reduction in per capita spending under fee-for-service Medicare.

Opportunity for Reduction of Medicare Costs

Using regional benchmarks defined as the best quintiles or deciles of U.S. regions in overall intensity of care, we estimate that Medicare spending would be able to decline by 18 percent to 20 percent overall. Use rates for physician and hospital services, which were used to establish the benchmarks, would decline by between 22 percent and 28 percent, depending upon the benchmark chosen.

TABLE 2-2 Potential Reductions in Overall Medicare Use Rates for Specific Services if All U.S. Regions Adopted the Practice Patterns of Best Performing Quintile or Decile of Regions, Based on Stratification Using the End-of-Life Expenditure Index

	Care Intensity Benchmark	
	Best Quintile	Best Decile
Percent reduction in spending, 2006	17.6%	19.8%
Savings to Medicare, 2006	$47.8 billion	$53.9 billion

Several limitations of the current analysis deserve consideration. First, the use of regional benchmarks ignores the substantial variation in cost and quality observed within regions. The analysis does not quantify the potential savings from improving the administrative efficiency of U.S. health care or from reducing the practice of defensive medicine through malpractice reforms. And the analysis does not account for potential savings that could be achieved through reforms of the payment system or greater integration and coordination of care. Each of these considerations would argue that the estimates of potential savings are relatively conservative.

A second serious limitation is inherent in the method of benchmarking; the method says nothing about whether it is possible to achieve real savings within the context of the current U.S. delivery and payment system. It is unlikely, for example, that simple cuts in the prices paid to physicians and hospitals or cuts in overall payments to higher-spending regions would have anything but a harmful and disruptive effect on the current care of Medicare beneficiaries in affected regions (Garber and Skinner, 2008). Efforts to foster the integration of care and align payment systems to support improved care at lower cost are intended to directly address concerns about how to support the transition to a lower-cost, higher-quality delivery system (Fisher et al., 2009b).

Recent findings that highlight the dramatic variations in spending growth across U.S. regions are therefore relevant. While average per capita spending growth in Medicare, adjusted for inflation, was 3.5 percent between 1992 and 2006, some regions grew at rates under 2.5 percent, while others grew at rates above 5 percent (Fisher et al., 2009a). These variations in growth rates suggest that slower growth may well be possible within the context of the current delivery system. And if the United States were able to reduce spending growth by 1 percent per year over the next 15 years, Medicare would be about $1.4 trillion better off than under current projections (Fisher et al., 2009a). This suggests not only that a gradual transition toward a more frugal healthcare system is possible but that it would make a substantial difference.

OPPORTUNITIES TO REDUCE UNWARRANTED CARE DIFFERENCES

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Health Dialog

Patients make a surprisingly large number of medical decisions each year: 82 percent of adults over the age of 40 have made a decision about having a surgery or screening test done or taking a new medication in the past 2 years (Dartmouth Medical School, 2005). Roughly one-third of all

medical decisions are about surgeries, tests, treatments, and procedures that have two or more treatment options (Dartmouth Medical School, 2005). These "preference-sensitive" care decisions drive about one-fourth of all healthcare expenditures, as patients are often encouraged to have their physicians drive these decisions rather than sharing more actively in the decision-making process. As a result, patients are frequently undergoing more expensive treatments that they would not have chosen under a shared decision-making model.

The choice of treatment should be decided upon by the fully informed patient in partnership with a physician, and this can be successfully accomplished through shared decision-making programs. Not only do these programs benefit patients by affording them the services and treatment most responsive to their needs, but they yield the broader benefit of driving costs down as patients often choose more conservative (and less expensive) treatment after carefully weighing the trade-offs.

Preference-Sensitive Care

Preference-sensitive care addresses conditions where (1) treatment options exist, (2) the treatment options involve significant trade-offs in quality or quantity of life, and (3) the choice of treatment should be based on the preferences of the fully informed patient in partnership with their physician (O'Connor et al., 2004).

These conditions include a herniated lumbar disc, osteoarthritis of the hip and knee, chronic stable angina, prostate cancer, benign prostatic hypertrophy, early-stage breast cancer, and others. Because the current state of health care is for patients to rely on physicians to drive the treatment decisions without much of their input—delegated decision making—excess use of expensive treatment options has been high. Patients assume their physicians are able to adequately assess their values and preferences when recommending a treatment plan. Delegated decision making is confounded by geographic variation (practice pattern variation) and by fee-for-service reimbursement. Thirty years of research from Dartmouth has affirmed that a considerable portion of this variation cannot be explained by illness, medical need, patient preference, or the dictates of evidence-based medicine—these variations are *unwarranted*.

These variations are driven in part by a system-wide failure to adequately inform patients of their treatment options. Options have varied risks and benefits that only the patient can experience. Patients must take an active role in making preference-sensitive decisions to ensure that their personal values and preferences are reflected in the ultimate treatment choice. This lack of information leads to lack of patient engagement. Failing to adequately engage patients in informed choice leads to interventions

(and costs) that fully informed patients would choose not to have, which can, in turn, reduce unwarranted variation in the delivery of care, as discussed next.

Shared Decision Making

Shared decision making is a process that aims to foster collaboration between patients and their providers to arrive at providing patients with the care they want (Greenfield, 2001). The process involves a patient using a decision aid that then leads to a constructive discussion between the patient and his or her healthcare provider. The decision aid provides unbiased estimates of the varied risks and benefits for each treatment option. Ideally, it also allows the patients to vicariously "experience" the likely outcomes by seeing through the eyes of other patients who have faced the same decision. The desired outcome of the shared decision-making process is a treatment decision that most closely reflects a fully informed patient's values and preferences. In the shared decision-making process, both the provider and the patient have important contributions to the dialogue. The provider can augment the decision aid by contributing expert medical knowledge of available treatment options and the risks, benefits, and areas of scientific uncertainty associated with each, and by exploring the patient's understanding of the options, risks, and benefits. The patient contributes personal expertise of his or her tolerance for risk, lifestyle, and values. Finally, the physician can also assess the concordance between the patients expressed choices and preferences. The end result is a mutually agreeable course of action for treatment.

Evidence of Impact

The most comprehensive assessment of the evidence and results of decision aids and shared decision making is the Cochrane Collaboration's review of decision aids (O'Connor et al., 1999, 2004). The review is a systematic assessment of the peer-reviewed literature on decision aids for screening tests and treatment decisions. They identified eight randomized trials comparing the use of decision aids for patients facing decisions for conditions where surgical and nonsurgical options existed. These varied from back pain with sciatica, to chronic stable angina, to benign conditions of the uterus. Individuals using decision aids were less likely to choose surgical intervention compared to those who were not (summary measure relative risk = 0.8 [95 percent confidence interval 0.60-0.94]).

The finding that patients exposed to decision aids were more likely to choose conservative treatment was consistent across conditions and geographies (studies were done in the United Kingdom, United States, and

Canada). Although these studies showed a reduction in surgical interventions, they were of insufficient power to assess the impact of decision aids and shared decision making on the overall costs of care. Semi-quantitative studies have been presented in the *Dartmouth Atlas* (O'Connor et al., 2004) that suggest the costs of care could be approximately 10 to 20 percent lower for the cohorts in the conservative treatment arm. A recent article in the *New York Times* lays out a similar argument for prostate cancer (Leonhardt, 2009).

One large randomized population-based trial of the effect of decision aids and health coaching on total healthcare expenditures has been presented in abstract form (Wennberg, 2007). This study of 180,000 individuals compared two levels of engagement for patients with chronic illness and/or preference-sensitive conditions. In the broader engagement group, health coaching combined with decision aids reduced total population costs by 3.6 percent, with 40 percent (approximately 1.5 percent of total population costs) arising from the preference-sensitive cohorts. This savings were primarily accounted for by an 11.3 percent reduction in admissions for preference-sensitive surgeries.

Conclusion

To summarize the potential reduction in costs through the broad implementation of decision aids and shared decision making we make the following assumptions:

- Preference-sensitive care accounts for approximately 25 percent of all healthcare expenditures.
- One randomized controlled trial powered to assess cost implications found a reduction of 1 to 1.5 percent in total population costs through patient intervention alone for preference-sensitive care.
- The Cochrane Collaboration found a relative reduction in use of invasive treatment of 20 percent when provided to ideal candidates.
- Benefit and provider reimbursements models to encourage shared decision making *should* increase the uptake of the intervention.

In light of the literature and in the context of these assumptions, we conclude that *if* systematically applied shared decision making *did* have a substantial impact on total U.S. healthcare expenditures, then the following would occur:

- Systematic use of shared decision making directly with patients could be expected to reduce net health costs by 1 to 1.5 percent.

- Systematic use of decision aids and coaching in a provider setting could be expected to reduce net health costs by 4 to 5 percent.
- Given prior research on reimbursement and copays, adding provider reimbursement and benefit design could be expected to result in a larger than 5 percent net healthcare cost reduction.

Several caveats must be considered. First, no healthcare economy has systematically applied shared decision making. Second, no provider intervention to date has been of sufficient scale to assess the financial impact of provider-based shared decision making on total expenditures. Finally, benefit designs and reimbursement models aimed at increasing the use of shared decision making have not been tested.

Despite these caveats, shared decision making is a powerful tool in patient care. For shared decision making to have a significant impact on the healthcare delivery system, patient choice must be established as the standard of care. It should be ethically required and could be used as a way to replace informed consent requirements. Changes in benefit structures to provide incentives for participation in shared decision making would help programs gain traction. It could also be taken a step further with cost sharing for more expensive treatments. Perhaps the most important element to any emerging effort is the way in which the services are reimbursed. We need to pay for achieving high-quality patient decision making and follow up with supportive infrastructures that systematically deliver shared decision making.

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3

Inefficiently Delivered Services

INTRODUCTION

As the debate on healthcare reform continues to focus on the financial impacts of rising expenditures, the discussion has simultaneously included analyses of cost-control methods (Pear, 2009). Specific attention has been drawn to the potential for care management, clinical service reengineering, and administrative simplification to increase the efficiency of care delivery (The Commonwealth Fund, 2009; UnitedHealth Group, 2009). In this session, speakers continue to use the lens of efficiency to focus the discussion of opportunities to improve quality of care and decreased costs. Whereas in the previous session, the focus was on how to maintain quality by eliminating unnecessary services, the presenters now focus on the savings opportunities available if appropriate services were provided in the most efficient ways possible, drawing clear connections to the problems resulting from underlying system fragmentation, and perverse economic and practice incentives.

In 1999, the Institute of Medicine (IOM) landmark study *To Err Is Human* (IOM, 2000) pushed medical safety to the forefront of the American consciousness. Building on the study's report that at least 44,000 people, and perhaps as many as 98,000 people, die in hospitals each year as a result of medical errors that could have been prevented, Ashish Jha from Harvard University discusses reducing the prevalence of adverse events and duplication in testing in the inpatient setting. Calculating that over 3 million preventable adverse events occur in hospitals annually, with over half of these attributable to hospital-acquired infections and adverse drug events,

he estimates that eliminating clearly preventable adverse events and redundant tests could save hospitals a potential $25 billion, or 8.2 percent of all inpatient costs. In describing the limitations of his analysis, he highlights in particular that the estimates were based on data that were several years old, and therefore may not reflect current costs, and that data were not available for all patient populations (e.g., women admitted to the hospital for labor and delivery). Jha concludes by suggesting that improving quality of care while saving costs will require additional efforts to systematically measure and publicly report adverse event rates in U.S. hospitals.

Gary S. Kaplan's discussion of the recent work at Virginia Mason Medical Center (VMMC) demonstrates that coordinated systems can dramatically cut costs for high-cost conditions, such as the treatment of back pain. However, coordinated systems can also address other quality issues, such as patient satisfaction with services. By focusing on back pain, migraines, and breast nodules and by applying a systems-based healthcare model to these common, high-cost conditions, Kaplan describes how healthcare spending at VMMC fell between 5 and 9 percent relative to industry peers. Furthermore, waiting time for appointments decreased from 1 month to less than 2 days, patient satisfaction grew to 96 percent of maximum, and 95 percent of patients suffered no loss of work time. Kaplan attributes these savings and improved outcomes to reductions in unnecessary imaging and provider visits, as well as eliminating the overuse of physician providers in favor of nurse practitioners when appropriate, and the often concomitant poor coordination of care. Mapping this analysis to the national healthcare landscape, he suggests that more efficient use of mid-level practitioners for common conditions could reduce national expenditures by $13 billion annually. In closing, he outlines key factors to affordable health care, including: accountability; efficient use of labor; use of effective care pathways for high-cost conditions; alignment of reimbursement with value; and electronic health records embedded with evidence-based decision rules.

Framing clinical and administrative waste in terms of intra- and interorganizational contexts, William F. Jessee of the Medical Group Management Association focuses on inefficiencies within medical practices. He describes considerable unexplained variation among medical practices in the cost of producing care, and identifies almost $26 billion in possible cost reductions from increasing the efficiency of delivering care in physician offices. While Jessee suggests that this estimate is provocative, he also cautions that it is preliminary in nature, as it was based on limited cross-sectional survey data. Arnold Milstein of Pacific Business Group on Health continues this discussion by addressing inefficiencies in hospitals. Referencing the analyses of the Medicare Payment Advisory Commission, he explains that if all hospitals replicated the attainment of the top 12 percent in terms of

cost per case and quality, their 30-day mortality rates would decline by about 18 percent and inpatient costs by 12 percent, yielding 2 percent savings in national health expenditures, all without lowering quality of care. He further identifies technical assistance in the form of standardized care pathways, other clinical reengineering processes, and procompetitive policies as the most promising avenues of intervention.

Cost-saving strategies need to focus not only on inefficiencies, specifically within hospitals and provider offices, but also on those inefficiencies generated by poorly coordinated service systems. Mary Kay Owens concentrates on the cost of care fragmentation, an increasingly common problem given the aging population and increasing numbers of individuals with multiple chronic conditions (Martini et al., 2007; Meara et al., 2004; Wolff et al., 2002). She estimates a potential opportunity for $240 billion in savings exists from improved care coordination through such initiatives as disease management programs, patient education programs, and the development of new provider delivery and payment models. She additionally emphasizes that these estimates do not account for the population of uninsured nor do they factor in future demographic trends in chronic disease or a growing elderly population.

COSTS OF ERRORS AND INEFFICIENCY IN HOSPITALS

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Ever since the publication of *To Err Is Human*, there has been considerable interest in improving patient safety, but there is very little evidence that safety has improved. Prior estimates of the costs of adverse events have been limited to studies at individual institutions or national extrapolations from the data of a small number of institutions. *To Err Is Human* suggested that preventable medical injuries were responsible for between $17 and $28 billion in direct medical costs (IOM, 2000). These estimates were based on data that were from two epidemiologic studies that were conducted nearly 2 decades ago. Other estimates are derived from administrative data, which are well known for undercounting many types of adverse events, such as healthcare-associated infections and adverse drug events. One such study used National Inpatient Sample (NIS) data and patient-safety indicators (PSIs) to estimate the cost of 18 types of adverse medical events at $4.6 billion (Zhan and Miller, 2003). However, given that the coding of PSIs is inconsistent, the inaccurate measurement of the actual occurrence of adverse events commonly occurs.

These studies give us a significant starting point, but our current understanding of the impact of adverse medical events is neither current nor

granular enough to know where and how to focus our activities in these areas.

Calculation of National Estimates

A *Health Affairs* publication presents a detailed analysis of how reducing adverse medical events and eliminating redundant tests could contribute to a dramatic reduction in hospital spending (Jha et al., 2009). Since there was no precise, current data available for the prevalence of adverse events, we used a combination of literature review, consultation with experts, and review both of unsafe care lists compiled by patient safety advocate groups and of major epidemiologic studies. We used a working definition of *adverse event* that included injuries from medical care not caused by the underlying condition (Jha et al., 2009). We further categorized the adverse events as either preventable or nonpreventable, based on the provision of error-free care: if a patient experienced an adverse event despite having received error-free care, that adverse event was considered to be nonpreventable. We also examined the prevalence of redundant laboratory and radiologic tests.

Based on our results from the literature review, we selected 10 adverse events commonly described in over 3,000 studies: adverse drug events, falls, pressure ulcers, pneumothorax, thromboembolic disease, surgical site infection, catheter-related blood stream infection, urinary tract infection, pneumonia, and hematoma. Using these studies as a foundation and looking specifically at these 10 adverse events, we were able to use an iterative methodology to estimate the at-risk population, prevalence of these events, and the associated impact of those prevalences in terms of dollars expended and redundant or unnecessary services provided.[1]

[1]We used nationally representative data from the 2004 National Inpatient Sample (NIS) to determine the population that was at risk for suffering each of these adverse events. To estimate the number of patients that actually experience an adverse event, we multiplied the number of at-risk patients by the incidence among the at-risk population (Jha et al., 2009). We used a range of incidences to account for the variation observed in the literature. We then multiplied that figure by the fraction of events that is considered preventable, as determined by the literature and by quality improvement studies, to calculate the number of preventable adverse events for each category (Table 3-1). To determine the potential savings associated with the reduction or elimination of an adverse event, we considered only the direct medical costs associated with that adverse event and did not factor in incidental costs, such as the patient's lost wages. After inflating all costs to constant 2004 dollars with the Producer Price Index (PPI), we calculated potential savings based on estimates found in our literature review. Because there were often multiple values cited for these savings, we used the midpoint of the ranges in our calculations. We subsequently built Monte Carlo simulation models, and obtained almost identical results to the midpoint calculations. We therefore used the Monte Carlo results for our analysis in the manuscript. To determine the cost of completely eliminating an

Potential Savings Nationally

In 2004, patients who received care in U.S. hospitals experienced approximately 5.7 million adverse events (Table 3-1). The majority of these adverse events were adverse drug events (2.2 million events) and hospital-acquired infections (1.7 million events). Of these 3.9 million events, 46 percent were preventable adverse events (389,000 adverse drug events and 1.4 million hospital-acquired infections). Avoidable costs were those associated with adverse events that were clearly preventable based on currently available approaches, while total costs included the financial impact of all adverse events. Adverse drug events cost the system an avoidable $3.8 billion (95 percent confidence interval [CI], $3.1-$4.6 billion) in 2004 (Table 3-2), and, if eliminated entirely, could result in a savings of $8.8 billion (95 percent CI, $7.4-$10.2 billion).

The sum of all categories of preventable adverse events represents an avoidable cost to the system of $16.6 billion (95 percent CI, $12.9-$21.2 billion) (Jha et al., 2009). If redundant tests are added to this figure, the avoidable costs are $24.8 billion (95 percent CI, $20.4-$30.7 billion), or 8.2 percent of all inpatient costs (Table 3-2). Were the errors and redundant tests to be eliminated entirely, the figure jumps to $40.5 billion (95 percent CI, $31.9-$50.5 billion), or 13.5 percent of inpatient costs (Table 3-2). A breakdown of the percentage of cost savings by adverse event is shown in Figure 3-1.

The prevalence of these adverse events also appears to be correlated with other factors. We examined the prevalence of adverse events and redundant tests in various hospital settings: by location (urban vs. rural), by size, and by teaching status—and found, for example, that patients in teaching hospitals were most likely to experience adverse events. Reforms in these teaching hospitals could account for $11 billion or 45 percent of the potential savings discussed here (Jha et al., 2009).

Primary Caveats and Assumptions

Despite best efforts, there were limitations to this study. We used Monte Carlo simulations to account for variation in the data and to compensate

adverse event, we multiplied the number of occurrences of that event by the cost of each event (Jha et al., 2009). We used a similar approach for redundant tests. We identified the rates of redundant laboratory and radiology tests from our comprehensive literature review. While there are no standard definitions for classifying a test as redundant, this term is often ascribed to the proportion of ordered tests that are cancelled by clinicians when they are made aware of prior results of that test. Therefore the determination of the frequency of redundant tests was made by the ordering clinicians themselves and not by external sources. Given that redundant tests could be completely eliminated, we determined that the associated savings would simply be the cost of all of the tests that were ordered unnecessarily.

TABLE 3-1 Estimates of Total Adverse Events and Number of Preventable Adverse Events

	Estimated Number of Total Adverse Events (thousands)	Estimated Number of Preventable Adverse Events (thousands)
Thromboembolic disease	828	511
Hospital-acquired infections	1,725	1,449
Adverse drug events	2,169	589
Decubitus ulcers	226	184
Other adverse events	783	290
Total adverse events	5,731	3,023

for some of the weaknesses in the data from our review. Even so, some of the study data were several years old, and therefore our estimates may not be current. It is likely that, given that the hospitalized patient population has become sicker, we may have underestimated the rates of adverse events and their associated costs.

There were also important patient populations for whom we could not estimate the frequency or costs of adverse events. For example, we found no reliable estimates for women admitted to the hospital for labor and delivery or for pediatric patients (except for adverse drug events). Again, the omission of these hospitalizations likely led to an undercount of the number of adverse events and their associated costs (Jha et al., 2009).

TABLE 3-2 Avoidable and Total Costs and the Percentage of Inpatient Costs They Represent

	Avoidable Costs in Millions* (95% CI)	Percent of Inpatient Costs	Total Costs in Millions* (95% CI)	Percent of Inpatient Costs
Thromboembolic disease	$3,090 ($1,979-$4,466)	1.0	$5,041 ($3,444-$6,966)	1.7
Hospital-acquired infections	$5,797 ($3,773-$8,198)	1.9	$8,912 ($5,833-$12,515)	3.0
Adverse drug events	$3,823 ($3,067-$4,626)	1.3	$8,840 ($7,442-$10,181)	2.9
Decubitus ulcers	$748 ($256-$1,332)	0.3	$913 ($343-$1,595)	0.3
Other adverse events	$3,165 ($526-$7,884)	1.1	$8,569 ($1,905-$18,192)	2.7
Redundant labs and radiology tests	$8,229 ($5,015-$11,829)	2.7	$8,229 ($5,015-$11,829)	2.7
Total potential savings	$24,848 ($20,386-$30,673)	8.2	$40,503 ($31,929-$50,464)	13.5

*Costs in 2004 dollars.

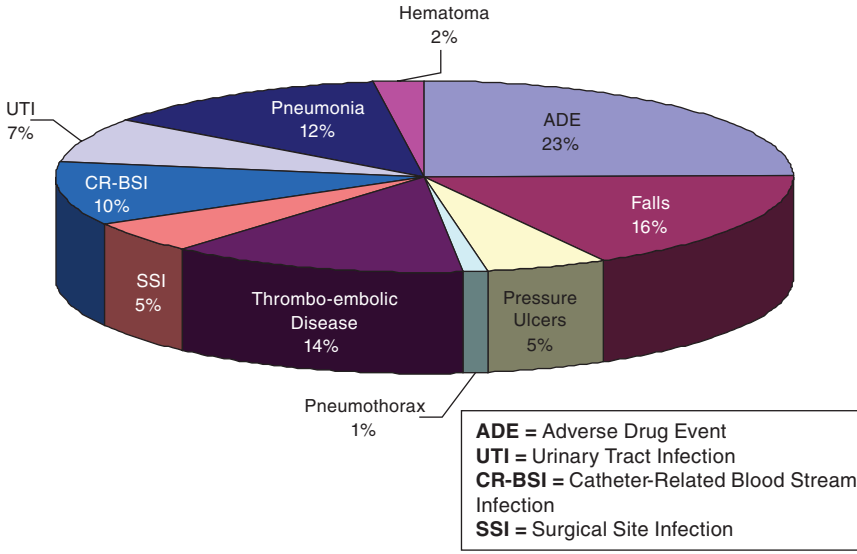

FIGURE 3-1 Breakdown of potential national savings by type of adverse event. SOURCE: Copyrighted and published by Project Hope/Health Affairs. Jha, A. K., D. C. Chan, A. B. Ridgway, C. Franz, and D. W. Bates. 2009. Improving safety and eliminating redundant tests: Cutting costs in U.S. Hospitals. *Health Aff (Millwood)* 28(5):1475-1484.

Our estimates represent only the direct costs associated with the care provided in hospitals. They do not account for additional sources of savings, such as the lost productivity and wages of individuals affected by poor medical care. So, in all of these cases, the limitations of this study are likely to cause us to *understate* the costs and therefore potential savings from an intervention aimed at preventing adverse events.

Lastly, and quite significant for public policy, we chose not to examine what kind of financial impact hospitals might face in implementing solutions to decrease adverse events and redundant tests. Yet, the cost of such interventions and its relationship to the potential savings of eliminating adverse care will be important considerations for policy makers who wish to target these sources of potential cost savings.

Thoughts About Next Steps

Eliminating clearly preventable adverse events and redundant tests could save hospitals a potential $24.8 billion (2004 dollars), or 8.2 percent

of all inpatient costs. Although current efforts by the Centers for Medicare & Medicaid Services (CMS) and others around the "no-pay" rules are meant to begin to capture some of these savings, most of the early data from other similar efforts suggest that the rules are unlikely to have a major impact. More salient will be efforts to systematically measure and publicly report adverse event rates in U.S. hospitals, which will force hospitals to examine their own processes and, as we have seen with public reporting efforts elsewhere, make concerted efforts to improve care. Such a strategy will improve patient well-being while simultaneously enabling the healthcare system to save billions of dollars.

COSTS FROM INEFFICIENT USE OF CAREGIVERS

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President Obama's Council of Economic Advisors estimates that 30 percent of U.S. healthcare expenditures do not contribute to positive healthcare outcomes (Romer, 2009). Providing care for all Americans while reducing per capita spending requires improving the efficiency of the current delivery system. Because most of the cost of producing health care relates to the cost of labor, the inefficient or unnecessary use of healthcare workers is a major avoidable expense for providers that is passed on to purchasers. Identifying, quantifying, and reducing healthcare encounters that are inefficient or unnecessary offers immense opportunity for savings.

For example, one retrospective study of national survey records (Mehrotra et al., 2007) indicated that 8 percent of ambulatory care visits were for preventive health examinations at an annual cost of $7.8 billion. Most preventative care occurred in conjunction with other visits, however, and 75 percent of patients had been seen by providers for other reasons within the previous year. It is likely that a greater proportion of preventive care services could be delivered in an equally effective but more efficient manner.

At VMMC, we have directly measured cost reductions from decreasing non-value-added healthcare encounters and projected the savings to a national level.

A Collaborative Approach to Enhancing Efficiency and Quality of Care

In 2002, VMMC began removing costly waste in healthcare delivery by applying the principles of the Toyota Production System (Bush, 2007; Bohmer and Ferlins, 2005). This method uses standardized best practice reinforced by reliable systems to reduce costly individual variation. Quality and timeliness become system attributes, ensuring consistent, high-value performance from each healthcare provider. In 2004, VMMC expanded this

work by engaging employers and health plan executives in "Marketplace Collaboratives" to identify and reward value in the delivery of health care (Fuhrmans, 2007; Pham et al., 2007). These groups approached the issue of efficiency in healthcare delivery by doing the following:

1. Assigning priority to prevalent and costly medical conditions based on claims data of employers. Three such conditions included back pain, headache, and breast conditions.
2. Defining measurable value from the customer's perspective with five quality indicators:
   a. Same-day access to care,
   b. Rapid return to function,
   c. Prospectively defined, value-added, evidence-based care pathways,
   d. 100 percent patient satisfaction, and
   e. Reduced cost for both purchasers and providers.
3. Applying a general model of care delivery that eliminates both non-value-added components and waits and delays, meets quality specifications, and reduces costs.

Collaboratives produced standardized pathways that featured rapid access to evidence-based care, aligning skill and training of providers with appropriate clinical tasks.

As collaborative teams improved efficiency, we quantified waste eliminated from the preexisting system. We measured reduced use by direct observation of clinical operations during process improvement, including the number of MRI procedures. CareConnections measured physical therapy use and work loss for back pain. VMMC's finance section provided data for 2009 on reimbursement and VMMC's cost of producing care.

Reduction of Unnecessary Health Encounters

Assuming our costs and reimbursement rates are generally applicable, the savings we identified would generate savings in the United States of over $22 billion per year while improving speed of access, quality of care, and capacity to care for more patients. The first category of major savings realized by the collaboratives was in the area of reducing unnecessary visits and services.

Fewer Unnecessary Office Visits

Outpatient visits were reduced by using an evidence-based scheduling tool that matched a patient's condition with an appointment that integrated evaluation, education, and therapy into a single same-day visit. In the back

pain pathway, 96 percent of patients returned to work after an initial appointment with a physical therapist and a physician. For those requiring additional physical therapy, return to function was accomplished with an average of 4.4 visits compared to 8.8 visits for marketplace peers. In the breast value stream, care was completed in a single same-day visit for the 89 percent of women who do not require biopsy. For patients with uncomplicated migraines, one same-day visit was needed for evaluation and treatment for most patients. Our model eliminated at least 50 percent of office visits for these conditions, including "new visits" to multiple providers.

Applying VMMC's experience to the national level, reduction of unnecessary office visits related to such common conditions as back pain, headache, and breast nodules can generate savings of up to $5.1 billion annually (Table 3-3).[2]

Less Unnecessary Imaging

Unnecessary visits for imaging represented another opportunity to reduce non-value-added care. We installed a system within the process flow of scheduling for imaging that required the provider to designate one of a list of evidence-based indications to complete the order. Prior to installing such systems for back pain and migraine, VMMC performed 17,128 MRI studies per year of which 1,886 (11 percent) were lumbosacral spine images and 1,026 (5.9 percent) were brain images.

When such evidence-based decision rules were embedded in the sched-

[2] Claims data from over 7,000 persons receiving health care financed by VMMC indicated that back pain, headache, and benign breast conditions comprise 8.8 percent of medical visits (Medical claims data for VMMC employees; reporting period 1/1/08-6/30/08 with 47,093 episodes of care during this time period). For the U.S. population there were 1.1 billion ambulatory care visits in 2006 (Schappert and Rechtsteiner, 2008). If back pain, headache, and benign breast nodules comprise 8.8 percent of total U.S. outpatient visits, these conditions would account for 96.8 million visits per year. We believe that at least 50 percent of outpatient visits for these three conditions, or 48.4 million visits per year, could be eliminated by using an efficient care model.

In terms of savings, of the 1.1 billion U.S. outpatient visits per year, 23 percent of patients are aged 65 or older (CMS reimbursement age range) and 59 percent are aged 15-64 (commercial reimbursement age range). We assumed that the 48.4 million non-value-added visits per year were distributed in this proportion. If visits for the CMS group were paid at a $69 average reimbursement rate (assuming 50 percent "new patient" charge codes 99203 and 50 percent "return visit" charge codes 99213), savings would be $0.77 billion per year (48.4 million × 0.23 × $69). If 59 percent of visits were paid at the current commercial rate of $152 (assuming 50 percent 99213 charge codes and 50 percent 99203 charge codes), savings would be $4.3 billion per year (48.4 million × 0.59 × $152) and the total for both age groups would be $5.1 billion per year. Differences in contracted commercial reimbursement, proportion of "new" and "return" visits, and major differences in CMS, commercial, and uninsured patient populations could affect this estimation.

TABLE 3-3 Cost Savings from Reductions in Unnecessary Office Visits*

VMMC rate of reduction for unnecessary office visits	50%	
Total U.S. outpatient visits	96.8 million	
Potential reduction in number U.S. office visits	48.4 million	
	Medicare Health Insurance	Commercial Health Insurance
Mean reimbursement rate per visit	$69	$152
Potential savings in dollars	$0.77 billion	$4.3 billion

NOTE: VMMC = Virginia Mason Medical Center.

*Limited to outpatients visits for back pain, headache, and benign breast conditions.

uling process, MRI volumes decreased 31 percent for back pain and 41 percent for headache at a time when patient volumes for these conditions were increasing (Table 3-4).[3]

If 30 percent of all MRI studies in the nation did not add value and could be avoided, the same type of evidence-based process successful at VMMC could realize savings of up to $6.5 billion per year. Although we have no direct data to confirm the projection of 30 percent unnecessary imaging to all MRI studies, it is our opinion that our sample likely reflects general practice.

[3]The American College of Radiology estimates that 26 million MRI examinations were performed in the United States in 2007, of which 9 million were performed on CMS patients (American College of Radiology, n.d.). We assumed the remaining 17 million examinations were performed on patients with employer-based health plan financing. To calculate savings we used average cost to CMS at $500 per MRI and average cost to employers at $1,000 per MRI. Looking more specifically at the VMMC experience, lumbosacral MRI studies constitute 11 percent of all MRI images performed. If in the general population 11 percent of MRIs were lumbosacral images, we would project 990,000 (9 million × .11) images for patients with CMS funding and 1,870,000 (17 million × .11) images for patients with commercial funding. A 31 percent reduction would be 306,900 images for CMS and 579,700 images for commercial populations. At a cost of $500 to CMS and $1,000 to commercial purchasers, annual savings for lumbosacral MRI imaging would be $153 million per year for CMS and $580 million per year for commercial purchasers for a total of $733 million per year. In like manner for MRI studies of the brain, 5.9 percent of 9 million and 17 million would be 0.53 million CMS-funded and 1.0 million commercially funded images, respectively. A 41 percent reduction would be 217,710 and 411,230 images, respectively, with savings of $109 million and $411 million for CMS and commercial patients for a total of $520 million per year. Assuming 30 percent of *all* 9 million MRI studies on CMS patients and 17 million studies on commercial patients did not add value and could be avoided, this would be 2.7 million MRI studies in CMS patients and 5.1 million studies in non-CMS patients per year. At the above reimbursement rates CMS savings would be $1.4 billion and commercial savings $5.1 billion per year for a total of $6.5 billion per year.

TABLE 3-4 Cost Savings from Reductions in Unnecessary Imaging

VMMC rate of reduction for unnecessary lumbosacral spine imaging	31%
VMMC rate of reduction for unnecessary brain imaging	41%

	Medicare Health Insurance	Commercial Health Insurance
Total U.S. MRI examinations performed	9M	17M
Estimated total for lumbosacral imaging	0.99M	1.87M
Estimated total for brain imaging	0.53M	1.0M
Potential reduction in number of U.S. imaging examinations	2.7M	5.1M
Reduction in number of lumbosacral examinations	0.31M	0.58M
Reduction in number of brain imaging examinations	0.22M	0.41M
Reimbursement rate per visit	$500	$1000
Potential savings in dollars	$1.4B	$5.1B
From reduction in lumbosacral examinations	$153M	$580M
From reduction in brain imaging examinations	$109M	$411M

NOTE: B = billion; M = million; MRI = magnetic resonance imaging; VMMC = Virginia Mason Medical Center.

Improving Efficiency of Office Visits

Applying the reforms detailed above to reduce non-value-added office visits and extending a similar approach to additional prevalent, high-cost conditions such as shoulder, knee, and hip pain, routine exams, and irritable bowel syndrome, we believe a minimum of 5 percent of office visits could be eliminated. Such a reduction leaves 95 percent, or 1.05 billion office visits per year remaining for efforts to improve efficiency. The second major opportunity for cost savings is improvement of efficiency of necessary office visits.

Using Less Costly Providers

At VMMC, labor costs represent 65 percent of operating expenses. Efficient use of skilled mid-level providers can reduce healthcare costs substantially for both purchasers and providers.

In the care pathway for breast nodules, more than 90 percent of patients require no surgery. Using an experienced advanced registered nurse practitioner (ARNP) instead of a breast surgeon for the initial office visit reduces cost of providing care. In the headache care pathway, using an ARNP instead of a physician for prescreened uncomplicated problems achieves similar savings. The back pain care pathway substitutes an initial physician

evaluation with an initial evaluation that is performed by a physical therapist with minimal physician support. Access, patient satisfaction, and rapid return to function are outstanding with this model (Mecklenburg, 2008).

Well over 183,000 episodes of care at VMMC financed through employer-based benefits from 2006 to 2008 were for uncomplicated conditions (Table 3-5).[4] From our experience in redesigned care pathways we believe that ARNP or physician assistant (PA) providers could deliver at least 50 percent of our episodes of care at a substantial cost reduction.

Again, assuming that on a national level half the episodes of care were for uncomplicated conditions that could be handled capably by an ARNP or PA, the savings nationally could be as high as $8.3 billion (Table 3-6).[5]

Using mid-level providers is financially favorable for provider groups because the labor component of the cost of production often decreases by half, saving $25 per visit. If labor costs were reduced by even $1 per minute by using mid-level providers for 50 percent of total U.S. outpatient visits the cost of providing care for providers would decrease nationally by $13.1 billion (Table 3-7).[6] In our experience with the back pain pathway, patient volumes quadrupled, daily individual physician billable units doubled, and VMMC's margin increased even as revenue from unnecessary imaging declined.

Yet another creative use of mid-level providers could be in the area of patients with essential hypertension, diabetes, and disorders of lipid metabolism. These three conditions account for 75 million visits per year.

[4] An additional 13 percent of service episodes included visits for hyperlipidemia, allergic rhinitis, minor orthopedic trauma, dermatology signs and symptoms, acute bronchitis without comorbidity, tendonitis/bursitis without surgery, minor skin trauma, vaginitis, benign hypertension without comorbidity, local joint degeneration without surgery, other ENT disorders without surgery, fungal skin infection, gynecological signs and symptoms, chronic sinusitis without surgery, urological symptoms and signs, migraine, irritable bowel syndrome, and minor infection.

[5] Based on CMS and commercial reimbursement rates for VMMC, savings at a national level can be estimated by applying these data to the 1.05 billion annual "necessary" outpatient visits. Of these 1.05 billion visits, 23 percent are by patients in the CMS population aged 65 and older (242 million), and 59 percent of the visits are by patients in the commercial benefits age range of 15-64 (620 million). If half these visits could be provided by an ARNP or PA, with equal proportions of "new" and "return" reimbursement charges (codes 99203 and 99213), then savings for CMS would be ($10 × 242 million/2) or $1.2 billion per year, and savings for commercial patients would be ($23 × 620 million/2) or $7.1 billion per year for a total of $8.3 billion per year.

[6] In 2009, the cost to VMMC of a proceduralist physician was approximately $4 per minute, a nonproceduralist physician $2 per minute, and an ARNP or PA $1 per minute. If half the 1.05 billion "necessary" outpatient visits averaged 25 minutes (averaged time for equal distribution of "new" and "return" patients), and if labor costs were reduced by $1 per minute, the cost of providing care for providers would decrease (25 × $1 × 1.05 billion/2), or $13.1 billion.

TABLE 3-5 Distribution of 183,418 Service Episodes Paid by One Health Plan to VMMC, 2006-2008

	Episodes	%	Cumulative %
Routine exam	42,060	23	23
Minor inflammation of skin	12,760	7	30
ENT signs and symptoms	6,239	3	33
Acute sinusitis	5,424	3	36
Otitis media without surgery	5,338	3	39
Tonsillitis without surgery	5,106	3	42
Orthopedic/rheumatologic signs and symptoms	3,208	2	44
Menstrual disorders	2,949	2	45
Other minor orthopedic disorder	2,526	1	47
Cystitis	2,157	1	48
Viral skin infection	2,155	1	49
Conjunctivitis	2,127	1	50

NOTE: ENT = ear, nose, throat.

TABLE 3-6 Potential Savings to Purchasers from Use of Mid-level Providers for Office Visits Based on VMMC Experience

Total "necessary" U.S. outpatient visits[a]	1.05 billion	
	Medicare Health Insurance	Commercial Health Insurance
Number of ambulatory visits per year[a]	242 million	620 million
Potential number of visits with mid-level practitioners[b]	121 million	310 million
Savings to purchasers per visit	$10	$23
Potential total U.S. savings to purchasers in dollars	$1.2 billion	$7.1 billion

[a] For patients age 15 and older.
[b] For uncomplicated conditions.

Again, if half of the visits for these patients could be managed by an ARNP or PA, and if half of them could be managed by telephone or e-mail, with reimbursement at 50 percent of an office visit then the national savings could add up to $2.3 billion annually.[7]

[7] Patients with essential hypertension, diabetes, and disorders of lipid metabolism represent a total of 75 million outpatient visits per year in the United States. If half of these (37.5 million) were managed by an ARNP or PA, *and* half of these visits could be managed by telephone or e-mail, *and* if reimbursement were reduced an additional 50 percent from ARNP and PA reimbursement rates for office visits, additional savings for CMS would be $0.33 billion (37.5 million × 23 percent CMS patients × $39 savings vs. physician visit) and for commercial patients $1.92 billion (37.5 million × 59 percent × $87 savings vs. physician visit) for a total of $2.3 billion per year. These savings would require funding the lower cost alternative in a new reimbursement model such as "bundled" payments.

TABLE 3-7 Potential Savings to Purchasers and Providers Using Mid-Level Providers

	Purchaser Cost of Commercial Visit*	Purchaser Cost of Medicare Visit*	Labor Costs to Providers
Physician	$152	$69	$50
ARNP/PA	$129	$59	$25
Percentage difference between costs	15%	14%	50%
	Commercial Purchasers	Medicare	Providers
National savings if half of total annual office visits seen by mid-level practitioners	$7.1 billion	$1.2 billion	$13.1 billion

NOTE: ARNP = advance registered nurse practitioner; PA = physician's assistant.
*For 25-minute visit.

Lessons for the Delivery System

The total $22 billion savings per year we have identified in a small segment of the delivery system is 22 percent of the $100 billion per year that President Obama requires over the next decade to finance health care for all Americans (Obama, 2009).

In our experience, the path to affordable health care includes:

- Creating accountable care organizations to control quality and cost;
- Increasing the proportion of mid-level providers and deploying them effectively;
- Defining efficient, effective care pathways for high-cost conditions;
- Defining quality in terms of outcomes, access, and patient satisfaction;
- Aligning reimbursement with value; and
- Using an electronic medical record to limit variation by embedding "mistake-proofed" evidence-based decision rules into the work flow.

The savings discussed here are driven to a large degree by the infrastructure available at VMMC—an infrastructure that many providers do not have. The savings we achieved were accomplished in the format of an "accountable care organization," an integrated delivery system populated

by teams of physicians and mid-level providers using reliable systems to reduce variation among individual practitioners. Providers practice with the benefit of standardized "mistake-proofed" evidence-based protocols embedded in their work flow. We collaborate with purchasers to create actionable information from claims data, set priorities with the greatest opportunities, define quality, and develop relevant measurement and reporting methods. In our view each of these elements has assisted us in improving efficiency and effectiveness.

Most of our savings are related to more efficient deployment of our workforce. By aligning nonphysician providers with less complicated clinical tasks, we recovered physician time for the fewer but more complex cases. Our capacity to see additional patients increased, and patients had very rapid access to both physician and nonphysician providers. We believe that if more healthcare workers are needed, a substantial proportion of these will be mid-level providers.

For physicians, a strategy of cost reduction through improving access and quality is more reliable and sustainable than a strategy of revenue enhancement. When providers insist on substantial yearly increases in revenue it disadvantages purchasers, the community, and ultimately the providers themselves. As VMMC learns to operate more efficiently, our margin improves while capturing savings for purchasers and providing care for many more patients.

Healthcare costs are the product of use and reimbursement. While providers are accountable for producing value, CMS and health plans are accountable for aligning reimbursement with value. The current reimbursement model easily cancels savings achieved by providers when it fails to fund effective low-cost interventions and provides full reimbursement for unnecessary care. In addition, contracted reimbursement rates between health plans and providers escalate healthcare cost unrelated to value. For provider groups in the Seattle market in 2007 (Washington State Department of Health) the contracted "conversion factor" varied from $68 to $103 per relative value unit, a difference unrelated to value, quality, safety, access, or patient satisfaction. We estimate a 25 percent cost additional savings for employers if health plans used the funds of their clients to purchase quality and value.

It is our belief that health care will become affordable when the politics of self-interest is replaced by the politics of collaboration, when quality is defined on the basis of improved outcomes for our patients, and when the rewards we receive as providers are commensurate with the value we deliver. At VMMC we have moved in this direction with employers. It is our experience that it is both possible and necessary to deliver health care that is better, faster, and more affordable.

COSTS FROM PHYSICIAN OFFICE INEFFICIENCIES

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Medical Group Management Association

There is increasing consensus that a considerable portion of the $2.3 trillion expended annually on health care in the United States is wasted. In considering how health care can be reformed and more Americans provided with access to necessary health services, reducing the resources consumed by waste becomes of vital importance.

There are a wide variety of sources of waste in health care. Clinical waste is associated with the processes of delivering healthcare services to patients, and administrative waste is associated with the systems and processes for financing and payment for care. In addition, waste may occur entirely within a healthcare delivery or financing organization (intraorganizational waste) or as a consequence of the interactions between and among such organizations (interorganizational waste). Table 3-8 illustrates several examples of each category of waste.

This paper focuses on clinical and administrative waste occurring within physicians' office-based medical practices. It does not attempt to separate clinical from administrative waste. Therefore, the estimate of savings potential presented here may overlap with other analyses presented in these proceedings.

Estimating Waste in Physician Offices

The Medical Group Management Association (MGMA) conducts an annual survey of medical group practice costs and revenues, collecting a

TABLE 3-8 Examples of Healthcare Waste

	Intraorganizational	Interorganizational
Clinical	• Unnecessary procedures • Excessive testing • Inefficient care delivery processes • Medical errors	• Duplicative testing • Lost information • Fumbled hand-offs • Nonstandardized disease management, formularies, etc.
Administrative	• Inefficient billing and collections • Avoidable billing errors • Manual vs. automated processes	• Redundant provider credentialing • Manual vs. automated processes ✓ Patient identification ✓ Eligibility/coverage verification ✓ Pharmacy interactions • Claims payment processes

variety of information, including total relative value units (RVUs) produced per physician; work RVUs per physician; total cost per physician, physician compensation; and total operating cost per physician, which does not include physician compensation (MGMA, 2008a, 2008b). The estimates here draw on data collected for 2007. For this survey, 10,586 medical group practices were invited to participate. These practices are approximately representative of the population of medical group practices in the United States, but they do not include solo or two-physician practices. Further, potential bias may be present due to respondent self-selection. For the 2007 data, there were complete, usable responses from 1,470 practices (a 14 percent response rate) representing 28,177 physicians.

The distribution of total cost (including physician compensation) per total RVU produced was calculated to represent the standardized "cost of production." This cost measure represents the true cost to payers and consumers. However, inclusion of the cost of physician compensation introduces an uncontrollable variable beyond the efficiency of the practice. Therefore, operating cost per total RVU was also included in this analysis. By excluding physician compensation, a better measure of efficiency, or the cost to the practice of producing an RVU, can be expressed. One notable limitation of this analysis is that the cost figures used *exclude* any cost incurred by hospitals for care not provided in the physician's office-based practice. The data do, however, include RVUs produced through inpatient care, since billing for that care occurs through the physician's practice. Accordingly, both sets of figures—production costs and operating costs—understate the total cost of production through the omission of the cost of providing inpatient care.

Savings Potential in Physicians' Offices

The distribution of production costs per RVU produced for all practices varies (Tables 3-9 and 3-10). Similar variation is seen among four representative examples of practice types—multispecialty, cardiology, gastroenterology, and general surgery.

The distribution of production costs for all types of practices is skewed to the right. For example, the range from the median to the 75th percentile for multispecialty groups is $12.88, while the range from the 25th percentile to the median is only $7.15. This skew is likely driven in part by differences in physician compensation. Differences in insurance payment rates or differences in the generation of revenues from sources other than professional services are likely drivers of differences in physician compensation. However, the fact that there is a similar skew in the distribution of total operating cost per RVU indicates that at least some of the higher cost is related to differences in practice efficiency.

TABLE 3-9 Total Production Cost (Including Physician Compensation), per Total RVU Produced, for Selected Practice Types (2007)

	Practice Type				
	Inclusive	Multispecialty	Cardiology	Gastroenterology	General Surgery
Mean (SD)	$90.78 ($188.08)	$64.59 ($24.43)	$50.56 ($19.35)	$64.67 ($25.02)	$89.68 ($138.67)
Median (IQR)	$55.38 ($45.33-$68.19)	$57.66 ($50.51-$70.54)	$46.76 ($40.99-$62.06)	$68.87 ($46.58-$77.82)	$48.17 ($38.78-$57.63)

NOTE: IQR = interquartile range; SD = standard deviation.

There is wide variation in the cost of producing an RVU—from as little as $31.80 at the 10th percentile of cardiology practices, to as much as $95.45 at the 90th percentile of multispecialty groups, a more than three-fold differential. Assuming that an RVU is, indeed, a standardized measure of production, at least some of this variation must represent differences in production efficiency. However, the literature on this topic is essentially nonexistent.

Several factors are associated with higher median cost per RVU. Multispecialty groups have a median production cost per RVU of $57.66, compared with a median of $53.32 for pooled single-specialty groups. This difference persists even when operating cost per RVU is the variable of interest ($33.93 for multispecialty groups, and $25.81 for pooled single-specialty groups). This is consistent with an explanation that single specialty groups are more efficient than multispecialty groups. However, when the mean cost is considered (rather than the median), a somewhat different picture emerges. Multispecialty groups have much less variation in their cost per RVU. The mean production cost per RVU is $64.59, and the mean operating cost per RVU is $38.28 for multispecialty groups. The standard

TABLE 3-10 Total Operating Cost (Excluding Physician Compensation), per Total RVU Produced, for Selected Practice Types (2007)

	Practice Type				
	Inclusive	Multispecialty	Cardiology	Gastroenterology	General Surgery
Mean (SD)	$36.88 ($34.60)	$38.28 ($16.80)	$25.50 ($9.76)	$33.51 ($20.69)	$22.22 ($9.00)
Median (IQR)	$29.56 ($21.94-$38.30)	$33.93 ($27.62-$43.89)	$24.45 ($20.52-$29.39)	$32.25 ($23.76-$37.40)	$19.02 ($15.37-$25.51)

NOTE: IQR = interquartile range; SD = standard deviation.

deviations for these two numbers are $24.43 and $16.80, respectively. By contrast, for pooled single-specialty groups, the mean production cost per RVU is $101.22, and the mean operating cost per RVU is $36.53, with standard deviations of $223.75 and $40.06, respectively. The much higher mean and standard deviation observed in single-specialty groups when physician compensation is included indicates that a few very high physician compensation numbers are significantly skewing the distribution.

Other factors associated with modestly higher median cost per RVU are:

- Hospital vs. physician ownership of the practice (total cost per RVU = $59 for hospital-owned practices compared with $52.46 for physician-owned practices);
- Primary care vs. specialty care (total cost per RVU = $56.83 for primary care practices compared with $54.05 for specialty practices); and
- Paper-based vs. electronic health record (EHR) systems (total cost per RVU for practices with no EHR = $56.58 compared with $53.20 in practices using an EHR).

While these analyses are provocative, they are clearly preliminary and should not form the basis for any policy recommendations at this time. Though there is some suggestion that inefficiency drives increased cost (in the comparison of production and operating costs), much of the variation in cost is still likely driven by factors such as geographic differences in cost of wages, rent, malpractice insurance, supplies, compliance with insurer requirements, and other practice expenses that are outside the control of practice managers and physicians. None of these have been considered in these calculations.

Although it is perilous to make such inferences owing to the lack of research in this area, we can offer a reasonable estimate of efficiency gain opportunities by normalizing the distribution of cost of production and assuming that some proportion of the difference between the observed curve and the normalized curve represents "waste." When the curve is normalized, we find that about $25.5 billion in cost reductions might be possible.[8] However, we assume that most of this estimate is driven by differences in physician compensation, rather than differences in efficiency. A conservative, but somewhat arbitrary, estimate of savings from improved efficiency

[8] We calculate this figure by taking the sum of the cost difference between the observed distribution and the normalized distribution at each percentile interval, multiplying by the average annual RVU production per physician (12,242 RVUs), and multiplying that total by the approximately 700,000 patient care physicians in the United States.

might be 25 percent of this number, or about $6.4 billion annually (in 2007 dollars), about 0.2 percent of total healthcare costs in the United States.

In summary, there is considerable unexplained variation among medical practices in the cost of producing an RVU of care, and additional research is sorely needed to understand the drivers of that variation. However, inefficiency is likely one of those drivers, and reducing clinical and administrative inefficiency might reduce national healthcare expenditures by about 0.2 percent annually.

LOW-COST HOSPITALS WITH HIGH-QUALITY SCORES

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Pacific Business Group on Health and Mercer Health & Benefits

Sources of waste in the production of hospital services are multiple and no different from any other industrial sector. They include waste from overproduction, time on hand (waiting), excess transportation, excess processing, stock on hand (inventory), excess movement, and delivery of defective services (Bush, 2007). Information from Medicare's prospective payment system impact file, MedPAR, Medicare cost report data, and Medicare's Hospital Compare reports enable estimation of the percentage reduction in national spending for inpatient care if all hospitals produced inpatient care for the same cost per admission as their low-cost, high-quality peers.

Such an opportunity analysis was published by the Medicare Payment Advisory Commission (MedPAC), on which the author serves, in its March 2009 report to Congress (2009). MedPAC placed 12 percent of U.S. hospitals in a "relatively efficient" group based on favorable performance on a set of risk-adjusted cost and quality measurements for 2004-2006. Per case costs were standardized for area wage rates, case mix, severity, outlier cases, interest expense, low-income patient share, and teaching intensity. A composite mortality rate was computed using methodology defined by the Agency for Healthcare Research and Quality (AHRQ) to compute risk-adjusted mortality for eight common high-risk conditions and procedures (acute myocardial infarction [AMI], congestive heart failure [CHF], pneumonia, gastrointestinal hemorrhage, stroke, craniotomy, coronary artery bypass graft, and abdominal aortic aneurysm repair). Mortality rates for each condition or procedure were then weighted for each type of discharge by the share of such discharges in each hospital.

MedPAC defined relatively efficient hospitals as all hospitals ranking in the top 12 percent nationally on a composite measure of low risk-adjusted cost per case and high-quality scores. The MedPAC analysis demonstrated that if the other 88 percent of U.S. hospitals attained the performance level of these relatively efficient hospitals, their 30-day mortality would decline

by approximately 18 percent; readmissions would decline by about 4 percent; and cost of inpatient care by about 12 percent, all while patients' experiences of care remain unaffected (see Table 3-11).

Another way of stating the savings opportunity associated with closing the performance gap is that overall U.S. hospital inpatient cost per case would decline by about 11 percent. If these hospital cost savings were passed along to consumers, it would lower U.S. healthcare spending by nearly 2 percent, since inpatient spending comprises approximately 60 percent of hospital spending, and hospital spending comprises approximately 30 percent of total healthcare spending.

Failure to collect comprehensive nationally standardized information on hospital structural features and processes in the United States prevents full understanding of what accounts for better performance by the highest ranking 12 percent. However, data available to MedPAC shows that lower hospital costs are highly associated with financial pressure on hospitals in the form of lower negotiated average price per case by payers other than Medicare; more non-Medicare financial pressure on hospitals is associated with lower hospital production cost (see Table 3-12).

Capturing the Potential Savings

How might these savings be captured in the United States? Combining the dissemination of standardized care pathways and other successful elements of clinical process reengineering in top-performing hospitals with more procompetitive health industry regulatory policies appears to be a promising approach. If this approach were implemented vigorously, it is likely that today's "price-performance frontier" in U.S. hospital care would also advance, generating a long-term flow of gains in hospital cost and quality. This would constitute a virtual cycle of efficiency comparisons, rewards

TABLE 3-11 Hospital Performance on Quality Measures, 2004-2006

	Type of Hospital	
Relative Historical Performance, 2004-2006	Relatively Efficient During 2004-2006 (%)	Other Hospitals (%)
Risk-adjusted:		
Composite 30-day mortality, 2004-2006 (AHRQ)	87	106
Readmission rates, 2005	97	101
Standardized cost per discharge, 2004-2006	90	102

NOTE: AHRQ = Agency for Healthcare Research and Quality.
SOURCE: MedPAC, 2009.

TABLE 3-12 Impact of Financial Pressure on the Financial Characteristics of U.S. Hospitals

	Level of Financial Pressure, 2002-2005		
Financial characteristics, 2007 (medians)	High Pressure (non-Medicare margin < 1%)	Medium Pressure	Low Pressure (non-Medicare margin > 5%)
Non-Medicare margin (private, Medicaid, uninsured)	–2.4%	4.5%	13.5%
Standardized cost per discharge	$5,800	$6,000	$6,400
Annual growth in cost per discharge 2004-2007	4.8%	4.9%	5.0%

SOURCE: MedPAC, 2009.

for excellence, and faster hospital productivity gain; comparable to what occurred in most other U.S. service and product sectors, beginning in the 1990s. Though MedPAC has not yet completed similar analyses for other provider types, there is no a priori reason to expect that the size of the efficiency gap or the best closure method would substantially differ.

COSTS OF UNCOORDINATED CARE

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Southeastern Consultants, Inc.

As the United States faces a daunting future where healthcare spending promises to double to over $4 trillion dollars per year within the next decade (CMS, 2009), several strategies have emerged in response, such as enhanced care coordination, payment reform, and the implementation of health information technology in order to cut costs and improve health outcomes. A concrete example is provided by the Patient-Centered Primary Care Collaborative (PCPCC), which has recently supported the patient-centered medical home (American College of Physicians, 2007). This approach has already improved quality of care and access to services and reduced cost through an interprofessional, multidisciplinary team approach to patient-centered care coordination across a variety of systems. In the following analysis, we review the benefits of efforts to coordinate care, which include such innovations as the patient-centered medical home, and estimate the cost savings possible from these reforms.

The Problem

In a recent analysis by Southeastern Consultants, Inc. (SEC) of 9 million Medicaid only and Medicaid/Medicare dually enrolled patients in five

large states, we found a cohort of patients exhibiting patterns of extreme uncoordinated care.[9] In the state example provided, these uncoordinated care patients represented less than 10 percent of patients, but they accounted for an average of 46 percent of drug costs, 32 percent of medical costs, and 36 percent of total costs for the population. These percentages of total cost contributed by the uncoordinated care populations did not differ significantly among the various states examined (Figure 3-2).

The following is an example of an actual patient with extreme uncoordinated care identified in the datasets. This patient is a 46-year-old female with a cardiac condition, chronic obstructive pulmonary disease, and depression who had use patterns within the 12-month period that included a total of 185 prescriptions ($8,388) from 34 different prescribing physicians, and used 21 different pharmacies. This patient also had 395 separate medical events ($28,125) among which included 45 emergency room (ER) visits ($10,012), 147 outpatient visits ($14,120), and 85 physician visits ($2,237) from 54 different treating physicians, and received other numerous types of services as well. This patient is representative of many patients we observed with extreme uncoordinated care and inefficient use patterns that drive up costs unnecessarily and compromise quality of care.

Moreover, these uncoordinated care patients have significant differences in all cost service components, including lab, outpatient, ER, pharmacy, practitioner, and hospital services. Comparisons of average annual

[9] Southeastern Consultants, Inc. (SEC) performed comprehensive claims analyses on over 9 million Medicaid only and Medicaid/Medicare dually enrolled patients in five large states for various periods from 2000 through 2006. These analyses included use and expenditure analyses of drugs and medical services, a disease profile of the population, and the identification of access and care patterns indicative of uncoordinated care in a subset of the population. SEC examined drug and medical use and costs attributed to these extremely uncoordinated care patients in an effort to supply policy makers addressing healthcare reform at the state and federal levels with compelling new data as to the importance of improving the coordination of care. In addition, SEC conducted statistical-based, predictive modeling to estimate expected costs and created matched comparison groups to further evaluate estimated program savings that can be achieved from a more integrated approach to better coordinate care by implementing a patient-centered primary care medical home model with enhanced health information technology applications and an appropriate provider incentive payment model. Using the claims and eligibility classification data, patients were separated into Medicaid only, dual eligibles, and long-term care subgroups and screened for patterns of uncoordinated episodes of care and the absence of a medical and pharmacy home. Various statistical methods were applied and algorithms created to identify patients with patterns of use associated with extreme uncoordinated care. Patterns identified included using excessive numbers of prescriptions, therapeutically duplicative drugs, frequently changing drug therapies, using multiple prescribers and multiple pharmacies concurrently and in random patterns, accessing the emergency room frequently for nonemergent or preventable care, and numerous other access patterns indicative of uncoordinated care. Not surprisingly, over 98 percent of identified uncoordinated care patients in the datasets had at least one chronic condition.

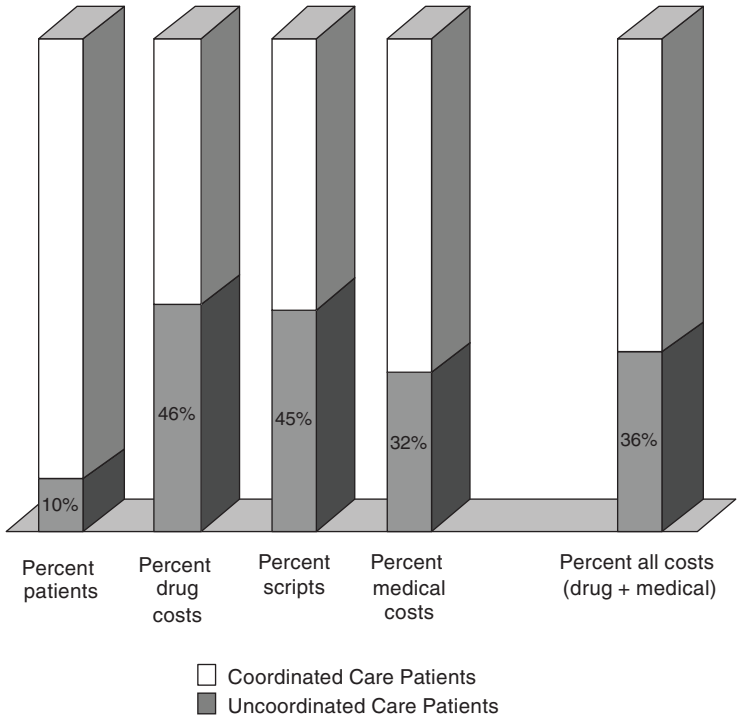

FIGURE 3-2 State example: uncoordinated care percentages for Medicaid only group.

total cost observed for the most extreme uncoordinated care patients were $15,100 compared to $3,116 for those with better coordinated care observed in the remaining population (Figure 3-3).

The patterns were even more significant among the subset of older (pre-Medicare) and Medicare dual patients who experience a greater prevalence of chronic diseases and comorbid conditions. For example, about one-quarter (28 percent) of these patients exhibited patterns of extreme uncoordinated care and accounted for an astounding 71 percent of drug costs, 44 percent of medical costs, and 52 percent of total costs for that population (Figure 3-4). The results were similar among the states studied.

How Much Does Uncoordinated Care Cost?

In the SEC analysis, we found that patients with uncoordinated care exhibited many of the same patterns in their care histories. The variables that seem to be predictors of higher than expected total cost, and thus are

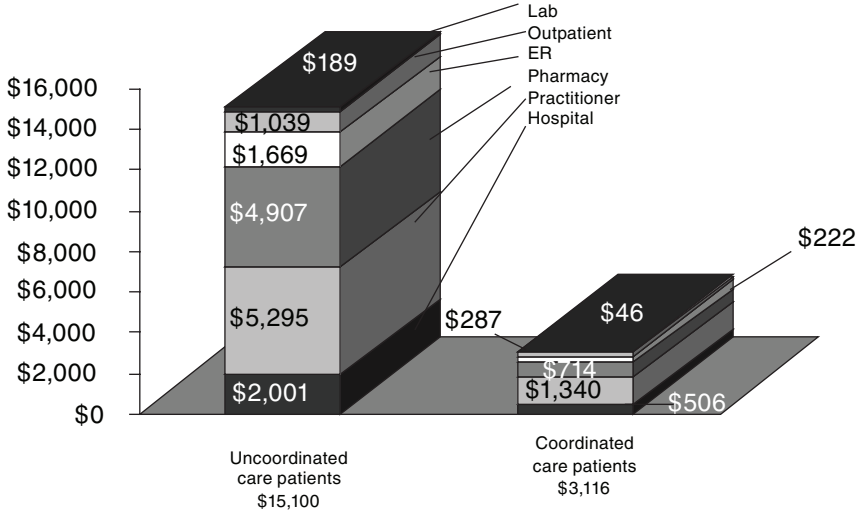

FIGURE 3-3 State example: Medicaid only group total annual expenditures—patients with and without uncoordinated care.

markers for identifying patients with the greatest savings opportunities, were those that were correlated with episodes of uncoordinated care and treatment. These predictors included excessive or inappropriate numbers and types of prescriptions, high numbers of different prescribing and treating physicians, using a high number of different pharmacies, and frequently accessing the ER for nonemergent or preventable care (Billings, 2000). All of these patterns contribute to higher than expected unnecessary costs. One very significant characteristic observed in the population studied was inappropriate medication usage, including both overuse and low adherence, which highlights an important opportunity for pharmacists to provide medication therapy management and monitoring services to patients and the entire healthcare team in a collaborative effort to improve outcomes and reduce costs.

Once these uncoordinated care patients were identified, we could begin to compare their care histories with those of similar patients in order to estimate the cost or the opportunity for savings should these uncoordinated care scenarios shift to a more continuous and coherent care plan. Below, we provide an illustrative example from one of the state datasets for a group of 10,081 uncoordinated care patients matched to 37,873 coordinated care patients by age, gender, primary disease (as shown), major comorbid disease(s), and severity of illness score. Comparing the costs of each group and using the healthcare costs associated with the coordinated group as the

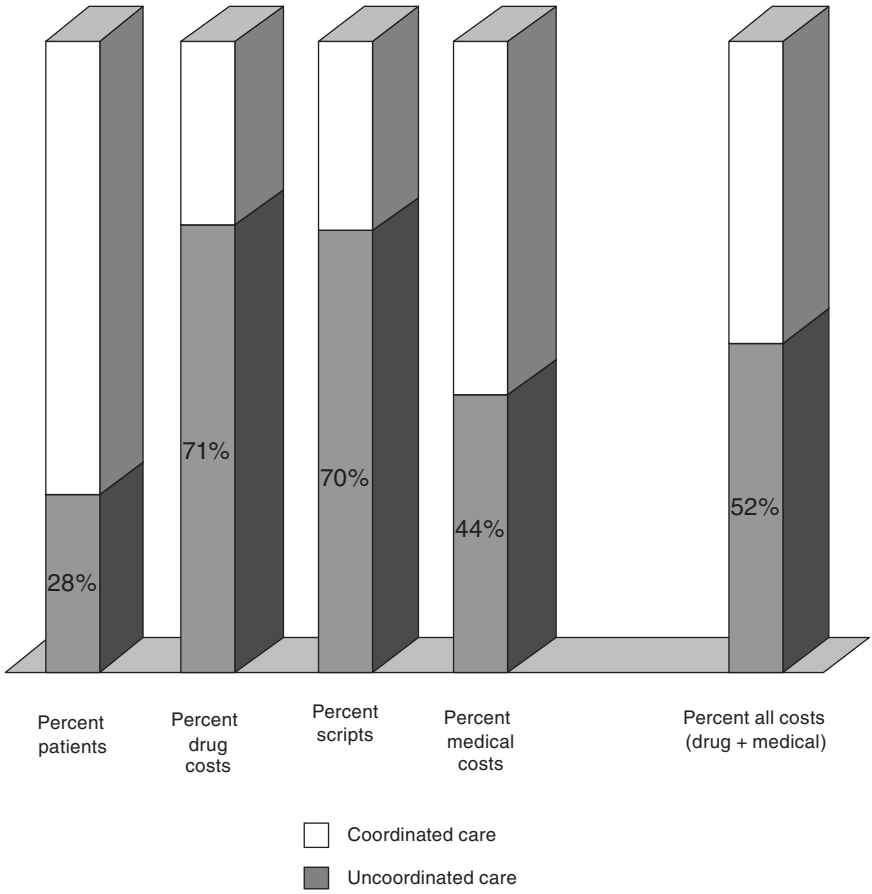

FIGURE 3-4 State example: Uncoordinated care expenditures for pre-Medicare group (ages 55-64).

baseline, the estimated excess cost of uncoordinated services is $74 million (43 percent of the total actual cost of $172 million) or $7,340 per patient (Figure 3-5). In the analysis, we adjusted for numerous contributing factors and found that the cost differences were in fact driven primarily by those selected variables correlated with patterns of extreme uncoordinated care.

The Opportunity

Patients with extreme uncoordinated care clearly account for a disproportionate share of costs. In fact, the costs of uncoordinated care averages approximately 30 percent of total plan costs studied. Based upon multiple analyses, we estimated that an average of 35 percent of the costs contrib-

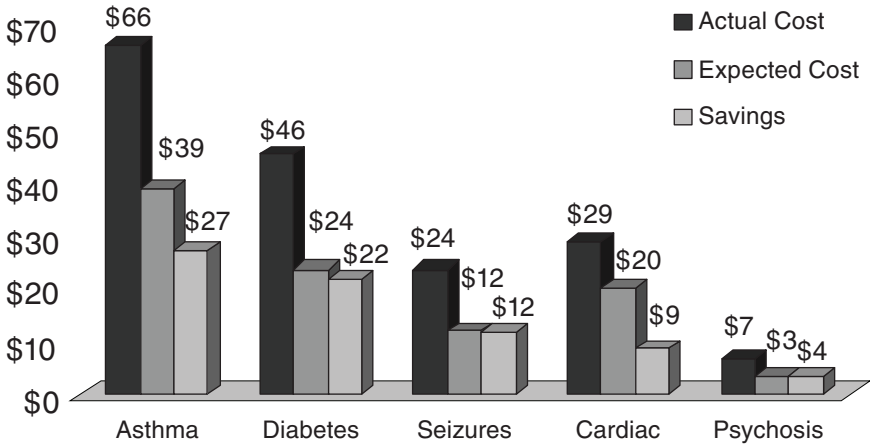

FIGURE 3-5 State example: $74 million in estimated cost savings due to uncoordinated care.

uted by patients with extremely uncoordinated care should be avoidable with improved care integration, enhanced and targeted interventions, and care coordination between providers. Again, this figure is derived from the various comparisons among uncoordinated care patients and matched cohorts of patients demonstrating more coordinated care.

Extending these estimates to the national level, the savings opportunities are formidable. Assuming that national health reform efforts aimed at these uncoordinated care patients are developed and phased in over 3 years (realizing savings at 25, 50, and then 75 percent levels), the average savings in the period 2010-2018 are estimated at $240.1 billion per year or an average of 8.8 percent of total annual expenditures. (Table 3-13).

Key Assumptions

Similar Costs for Uncoordinated Care Patients Among the Publicly and Privately Insured

According to the *2009 Almanac of Chronic Disease*, 75 percent of U.S. healthcare spending overall is for patients with one or more chronic conditions, and 83 percent of all Medicaid spending and 96 percent of all Medicare spending is for patients with one or more chronic conditions (Kott, 2009). Furthermore, a national Gallup Serious Chronic Illness Survey reveals that 81 percent of people with a serious chronic condition were treated by two or more different physicians, and of that group over 32 percent of people were treated by four or more physicians (Anderson,

TABLE 3-13 Estimates of National Savings from Improved Coordination of Care (Billions)

Year	NHE Total Projected Costs[a]	Estimated Total Cost Contributed by Patients with Uncoordinated Care (30%)	Estimated Cost Savings from Improved Coordination of Care (35% avg. savings)	Estimated Coordinated Care Annual Savings (phase in over 3 years)	Percent Coordinated Care Savings of Total Cost
2010	$2,040.1	$612.0	$214.2	$53.6	2.6%
2011	$2,152.8	$645.8	$226.0	$113.0	5.3%
2012	$2,278.5	$683.6	$239.2	$179.4	7.9%
2013	$2,420.8	$726.2	$254.2	$254.2	10.5%
2014	$2,581.2	$774.4	$271.0	$271.0	10.5%
2015	$2,761.3	$828.4	$289.9	$289.9	10.5%
2016	$2,956.7	$887.0	$310.5	$310.5	10.5%
2017	$3,169.5	$950.9	$332.8	$332.8	10.5%
2018	$3,398.4	$1,019.5	$356.8	$356.8	10.5%
Total	$23,759.3	$7,127.8	$2,494.7	$2,161.2	
	Average annual coordinated care savings 2010-2018			$240.1	8.8%

NOTE: NHE = National health expenditure data.

[a] The categories of NHE spending used to compile the baseline costs included direct care expenditures for hospital, professional, home health, and medical products and excluded administrative, nursing home, structures, and investments. Source data: National Health Expenditure Data Projections for 2010-2018, Table 2, Centers for Medicare & Medicaid Services, Office of the Actuary, released January 2009.

2007). Again, treatment by many different physicians was a common characteristic among uncoordinated care patients. So available data would suggest that in public and private payer contexts, chronically ill patients and patients with uncoordinated care are certainly common and likely occur at comparable rates.

Mental Health Does Not Drive the Observed Cost Variance

Even though it may be a contributing factor, patients with serious mental health conditions such as psychosis or bipolar disorder accounted for only 20 percent of the patients and 34 percent of the total cost for the entire group of extreme uncoordinated care patients.

Caveats

First, even though we removed all suspected fraudulent, incorrectly paid, duplicate, and otherwise aberrant claims from our analysis, it is pos-

sible that some small percentage of fraudulent claims remained undetected and were included in this analysis.

Second, all patients with catastrophic illnesses and at the end-of-life were removed from the datasets and excluded from the analysis and cost-saving estimates. These included patients with severe trauma such as those with head injuries, burns, or other catastrophic conditions and any patient who died during the 12-month analysis period.

Third, only the most extreme uncoordinated care patients were identified and included in the cost-saving estimates. Therefore the estimates are very conservative since moderately uncoordinated care patients were not included in the cost-saving estimates and certainly represent additional savings opportunities.

Fourth, the cost-saving estimates do not include future cost avoidance in nursing home and long-term care costs that can reasonably be expected to occur due to improved coordination of care and enhanced clinical outcomes of patients who receive appropriate treatment earlier in the course of their disease and extend their physical and mental functionality and independence.

Fifth, the cost-saving estimates do not account for the 47 million uninsured people who may soon be integrated into the healthcare system since the national health expenditure (NHE) data does not include that possible scenario in the national healthcare cost projections.

Finally, the cost-saving estimates do not account for the rapidly increasing rates of chronic disease and obesity since NHE data appears to only use population and demographic trend factor adjustments and not disease prevalence-based adjustments in the projections for future healthcare expenditures.

Conclusion

The findings from these comprehensive claims analyses provide compelling evidence that the opportunity for effective cost avoidance is significant. Measures to improve care delivery and payment models, as well as efforts to leverage health information technologies to facilitate system wide, enhanced coordination, should be implemented within existing state, federal, and commercial program structures. Healthcare reform efforts must recognize and address the problem and significant avoidable cost of uncoordinated care if there are going to be "real" and "meaningful" changes to the healthcare delivery and payment systems. Public and private health plans can reduce unnecessary expenditures attributable to uncoordinated care, preserving valuable resources without reducing appropriate access to care or needed services. These preserved resources can also be used for funding expansion programs for the uninsured and underinsured populations and improving the quality of health care for all citizens.

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4

Excess Administrative Costs

INTRODUCTION

Administrative costs in the United States consumed an estimated $156 billion in 2007, with projections to reach $315 billion by 2018 (Collins et al., 2009). With the time, costs, and personnel necessary to process billing and insurance-related (BIR) activities from contracting to payment validation on the provider side and the needs of payers to process claims and credential providers, significant redundancy and inefficiency arises from healthcare administration. Adding to concerns is emerging evidence of an inverse relationship between administrative complexity and quality of care (Himmelstein and Woolhandler, 2002). The presenters in this session approach estimating excess administrative costs from a variety of macro- and microeconomic levels, all with the goal of identifying the portion of expenditures spent on administration that could be reduced by increasing the efficiency of the delivery system, which highlights the need for administrative simplification and harmonization.

James G. Kahn of the University of California-San Francisco discusses BIR costs at the provider level. He puts these costs in the context of a complex payment system, describing three main drivers of BIR costs: complexity, variability, and friction. Using available evidence, he estimates that up to $183 billion of expenditures on BIR activities in the United States may be due to inefficiency. However, he also encourages caution in interpreting the results, given the lack of adequate data on the BIR costs in several settings, such as in pharmacies and nursing homes. Lawrence P. Casalino of Weill Cornell Medical College builds on this presentation, citing evidence that

the average American physician spends 3.8 hours a week—the equivalent of more than 3 workweeks a year—on interactions with payers (Casalino et al., 2009). He estimates that Canada spends between $15 and $32 billion less on BIR activities compared to the United States because of greater administrative standardization.

James L. Heffernan from the Massachusetts General Physicians Organization highlights how other economic sectors, such as industrial manufacturers, commit significantly less resources to administration compared to the healthcare sector. Comparing the administrative costs of a single professional billing office to that of Medicare, he surmises that standardizing administrative complexity could save $26 billion for physician and clinical services' billing operations along with 4 hours of professional time per physician per week and 5 hours of practice support staff time per week. He therefore concludes that a single, transparent set of payment rules in a multipayer healthcare system would potentially reduce the burden common in a provider's billing office.

Concluding this session, Andrew L. Naugle of Milliman explores administrative costs for payers, focusing on the commercial market. He estimates that, if commercial insurers could all adopt the best-practice level of administrative expenses being no more than approximately 7.6 percent of fully insured commercial premiums, up to a $23 billion savings opportunity exists for the commercial market in total administrative expense reduction. As these estimates applied data across the entire commercial marketplace, Naugle cautions that variation in savings could occur across specific individual payers as they each will be variously impacted by their respective marketplace and organizational characteristics. Outlining opportunities to capitalize on these savings, he discusses possible policy options, including the elimination of manual transactions between payers and providers; simplifying the sales process; maximizing self-service capabilities and adoption; and standardizing payer and provider interaction processes and rules.

EXCESS BILLING AND INSURANCE-RELATED ADMINISTRATIVE COSTS

James G. Kahn, M.D., M.P.H.
University of California-San Francisco

There are very substantial administrative costs in the U.S. healthcare system, making up, by one estimate, nearly one-third of all spending (Woolhandler et al., 2003). A major portion of these costs are BIR activities undertaken to fulfill the requirements of getting paid, from contracting through collections. Most BIR activities occur at the provider level, with a smaller amount at the insurer level. BIR activities thus reflect the trans-

action cost of a complex payment system. As such, it largely constitutes inefficiency rather than added value. This economic loss can be mitigated if there are secondary benefits (e.g., enhanced quality or use management).

Three features of managing health insurance drive BIR costs at the provider level. The first is *complexity*. The insurance process has multiple steps, often demanding precise accuracy and attention to detail. BIR steps include contracting with insurers and subcontracted providers; maintaining benefits databases; determining patient insurance and cost sharing; collecting copayments, formulary, and prior authorization; coding of services delivered; checking and submitting claims; receiving and depositing payments; appealing denials and underpayments; collecting from patients; negotiating end-of-year resolution of unsettled claims; and paying subcontracted providers.

The second burdensome feature of managing insurance is *variation*. Due to consolidation of insurers in recent decades, a provider practice likely has fewer payers to deal with. However, each payer offers multiple products and often further customizes products to individual purchasers (such as a large employer). Each provider may have to deal with dozens to hundreds of different plans. Providers must track plan-specific benefits and reimbursement rules, maintain special databases and benefit experts, and conduct time-consuming checks of plan details prospectively and in response to claims denials. This situation is in stark contrast to privately administered plans in other developed countries, where there is typically a single primary benefits package.

The third feature is *friction*. Many BIR steps slow and complicate the process of getting paid. These include priority authorizations and formulary restrictions, high rates of nonpayment for initial submissions (10 to 15 percent), underpayments, and ultimate non- and underpayment (5 to 10 percent) (Gans, 2009). Providers express frustration and occasionally a suspicion that the process is kept complicated to lower ultimate payment levels.

This report estimates total U.S. BIR costs for providers, using available evidence on BIR rates applied to National Health Expenditures. For completeness, it includes a similar estimate of BIR costs for private payers. Finally, to facilitate synthesis, the report includes a tabular summary of the five administrative cost estimates presented at the IOM Roundtable on Value & Science-Driven Health Care's workshop titled The Healthcare Imperative in May 2009.

Billing and Insurance-Related Administrative Costs

Existing estimates of the BIR component of administrative costs at providers fall into two broad categories: macroanalyses and microanalyses.

Using a macro approach, some studies have compared total administrative costs in U.S. settings to similar settings in Canada and mainly attributed the observed differences to demands of a multipayer system. More promising for this analysis, subsequent micro studies have described and inventoried BIR tasks and associated costs, in increasing detail over time.

The first study (Woolhandler et al., 2003) found a roughly threefold difference in total administrative spending per capita between the two countries in 1999. For physician practices, administrative spending was $107 (16 percent of revenue) per capita in Canada, and $324 (27 percent) in the United States. For hospitals, the amounts were $103 (13 percent) and $315 (24 percent), respectively. Thus, BIR costs were estimated indirectly (if imprecisely) as $217 and $212 per capita in 1999, in the two provider settings.

Later studies increasingly honed in on BIR tasks. Kahn and colleagues (2005) studied BIR costs in 2001 in California, finding that BIR administration represents 14 percent of physician revenue and 6.6 to 10.8 percent of hospital revenue. Sakowski and colleagues (2009) studied a large multispecialty group practice in California, finding that BIR activities represents 10 to 12 percent of revenue, with higher percentages related to the clinician time needed to code services for billing purposes. Casalino and colleagues (2009) found that the portion of BIR activities related to staff compensation in dealing with private payers is 6.9 percent of revenue. When adjusted to include public payers, overhead costs, and a portion of clinician coding of services, this translates to a total BIR cost equal to 13 percent of revenue.

Estimates of Billing and Insurance-Related Costs

This report derives estimates of total BIR costs in the United States, drawing on existing research and reference data to create as comprehensive a picture as possible. In addition, to foster a clear overview and synthesis of all administrative cost estimates presented in these proceedings, this report includes a table that systematically summarizes the estimates, identifies and reconciles differences in scope and method, and presents a best estimate for each component of BIR costs.

Total BIR costs in each healthcare system setting (e.g., physician practices) was calculated as the product of two factors: BIR cost as a percent of revenue (from published studies) and National Health Expenditures (CMS, 2007).

This analysis defined BIR-specific activities as potential excess, as compared with a system that greatly simplifies BIR requirements. An attempt to formally benchmark using the Canada vs. United States macrocomparison described above failed—observed differences in administrative costs slightly exceed the BIR costs calculated directly at U.S. providers. That is, BIR costs

are greater when calculated with the macro approach than with the micro approach. This suggests that either the cross-national macrocomparison overestimates BIR costs or the U.S. ground-up (micro) measurement underestimates BIR costs. Thus the estimates of excess BIR costs presented here are upper bounds; we attempt to correct for benchmarking in the summary table.

We also considered comparing different U.S. providers to identify best practices (lowest BIR cost) and thus the excess BIR expenditure attributable to less efficient providers would be highlighted by examining statistical distributions across practices. This is analogous to the approach used for differences in clinical services use and cost presented in other sections of these proceedings. In this method, we would examine statistical distributions across practices. However, there are serious technical impediments. Crude statistical distributions may obscure real explanatory differences (e.g., greater administrative burden or lower practice income). For example, an HMO with high-market power may negotiate high-payment rates, with no added administrative burden, leading to an artificially deflated BIR burden. Or, a practice may operate in an especially complex payer environment, driving up BIR costs. Further, this approach might be taken to imply that there are only minimal savings to be obtained at all providers from simplified BIR demands (e.g., standard billing forms or benefit plans). In this way, reducing BIR costs differs from efforts to reduce the well-understood variation in clinical practices. That is, the largest savings in administrative costs may derive from lowering everyone's costs by simplifying the system, whereas the largest savings in clinical practice may stem from emulating current best practices.

Savings Opportunities

For physician care, annual expenditures from National Health Expenditures (NHE) projections for 2009 are $539 billion (CMS, 2007). The BIR portion of physician revenue is estimated at 13 percent, based on data from three studies (Casalino et al., 2009; Kahn et al., 2005; Sakowski et al., 2009). The result is an estimated $70 billion per year in BIR expenditures, representing an upper bound on "excess" due to the lack of an adequate benchmark (Table 4-1). For hospital care, the $789 billion in annual spending is multiplied by the midpoint of 8.5 percent from one study (Kahn et al., 2005), yielding an estimate of $67 billion. The total for physicians and hospitals is $137 billion per year. If a similar rate applies to other providers (e.g., pharmacies and nursing homes), the total for BIR costs at all providers is $254 billion.

We also present an estimate of BIR costs at private insurers. Private insurers have an estimated $854 billion in annual revenue in 2009 (CMS,

TABLE 4-1 Estimate of Billing and Insurance-Related (BIR) Costs in the U.S. Healthcare System in 2009

	Annual NHE (in billions)	Percentage for BIR Costs	Annual BIR Costs (in billions)
Physician care	$539	13	$70
Hospital	$789	8.5	$67
Subtotal			$137
Other providers	$771	10	$77
Cumulative subtotal			$214
Private insurers	$854	12.3	$105
Public programs	$1,191	3.5	$42
Cumulative total			$361

NOTE: NHE = national health expenditure.
SOURCE: CMS, 2007.

2007). They have an overhead (administration and profits) of 12.3 percent (CMS, 2007). Thus, by multiplying total annual revenues by the percentage consumed by overhead, the total BIR cost is estimated at $105 billion. This is consistent with reporting for 2007 of $94.6 billion for the administration and net cost of private health insurance (CMS, 2007).

An appropriate benchmark is the overhead for public programs, which is 2 percent and 4 to 5 percent for Medicare and Medicaid, respectively (CMS, 2007); this is incorporated in the summary table for all the administrative cost estimates presented in this session.

Adding each of the individual BIR estimates together, the total upper bound for BIR costs is estimated at $361 billion in 2009. Adjustment for estimated benchmarks decreases this amount by about one-third (Table 4-1).

Primary Assumptions and Caveats

This analysis assumes that it is possible to distinguish BIR costs from other administrative functions. The triangulated, mutually consistent data using varied methods suggests that this is true, to reasonable precision. Consistency with qualitative data (e.g., physician description of a major BIR burden) is also encouraging (Casalino et al., 2009; Sakowski et al., 2009).

Second, we assume that BIR costs are not dropping since these data were collected. The recent findings of Casalino and colleagues (2009) are comparable to Kahn and colleagues (2005), with data that are 5 years

apart. Further, the majority of physician groups believe that the effort needed to deal with plans is increasing (Casalino et al., 2009).

Third, there is uncertainty in the BIR estimates. Our knowledge of BIR costs is perhaps best for physician offices, with much more limited data for hospitals, and almost none for other providers (e.g., nursing homes, labs, and pharmacies). Even in physician practices, there is uncertainty: clinician coding of services provided (about 2 percent of revenue) is necessary for billing but may also provide useful information for outcomes measurement and quality improvement. Hospital administrative reporting includes a "general administration" category that comprises 4 percent of revenue, with insufficient information to apportion to BIR activities and other administration. Notably, the BIR cost at other providers (e.g., pharmacies) is a major unknown (the analysis assumed 10 percent, based on informal observations and discussions about pharmacy operations and anecdotal reports on pharmacy benefit management procedures and fees). For public programs, there are multiple and potentially inconsistent sources of BIR burden; we rely on estimates from the Centers for Medicare & Medicaid Services (CMS), which are lower than aggregate values in NHE.

This analysis could identify no definitive benchmarks. In the summary table (Table 4-2), we incorporate benchmarks used by others, leading to a drop in the estimate of "excess" BIR costs.

Finally, the BIR costs reported here may overlap with excess clinical services. That is, if expensive clinical services are reduced 5 percent through more proactive, patient-centered care, there will also be a drop in BIR costs. However, this drop may be less than proportional, for two reasons. First, some BIR costs are a function of the number of patients or plans, not the number of services. Second, the services targeted for reduction are more expensive (e.g., MRIs cost more than office visits), so that relatively fixed BIR costs per service will represent a smaller portion of the reduced rather than of the retained services.

Next Steps

There would be value in broadened and improved BIR research. Better BIR studies are very much needed for hospitals, due to the presence of only one study, and hampered by a large undefined administrative cost category. The need for BIR research for other providers is even more acute. For physician groups, it could be useful to conduct more in-depth studies (i.e., the depth of Sakowski et al., 2009, with the sample of Casalino et al., 2009).

Intervention studies are a critical next phase. Policy makers will need to know how much BIR cost will be reduced with changes in procedures that are small (e.g., single billing form), medium (e.g., standard core benefits

TABLE 4-2 Synthesis of Estimates from Presentations on Excess[a] Administrative Costs

		Billing and Insurance-Related Administrative Costs		Method		
Setting	Roundtable Presenter	Total	Excess*	Data Source(s)	Types of Costs Included	Basis for Estimating Excess
Private Insurers	Jensen	n/a	$63 billion	OECD	All administration & profits	Comparison U.S vs. other OECD, adjusted for wealth
	Kahn	$105 billion	$75 billion	U.S. national health expenditures	All administration & profits	Difference in overhead for private vs. public payers
	Synthesis	$105 billion	$63-75 billion	See above	All administration & profits	Range from above
Physicians	Casalino	$65 billion	$32 billion	U.S. representative survey, applied to NHE	6 major activities. No service coding.	Ratio based on Canadian survey (preliminary, potentially conservative)
	Kahn	$70 billion	n.s.	Two California studies, applied to NHE	All BIR tasks (with half of service coding), all payers & cost	None available
	Heffernan	n.s.	$26 billion	Mass. General Phys. Org, applied to NHE	All BIR tasks, for private payers only, for 2009	Micro-costing of current private payers vs. Medicare
	Synthesis	$65-70 billion	$32-35 billion	As above	Similar to Kahn: all payers and BIR tasks	Use of Casalino preliminary ratio for physician practices

TABLE 4-2 Continued

		Billing and Insurance-Related Administrative Costs		Method		
Setting	Roundtable Presenter	Total	Excess*	Data Source(s)	Types of Costs Included	Basis for Estimating Excess
Hospitals	Kahn	$67 billion	n.s.	One California study, applied to NHE	All BIR activities	None available
	Synthesis	$67 billion	$34 billion	As above	As above	Use of Casalino preliminary ratio for physician practices
Other providers	Kahn	$77 billion	n.s.	NHE, with assumed BIR	Assumed 10% BIR, based on physicians and hospital data	None available
	Synthesis	$77 billion	$39 billion	As above	As above	Use of Casalino preliminary ratio for physician practices
TOTAL[b]			$168-183 billion			

NOTE: BIR = billing-and-insurance related; n/a = not applicable; NHE = national health expenditures; n.s. = not significant; OECD = Organisation for Economic Co-operation and Development.

[a] By "excess" we mean spending above the indicated benchmark comparison. We make no judgment on whether that excess spending brings value.

[b] Estimates of provider BIR excess rely on the preliminary U.S.:Canada ratio used by Casalino for physicians. As this ratio is finalized, the estimates will evolve.

package), or pervasive (e.g., single payer) in order to effectively minimize the waste associated with these costs in the U.S. healthcare system.

Synthesis of Presentations on Excess Administrative Costs

Two analyses of BIR costs among private insurers found very similar results. Eric Jensen estimated $63 billion in excess BIR costs at private insurers, as compared with OECD countries (which have a much lower private payer role). Kahn and colleagues estimated $105 billion in total BIR costs at private insurers, based on U.S. NHE data, and $75 billion in excess as compared with U.S. public payers (CMS, 2007). The synthesis range is *$63-75 billion*.

Three assessments of administrative costs in *physician practices* applied data from practices to the physician category in the National Health Expenditures. The analysis presented by Casalino and colleagues (2009) focused on staff costs in a national sample, for six major tasks required to deal with private health plans. For these written proceedings, Casalino and colleagues adjusted their analysis to include private and public payers, as well as nonstaff overhead, estimating $64.7 billion in BIR costs. As compared with costs for similar activities in Canada, the estimated annual excess in the United States is $32 billion. The analysis presented by Heffernan used data from the Massachusetts General Physician Organization, which has a relatively efficient billing operation as compared with national means. A microcosting of tasks to obtain private insurer payment versus Medicare (admittedly an imperfect payer itself) found a 10 percent excess burden. The analysis presented by Kahn and colleagues used data from two California studies that included a broader range of billing and insurance-related activities, including a portion of clinician coding of services provided. All payers and costs (e.g., overhead) are included, yielding an estimated $70 billion per year in total BIR costs.

The differences between these estimates can be explained as follows. The revised estimate by Casalino and colleagues is $5 billion less than the estimate from Kahn and colleagues, and probably reflects the different treatment of clinician service coding and imprecision.[1] Heffernan used a method that includes all BIR tasks but estimates national burden based only on private payers (i.e., assuming no excess burden to providers from dealing with Medicaid or Medicare).

[1] The $39 billion difference between the Kahn et al. estimate and the Casalino et al. estimate, presented earlier, reflects the public payer portion ($14 billion); additional BIR activities, such as health information technology and answering patient billing questions ($6 billion); overhead at 12 percent ($7 billion); a correction in the denominator derived from NHE data ($5 billion); and half of clinician service coding ($7 billion).

The synthesis estimate for excess BIR costs for physician practices is *$32-35 billion*. This includes all BIR activities, all payers, and all costs, with Canada preliminary analysis on staff time (Casalino et al., 2009) used to generate a benchmark ratio (i.e., excess = 50 percent total BIR).

For *hospitals*, Kahn presented the only estimate of $67 billion total BIR cost based on study of BIR percentages and NHE expenditures. Applying the United States vs. Canada preliminary benchmark ratio used by Casalino and colleagues for physician practices yields a net excess BIR estimate of *$34 billion*.

For *other providers* (e.g., labs, pharmacies, and nursing homes), an assumption of 10 percent BIR (between physician and hospital levels) yields an estimated $77 billion in total BIR costs. Again, applying the preliminary benchmark ratio used by Casalino and colleagues for physicians yields an estimated *$39 billion* in excess BIR costs for these providers.

The *total excess BIR cost* is estimated at *$168-$183 billion* per year, in 2009 dollars. This is the sum of values presented above. It relies heavily on the preliminary benchmark ratio used by Casalino and colleagues for physician practices. As this ratio is finalized, the BIR estimate using this method will evolve. This estimate is conservative in assuming no BIR excess for public programs, though some of these are more costly to administer than others, and no BIR outside of the health sector (e.g., at employers). As well, further research on BIR costs in specific sectors in the United States and Canada will lead to evolving estimates of BIR costs, total and excess. Nonetheless, we believe that this synthesis represents the best integration of existing data on BIR costs and the most accurate comprehensive estimate of current excess BIR costs—about 7 to 8 percent of U.S. spending on health care.

WHAT DOES IT COST PHYSICIAN PRACTICES TO INTERACT WITH PAYERS?

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Physicians in the United States have multiple forms of interaction with different payers. Interactions with payers, such as private health insurance plans, Medicare, and Medicaid, include obtaining prior authorization, dealing with formularies, submitting claims and verifying the accuracy with which they are paid, submitting quality data and reviewing payer-generated quality performance reports, negotiating contracts, and having physicians credentialed by the payers.

Each of these interactions generates costs for both the physician practices and the payers. Some portion of those costs is waste, but the question is: How much waste, excess, and inefficiency is there? We discuss two broad categories of waste: unnecessary interactions and inefficient interactions. Unnecessary interactions might be performed efficiently but need not be done at all. Here, the interaction costs between a health plan and a physician practice exceed the benefits. Inefficient interactions are poorly structured or otherwise performed in ways that do not maximize the benefits and minimize the costs. Even though the interaction may be worth doing, waste is still generated from poor performance.

In this paper, we provide data on the cost to physician practices of time spent on interactions with health plans, wasteful and not. Even though we do discuss waste in the broad categories summarized here, we note that the adequate data necessary for fuller analysis are still lacking.

Costs to Physician Practices of Interacting with Payers

Based on a 2006 mail survey of U.S. physicians and medical practice administrators we conducted (Casalino et al., 2009), we estimate that each physician spends the equivalent of $72,036 (2009 dollars) of his or her time interacting with health plans (Table 4-3). When multiplied by the number of office-based physicians in the United States, we further estimate a total cost for all U.S. outpatient physicians of $33.2 billion. If median rather than mean estimates were used, our estimate is $53,856 per physician and $24.9 billion for office-based physicians nationally.

We also made "all payer" estimates by aggregating the above interaction costs with two others: (1) the cost to physician practices of time spent interacting with Medicare and Medicaid, and (2) the cost to physi-

TABLE 4-3 U.S. Physician Practices' Costs of Interacting with Health Plans (2009 dollars)

	Interacting with Health Plans		Interacting with Health Plans, Billing Traditional Medicare/ Medicaid and Obtaining Patient Appointments	
	Costs per Physician	National Costs (billions of dollars)	Costs per Physician	National Costs (billions of dollars)
Mean	$72,036	$33.2	$88,855	$40.8*
Median	$53,856	$24.9	$66,641	$30.6

*If overhead costs, costs for physicians and their staff not in office-based practice, and costs of the time spent by nurse practitioners and physician assistants are included; $23.9 billion would be added to this $40.8 billion, for a total cost of $64.7 billion. See Addendum.

cian practices of time spent intervening with specialists and imaging and surgical facilities to obtain more timely appointments for patients. (In the United States, obtaining such appointments is not a form of interacting with health plans, but we include this cost to facilitate comparison to the Canadian system, as discussed below.) The mean estimated cost in 2009 dollars of interacting with all payers in the United States is $88,855 per physician and $40.8 billion annually for office-based physicians (Table 4-3). If median estimates are used, our annual estimate is $66,641 per physician and $30.6 billion for all office-based physicians.

While these estimates do represent interaction costs related to payers, they do not represent total administrative costs for physician practices. They do not include:

- The cost of overhead related to these interactions, such as office space or telephone, fax, and computer expenses;
- Time spent by the one-third of U.S. physicians (and their staff) who are not in office-based practice; or
- Time spent by nurse practitioners or physician assistants.

Furthermore, these estimates exclude the costs to payers of interacting with physician practices and the costs to hospitals or payers of interacting with each other.

Given these limitations, we can still use some conservative assumptions and "back of the envelope" calculations (see Addendum) to estimate the full interactions costs *for physician practices*. The excluded administrative costs mentioned above would increase the total interaction cost by approximately $23.9 billion to a total annual cost of $64.7 billion.

Looking beyond the dollars, we find that most physician time is spent on formularies and authorizations; most nursing staff time is spent on authorizations (Table 4-4). The average U.S. physician spends 3.8 hours a week—the equivalent of more than 3 workweeks a year—on interactions with payers. Primary care physicians and physicians working in small practices spend more time interacting with health plans than their counterparts in large practices. Regardless, the problem appears to be getting worse. Over three-quarters of survey respondents stated that the cost of interacting with health plans is increasing, with 41 percent stating that the cost is "increasing a lot."

"Excess" Administrative Costs

As noted in the introduction, administrative costs can be excessive in three ways. First, administrative costs are excessive if they exceed the benefits they generate. For example, do the costs to physician practices and

TABLE 4-4 U.S. Hours per Physician per Week Interacting with Payers

	Authorizations	Formularies	Claims/Billing	Credentialing	Contracting	Quality Data: Submitting Data to Payers	Appointments	Total
Physician	1.0	1.3	0.8	0.06	0.05	0.04	0.5	3.8
Nursing staff	13.1	3.6	3.2	0.02	0	0.01	1.5	21.4
Clerical staff	6.3	0	38.8	2.03	0	0.14	0	47.3
Senior admin	0	0	3.0	0.01	0.13	0.07	0	3.2
Lawyer/accountant	0	0	0	0	0.15	0	0	0.15

NOTE: Includes billing Medicare/Medicaid and time seeking timely patient appointments.

health plans of prior authorization requirements exceed the benefits? We do not have data to address the cost–benefit questions that physician–payer interactions raise.

Second, administrative costs are excessive to the extent that physician practices and payers are inefficient in dealing even with well-structured interactions. For example, if payers provided well-designed electronic access for filing claims, requesting prior authorizations, and so on, but some physician practices do not use computers, or do not know how to use them well, this would generate excessive administrative costs.

Third, administrative costs are excessive if the interaction that generates them is structured inefficiently. For example, it may be inefficient for each health plan to do its own credentialing (requiring physicians to go through the credentialing process multiple times), rather than to use a single central credentialing source. More generally, the lack of standardization among payers for virtually every form of physician–payer interaction—for example, for Web access portals and for claim-editing processes—generates tremendous costs. One physician whom we interviewed while preparing the survey instrument explained this phenomenon vividly:

> There is a lack of standardization in dealing with health plans. It's like going to the gas station to gas up your car and having to change the nozzle on the gas pump because you have a Toyota and the pump was made to fit Fords.

While we lack the data to directly estimate the reduction in costs if physician–payer interactions were more standardized, we can use comparison with the Canadian system to provide some guidance. If standardization were very high, it might approach the degree of standardization in a single-payer system, such as the Canadian system. Preliminary analyses of our survey of Canadian physicians and administrators suggest that the time cost to Canadian physician practices of interacting with their single-payer system is considerably less than half the cost to U.S. practices. Extending that finding to the U.S. experience, standardization would reduce the annual time cost of these payer interactions from $40.8 billion to $20.4 billion—an annual saving of $20.4 billion (using means).[2] If we use the $64.7 billion annual cost estimate that includes overhead expenses, physicians who are not office-based, and so on (discussed above), the annual saving would be $32.4 billion.

It is, however, important to note that these estimates do not take into account the benefits that might be lost—for example, the presumed benefits

[2]If median estimates are used, the reduction would be from $30.6 billion to $15.3 billion—a $15.3 billion annual saving.

of competition and innovation in a multipayer system—if the United States moved to a single-payer system or if multiple payers in the United States moved toward greater standardization.

The $15 billion to $32 billion estimate is a comparison with the Canadian single-payer system. It is not an estimate of the waste that could be eliminated if the U.S. multipayer system were made more efficient, such as through greater standardization. The amount of savings that such standardization would produce is not known, but interviews we conducted with 27 health plan executives and leaders of physician practices as part of our research suggest that it would yield at least 10 percent savings. If so, the annual savings would be $6.7 billion (10 percent of $64.7 billion).

Caveats and Assumptions

In addition to the caveats and assumptions noted throughout the discussion above, it is important to note that our data are based on physician and medical practice administrator responses to surveys. It is possible that the survey respondents were not representative of the population of physicians and practice administrators in the United States (or Canada). However, we surveyed stratified random samples of physicians and administrators and weighted respondents appropriately. We had a response rate of 58 percent (much higher in Canada). We were also able to check, to some extent, for nonresponse bias and found no evidence for such bias (Casalino et al., 2009).

It is also possible that respondents exaggerated the amount of time spent on interactions with payers. The amounts of time reported did vary considerably among respondents (in general, the standard deviations were approximately as large as the means). This could reflect inaccurate or exaggerated responses or true variation. As we discuss in our *Health Affairs* article (Casalino et al., 2009), some reassurance may be gained from the fact that three other studies, using different methodologies, made quite similar estimates of the time spent by physicians interacting with health plans. Additionally, the patterns of response across practice size, specialty type, and type of interaction in our study generally followed consistent patterns, which would be unlikely if inaccurate or exaggerated responses were common. Nevertheless, we cannot exclude the possibility that U.S. respondents consistently exaggerated the time spent, and that Canadian respondents did not.

Conclusion

In summary, our estimates, based on our U.S. analyses and on preliminary analyses of Canadian data, suggest that the multiple-payer system in the United States, as presently operated, generates $15 billion to $32 bil-

lion in excess annual administrative costs for physician practices, compared to the current Canadian single-payer system. The 27 physician group and health plan leaders whom we interviewed repeatedly emphasized that interactions between health plans and physician practices are performed much less efficiently than they could be.

ADDENDUM: "Back of the Envelope" Calculations of Additional Costs of Interacting with Payers

As noted in the text, our estimates of the cost to physician practices of interacting with payers do not include:

- Time spent by the one-third of U.S. physicians (and their staff) who are not in office-based practice;
- The cost of overhead related to interacting with payers, such as office space or telephone, fax, and computer expenses needed for these interactions; and
- Time spent by nurse practitioners or physician assistants.

We estimated that including these costs would increase the national annual cost to physician practices of dealing with health plans by $17.4 billion, using the following conservative assumptions and calculations:

- Assume that per physician cost of interacting with payers for non-office-based physicians is 65 percent lower than for office-based physicians. Given that one-third of practicing U.S. physicians are not in office-based practices (i.e., that there are half as many such physicians as office-based physicians), then the annual cost of interacting with payers for these physicians is (.35)(.50)($40.8 billion) = $7.1 billion.
- Assume that overhead for interactions with health plans for office-based practices is 30 percent of the cost of physician and staff time spent on these interactions (Sakowski et al., 2009) (calculations provided in a personal communication with the Medical Group Management Association). Total cost of this overhead is then (.30)($40.8 billion) = $12.2 billion.
- Assume that overhead for interactions with health plans for non-office-based practices is 10 percent of the cost of physician and staff time spent on these interactions.[3] Total cost of this overhead is then (0.10)($7.1 billion) = $0.7 billion.

[3] We do not have data to support the 10 percent estimate, but conservatively make this estimate much lower than for office-based physicians because physicians who are not office-based and work primarily in the hospital are likely to have fewer interactions with health plans.

- There are 125,000 nurse practitioners in the United States; assume that 90,000 work in outpatient practices and that they and the staff working with them spend 60 percent as much time as physicians interacting with payers.[4] There are 68,000 physician assistants in the United States.[5] Assume that 51,000 work in outpatient practice and that they and staff working with them spend 60 percent as much time as physicians interacting with payers.[6] Assume no costs of interacting with payers for nurse practitioners and physician assistants not in office-based practice. Assume that nurse practitioners and physician assistants' time, salary, and benefits are worth 40 percent of physician's time (including specialists).[7] Then a crude calculation of the cost of the time spent interacting with payers by nurse practitioners and physician assistants and staff working with them can be calculated as [the number of NPs + the number of PAs] multiplied by the ratio of time spent interacting with payers by NPs/PAs compared to physicians multiplied by the ratio of NP/PA income compared to physicians multiplied by the per physician annual cost of interacting with payers (from Table 4-1) = [90,000 + 51,000](0.6)(0.4) ($88,855) = $3 billion. Add overhead at 30 percent = an additional $0.9 billion, for a total of $3.9 billion as the cost of interacting with payers for nurse practitioners and physician assistants and staff working with them.
- Total additional costs of interacting with payers for non-office-based physicians, nurse practitioners, and physician assistants, and overhead = $7.1 billion + $12.2 billion + $0.7 billion + $3.9 billion = $23.9 billion.

[4] Sources: The number of nurse practitioners comes from the American Academy of Nurse Practitioners. We are not aware of data on the number of nurse practitioners in outpatient practice, so this figure is a conservative estimate. We estimate that nurse practitioners have fewer interactions than physicians with payers because they have fewer patient visits.

[5] Source: American Academy of Physician Assistants.

[6] As for nurse practitioners, the figures on the number of PAs in outpatient practice and the percent of time that they, compared to physicians, spend interacting with payers are conservative estimates; we do not have data for these.

[7] We cannot provide a precise estimate for this figure because the ratio of nurse practitioner and physician assistant income and benefits to physician income and benefits varies considerably by specialty, and we lack data both on the number of NPs and PAs practicing in particular specialties and on their income by specialty type. The 40 percent estimate is conservative.

COST SAVINGS FROM SIMPLIFYING THE BILLING PROCESS

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Massachusetts General Physicians Organization

The cost of administration in the healthcare revenue cycle is too high when compared to other industries (Credit Today, 2006). Comparison of staffing patterns of the credit and collection funding of various industries to some of the highest performing providers demonstrates that administrative costs are excessive (Credit Today, 2006). The experience with the Health Insurance Portability and Accountability Act (HIPAA) provides some insight to the approaches of administrative simplification. The providers and payers have met the standards of the legislation by using third parties to convert and transfer data from providers to meet the requirements of each payer. The use of third parties, system integrators, introduces an additional cost into the payment process in the effort to meet standardization requirements. Nevertheless, community efforts continue to seek savings by encouraging voluntary efforts.

Even though administrative processes are required to ensure fair payment for services and reduce fraud, excessive complexity in administrative processes engendered by numerous, opaque, changing, and convoluted payment rules come at significant cost. The Massachusetts General Physicians Organization studied the excessive administrative burden on physicians and modeled the costs of the current system versus a uniform and transparent set of payment rules similar to Medicare's. The estimates of the administrative burden were found to be 11.9 percent of net patient service revenue. These results suggest standardizing administrative processes while preserving administrative controls can yield sizable financial return as a policy for incremental reform.

Administrative costs associated with receiving payment have been a well-recognized contributor to healthcare costs in the United States for decades (Woolhandler and Himmelstein, 1991), yet the complexity of administering our system of payments and its attendant costs have continued to grow. Using cross-national comparisons, aggregate costs of administration (including costs for documentation, coding, billing, etc.) now exceed 31 percent of U.S. healthcare expenditures, up from 22 percent in 1983 (Hellander et al., 1994). From 1969 to 1999, administrative personnel grew from 18.2 percent to 27.3 percent of the U.S. healthcare labor force, a rate that far outpaced that of Canada (Woolhandler et al., 2004). More recent studies have shown that the 2006-2007 growth in resources dedicated to administration (6.6 percent) has outpaced that of professional services and is comparable to the growth in hospital costs (7.5 percent) and prescription

drug spending (6.7 percent) (Keehan et al., 2008; CMS, 2007). Compounding concerns of growing healthcare administration costs is the evidence that administrative complexity has an adverse impact on quality of care (Himmelstein and Woolhandler, 2002), thus eroding the value equation for U.S. healthcare from both a cost and quality perspective.

Other economic sectors such as consumer product distribution, industrial manufacturer, and service providers commit substantially lower resources to the administration of payment for services. Non-healthcare sectors correct 3 percent of remittances for errors while the industry standard in health care is greater than three times higher (The Hackett Group, 2009). One approach to compare the relative resources required for the revenue cycle across industries is to look at the number of staff, measured in full-time equivalents (FTEs) required per dollar cost. Many non-healthcare sectors operate close to or below 100 FTEs per $1 billion collected compared with median staff levels of 810 FTEs per $1 billion collected for physician practices (Figure 4-1) (Credit Today, 2006). Although physician transactions and our payment systems are more complex than those comparator sectors, the greater than sevenfold increase in collection costs in health care begs the question of whether all of our current resources committed to these processes are being put to best use.

The impact of excessive administrative complexity on physicians can

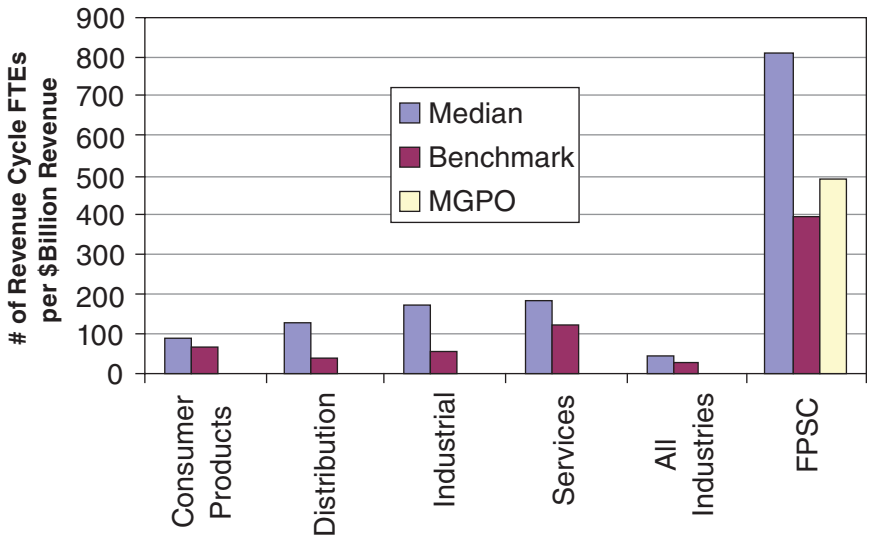

FIGURE 4-1 Physician billing staffing compared to other industries.
NOTE: FPSC = Faculty Practice Solution Center; FTE = full-time equivalent; MGPO = Massachusetts General Physicians Organization.

be particularly dramatic; in one study of a typical 10-physician practice, estimated excess administrative complexity cost over $250,000 per year (Pope, 2004). Another physician organization had a 32 percent growth to 250 FTEs, independent of programmatic growth, in the staffing of its professional billing office over a 6-year period to help deal with administrative complexity (Healy, 2003). The costs of compliance and adjudicating payment disputes are indirectly passed on to purchasers and patients and translate into significant resources that could be spent elsewhere in our healthcare system, yet there has been little concerted action to remedy this situation (Martin, 1999). There is also evidence that undue administrative burden extracts nonfinancial tolls as well. For example, a review of the significant contributors to a dramatic decline in physicians' perception of their practice environment over the period from 1992 to 2006 singled out the costs of practice management in general, and excessive administrative complexity in particular, as major contributors (Massachusetts Medical Society, 2007). In spite of these many indications, stakeholders in the U.S. healthcare system, including patients, providers, payers, purchasers, and policy makers, have demonstrated little motivation to collaboratively confront excessive administrative complexity as a target for reform.

Cost Estimates

The excessive administrative complexity of the payment system was found to primarily encumber: (1) the processing and receipt of payments for physician services in the professional billing office (PBO), and (2) the administrative functions of physicians and their staff in the clinical practices. In addition, excessive administrative complexity generated costs related to successful appeals and unrealized revenue due to rejected claims that would have been paid under our alternative single transparent rule set and processing requirements. In fiscal year (FY) 2006, the cost of excessive administrative complexity, including both expense and lost revenue, was nearly $45 million, or 11.9 percent of net patient revenue (representing $8.43 of net patient revenue per dollar of burden spent or $50,250 in burden per physician). These costs primarily consist of labor costs with the exception of rejected claims and nonlabor PBO infrastructure costs that have been conservatively estimated at the department level (Table 4-5).

Thirteen percent, or $5.6 million, of the total estimated administrative complexity burden was due to excessive administrative complexity directly associated with the processing and billing of claims in the PBO. Table 4-6 lists the cost centers within the PBO related to excessive administrative complexity. These costs do not include the estimated 29 percent of staff time following up on claims that are initially rejected but later paid upon appeal.

TABLE 4-5 Financial Cost of Administrative Complexity in Case Study Physicians' Organization

Where?	Burden $000s	% of Total Burden	% of FY06 NPSR
PBO	5,612	12.5	1.5
Physician practices	33,116	74.0	8.8
Revenue lost on legitimate claims	6,000	13.5	1.6
TOTAL	44,728	100.00	11.9

NOTE: FY = fiscal year; NPSR = net patient service revenue; PBO = professional billing office.
SOURCE: Prepublication data prepared by the authors for research funded by the Robert Wood Johnson Foundation (RWJF).

The largest portion of the administrative complexity burden, 74 percent, is attributed to the time costs of practicing physicians and their office staff preparing paperwork and contacting payers responding to questions concerning prescriptions, diagnoses, treatment plans, and referrals. Many of the subspecialty practices within the Massachusetts General Physicians Organization (MGPO) have full-time staff dedicated to referral processing. The physician time estimated at 4 hours per week accounts for $28.4 million of the estimated burden while the practices' administrative staff and

TABLE 4-6 Administrative Complexity Burden in the PO's Professional Billing Office

PBO Cost Centers/Functions	Cost of Admin. Complexity $(000,000s)	Estimated Extra Staff (FTEs)	Extra FTE's as % Actual FTEs
Salaries:			
Group practice management	1.61	19.3	40
Third-party billing	1.26	24.3	37
Coding	0.32	5.0	10
Production	0.27	6.3	18
Administration	0.22	1.5	15
Payer relations	0.09	1.0	17
Information systems	0.08	1.0	8
Customer service	0.05	1.0	14
Other:			
Outside programming	0.57		
Department overhead	1.14		
Total cost of complexity in PBO	5.61		
Burden as % of PBO total costs.	24%		

NOTE: FTE = full-time equivalent; PBO = professional billing office of the Massachusetts Physicians Organization; PO = physicians' organization.
SOURCE: Prepublication data prepared by the authors for research funded by the RWJF.

nursing time of 5 hours a week accounts for $4.9 million. Although these "costs" are best viewed as opportunity costs rather than true savings, the value of these practice-based savings could be realized through physician and staff work-life improvements, more time with patients, and/or increased productivity.

On the revenue side we found that for non-Medicare payers, 12.6 percent of charges that are billed are denied on the initial submission. After appeal, 81 percent of initial denials are eventually paid (10.2 percent of charges). The level of denials that are not collected from non-Medicare payers remains 2.4 percent greater than Medicare. The loss of this revenue is attributed to lack of standards and communication of the rules across payers compared to the Medicare practice. The revenue lost is of a value of $6 million by the MGPO. In addition to the direct loss of revenue, 29 percent of the current PBO staff effort is committed to processing and appealing denials that are eventually paid.

There will always be some administrative tasks required to process claims for payments of services, to measure performance for improvement, and to ensure the payments are made for services performed; however, the U.S. healthcare system has generated Byzantine systems of rules and regulations surrounding payment for medical services and the result has been a growing and costly bureaucracy that in the end pulls resources from direct patient care. On a national scale, the MGPO estimates translate into approximately $26 billion of savings for physician and clinical services billing operations. This is the result of applying the ratio of the cost of administrative complexity for the MGPO of 11.9 percent to the value of private health insurance payments for physicians and clinical services of $221 billion, based on the 2006 National Health Expenditure Projections 2007-2017, Office of the Actuary in the Centers for Medicare & Medicaid Services (CMS, 2007).

Next Steps

A single transparent set of payment rules for a healthcare system with multiple payers would potentially reduce the stress and burden common in a billing office of a physicians' organization. Some of the changes in tasks and functions performed by PBO staff that would be eliminated or take less time are listed in Table 4-7. Most changes would reduce appeals to payers, reworking of claims, repetitive tasks, resources necessary to keep systems current, and time spent reviewing changing payer guidelines.

Administrative simplification receives a lot of attention in local and national forums. In Massachusetts there was an effort led by the Massachusetts Medical Society and members of the state Healthcare Financial Management Association chapter called the Round Table. It identified a

TABLE 4-7 How Could Administrative Complexity Burden Be Reduced if a Single Set of Rules Were Used?

Group Practice Management
- Time to research and understand payer rules/guidelines would be reduced
- Time reviewing and analyzing rejections would decrease
- Work flow could be more streamlined and efficient
- Time saved working transaction edits

Third Party
- Reduction in rejection claim follow-up time
- Reduction in effort to maintain different formats for scrubbed claims
- Reduction in overall billing effort due to easily accessible online EOB information

Coding
- Reduction in time working payer-specific TES edits and PCS work files
- Reduction in time dedicated to Radiology bundling edits and Radiology local policy review edits

Production
- Elimination of all manual processing of paper checks and EOBs
- Elimination of resources required to scan paper EOBs

Management Information Systems
- Elimination of referral manager queues
- Elimination of open referral module maintenance
- Elimination of payer-specific dictionary fields
- Reduction in time to implement 835 receipt files
- Reduction in PCS work file compile routines

Customer Service
- Reduction in volume of insurance-related questions

Payer Relations
- Reduction in time related to the research of payer policies

NOTE: EOB = explanation of benefits; PCS = paperless collection system; TES = transaction-editing system.
SOURCE: Prepublication data prepared by the authors for research funded by the Robert Wood Johnson Foundation.

list of opportunities to pursue common policies and procedures leading to lower cost. Efforts continue to realize the savings, including working with the Council on Affordable Quality Healthcare to develop a more efficient process for large groups, in addition to the progress they have made for individual practitioners and small groups.

A new effort was launched in the last 3 months that brings together payers and providers with employers in an expanded effort. The program is called EACH, or Employer Action Coalition on Healthcare. It is a three-

pronged effort, with administrative simplification being one of the major goals. Providers and payers continue to take these voluntary actions in many communities. But, both payers and providers find it difficult to make the investment to change to a more efficient collaborative system when their own systems are working well for their purpose. Effectively these factors prevent the achievement of the important administrative simplification goals. Some commentators have concluded that this is evidence that we need a single national payer.

Consider as an alternative, that a common administrator might be a more effective solution. The analysis described in this paper used Medicare rules as a possible benchmark. In addition, CMS is moving toward using common Medicare contractors in each region. The contractors have launched the major effort to coordinate hospital and physician payments. These organizations will be in a position to compete to administer services consistently across payers in a region. The Medicare contractors are already required to meet performance requirements, maintain an extensive system of reporting, deliver provider education, and a track record of low cost.

The processes involved in the revenue cycle and therefore in the administrative simplification effort are not static. They change with the addition of new technology for both payers and providers. They are impacted by new developments in benefit management. They are potentially significantly impacted by the new payment models that may be anticipated with health reform. Administrative simplification requires a dynamic measurement process to allow for continuous improvement and adjustment as the performance changes. A few areas of the country have experience with provider and payer–provider performance reporting tools. These have the potential to transparently monitor the effectiveness of both payer and provider systems to improve both the effectiveness and efficiency of the revenue cycle.

Primary Caveats and Assumptions

We recognize that there are other important limitations to our study. First, our study was limited to just one PBO. Although there is some evidence to suggest that the operations of that PBO are relatively efficient (thus biasing our savings estimates toward being conservative) there may be significant variation in administrative costs between PBOs, which could be similar to that found among hospitals (McKay et al., 2008). For example, PBOs in less competitive markets with a single dominant commercial payer could have lower administrative costs due to a smaller number of billing rules and processes. Second, we focused on excessive administrative complexity in fee-for-service payments. We recognize that with undermanaged care the payment rules may be purposefully more restrictive so our results may not be directly generalized to capitated and other managed care arrangements.

We focused on a PBO perspective, recognizing that additional savings would also accrue to payers (who have corresponding costs associated with adjudicating claims and appeals) under our single payment rule scenario, but they could not be quantified here. In addition, there are emerging costs related to quality reporting, improvement, and pay-for-performance administration that are not included here because they could not be characterized as "non-value-added" activities. The incremental costs incurred by the PBO to meet different performance management measures have not been identified, yet contribute to the dynamic nature of the administrative simplification in light of the health reform debate.

Conclusion

An incremental move to one set of payment rules would yield significant dollar savings and work-life and productivity opportunities for physicians would be created. The savings from reducing administrative complexity would be translated into decreased costs in general and provide resources that could be passed on as savings to purchasers and patients or provide additional needed health services. Achieving these savings would not require restructuring the basic market system of our complex healthcare system through mandating a single payer. Rather, mandating a single set of rules, a single claim form, standard rules of submission, and transparent payment adjudication—with corresponding savings to both providers and payers—could provide systemwide savings that could translate into better care for Americans.

EXCESS HEALTH INSURANCE ADMINISTRATIVE EXPENSES

Andrew L. Naugle, M.B.A.
Milliman, Inc.

Within the context of the 2009 U.S. healthcare reform discussion, significant attention has been paid to identifying opportunities to reduce administrative expenses. Every stakeholder in the health insurance system incurs some administrative expense—payers, providers, purchasers, and even patients. Efforts to reduce these costs, especially those of payers and providers, have the potential to produce substantial financial savings, which could be used to fund additional care or be redirected for other purposes.

Our experience working with both payers and providers convinces us that there is widespread agreement that administrative expense reduction is both worthwhile and possible. In many cases, we believe that there is also agreement regarding viable high-level tactics for reducing administrative expenses. The points of contention and disagreement, which have precluded

significant administrative expense reduction in recent years, tend to involve funding of cost-reduction initiatives (who will pay for them?), avoidance of risk associated with changes to the status quo, and the potential for loss of payer competitiveness through product commoditization.

This paper quantifies the industry-wide administrative expense-reduction opportunity that the commercial payer community could achieve by transitioning from today's average administrative expense level to a best-practice administrative expense level. In addition, the paper identifies some tactics that could be employed by the industry to achieve these potential cost reductions.

For the purposes of this analysis, we have defined administrative expense as all expenses incurred by payers for common administrative functions such as claim processing, customer service, underwriting, medical management, and sales and marketing, as well corporate overhead and external broker commissions. We have excluded premium taxes from the analysis.

It is important to note that this paper only focuses on the commercial market (e.g., not Medicare, Medicaid, or TRICARE) and excludes supplemental products (e.g., vision, dental, and hospital indemnity plans). It also ignores potential savings that could be realized by other stakeholders (specifically, providers and purchasers) through implementation of cost-reduction strategies by payers.

Quantifying the Expense Reduction Opportunity

We used the following methodological approach to quantify the magnitude of the administrative expense-reduction opportunity:

- Estimated the total dollar value of commercial premiums for the entire U.S. health insurance marketplace;
- Estimated the distribution of commercial premiums between self-insured and fully insured products;
- Estimated total administrative expense associated with fully insured commercial products;
- Estimated total administrative expense for fully insured commercial products assuming a shift from current expense levels to a best-practice level;
- Calculated the savings opportunity for fully insured commercial products as the difference between the current administrative expense level and the estimated best-practice expense level;
- Estimated the marginal expense reduction opportunity for self-insured business as a percentage of the marginal expense-reduction opportunity for fully insured business; and

- Calculated the range of total possible savings as the sum of the value for fully insured commercial business and the range of possible savings for self-insured commercial business.

The methodology and data sources we used to develop these estimates are described below.

Value of Current Total Commercial Health Insurance Premiums

Our estimate of the total value of health insurance premiums for the commercial health insurance market is based on the Milliman Healthcare Reform Database. The Milliman database contains cost details for U.S. subpopulations (market segments), with the total reconciling National Health Expenditures data for 2008. According to this data source, 2008 U.S. health insurance commercial premiums, including premium equivalents for self-funded products, totaled approximately $700 billion.

Distribution of Commercial Health Insurance Premiums

There are two primary types of risk arrangements in the health insurance market: fully insured and self-insured (also known as "self-funded"). For fully insured products, the insurance company (the payer) takes the financial risk on the claims cost. For self-insured products, the purchaser (typically the employer) takes that financial risk. The self-insured market has grown substantially since implementation of the Employee Retirement Income Security Act of 1974 (ERISA), which recognized self-funded plans as a viable option and exempted them from most state-mandated benefits.

Self-funded products are most prevalent for group sizes greater than 500 covered lives, but are a viable option for much smaller groups. This approach is typically unadvisable for groups of less than 100 covered lives because of the risk exposure. Self-funding offers several characteristics that are desirable to purchasers, including benefit design flexibility, and lower cost owing to exemption from state premium taxes (which can add 2 percent to the cost of a fully insured product) and the insurer's risk margin on the claims cost.

In our experience, fully insured products tend to generate a greater amount of administrative expense than self-insured products. This situation exists because of a variety of factors such as unbundling of administrative services, shifting of administrative responsibilities from the payer to the employer's human resources department, and price pressure. For that reason, it was necessary to estimate the distribution of total commercial premiums between these two risk arrangements. The data sources we used to make this distribution were the Medical Expenditure Panel Survey from

the Agency for Healthcare Research and Quality (AHRQ), and proprietary Milliman data. Through the combination of these two data sources, we estimated that approximately $375 billion of premiums are associated with fully insured products and $325 billion of premium-equivalents with self-insured products.

Administrative Expense for Fully Insured Commercial Products

We estimated 2008 total administrative expense for fully insured commercial products using benchmarks developed from administrative expense data collected from more than 100 payers. According to these proprietary benchmarks, median payer administrative expense for fully insured commercial products, expressed as a percentage of fully insured commercial premiums, was 11.3 percent. Note that this definition of administrative expense is inclusive of external broker commissions, but excludes premium taxes.

Using the combination of the total fully insured premiums in the commercial market and the median administrative expense level (using the median to approximate the mean) we calculated an estimate of $42.4 billion ($375 billion × 11.3 percent) to represent total payer administrative expense for fully insured commercial products.

Administrative Expense for Fully Insured Commercial Products at Best Practice

Next, we developed an estimate of what total payer administrative expense for fully insured commercial products would have been in 2008 if administrative expense as a percentage of premiums was shifted from 11.3 percent to a level equivalent to that exhibited by best-practice organizations. Best-practice payers tend to exhibit certain characteristics that allow them to offer high-quality service in a very efficient manner. For example, they maximize use of electronic transactions, leverage information systems to achieve high levels of automation, minimize low-value administrative activities, and generally avoid unnecessary complexity.

In terms of administrative expense, we defined the best-practice level, based on our experience, to be approximately 7.6 percent of fully insured commercial premiums. Although it is possible for organizations to operate effectively at lower administrative expense ratios, we find it is more common for organizations with administrative costs below this level to exhibit characteristics of poor performance (e.g., high claims turnaround times, long customer service call hold times, inadequate or ineffective medical management programs) that are due to insufficient staffing.

Furthermore, it is important to consider that certain administrative

costs can have an offsetting impact on benefit cost. For example, some medical management programs can help to avoid unnecessary use. Administrative spending on these programs can be considered an investment, which can result in lower expenditures for healthcare services and therefore a lower total cost. Elimination of such "good" administrative expenses must be carefully considered to ensure that any administrative expense savings are not offset by increases in benefit costs.

Using the best-practice administrative expense level defined above and our estimate of total fully insured commercial premiums, we estimated that total payer administrative expense would be approximately $28.5 billion ($375 billion × 7.6 percent).

Administrative Expense Reduction Opportunity

Fully insured commercial business Using the administrative estimates developed in the two prior sections, we calculated the total administrative expense reduction opportunity for fully insured commercial products as the difference between the 2008 median and the best practice: $13.9 billion ($42.4 billion-$28.5 billion). This amount represents an estimate of the savings that could be achieved by shifting the industry median administrative cost level to a level representing current best practice.

Self-insured commercial business As previously stated, in our experience, self-insured products incur lower levels of administrative expense than do fully insured products. Therefore, we estimated the administrative expense reduction opportunity for these products by assuming the effect would be in the range between 50 and 75 percent of the marginal reduction for fully insured products.

Given that, we estimate that additional administrative expense savings for self-insured businesses could be in the range between $6.2 billion and $9.1 billion. We calculated these estimates as shown in Table 4-8.

Commercial Administrative Expense Reduction Opportunity

In summary, we estimate the total administrative expense-reduction opportunity for the commercial market as the sum of the estimate for the fully insured market ($13.9 billion) and the range of estimates for the self-insured market ($6.2 billion to $9.1 billion). The resulting range is $20.1 billion to $23.0 billion, or approximately 3 percent of total commercial premiums.

Within the context of healthcare reform, this may be a relatively conservative estimate. It assumes that the entire payer community achieves an administrative expense level consistent with current best practices. If the

TABLE 4-8 Estimates of Payer Administrative Expense-Reduction Opportunity for Self-Insured Business

	Scenario 1	Scenario 2
Percentage of marginal FI savings that can be applied to SI business	50%	75%
2008 administrative expense ratio for FI business	11.3%	11.3%
2008 best-practice administrative expense ratio for FI business	7.6%	7.6%
Marginal improvement opportunity for FI business	3.7%	3.7%
Marginal improvement opportunity for SI business based on percentage of marginal FI business reduction	1.9%	2.8%
Estimate of total SI commercial premium equivalents	$325 billion	$325 billion
Estimate of administrative expense-reduction opportunity	$6.2 billion	$9.1 billion

NOTE: FI = fully insured; SI = self-insured.

definition of *best practices* changes due to significant changes to the administrative paradigm, then even greater administrative expense reductions may be possible. Furthermore, we caution users of this report to consider the caveats and assumptions described in the next section.

Caveats and Assumptions

Reviewers of this document should consider the following caveats and assumptions when evaluating the results:

- The savings estimates provided herein are only for payers. Secondary savings would likely accrue to providers, purchasers, and potentially patients. Those savings are not estimated in this paper.
- The savings estimates provided herein are only for commercial products. Additional savings may be achieved in noncommercial products (e.g., Medicare, Medicaid, TRICARE). Those savings are not estimated in this paper.
- The calculation methodology applies data in a general manner across the entire marketplace. These estimates are not intended to represent what is possible for a specific plan or group of plans. It may not be possible for all payers, especially small payers, to achieve the best-practice benchmark because of a variety of circumstances, most notably the effects of economies of scale.
- We do not guarantee an organization's or the industry's ability to achieve the savings estimates described herein, and Milliman disclaims any and all liability that may result from a third party's use of this white paper.

- The opinions expressed in this white paper represent those of the author and not the opinions of Milliman, Inc.

Next Steps

While the opportunity to reduce payer administrative expenses in the U.S. health insurance system is great, the realization of those savings presents many challenges. If the historical context is an indicator of the future, then the achievement of material administrative cost reductions will require concerted, collaborative expense-reduction efforts coordinated among all stakeholders.

We believe there are opportunities to reduce the complexity that drives inefficiency in the system. To that end, we have identified a few tactics targeting those functions that drive the majority of administrative expense, and therefore represent, in our opinion, high-priority areas of focus for administrative expense reduction efforts.

Eliminate Manual Transactions Between Payers and Providers

According to the U.S. Healthcare Efficiency Index (www.ushealthcareindex.com), the majority of common transactions between payers and providers are performed using labor-intensive, manual means. This is despite the fact that, in accordance with HIPAA, nearly every payer in the nation has the capability to accept electronic transactions, and significant financial benefits accrue to payers through their use. Eliminating manual transactions for claim submission, claim status inquiries, eligibility verification, claim payment, and remittance advices will substantially reduce both payer and provider administrative expenses.

Simplify the Sales Process

Today approximately 30 percent of payer administrative cost is driven by sales and marketing activities. Approximately one-half of that amount is driven by external broker fees. The process of purchasing group health insurance, and soliciting and evaluating proposals from multiple payers, is complicated and time consuming. Furthermore, most group insurance purchasers are not health insurance experts. These realities drive many purchasers to employ the services of a broker. Although the broker provides some valuable administrative services for less sophisticated purchasers, substantial reductions in sales and marketing expense could be achieved if purchasers could more easily compare products and prices, thus minimizing the broker's role, and associated costs, in the sales process.

Maximize Self-Service Capabilities and Adoption

Although health insurers have made significant investments in self-service capabilities (online and telephonic), adoption rates for these services could improve significantly. The administrative expense associated with a self-service transaction is negligible when compared to the cost of handling a telephone call or processing written correspondence.

Standardize Payer–Provider Interaction Processes and Rules

A typical provider may have contracts with 10 or more insurers and interact with others as a nonnetwork provider. Every payer has different processes, policies, and rules. Standardization of processes for common types of interactions could reduce both provider and payer administrative expense.

Scrutinize Medical Management Programs for Effectiveness

Since the advent of managed care, payers have implemented many programs intended to manage use of healthcare services. The clinical personnel (e.g., physicians, nurses, and other clinicians) responsible for these programs are often among the most expensive administrative staff. Although some of these programs are effective in managing use and cost, others have dubious value, especially when compared to the administrative burden they impose on payers, providers, and patients. The elimination of medical management programs that do not demonstrate value could significantly reduce administrative cost.

Of course, this is not a complete list, and successful implementation of all of these tactics does not guarantee realization of the full savings opportunity. However, we believe it is possible to substantially reduce payer administrative expense to the benefit of the U.S. healthcare system. We also believe that material administrative expense reduction can be achieved without harming competition among insurers, and without reducing provider reimbursement levels or diminishing quality and service to purchasers and patients. Such initiatives will, however, require coordination among all stakeholders, and implementation of carefully considered strategies adopted by all payers, to reduce complexity and eliminate administrative variation.

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5

Prices That Are Too High

INTRODUCTION

In a discussion about rapidly rising healthcare costs, inevitable attention turns to the pricing of medical services and products. While current prices may preserve incentives for innovation and reflect investments in research and development (Jayadev and Stiglitz, 2009), these prices may also reflect market asymmetries in information and monopoly power (Dafny, 2009; Pauly and Burns, 2008). The speakers in this session explore how current market practices result from perverse economic and practice incentives, and the opacity of cost, quality, and outcomes, yielding prices that may cost the nation billions of dollars in expenditures unnecessarily.

Basic economics teaches that monopolies create high prices and inefficiencies because of the stymied competition. Cory S. Capps of Bates White reasserts this basic economic principle when he examines the impact of hospital consolidations on prices. According to his research, mergers have resulted in higher costs and prices and static or worse patient outcomes. He describes how, until the 1990s, mergers had been blocked because of antitrust legislations. However, a policy change in 1993 has since allowed for the concentration of healthcare providers and relative increase of market inefficiencies. Estimating that current healthcare expenditures are about 0.4 to 0.5 percent higher than they would be absent price increases from hospital consolidations, Capps postulates that "unconcentrating" the market would yield between $10 billion and $12 billion in savings annually. However, he also explains that this analysis considers only broad averages and general trends, and does not indicate that any specific hospital consolidation will (or will not) result in higher or lower prices.

Jack Hoadley of Georgetown University discusses how pricing and markets work in relation to pharmaceuticals, explaining that pricing varies substantially by payer and by whether drugs are under patent protection. He also explores how government-sponsored programs, such as the Veterans Administration and Medicaid, price drugs differently than privately insured health plans (including those that deliver the Medicare drug benefit) or than pharmaceutical companies for uninsured purchasers. He additionally reviews research demonstrating that brand-name drugs are twice as expensive in the United States as in other countries while generic drugs are less expensive domestically. Hoadley ultimately concludes that, while a price reduction of even 5 percent in brand-name drug prices could save $9 billion a year, the potential is unclear, partially because pharmaceutical spending is driven not only by prices, but also by physicians' prescribing decisions and patients' decisions whether to comply with their prescriptions. While Hoadley cautions that this estimate is only illustrative, as no obvious standard for an optimal drug price is available, he also explains that additional consideration of the impact price alterations could have on research and development and innovation is necessary.

According to Thomas J. Hoerger of RTI (Research Triangle Institute) International and Mark E. Wynn of the Centers for Medicare & Medicaid Services, evidence from competitive bidding demonstration projects demonstrates that the market for durable medical equipment (DME) inflates prices by approximately 20 to 25 percent. Care as to the interpretation of the amount of savings achievable is suggested by Hoerger because, while his savings estimate is based on competitive bidding results from the 1999-2002 demonstration projects and the 2008 national program, Medicare fees for DME have since been reduced. Hoerger also discusses how generous insurance coverage and demand created by pressing medical needs can promote higher prices for DME in excess of those that would occur in a perfectively competitive market. Although Medicare has used administered fee schedules in an effort to control these excess prices, Hoerger argues that these schedules may not be responsive to the usual market forces of supply and demand, entry and exit, and technological change. Wynn suggests that well-defined products, such as durable medical equipment, are the best candidates for competitive bidding. Yet, despite the potential for competitive bidding to lower the prices for DME, he urges consideration of the political context, describing how Congress delayed a DME bidding program for 18 months given formidable political backlash.

Lastly, Jeffrey C. Lerner of ECRI Institute concludes this session discussing price-setting practices and market practices for medical devices. He examines some of the most common purchasing processes in hospitals and discusses how efficiency can be improved. Building on the premise that the large and artificial asymmetry between information and market power existing between buyers and sellers creates inefficiencies, he suggests that

better negotiating processes in hospitals could have yielded close to $5 billion in savings in 2008. He acknowledges that beyond hospitals, data from outpatient medical centers and physician groups would be needed for a more complete analysis.

PRICE IMPLICATIONS OF HOSPITAL CONSOLIDATION

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Bates White, LLC

Because Medicare and Medicaid payments are largely determined by administrative fiat, only payments by private parties, primarily insurers, are subject to potential price increases resulting from hospital ownership consolidation. Since 2002, payments to hospitals by private payers have made up 13 to 14 percent of national healthcare expenditures.[1] This implies, for example, that if hospital prices increase by 10 percent then total national healthcare expenditures would increase by 1.3 to 1.4 percent.

Hospital Consolidation and Spending Growth

In the late 1980s and early 1990s, hospital inpatient spending grew rapidly at rates of roughly 4 percent, and total hospital spending grew 8 to 10 percent per year (California HealthCare Foundation, 2009; Claxton et al., 2007; Ginsburg et al., 2006; Strunk et al., 2002) (Figure 5-1). Then, beginning in the early 1990s, two major structural changes in the healthcare industry gathered steam. The first was the dramatic increase in the penetration of managed care (Figure 5-2). The second was a reduction in the length of the average hospital stay and a concomitant increase in outpatient care.

In combination, these changes likely explain the marked reduction in the growth rate of spending on hospitals in the early and mid-1990s. Instead of growing at rates in excess of 8 percent, overall hospital expenditures increased 3 to 4 percent annually, while inpatient expenditures actu-

[1]Spending on hospital care represents roughly 31 percent of total healthcare spending, and private-sector spending represents about 55 percent of total healthcare spending (2007 National Health Expenditures Tables, at http://www.cms.hhs.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp). Multiplying the hospital share by the private-sector share suggests that private-sector payments to hospitals are closer to 17 percent of national healthcare expenditures. NHE Table 4 reports by expenditures source of funds and type of expenditure from 2002-2007 and shows that private-sector payments to hospitals account for 13 to 14 percent of total healthcare expenditures. The discrepancy between the higher figure and the 13 to 14 percent figure is likely the result of lower acuity hospital visits among the privately insured population (i.e., while private-sector spending is 55 percent of total healthcare spending, the private sector accounts for a share of payments to hospitals that is below 55 percent).

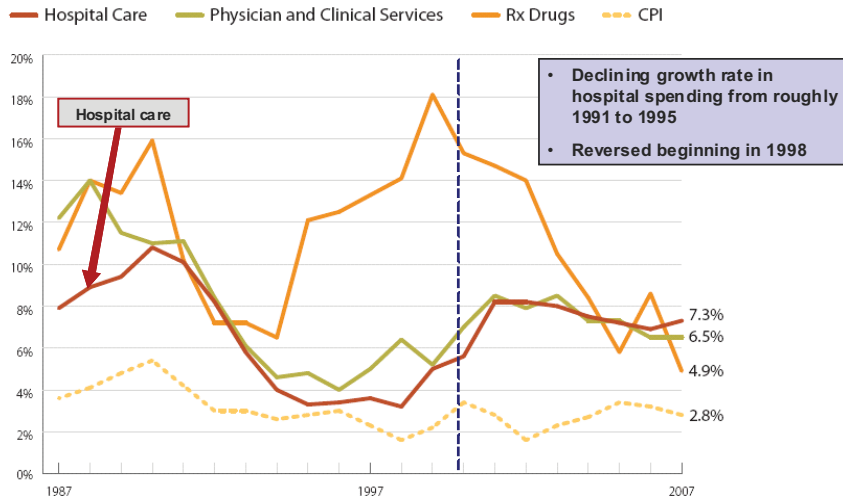


FIGURE 5-1 Components of national healthcare spending growth.
NOTE: CPI = consumer price index.
SOURCE: Reprinted with permission from the California HealthCare Foundation, 2010.

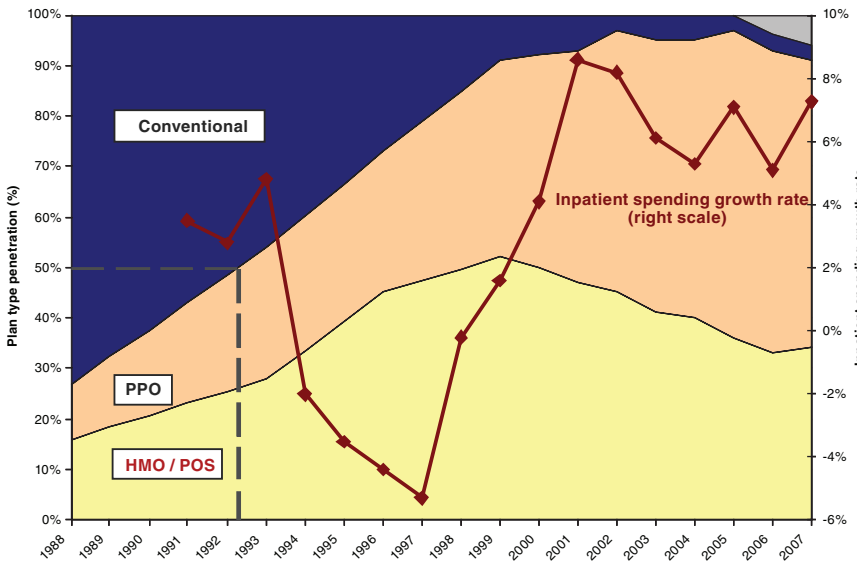


FIGURE 5-2 Managed care penetration and inpatient spending growth.
NOTE: HMO = health maintenance organization; PPO = preferred provider organization; POS = point of sale.

ally fell for several years. Then, around 1993, a wave of hospital mergers began (Figure 5-3). The peak occurred in 1996, when there were 108 consolidations among hospitals within metropolitan statistical areas (MSAs). Merger and acquisition activity remained high for several years thereafter (Town and Vistnes, 2001). Thereafter, in the late 1990s and 2000s, hospital spending returned to growth rates in excess of 6 percent overall and 6 to 8 percent for inpatient services only. In both periods of rapid spending growth—the late 1980s and late 1990s to 2007—the rate of increase of hospital spending outpaced the Consumer Price Index (CPI) by approximately 4 percent per year (Figure 5-2).

The peak of the 1990s hospital merger wave was followed by an increase in inpatient spending growth (Figure 5-3). Economic literature exploring the relationship between hospital mergers and hospital pricing suggests that a significant portion of the resurgence in hospital spending growth rates was *caused* by price increases resulting from hospital mergers.

Economic Research on Hospital Consolidation

This section builds on a comprehensive 2006 survey by health economists Robert Town and William Vogt that was commissioned by the Robert Wood Johnson Foundation (RWJF) (Vogt and Town, 2006). Town and Vogt reviewed 87 papers that analyzed the relationship between hospital

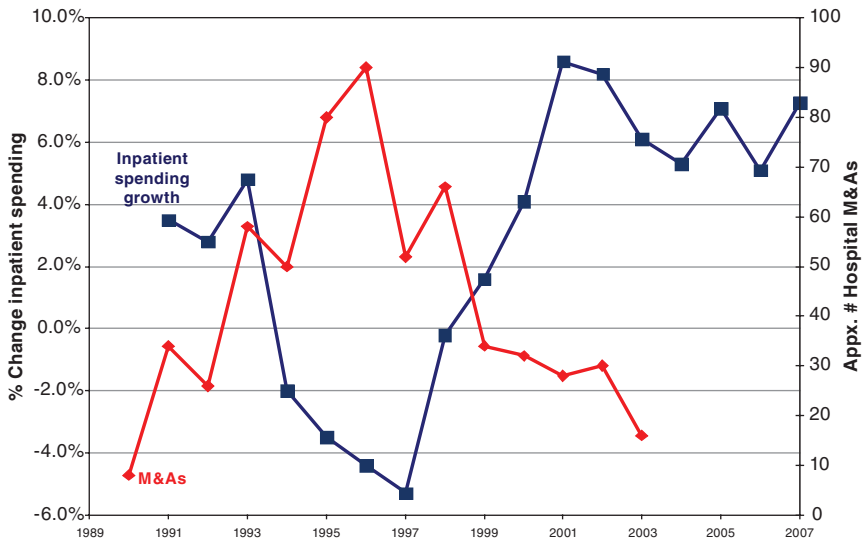


FIGURE 5-3 Inpatient spending growth and hospital merger and acquisition activity.

consolidation and concentration on the one hand and costs, quality, and pricing on the other.

Cost Effects

Most studies of the cost effects of hospital consolidation find small effects for most mergers and acquisitions. For example, Dranove and Lindrooth (2003) conclude that there are, at most, modest cost savings from system acquisitions in which hospitals simply combine ownership but do not combine licenses (Dranove and Lindrooth, 2003). They do, however, find that full mergers that involve combined licenses and service integration and consolidation can produce cost savings on the order of 14 percent. However, such full mergers are not the norm and can be difficult to successfully execute.[2]

Overall, Town and Vogt's conclusion from their survey of the cost literature is as follows: "[t]he balance of the evidence indicates that hospital consolidation produces some cost savings and that these cost savings can be significant when hospitals consolidate their services more fully."

Quality Effects

Hospital consolidation may also affect quality. The majority of studies to date, however, conclude that hospital mergers and acquisitions have either no effect or a modest negative effect on quality, with the former finding being the more common. Town and Vogt (2006) report that "[t]he findings from this literature [on quality effects] run the gamut of possible results. Of the 10 studies reviewed, five find that concentration reduces quality for at least some procedures, four papers find quality increases for at least some procedures, and three studies find no effect."

Price Effects

Studies of pricing have yielded more definitive results. There is substantial evidence that hospitals compete within a fairly narrow geographic area, often smaller than a city or an MSA. Mergers within such a narrow area can lead to substantial price increases (Capps and Dranove, 2004; Capps,

[2]The 1997 merger of the profitable UCSF and Stanford hospitals resulted in an entity that lost $176 million over 29 months. Don Kazak, "A merger gone bad," *Palo Alto Weekly*, May 16, 2001. For a detailed account see: John Kastor, *Mergers of Teaching Hospitals in Boston, New York, and Northern California*, Ann Arbor: University of Michigan Press, 2003. Similarly, the 1999 merger between Alta Bates and Summit hospitals resulted in a combined firm that, by 2001, faced a $40 million annual deficit. Chris Thompson, "Local hospitals are bleeding money," *East Bay Express*, August 1, 2001.

Dranove, and Satterthwaite, 2003; Dafny, 2009; Dranove and Ludwick, 1999; Gaynor and Vogt, 2003; Keeler, Melnick, and Zwanziger, 1999; Town and Vistnes, 2001; Vogt and Town, 2006; Vita and Sacher, 2001). Increases are most likely if the consolidation combines hospitals that, from the perspectives of insurers assembling provider networks, are close substitutes.

A significant portion of the research focused on the connection between hospital concentration, typically measured by the Herfindahl-Hirschman Index (HHI), and hospital prices. The HHI is calculated by summing the squared market shares of the hospitals in a given market and multiplying the resulting figure by 10,000, with a value of 10,000 corresponding to perfect monopoly.[3] Because the HHI is based on market shares, calculation of an HHI requires first defining the market within which to compute shares.

Defining the area within which to analyze concentration and compute HHIs has played a crucial role in litigated hospital merger cases. The Federal Trade Commission (FTC) or Department of Justice (DOJ) typically alleges a relatively narrow geographic market, which tends to indicate that market shares and the HHI are high. The merging hospitals typically contend that the relevant geographic market is large and includes many hospitals, yielding low market shares and low HHIs. During the 1990s, as described below, courts overwhelmingly sided with the merging hospitals.

Subsequent research has shown that hospitals generally compete locally and that hospital mergers—even those that have very small effects on MSA-level or multicounty HHIs—*can* lead to large price increases (Capps and Dranove, 2004; Dafny, 2009; FTC, 2005). This indicates that the MSA and other broad regions are unlikely to generally correspond to the relevant antitrust markets in which hospitals compete.

However, formal antitrust market definition is a lengthy and fact-intensive process that proceeds on a market-by-market basis. For the purpose of reviewing nationwide consolidation trends and estimating approximate effects on pricing, this is both impractical and unnecessary. Prior studies defining markets based on counties, healthcare referral regions, health service areas, or MSAs have shown the HHI to be a useful predictor of prices. Based on their review of such studies, Town and Vogt (2006) concluded that an 800-point increase in HHI within an MSA led to an aver-

[3]For example, in a market in which four firms have equal shares of 25 percent, the HHI will be 2,500 (HHI = $10{,}000*(0.25^2 + 0.25^2 + 0.25^2 + 0.25^2) = 2{,}500$). The HHI ranges from 0 to 10,000, with 0 corresponding to perfect competition and 10,000 corresponding to monopoly.

age price increase of roughly 5 percent (Vogt and Town, 2006).[4] To put it differently, each 160-point increase in the HHI leads, on average, to prices increases of about 1 percent. The analysis below follows this literature and analyzes hospital concentration at the MSA level.

Antitrust Enforcement and Hospital Mergers

Given this evidence of price effects resulting from hospital mergers, it is natural to inquire about antitrust policy and enforcement. During the 1980s and through 1993, the DOJ and FTC usually won when they went to court to block a hospital merger.[5] That success, however, came to an end during the hospital consolidation wave of the 1990s (Table 5-1). From 1993 through 1998, the FTC and DOJ lost six consecutive hospital merger challenges; in 2001, the State of California lost a seventh. In the decade after the last of these losses, 1998 to 2008, neither the FTC nor DOJ challenged a prospective hospital merger in court.[6] Over the 15 years spanning 1993-2008, antitrust policy likely had little restraining effect on hospital mergers over this period.

Hospital Consolidation and Likely Price Effects

From 1997 to 2006, the average number of hospitals per MSA declined only slightly (American Hospital Association, 1997, 2006). The landscape of hospital ownership, however, changed significantly over this period as a result of consolidation. Primarily as a result of mergers and acquisitions, the average number of independent hospitals per MSA declined by 0.3 percent, from 7.95 to 7.65, while the number of hospitals in multihospital systems in the average MSA increased 0.4 percent, from 3 percent to 3.4 percent (American Hospital Association, 1997, 2006) (Figure 5-4).

In terms of capacity (hospital beds), the shift was more pronounced. The share of beds sited at independent hospitals declined from 51 percent to 42.5 percent (American Hospital Association, 1997, 2006) (Figure 5-5). The share of beds controlled by multihospital systems with multiple loca-

[4] In a market in which five hospitals had equal shares, a merger between two of them increased the HHI by 800 points and resulted in a 5 percent price increase. An HHI of 2,000 corresponds to five firms with equal shares: HHI = $10,000*(.2^2 + .2^2 + .2^2 + .2^2 + .2^2) = 2,000$. If two of these hospitals merge, resulting in one firm with 40% and three with 20 percent, then the HHI would increase to 2,800: HH I= $10,000*(.4^2 + 2^2 + .2^2 + .2^2) = 2,800$.

[5] The DOJ lost one hospital merger case in the 1980s, in Roanoke, Virginia.

[6] In 2004, the FTC challenged a consummated merger between Evanston Northwestern Healthcare (ENH) and Highland Park Hospital, both located in a northern suburb of Chicago, Illinois. The administrative law judge in that case found for the Commission and ordered divestiture. On appeal, however, the Commission instead imposed a conduct remedy that required ENH and Highland Park to bargain separately with insurers. See http://www.ftc.gov/os/adjpro/d9315/index.shtm.

TABLE 5-1 Hospital Merger Cases[a]

Year	Merging Party	Location	Merger Blocked?
1989	Rockford Memorial Hospital	Rockford, IL	Yes
1994	Ukiah Adventist Hospital	Ukiah, CA	No
1995	Freeman Hospital	Joplin, MO	No
1995	Mercy Health Services	Dubuque, IA	No
1996	Butterworth Health Corp.	Grand Rapids, MI	No
1997	Long Island Jewish Medical Center	New Hyde Park, NY	No
1998	Tenet Healthcare Corp.	Poplar Bluff, MO	No
2000	Sutter Health System	Oakland, CA	No
2004	Evanston Northwestern Healthcare	Evanston, IL	N/A
2008	Inova Health System	Manassas, VA	Yes

[a] *United States v. Rockford Mem. Hosp.*, 717 F.Supp. 1251 (N.D. Ill. 1989), *aff'd*, 898 F.2d 1278 (7th Cir.), *cert. denied*, 498 US 920 (1990); *Ukiah Adventist Hospital v. FTC*, No. 93-70387 (9th Cir. May 18, 1994); *FTC v. Freeman Hospital*, 911 F.Supp. 1213 (W.D. MO. 1995), *aff'd* 69 F.3d 260 (8th Cir. 1995); *United States v. Mercy Health Services*, 902 F.Supp. 968 (N.D. Iowa 1995), *vacated as moot*, 107 F.3d 632 (8th Cir. 1997); *FTC v. Butterworth Health Corp.*, 946 F.Supp. 1285 (W.D. Mich. 1996), *aff'd per curiam*, No. 96-2440 (6th Cir. July 8, 1997) (unpublished); *United States v Long Island Jewish Medical Center*, 983 F.Supp. 121 (E.D.N.Y. 1997); *FTC v. Tenet Healthcare Corp.*, 17 F.Supp. 2d 937, 943 (E.D. Mo. 1998), *rev'd* 186 F.3d 1045 (8th Cir. 1999); *California v. Sutter Health Sys.*, 84 F. Supp. 2d 1057 (N.D. Cal.), *aff'd mem.*, 2000-1 Trade Cas. (CCH) U 87,665 (9th Cir. 2000), *revised*, 130 F. Supp. 2d 1109 (N.D. Cal. 2001); Final Order, *In re Evanston Northwestern Healthcare Corp.*, No. 9315 (Federal Trade Commission Apr. 24, 2008), http://ftc.gov/os/adjpro/d9315/080424finalorder.pdf; and Complaint, *In re Inova Health Sys. Found.*, No. 9326 (Federal Trade Commission May 8, 2008), http://www.ftc.gov/os/adjpro/d9326/080509admincomplaint.pdf.

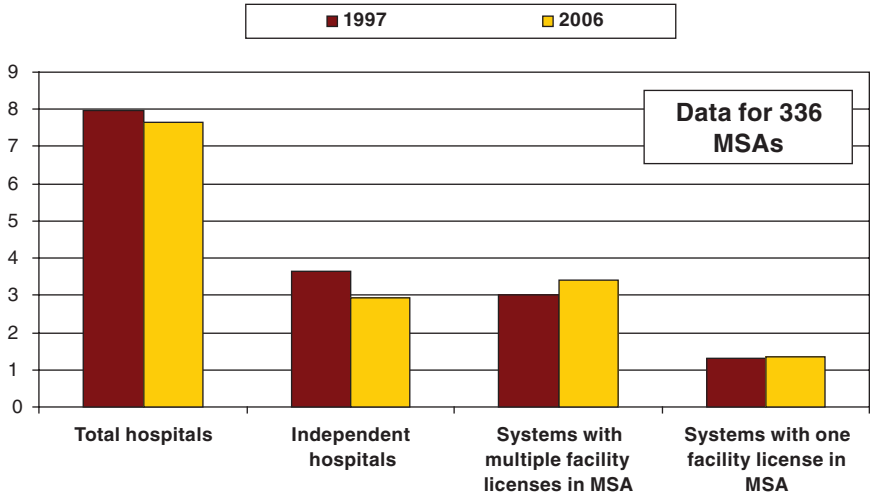
tions within an MSA increased from 21 percent to 27 percent of beds (American Hospital Association, 1997, 2006).

By the standards outlined by the DOJ and FTC in the *Horizontal Merger Guidelines*, most MSAs were already highly concentrated by 1997, when the simple average HHI within an MSA was over 4,000.[7] By 2006, the average HHI rose an additional 299 points. Weighting MSAs by admissions, the average 1997 HHI was still over 2,000 and rose by 253 points by 2006 (Figure 5-6).

Based on the Town and Vogt (2006) conclusion that prices increase by 1 percent per 160-point increase in HHI, hospital consolidation between 1997 and 2006 likely resulted in a 1.9 percent increase in hospital prices across MSAs and an average 1.6 percent price increase across patients.[8]

[7] The antitrust agencies define markets with HHIs above 1,800 as "highly concentrated." U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, http://www.usdoj.gov/atr/public/guidelines/horiz_book/15.html.

[8] An increase in concentration in a larger MSA will affect more patients than a similar increase in a smaller MSA. The effect for the average patient, across MSAs, is computed by



- Small decline in the average number of hospitals per MSA
- The average number of independent hospitals per MSA declined by 0.74
- The average number of hospitals in multi-hospital systems increased by 0.49

FIGURE 5-4 The extent of hospital consolidation.
NOTE: MSA = metropolitan statistical area.

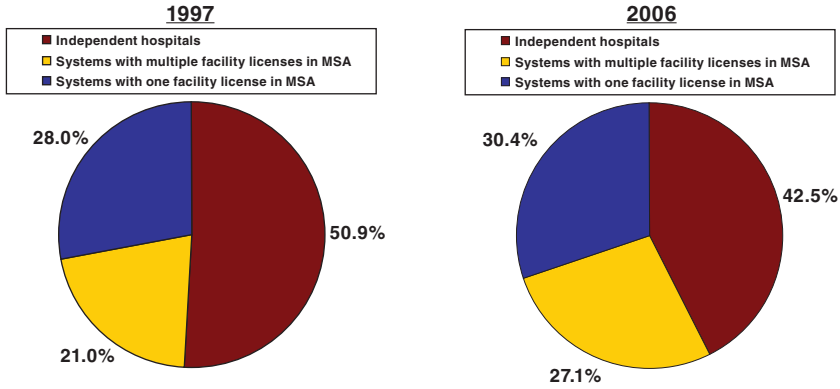


FIGURE 5-5 The share of beds owned by independent hospitals and multihospital systems.
NOTE: MSA = metropolitan statistical area.

That estimate accounts only for price changes driven by merger activity from 1997-2006, and thus does not capture the effects of the pre-1997 hospital mergers. A simple counterfactual scenario provides a conservative estimate of the approximate magnitude of the cumulative effects of hospital consolidation on prices. In particular, suppose that all MSAs that could be "unconcentrated" in 2006 were in fact unconcentrated.[9] This exercise effectively "unconsolidates" the MSAs that saw substantial consolidation and then estimates the resulting change in price.[10]

This counterfactual scenario indicates that, in an unconsolidated world, hospital prices (to private payers) would be about 8 percent lower on average in these MSAs. The hospital prices faced by the average patient, computed by weighting by MSA admissions, would be about 6 percent lower.

Hospital Consolidation and Healthcare Expenditures

Within the set of 94 MSAs for which (1) hospital ownership is concentrated, and (2) the population is large enough to support multiple independent hospitals (i.e., the MSA could in principle be unconcentrated), privately insured patients and their insurers pay about 6 percent more than they otherwise would. These 94 concentrated MSAs account for 60 percent of admissions among all MSAs, and about 85 percent of all admissions are to hospitals in an MSA. Thus, roughly half (0.85*0.60) of privately insured patients are paying 6 percent more than they would absent hospital consolidation. This indicates that nationwide payments to hospitals on behalf of the privately insured are about 3 percent higher than they would be absent hospital consolidation. Payments to hospitals by private insurers represent about 13 to 14 percent of total U.S. expenditures on health care.

In combination, these statistics indicate that total national healthcare expenditures are roughly 0.4 to 0.5 percent higher ($10 billion to $12 billion in annual expenditures) than they would be absent the price increases resulting from hospital consolidation.

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taking the admission-weighted average of HHIs. That the weighted average change is smaller than the unweighted average change indicates that concentration increased somewhat more in smaller MSAs.

[9] An MSA is defined as "relatively unconcentrated" if the HHI equals 2,000 (this is a conservative estimate; as in most contexts, an HHI of 2,000 indicates high concentration). An MSA is defined as large enough that it "could be relatively unconcentrated" if there are sufficient admissions in the MSA to support five or more hospitals (this requires 45,000 or more admissions per year). Ninety-four MSAs have an HHI over 2,000 and are large enough to support five or more hospitals. These 94 MSAs account for about 60 percent of admissions among the 336 MSAs.

[10] That is, compute the predicted price effect of reducing the HHI in these 94 MSAs from the observed level in 2006 to 2,000.

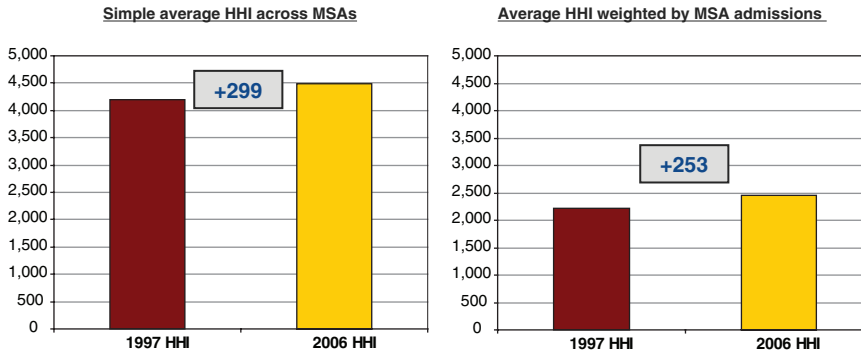

FIGURE 5-6 Metropolitan Statistical Area (MSA)-Level Herfindahl-Hirschman Indices (HHI), 1997 and 2006.

Caveats and Limitations

This is a rough but reasonable approximation that is consistent with other research. For example, Town and colleagues (2006) found that "the aggregate magnitude of the impact of hospital mergers [from 1990 to 2003] is modest but not trivial. In 2001, average health maintenance organizations' (HMOs') premiums are estimated to be 3.2 percent higher than they would have been absent any hospital merger activity during the 1990s."

Another noteworthy fact is that the degree of hospital ownership consolidation, and thus the likely average price effect, is not evenly distributed across the country. The data show a mix of highly concentrated MSAs and unconcentrated MSAs, and a correspondingly high variation in price effects is likely.

One significant caveat is that the analysis above assumes that inpatient and outpatient hospital prices move together, even though competitive conditions in the outpatient market may differ as a result of the presence of additional competitors, such as ambulatory surgery centers, that are not readily observable in public data sources.

Additionally, this analysis identifies only the *direct* price effect of hospital consolidation, and there may be other significant effects. For example, consolidation may enable hospitals to resist tiering, steering, and use management, thereby increasing expenditures by increasing use (this would magnify the effects of price increases). Reduced hospital competition may weaken incentives to operate efficiently, and this would increase expenditures by all payers, including Medicare and Medicaid. Moreover, this analysis makes no effort to estimate the effects on national health expenditures of any costs related to reduced insurance uptake as a result of higher hospital prices.

Physician practices also consolidated during the 1990s and 2000s, but detailed data on this subject are not readily available. Physician and clinic expenditures are approximately 70 percent of hospital expenditures, so this consolidation could affect another 9 percent to 10 percent of total healthcare spending. If the relationship between price and concentration in physician practices parallels the one for hospitals (see Figure 5-2, which shows that physician and hospital price growth track reasonably closely over time), then physician practice consolidation could account for an additional 0.25 percent to 0.40 percent increase in U.S. healthcare expenditures, but this estimate is highly speculative.

Finally, and importantly, this analysis speaks only to broad averages and general trends and does not indicate that any specific hospital consolidation is (or is not) likely to result in higher or lower prices.

PRESCRIPTION DRUG PRICES

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Georgetown University

Addressing cost savings that might be achieved from lower drug prices is challenging in a marketplace where pricing varies substantially by payer and by whether drugs are under patent protection. Recent price trends have been substantially influenced by the market entry of new generic competition. The global nature of the prescription drug marketplace also differentiates it from other healthcare sectors; despite that, U.S. drug prices vary widely from those in other countries. The impact of efforts to lower prices must be measured against the potential impact on research and development.

Pricing Across the Prescription Drug Marketplace

In the United States, prescription drugs are priced differently for different pharmaceutical market segments and different payers. First, drugs that are under patent protection with only a single manufacturer (i.e., single-source drugs) are priced differently than those without patent protection where two or more manufacturers compete. Second, pricing operates differently within the U.S. market among private health plans (including those that deliver the Medicare Part D drug benefit), state Medicaid programs, federal programs (such as the Department of Veterans Affairs), and the cash retail market for consumers without insurance coverage. Finally, drugs that are administered by a physician (such as by injection or infusion) or provided in an institution (hospital or nursing home) are handled differently by most payers than outpatient prescription drugs obtained by the patient from a retail or mail-order pharmacy.

Pricing for Private Health Plans

By 2006, 89 percent of retail prescription drug purchases in the United States involved third-party payment by private payers (including Medicare drug plans) at the point of sale; about 1 percent of transactions were handled by Medicaid programs (Figure 5-7) (IMS Health, 2006). The remaining 10 percent of purchases were made by cash customers, mostly individuals without any insurance coverage for their drugs. Notably, as recently as 1990, the cash market had been dominant. Drug coverage was less common, and many with coverage bought drugs at full retail prices and then filed receipts for reimbursement.

Single-source brand-name drugs Typically drug purchases for those with private insurance are managed by a pharmacy benefit manager (PBM) under contract to health plans or private insurers. Two factors have a significant influence over the pricing of single-source brand-name drugs under private drug coverage. First, most drugs require a prescription from a physician who often does not take into account the drug's cost or its status on a health plan's formulary (list of covered drugs). Second, U.S. pharmacists generally lack the legal authority to change a prescription in order to dispense

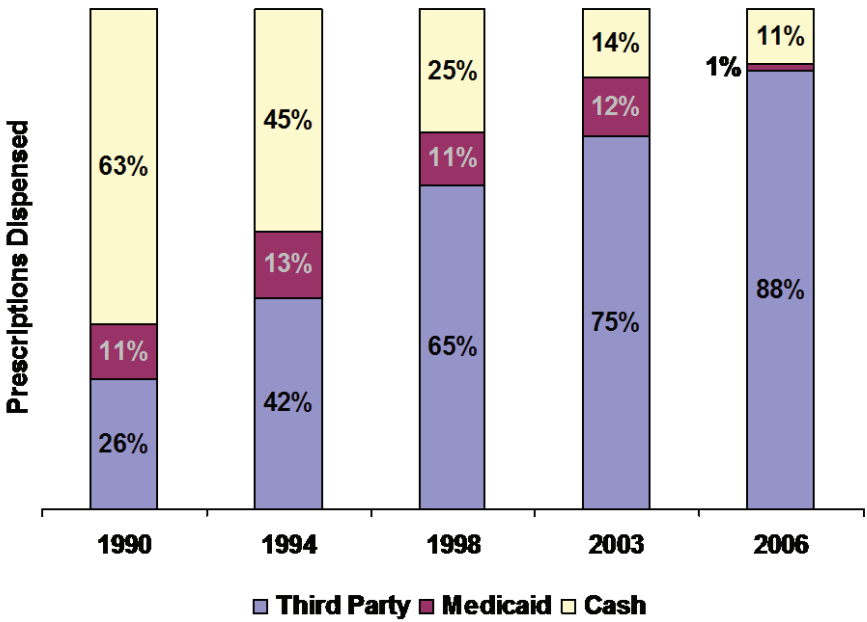

FIGURE 5-7 Shift of drugs to third-party payment, 1990-2006.

a therapeutically similar product, although they typically can substitute a therapeutically equivalent generic drug.

The combination of physician control of prescribing with claim adjudication by PBMs at the point of sale has implications for price setting. Drug price negotiations are based primarily on shifts in market share among competing medications in a particular class of drugs. The PBM uses a variety of tools to move market share in negotiating lower prices. The most common tools are formularies combined with tiered cost sharing and use management measures such as prior authorization.

The actual mechanics of pricing are complex (Figure 5-8) (CBO, 2007). Because the PBM does not take possession of the drug in most cases (mail order being the primary exception), negotiated discounts that result from formulary placement are not reflected in the price paid at the retail pharmacy. Instead, the PBM negotiates both a payment to the pharmacy and a rebate payment from the manufacturer. The PBM normally establishes the retail pharmacy price as a formula that combines a measure of the ingredient cost with a dispensing fee. The ingredient cost is typically based on the list price minus a certain percentage (such as 15 percent). The dispensing fee

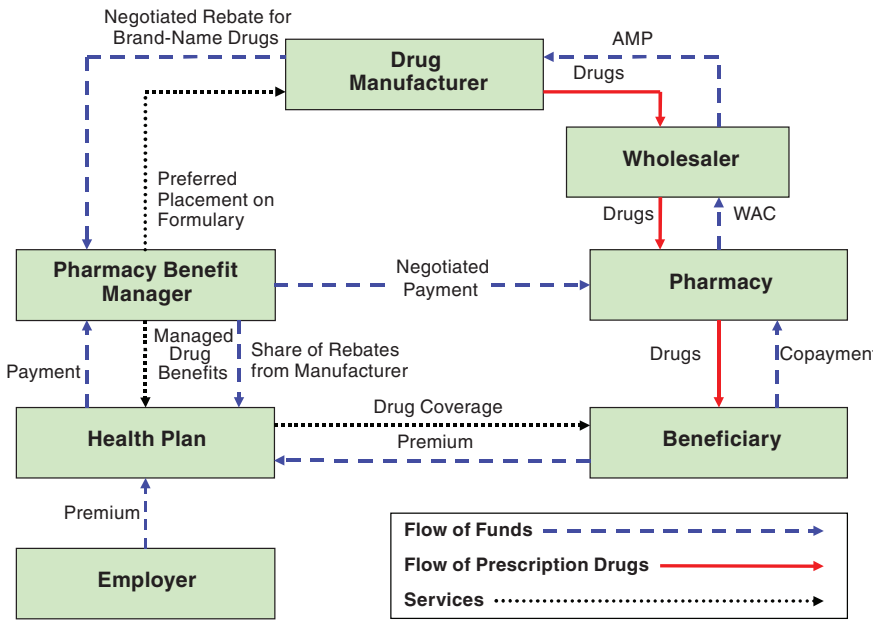

FIGURE 5-8 Flow of funds for a brand-name drug.
NOTES: AMP = average manufacturer price; WAC = wholesale acquisition cost.
SOURCE: CBO, 2007.

covers some of the fixed costs involved in filling a prescription and may be negotiated differently across pharmacies. In negotiating the manufacturer rebate, the PBM uses its size and its tools to shift use toward a particular drug to obtain a favorable price. The rebate provides the mechanism for lowering the effective price in a system where the PBM never owns the product. Rebate amounts are viewed as proprietary, but estimates generally place average rebates for individual drugs around 8 percent, ranging from nothing to 35 percent depending on the individual drug (Figure 5-9).

Multiple-source drugs Negotiating leverage for multiple-source drugs (usually generics) is substantially different than for single-source drugs, because the pharmacy can switch from one manufacturer's version of the drug to another without getting a new prescription from the physician. The pharmacy's leverage also stems from the large number of manufacturers that often sell therapeutically equivalent versions of a given drug. By

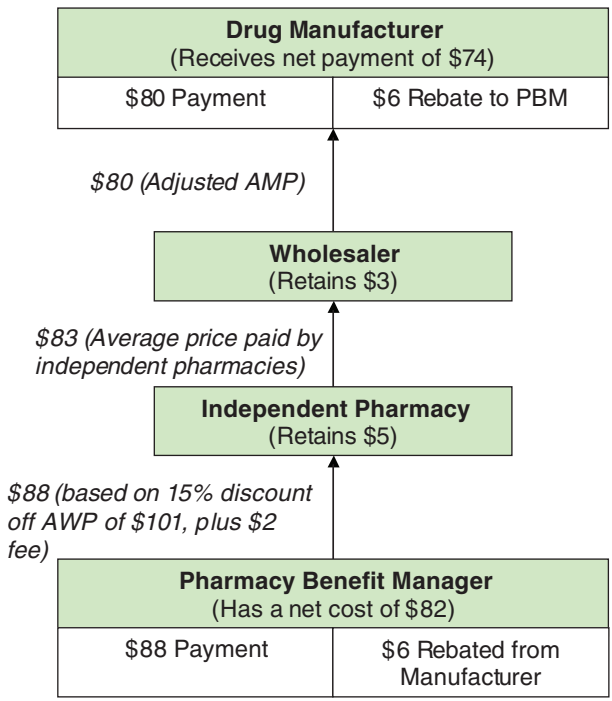

FIGURE 5-9 Pricing for a brand-name drug.
NOTE: AMP = average manufacturer price; AWP = average wholesale price; PBM= pharmacy benefit manager.
SOURCE: CBO, 2007.

contrast, PBMs have no ability to specify which version of a drug they pay for (except when using mail order), because it does not actually purchase the drugs. As a result, only pharmacies (or wholesalers) can negotiate with manufacturers on generic pricing.

Pricing for Medicaid Programs

As in the private sector, Medicaid prices have two components. One is the payment to the retail pharmacy that actually provides the drug to the beneficiary; it includes both an acquisition cost and a dispensing fee. The other is a rebate set in federal law and collected from drug manufacturers on each drug purchase (CBO, 2004).

According to federal law, the first component is based on the state's estimate of the pharmacy's cost of acquiring a drug from the manufacturer. For single-source drugs (brand-name drugs without generic equivalents), this estimate is typically based on 85 to 90 percent of the average wholesale price. For multiple-source drugs (with generic competitors), the state payment is based on the federal upper limit, calculated as 250 percent of the lowest average manufacturer price.[11] A dispensing fee, typically between $3 and $5, is added to these amounts.

For drugs sold by the original manufacturer, the rebate must equal the difference between the average manufacturer price—the average paid by wholesalers—and the manufacturer's "best price" offered to any purchaser, excluding federal and certain other purchasers. The minimum basic rebate is 15.1 percent of the average manufacturer price. For noninnovator multiple-source drugs, the rebate is 11 percent of the average manufacturer price; the best price concept does not apply. Manufacturers pay an additional rebate for innovator drugs when the price rises more rapidly than inflation. According to the Congressional Budget Office (CBO), the average Medicaid rebate for brand-name drugs in 2003 was about 35 percent of the average manufacturer price (CBO, 2005). About 35 states negotiate with manufacturers for additional discounts, or supplemental rebates, based on the placement of drugs on a preferred drug list.

Pricing for Federal Programs

The federal government directly purchases drugs for health benefits provided by the Departments of Veterans Affairs (VA) and Defense (DoD) and for various facilities operated by the Department of Health and Human

[11] This definition of the federal upper limit will begin in 2010; currently the federal upper limit is equal to 150 percent of the lowest published list price among generic bioequivalent alternatives.

Services (HHS). HHS also makes a discounted price available to certain safety net healthcare providers. Together, drugs purchased through these programs represent between 4 percent and 5 percent of all drug purchases in the United States (Hoadley, 2007).

All federal agencies can use the federal supply schedule prices on pharmaceutical products; in addition, manufacturers must also sell covered drugs to the "Big Four" agencies (VA, DoD, the Public Health Service, and the Coast Guard) at no more than 76 percent of the price paid by drug wholesalers. Some agencies also use negotiations and competitive bidding to obtain additional discounts. For example, the VA lists certain drugs on its national formulary and commits to their use throughout its system. Drugs acquired through a national contract may be 10 to 60 percent cheaper than the federal supply schedule price. Analysis by the CBO shows that prices obtained by the agencies are between 65 percent and 84 percent of the best private-sector prices, as measured by prices reported to the government for use in Medicaid rebate calculations (Table 5-2) (CBO, 2005).

Pricing for Specialty Drugs

Specialty drugs include biological agents, injectable drugs (whether or not they require physician administration), or other expensive drugs used for specific therapeutic purposes such as treating cancer, HIV, or kidney failure. According to one private pharmacy benefit manager, specialty drugs accounted for about 13 percent of total pharmacy spending in 2008 (MedCo Health, 2009). These drugs are often dispensed by specialty pharmacies that may negotiate directly with manufacturers and may administer specialty programs to manage their use. Frequently, they are purchased by physicians

TABLE 5-2 Relative Prices for Federal Purchasers

Setting	Average Price as a Percentage of List Price
Average wholesale price ("list price")	100
Best price (lowest for any private purchaser)	63
Federal supply schedule price	53
Medicare price (excluding supplemental rebates negotiated by state)	51
340B ceiling price	51
Price available to big four (VA, DoD, Coast Guard, PHS)	50
VA average price (includes negotiated discounts)	42
DoD treatment facility average	41

NOTES: DoD = Department of Defense; PHS = Public Health Service; VA = Department of Veterans Affairs.
SOURCE: CBO, 2005.

and reimbursed through medical insurance rather than through a prescription drug benefit. As a result, factors influencing pricing are substantially different than for drugs purchased directly by patients.

Trends in Drug Spending and Prices

According to government estimates, drug spending growth in the United States in 2007 achieved a 45-year low at 4.9 percent (Hartman et al., 2009). Annual growth rates earlier in the decade were in double digits (Figure 5-10). A key factor is lower price growth, only 1.4 percent in 2007 compared to 3.5 percent in the 2 previous years. The price slowdown in turn has been influenced by higher rates of dispensing generic drugs. Other factors include growing consumer safety concerns and effects of the recession, both of which lead some to stop taking certain drugs or switch to cheaper alternatives. Government actuaries expect a rebound over the next several years especially as the economy improves.

The overall price trend masks significant differences for brands, generics, and specialty drugs. According to one recent study, overall prices rose 4.5 percent in 2008, but prices for single-source brand-name drugs and specialty drugs rose much faster (8.7 percent and 9.3 percent, respectively). At the same time, generic drug prices fell by 10.6 percent (MedCo Health, 2009; Purvis, 2009).

Overall, 67 percent of all prescriptions were dispensed as generics in 2007, up from 60 percent in 2005. Although use of stronger incentives from insurers probably influenced this shift, the major reason was the market entry of generic versions of many popular drugs—a trend that will

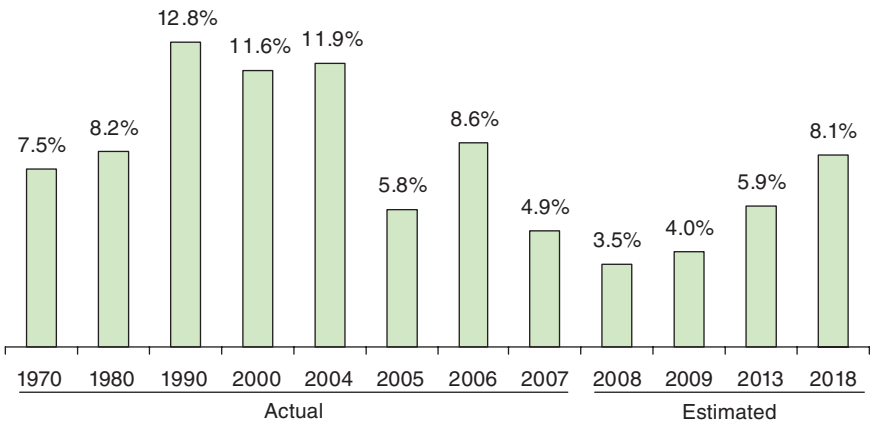

FIGURE 5-10 Average annual growth rates, prescription drug spending.

continue for several years. Nearly all the most popular brands from the middle of this decade have already lost patent protection or will do so in the next 5 years. At the same time, most new brand-name drugs have been for medical conditions with relatively low prevalence and thus add little to spending growth. Future trends in drug spending and prices will be heavily influenced by the pharmaceutical pipeline. Should important new drugs for common health conditions be approved, both prices and spending will rise accordingly. If growth in market approval and prescribing for specialty drugs continues high, these expensive drugs will be a key driver of future growth of overall drug spending.

A comparison with other nations reinforces popular perceptions that brand-name drugs are more expensive in the United States. U.S. prices are roughly double of those in Australia, Canada, France, and the United Kingdom. The United States fares far better in generic drug pricing, however, with prices 10 percent to 65 percent below those in the same four countries (Paris and Docteur, 2006). Factors explaining these wide price ranges include considerable differences in the role of government; the mechanics of prescribing, dispensing, and insuring drugs; and variations in physician prescribing practices.

Are Drug Prices Too High?

Potential for Price Reduction Is Unclear

Pharmaceutical spending is driven not only by prices, but also by physicians' prescribing decisions and patients' decisions whether to comply with their prescriptions. While physician prescribing varies as do other healthcare services, patients have unusual control since they must decide to fill each prescription, usually on an ongoing basis. Furthermore, there is considerable literature suggesting that coverage and cost sharing policies by health plans influence both compliance and decisions on whether to use a generic drug or a drug that is preferred on the formulary (Joyce et al., 2002). Furthermore, as discussed here, pharmaceutical pricing is complicated by unclear pathways between manufacturer and consumer and the segmentation of the market into numerous private and public purchasers.

Drug prices are a key contributor to spending levels and vary widely across different sectors and payers. For most drugs, the manufacturing cost may be small (although higher for many specialty drugs), but they must capture the costs of research and development and moving the drug through the approval process (including costs for unsuccessful products). Research costs are mostly recouped during a medication's period of patent protection, after which generic market entry lowers prices substantially. In addition, more so than other health services, drugs operate in a global

market with multinational firms selling all over the world. As noted above, prices vary widely across countries with some ability for cost shifting across borders.

There is no simple answer to whether drug prices are too high or whether any pharmaceutical market sectors come close to achieving optimal prices. U.S. prices for brand-name drugs are much higher than in other countries. Launch prices for new drugs appear high and often unrelated to the effectiveness of the new drug compared to others on the market. And again, the complex and often nontransparent relationship between manufacturer and purchaser further suggests some room for price reduction. At the same time, U.S. generic drug prices are lower than in other countries and have not been rising rapidly (even falling by some calculations). Determining the "right" price is difficult, especially since it is so unclear what is needed to support continuing research into new drugs.

Even So, Price Reductions May Yield Billions in Savings per Year

Taking the indications that there are windows of opportunity for cost savings, estimates of the potential savings from lower drug prices can be addressed in two ways.

Reduce pricing of single-source drugs First, what if prices for brand-name drugs that are still patent protected could be reduced? The CBO has estimated that reducing the price of brand-name drugs for the Medicare Part D by requiring manufacturers to pay a minimum 15 percent rebate (comparable to that used in Medicaid) would yield $110 billion (about $10 billion annually once implemented) in savings over 10 years (2010-2019) (CBO, 2009). Because this policy option excludes the Medicaid provision increasing rebates when private-sector purchasers obtain a better price, CBO argues this change would have minimal effect on private-sector prices. In looking at systemwide savings from lower prices, a ballpark estimate suggests that a 5 percent reduction in the price of brand-name drugs across all payers except those government payers already obtaining deep discounts would yield about $9 billion in annual savings. A 20 percent reduction would yield about $36 billion annually.

Shift to more use of generic drugs Second, the effective average price for drugs overall is reduced to the extent the market shifts from brand drugs to generics when popular drugs lose patent protection. Due to lower prices, incentives imposed by payers, and rules allowing automatic substitution of a therapeutically equivalent generic at the pharmacy, about 90 percent of a drug's use is switched to the generic version within about 6 months of market approval. But that switching rate may fail if manufacturers succeed

in shifting market share to a related medication in the same drug class. Furthermore, market entry of a new generic often has only a modest impact on the price and market share of other products in the same drug class. According to an industry estimate, a 3 percent increase in generic substitution would yield $10.5 billion in annual savings.[12] This type of increase could presumably be accomplished by policies to shift use in drug classes where available generics were viewed as equally effective alternatives to competitors still having patent protection (CBO, 2009).

A related source of savings would be to increase the availability of generics for specialty drugs (sometimes called follow-on biologics). Doing so would require legislation to create a new approval pathway for the Food and Drug Administration, as well as payment policy changes to encourage Medicare or Medicaid savings from adoption of newly approved products (and presumably parallel policy changes by private payers). These policy changes would have to be accompanied by acceptance of new products by both physicians and patients before widespread use—and thus savings—could occur. The CBO has suggested that these policy changes could generate $13 billion in federal savings over 10 years. Similar savings might be possible in the private sector (CBO, 2009; MedPAC, 2009).

Caveats and Assumptions

Several caveats and assumptions are important to note. First, no obvious standard for an optimal price is available. The savings estimates presented here are illustrative of the savings that might be possible if lower prices for brand-name drugs were achieved for the largest segment of the U.S. market: those with private drug coverage, including those enrolled in Medicare drug plans. System savings will not be achieved, however, if lower prices in one market segment lead to higher prices elsewhere. Second, no attempt has been made in this essay to assess the impact of lower prices on new drug research and development or the impact of lower U.S. prices on prices charged to consumers in other countries by multinational manufacturers. Third, studies are not available to estimate the share of drug use in various drug classes that might be switched to competing generics, and thus the estimate here is also illustrative. As they become available, comparative effectiveness studies will offer better information on which drug substitutions are clinically appropriate.

[12] Generic Pharmaceutical Association, *Economic Analysis of Generic Pharmaceuticals 1999-2008: $734 Billion in Health Care Savings*, May 2009.

DURABLE MEDICAL EQUIPMENT PRICES

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RTI International

Durable medical equipment (DME) is defined in the National Health Expenditures Accounts as "retail sales of items such as contact lenses, eyeglasses, and other ophthalmic products; surgical and orthopedic products; hearing aids; wheelchairs; and medical equipment rentals" (CMS, 2009a). Overall, this category accounted for about $24.5 billion in expenditures in 2007, or 1.1 percent of national health expenditures (CMS, 2009c).

For the purpose of this article, eye care and hearing aids—products with relatively little insurance coverage that are purchased in reasonably competitive markets—are considered to be separate from the remaining DME products that have more extensive insurance coverage. This article focuses on the latter group—which includes oxygen equipment, wheelchairs, diabetes test strips, and hospital beds used in the home—because these products are likely to have prices that are too high. This group of products is also representative of similar products in other expenditure categories that have a large physical component and share the following characteristics: rapidly evolving technology, important health benefits when used appropriately, a bundled labor component for delivery and servicing, and rising expenditures.

Conceptually, DME prices are likely to be too high—relative to the prices that would occur in a perfectly competitive market—for two reasons. First, patients are relatively insensitive to price because they have insurance and pay only a portion of the price of an item. In addition, patients often have pressing medical needs for the equipment. For example, in order to be discharged from the hospital, patients may need to have oxygen equipment or wheelchairs at home. In this situation, patients may not worry much about the price of the equipment, particularly if Medicare or an insurer is paying for most of the cost.

Second, Medicare uses an administered fee schedule to determine the prices it pays for DME. The fee schedule is based on prices that were in effect in 1986, with periodic updates for inflation and occasional ad hoc reductions in prices for items that were deemed overpriced. Although an administered fee schedule solves the problem of how much to pay for insured goods and services, it may not be very responsive to the usual market dynamics of technological change and entry and exit. In a competitive market, technological improvements that lower production costs lead to lower prices. With an administered fee schedule, there is no automatic signal that production costs have fallen, and the fee schedule will adjust slowly, if at all. In a competitive market, if prices are high enough to lead to economic

profits, more firms enter the market, driving prices down. High prices and profits will also attract entry under an administered fee schedule, but the entry will have no effect on prices. As a result, excessive entry may occur until no firms earn profits.

Evidence of Excessive Costs

Two major sources of evidence indicate that Medicare does pay too much for DME: (1) price studies by the HHS Office of Inspector General (OIG) and the Government Accountability Office (GAO), and (2) the results from Medicare's experience with competitive bidding.

Price Studies

Because of concerns that Medicare's fee schedule leads to prices that are too high, the OIG and the GAO periodically conduct studies comparing Medicare fees to the prices for DME charged to other healthcare providers. Past studies focused on oxygen equipment, manual and power wheelchairs, inhalation drugs, hospital beds, and diabetes testing equipment, among other DME. Most of these studies concluded that Medicare pays more than it should. However, comparisons between Medicare fees and other prices are not always straightforward because suppliers are reluctant to divulge price information, list prices may conceal discounts and rebates, and Medicare fees may cover services and administrative costs that are not included in prices to other payers. Consequently, supplier groups have typically criticized the OIG and GAO findings.

Two relatively recent OIG studies address some of the suppliers' concerns and take advantage of the growing availability of price information on the Internet. In a 2004 study of power wheelchairs, OIG compared the 2003 Medicare fee with the median prices offered to patients on supplier Web sites (Figure 5-11) (Department of Health and Human Services, 2004a). The study also collected more limited data on wholesale prices for the equipment and the negotiated prices actually paid by suppliers to manufacturers after accounting for discounts and rebates. The Medicare fee exceeded supplier Web site prices by 37 percent and was more than double the wholesaler and negotiated supplier prices.

In a 2006 study, OIG compared Medicare monthly payments for oxygen concentrators—a 50-pound piece of equipment that concentrates oxygen from the air in a room in the home—with suppliers' costs of acquiring concentrators (Department of Health and Human Services, 2006). Medicare allowed charges for concentrators accounted for $2.3 billion in 2004—more than Medicare paid for any other DME item. Currently, Medicare pays a monthly rental rate for providing oxygen equipment, with rental

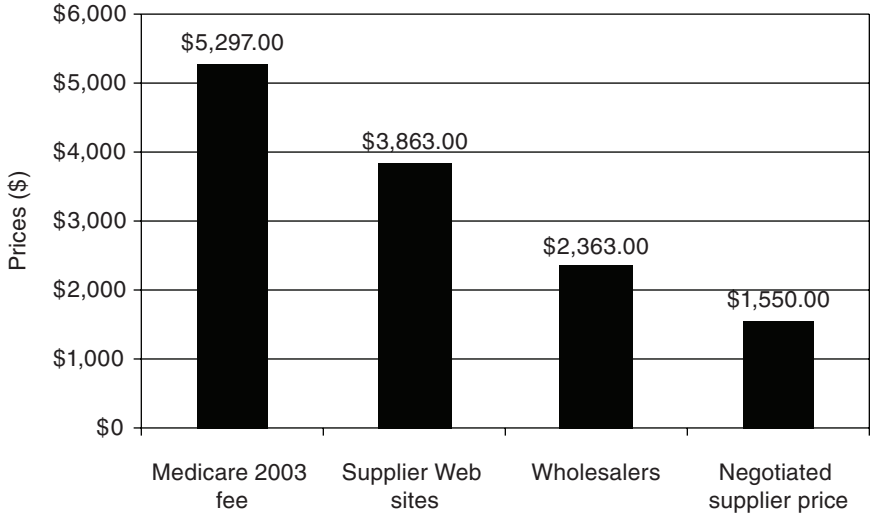

FIGURE 5-11 Excess costs: Power wheelchairs.
SOURCE: Department of Health and Human Services, 2004a.

payments limited (effective in 2006) to 36 months. In 2006, the median monthly reimbursement rate was $200.41. The OIG found that suppliers paid, on average, $587 to purchase a concentrator, a total that does not include supplier costs of servicing beneficiaries. However, the OIG examined service costs and concluded that minimal servicing and maintenance are required for concentrators and portable oxygen equipment. For those beneficiaries who received concentrators for a full 36 months, the OIG noted that Medicare would pay $7,215 for concentrators that cost suppliers $587. The OIG recommended that Congress should further reduce the rental period for concentrators.

Medicare's Experience with Competitive Bidding

Medicare's experience with competitive bidding suggests that Medicare fees for DME may be 20 percent too high (Table 5-3). In an effort to bring DME prices more in line with the "true" market price, Medicare conducted two demonstration projects to test whether competitive bidding could reduce program expenditures while maintaining quality and access to services. Products covered included oxygen equipment, hospital beds, enteral nutrition, urological supplies, surgical dressings, manual wheelchairs, general orthotics, and nebulizer inhalation drugs. Suppliers submitted bids on all of the items in a product category and provided quality and

TABLE 5-3 Scale of Excess Costs, Evidence from Medicare Competitive Bidding

Site	Description	Savings
Polk County, FL	Demonstration, 1999-2002	17.9%
San Antonio, TX	Demonstration, 2001-2002	20.5%
10 metropolitan areas	Round 1 of national program, 2008 (postponed by Congress)	26.0% (projected)

SOURCE: CMS, 2009b.

capacity information. Bids were arrayed from lowest to highest, and CMS selected enough quality suppliers to serve the demonstration area. Competitive bidding led to lower prices for most but not all of the items. In these demonstrations, expenditures fell by an estimated 17.9 percent in Polk County, Florida, and by an estimated 20.5 percent in San Antonio, Texas (Hoerger et al., 2003). The evaluation of these projects concluded that the demonstrations had relatively little effect on beneficiary access, quality, and product selection.

Partly as a result of the demonstration projects, Congress mandated a national competitive bidding program for DME as part of the Medicare Modernization Act of 2003. Between 2007 and 2008, bidding was conducted for 10 products in 10 metropolitan areas, winning suppliers were selected, and the new, lower prices based on bidding were scheduled to go into effect on July 1, 2008. Based on these lower prices, CMS projected that the bidding program would lower Medicare spending by 26 percent for the covered goods in the bidding areas (CMS, 2009b). However, just after the prices went into effect and before reimbursement could be made, Congress delayed implementation of the bidding program by 1.5 years as part of the Medicare Improvements for Patients and Providers Act of 2008. The act instead imposed a nationwide 9.5 percent reduction in fees for the products that would have been covered by the program.

Waste and Fraud in DME

Most DME suppliers are honest and provide quality equipment and services. However, the overall sector has seen a number of fraudulent practices; and in some areas, such as South Florida, fraud has been more prevalent. CMS estimates that Medicare overpayments, which do not perfectly correspond to fraudulent payments, were about 10 percent of total payments to DME suppliers in 2006 (CMS, 2007). Fraud would likely occur even in the absence of excessive Medicare fees, but higher fees make fraud more lucrative.

Potential Savings

To estimate the potential savings from DME, the following assumptions were made. First, the base for potential savings is $10.1 billion, the amount Medicare spent on DME and related items in 2007 (the Medicare reimbursement amount in Table IV.B6 of the boards of trustees report [Geithner et al., 2009] adjusted to incorporate beneficiary copayments). Spending on eyeglasses and hearing aids by all payers is excluded because these products are purchased in reasonably competitive markets, and other DME paid for by non-Medicare payers is excluded because data on excess payments and fraud are sparser for these payers. Second, Medicare fees for DME are 20 percent too high, based on Medicare's experience in receiving fee reductions of 20 percent with competitive bidding. Third, fraudulent payments account for 10 percent of Medicare payments for DME. This assumption is based on the CMS estimate for overpayments and assumes that fraudulent payments are roughly equivalent to estimated overpayments. To avoid double-counting, total payments are first reduced to account for excess fees and then the fraudulent payment rate is applied. Thus,

Potential savings = (Total payments ∗ fee reduction) + (Total payments ∗ (1 – fee reduction) ∗ fraud rate)
= (Total payments * 0.2) + (Total payments * 0.8 * 0.1) = 0.28 * Total payments
= $2.8 billion

The potential savings of $2.8 billion equals 28 percent of current Medicare payments for DME and converts to 11.5 percent of the $24.5 billion total expenditures on DME and 0.12 percent of the $2,241.2 billion in total national health expenditures in 2007.

Caveats

These estimates carry with them several caveats. First, the assumption of a 20 percent reduction in fees is based on competitive bidding results from the 1999-2002 demonstration projects and the 2008 national program. Such savings may no longer be available because fees were reduced in 2005, subsequent to the demonstration projects, and in July 2008, subsequent to the bidding in the national program. On the other hand, the reduction from the demonstration projects occurred despite a preceding large reduction in the fee schedule in 1998, and the national program reduction occurred despite the preceding general fee reduction in 2005 (Department of Health and Human Services, 2006). Second, the estimates only include potential savings from Medicare. However, this may not be a

major limitation because Medicare is the dominant payer for DME other than eyewear or hearing aids. Third, fee reductions may have relatively little effect on DME use, which has been the primary driver of increased DME expenditures. Fourth, although the estimate suggests that there are substantial potential savings from reducing Medicare fees for DME and eliminating fraud, this does not mean that it will be easy to obtain these savings in practice. Suppliers generally oppose initiatives to reduce Medicare fees, citing potential threats to quality and beneficiary access, and these arguments have sometimes proven persuasive to beneficiaries and legislators. In the case of the national competitive bidding program, suppliers also raised concerns about the bidding process and appeared to prefer a 9.5 percent nationwide fee reduction to the 26 percent reduction in the 10 bidding areas (U.S. Congress, 2008). In addition, mechanisms to reduce fees, such as competitive bidding, may lead to increased administrative costs that partially offset any resulting fee reductions. Efforts to reduce DME fraud may also require greater administrative costs, as current regulations have not been able to stem fraudulent practices.

Conclusion

Evidence from price studies and competitive bidding suggests that Medicare fees for DME may be 20 percent too high. In addition, fraud is relatively common in the DME market. The potential savings from eliminating high prices and fraud represent approximately 28 percent of Medicare payments for DME, 11.5 percent of total DME expenditures, and 0.12 percent of national health expenditures. These percentages provide a useful target for healthcare reform; however, there is no guarantee that the savings can be obtained easily.

MARKET PRICING AND THE MEDICARE PROGRAM

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The series of attempts by the Medicare program to obtain market prices for durable medical equipment over the past several years are instructive about the difficulties of reducing payments in a program operated by the federal government and affecting thousands of suppliers and millions of beneficiaries. In this paper, we will describe attempts to operate bidding programs for Medicare, describe the use of demonstration programs to test public policy innovations, and suggest some alternative methods of obtaining market prices for durable medical equipment.

A Target for Cost Savings

The category of durable medical equipment consists of medical equipment for use in the beneficiary's home with a useful life of 3 or more years. Examples include wheelchairs, hospital beds, and oxygen concentrator machines. Medicare classifies durable medical equipment with prosthetics, orthotics, and supplies into an overall category with the ungainly acronym of DMEPOS, and generally pays for 80 percent of these items, with the remaining 20 percent copayment the responsibility of the beneficiary or his or her "Medigap" insurer. Medicare pays approximately $10 billion a year for DMEPOS items, about 2 percent of total Medicare spending. If Medicare overpays for DMEPOS by 20 percent to 25 percent, any overpayments would amount to $2 billion or more, but would still be less than 1 percent of Medicare spending or of national healthcare costs. DMEPOS payments may be less important than spending on other types of services, but these overpayments are real money, and there are some important and salient issues in this category of spending since there have been several attempts by Medicare to discover and pay market prices for DMEPOS by using competitive bidding.

Scope of Overpayment

Overpayments for DMEPOS items clearly happen. Places where overpayment takes place are easily determined because of the price transparency available from Internet sales and catalog prices. Also, there have been a series of reports showing excessive Medicare payments for items of DMEPOS, which were written by the HHS OIG. Examples of these reports include

- A report that Medicare pays about 45 percent more for electric wheelchairs than the prices available on the Internet (Department of Health and Human Services, 2004a).
- A report showing that Medicare pays about $17,000 for a negative pressure wound therapy pump, which is available to suppliers for $3,600 (Department of Health and Human Services, 2009).
- A report that Medicare paid 10 percent to 20 percent more than insurers in the Federal Employee Health Benefit Plan for oxygen equipment (Department of Health and Human Services, 2004b).

Sources of Overpayment

Medicare pays these inflated prices using cumbersome and outdated administrative payment schedules required by law. The DMEPOS fee schedules

are based on average payments for these items determined to be reasonable costs in 1986-1987 and updated for inflation using a yearly update factor defined by Congress. New items are frequently added to the fee schedule and paid by using "gap filling" methods to pay reasonable amounts in comparison with other established items. This method to determine the payment amounts is outdated and does not account for the many changes in production methods, product innovations, and market changes in the past two decades. In addition to finding that overall DMEPOS payments are too high, the relative payments for various items are out of relative proportion to the market. Thus, Medicare may be paying market prices for surgical dressings, while greatly overpaying for electric wheelchairs.

A Successful Solution

Faced with these issues, congressional committee staff searched for methods to determine and pay market-based prices. The Balanced Budget Act of 1997 required Medicare to operate a demonstration on competitive bidding for DMEPOS. The Medicare Program has operated a series of demonstrations of program innovations since they were authorized in 1967. Since that time, the program has operated demonstrations to test and evaluate the effects of potential payment and program changes. Examples include the development and implementation of prospective payment systems for hospitals and for skilled nursing facilities, trials of "pay for performance" at hospitals and physician practices, and paying global amounts for acute episodes of hospital care. At any given time, the Medicare Program operates or has in development about 30 demonstrations, most of them required by law.

In the DMEPOS Competitive Bidding Demonstration, Medicare obtained bids in two medium-sized metropolitan statistical areas (MSAs): Polk County, Florida, and San Antonio, Texas. These sites were chosen for their relatively high per capita expenditures, for having a large number of suppliers, and for an MSA size that was regarded as large enough to operate the program but not so large that it would be overwhelming to operate. The product categories that were selected for bidding were oxygen equipment and supplies, hospital beds, surgical dressings, urological supplies, enteral nutrition, manual wheelchairs, nebulizer drugs, and simple orthotics.

Medicare announced five objectives for the DMEPOS bidding demonstration:

- To use bidding to determine market prices of DMEPOS items;
- To reduce the amounts paid by Medicare for DMEPOS items, and to reduce the copayment amounts paid by beneficiaries;
- To assure continued beneficiary access to high-quality DMEPOS items;

- To test bidding policies and operations in the context of the Medicare program; and
- To reject suppliers who engage in fraudulent activities.

To support these goals, bid rules were designed to be accessible to smaller suppliers, which make up a large portion of the industry. For example, Medicare chose multiple winners in each product category, thus making it possible to choose smaller suppliers rather than only selecting suppliers that were large enough to service the entire geographic area by themselves. As a result of this and other bidding policies, about 75 percent of the suppliers selected in the demonstration were small businesses, as defined by the Small Business Administration.

A benefit of choosing multiple suppliers is that the firms would continue to compete with each other on the basis of quality. Suppliers with good reputations for quality products and services would be recommended by social workers, hospital discharge planners, and others who make supplier recommendations to beneficiaries and their families, while poor quality suppliers would lose business to firms with better reputations.

According to an independent evaluation by Research Triangle Institute (RTI), the demonstration was a success, with continued beneficiary access to high-quality DMEPOS items. As a result of the competitive bidding process, Medicare achieved savings of 19.1 percent as compared with the normal fee schedule over the three bids (Hoerger et al., 2003). Also, the operating costs of the demonstration were much lower than payment reductions, thus yielding net savings to the Medicare program (Hoerger et al., 2003).

Replicating the Successful Demonstration

Based on the positive results of the bidding demonstration, Congress passed a bill establishing a national program of competitive bidding for DMEPOS items. The law required CMS to implement bidding in 10 large metropolitan areas in 2008, and then implement bidding in 70 more MSAs 2 years later. Implementing these requirements, CMS selected and held bids in Cincinnati, Cleveland, Charlotte (North Carolina), Dallas-Fort Worth, Kansas City (Missouri and Kansas), Miami-Fort Lauderdale, Orlando, Pittsburgh, Riverside (California), and Puerto Rico. The items that were chosen for bidding included many of the same items that were selected for the demonstration plus some others: oxygen supplies and equipment, standard power wheelchairs, complex rehabilitative power wheelchairs, diabetic supplies, enteral nutrients, hospital beds, walkers, mattress support surfaces, and continuous positive airway pressure (CPAP) machines for sleep apnea. The bidding was again successful, with price reductions of 26 percent compared with the fee schedules, and CMS selected a total of 329 bidders across the bidding sites. However, the bidding was controver-

sial, and Congress agreed with supplier industry groups to delay the bid program for 18 months, and to require rebids (CMS, 2008).

Lessons Learned

Based on experiences of the bidding demonstrations and projects, items and services with the following types of characteristics appear best suited for bidding:

- Items and products with lower levels of professional services. Thus, hospital beds appear well suited, while professional services such as evaluation and management visits by physicians are not as well suited.
- Well-defined physical products, including most DMEPOS items.
- Items and products with surplus capacity in the marketplace, or with easy entry into the marketplace, which would include most DMEPOS items.
- Items with a large number of potential bidders.
- Items that have excessive payment amounts, showing evidence that savings can readily be obtained. As noted above, there are many reports showing that Medicare is paying too much for DMEPOS items.

Even with these "lessons learned" in mind, there may be even broader opportunities for competitive bidding given the right structures. CMS has engaged in seeking bids for hospital acute care services in the Acute Care Episode (ACE) Demonstration, and sought bids for managed care in a few separate demonstrations. Although these bids entailed highly professional and skilled services, the bidding was made possible by bidding for Diagnosis Related Groups (DRGs), or for an adjusted per member per month (PMPM) amount, thus reducing the thousands of possible diagnoses and treatments into a manageable and well-defined number of products for bidding.

Great Solution, Even Greater Challenges

The Medicare program has had a difficult history of operating bidding demonstrations. For example, as noted above, the DMEPOS bidding program was delayed for 18 months.

With the DMEPOS bidding program, Congress also required CMS to operate a demonstration of bidding for clinical laboratory services. This demonstration was implemented in San Diego, California, and bidding was held in 2008. The demonstration met with vociferous opposition from

the clinical laboratory services industry, which filed a lawsuit in federal court alleging procedural defects of the demonstration, and also lobbied Congress to repeal the authorization for the demonstration. The industry was successful in obtaining a federal court injunction against the demonstration, and Congress did pass a repeal of the provision authorizing the demonstration.

For managed care services, CMS has operated a series of demonstrations of competitive bidding for Medicare beneficiaries in particular geographic areas. From 1996 to 1999, bids were requested for managed care contracts in Baltimore, Denver, Kansas City (both Missouri and Kansas), and Phoenix. In every one of these cases, Congress stopped the bidding process. Thus, CMS has had limited success in fully implementing bidding demonstrations or programs.

Alternative Strategies

In the absence of much success in operating bidding demonstrations, are there alternate methods of obtaining information on market prices that could be used by Medicare or other payers to determine payment amounts? While the planned competitive bidding project in 80 metropolitan areas is best able to capture market prices, it suffers from continued political opposition and significant administrative time and costs required to operate the projects. Alternative methods of obtaining market prices and making the existing fee schedule more accurate include:

- Operating a competitive bidding program in test markets, and applying the results of these bids on a national basis. A variant of this would use the results of the bids already obtained by CMS in 10 market areas for DMEPOS and apply these results nationally.
- Obtaining market prices from other purchasers such as health plans in the Federal Employees' Health Benefit Plan or Medicare Advantage plans and apply these prices nationally.
- Requiring a report on market prices from an independent organization such as the GAO, Medicare Payment Advisory Commission, or another organization that is regarded as a fair and objective judge, with recommendations on pricing that Congress could apply by law.

Considering the Trade-Offs

There are several trade-offs of the various strategies that should be considered as policy makers determine the best approach to use. First, there is a trade-off between the costs and administrative burden of operating bidding

projects compared with the often nonmarket and excessive payments made under administrative pricing schedules. Second, policy makers must decide whether to allow for multiple bidding winners, thus facilitating participation by smaller suppliers, versus the lower prices and ease of administration if only a single or small number of suppliers is chosen. Choosing multiple winners also allows for competition between suppliers on the basis of quality, thus providing the consumers with greater ability to obtain high-quality goods and services. Third, the bidding process requires years of elapsed time in a public program that must publish formal regulations on the processes and policies to be used for the bidding program. Administrative pricing may be operated more quickly, depending on the process chosen to determine the amounts to be paid by Medicare. Finally, the choice must be made between the relatively "pure" market price discovery that is possible using bidding in each market, versus proxies of the market through other methods of determining prices to be paid, even those that are based on attempts to obtain market prices through other means.

The Negative Consequences

There are several caveats that should be noted if Medicare started reducing payments for DMEPOS to market prices, *no matter what the process*. Any significant reduction in payments would affect suppliers, reducing profit margins, and potentially leading to consolidation in the industry. Also, in a competitive bidding environment, nonselected suppliers would lose their Medicare business, at least for those categories of supplies that they were not chosen to provide, which would lead to a large reduction in business since Medicare makes up roughly half of the business of many suppliers. Suppliers will be quick to note that Medicare imposes costs that are not reflected in Internet prices, including requirements for beneficiary education, billing, maintenance, and new requirements for accreditation and surety bonds.

Conclusion

The narrative of difficulties in applying competitive bidding to purchase DMEPOS and other items and services in the Medicare program is instructive about the difficulty of achieving healthcare payment reform in general. In this case, it appeared that all of the stars were aligned for payment reform. Medicare transparently pays more than market prices for DMEPOS items. The DMEPOS bidding demonstration showed an ability to reduce payment levels while maintaining access for high-quality items. The initial stage of the Medicare DMEPOS bidding program in 10 geographic areas yielded average reductions in payments of 26 percent. Even so, the politi-

cal backlash proved a formidable challenge to the widespread adoption of competitive bidding as a price-stabilizing option. While well organized, the DMEPOS industry has far less political influence than many other health industry members such as physicians and hospitals. Echoing some problems in the bidding that were cited by industry representatives, Congress subsequently delayed the DMEPOS bidding program for 18 months. Larger-scale reforms, even with an adapted version of competitive bidding, will face difficult political obstacles, and those costs must be evaluated in addition to the administrative and other considerations of these efforts.

MEDICAL DEVICE PRICES

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The market for medical devices (including capital equipment and supplies) in the United States in 2008 was approximately $153 billion.[13] In this paper, we estimate that hospitals, the primary purchasers of devices, would have saved approximately 3.1 percent or $4.73 billion in 2008 had they negotiated with manufacturers to achieve average savings for every device they bought.

Financial waste in the medical device market is likely driven by both pricing practices and overutilization. While reducing overutilization might produce much greater savings, it would be complicated and uncertain. Therefore, this paper does not take clinical appropriateness into account. In this paper, we concentrate on medical device prices alone, looking at how prices are set and how market practices could be improved.

The Medical Device Market

Let us step back to examine some characteristics of the medical device market, aspects of it that function differently and therefore affect the means for reducing costs, and the changing dynamics that threaten the savings that are now achievable. First, we must acknowledge that data for the medical device industry is extremely difficult to gather in meaningful ways. Information on the categories of medical devices we wish to examine is not gathered or compiled consistently. Furthermore, this market has not been

[13] This calculation was arrived at by taking a figure for 2006 of $131.6 billion and inflating it by 7.7 percent annually over the next 2 years (Donahoe and King, 2009). "Estimates of Medical Device Spending in the United States." Retrieved June 17, 2009, from http://74.125.47.132/search?q=cache:Gxmo1jaF4qQJ:www.amsa.org/business/King%2520Paper%2520Medical%2520Device%2520Spending.pdf+Donahoe+G,+King+G.+Estimates+of+medical+device+spending+in+the+United+States.&cd=1&hl=en&ct=clnk&gl=us.

subject to a great deal of study, despite its size and importance in modern medicine.[14] Exacerbating these limitations, few purchasers pay list prices in this market. The price of a device is often bundled with a range of services, and providing rebates is common. The size and characteristics of the market for medical devices are further complicated by the sheer number of products and the rates at which manufacturers introduce technical changes in their products. For example, ECRI Institute categorizes a half-million supply items bought by hospitals into 2,278 categories in the Institute's Universal Medical Device Nomenclature System (UMDNS). ECRI Institute currently captures information on 4,983 models of capital equipment, classified into 962 UMDNS technology categories in 2009. Each type of supply and capital equipment that hospitals buy is purchased differently, and within each type or category, the processes vary. It is important to understand this because our premise for this paper is that "financial waste" is the amount of money paid by U.S. hospitals above the average amount for the same equipment.

Focusing on Medical Supplies

The best data we have found on prices paid is for medical devices that are classified as supplies. We categorize supplies into two types. First, there are medical/surgical supplies, such as syringes, catheters, tongue depressors, etc. According to a study published in April 2009 (Schneller, 2009), hospitals in a large survey purchased 72.8 percent of their goods through group purchasing organizations (GPOs) and had average savings of about 18.7 percent. Most of these goods are medical/surgical supplies. Since hospitals are already achieving these savings, they are not included in our estimate of the additional 3.1 percent.

The category of supplies also includes sophisticated devices, such as hip and knee replacements, implantable defibrillators and pacemakers, artificial spinal discs, and a range of other implants, collectively known as physician preference items (PPIs). Despite some variation in what some parties consider PPIs (e.g., surgical thread may or may not be defined as a PPI), the costs of these supplies are significant. This, along with many other factors, complicates the categories we are discussing. Just how much of the category of supplies are PPIs varies among hospitals, and it is consequential for the arguments made in this paper. In letters sent to Senators Grassley and Specter in 2007, one large hospital system stated "medical and implantable devices make up 40 percent to 55 percent of a hospital's total supply

[14] Donahoe and King could find no empirical studies on "systemic spending on all types of medical devices" as of January 31, 2006. Burns notes the lack of comprehensive studies of the medical device purchasing/supply chain.

expense; in our case, implantable devices cost approximately $65 million annually" (Siegfried, 2007). A much smaller rural regional medical center reported that "medical device spending [i.e., PPI] here comprises approximately 40 percent of our total medical supply expense and is nearly $3 million annually" (Nelson, 2007).

Complications to Market Pricing for Physician Preference Items

Looking at how PPIs are bought and sold sheds light on some of the market fragmentation that may be driving significant excess costs to hospitals. Some manufacturers of PPIs insert "confidentiality clauses" into their contracts and other purchase documents with hospitals that prohibit these hospitals from disclosing prices paid to third parties. This practice can derail the negotiation of fair prices by precluding the hospital from disclosing prices to implanting physicians, other hospitals, consultants who help them purchase equipment, benchmarking pricing services, patients, and insurers. Some manufacturers have aggressively sought to reinforce and spread the use of these price-secrecy clauses, including the claim that prices are protected as "trade secrets." These arguments have been the subject of recent articles, most notably in the health policy journal *Health Affairs* and in legal writings (Bridy, 2009; Lerner et al., 2008). Physicians have long been insensitive to the prices their hospitals pay. A PPI, as the name indicates, is specified by physicians, but it is the hospital that purchases the supplies. One explanation for the perpetuation of this divide between the decision makers and purchasers is that hospital administrators are reluctant to disrupt the relationships with manufacturers of products preferred by their major revenue-generating physicians.

However, reform may come. Senators Grassley and Specter have introduced the Transparency in Medical Device Pricing Act of 2007 (S. 2221), which would require manufacturers to report their median and mean prices for PPIs quarterly to the Centers for Medicare & Medicaid Services. Other options to keep manufacturers from making prices opaque, such as banning the signing of secrecy clauses by hospitals doing business with the Medicare program, have also been proposed. With some 60 percent of the expenditures on medical devices potentially subject to secrecy clauses, this issue looms large in the ability to achieve the 3.1 percent average savings upon which we based our estimate of waste (Lerner et al., 2008).[15]

[15] Senator Specter said, in introducing his legislation, S. 2221 Specter, A. (2007, October 23, 2007). "Arlen Specter Speaks on the Senate Floor Regarding the Transparency in Medical Devices Act." Retrieved June 26, 2009, from http://specter.senate.gov/public/index.cfm?FuseAction=NewsRoom.ArlenSpecterSpeaks&ContentRecord_id=cf655dfb-1321-0e36-bab2-05c5b6002908.

The Cost Savings Opportunity

Data kept by government agencies and, to our knowledge, the private sector, fail to segregate the supplies market into medical/surgical supplies and PPIs in ways that are useful for calculating waste. Even so, cost savings can be estimated if both supply types are combined. For the purpose of this paper, ECRI Institute evaluated datasets of supplies from 123 hospitals that provided their complete "item masters" of purchases recorded from January 1, 2009 to May 1, 2009. Table 5-4 illustrates the findings from an analysis of actual prices paid, demonstrating that these hospitals collectively could achieve an average 3.1 percent savings if they negotiate to the average price paid for every supply item.[16]

We derive our estimate of total potential national savings in 2008 by multiplying the size of the market for medical devices, $152.65 billion, by 3.1 percent to arrive at $4.73 billion. We use supplies from this study, most of which are medical devices, as a surrogate for all medical devices.

In Table 5-4, the sample of data from the 123 hospitals is arrayed so that the three hospitals with the largest total amounts spent on supplies are at the top and the three with the lowest are at the bottom. It indicates that even hospitals that negotiate well can still capture additional savings. Hospital #1 could achieve 1.72 percent in additional savings (or $2.85 million) if it negotiated to the average price paid for every item.

This table also illustrates that were Hospital #1 able to negotiate the lowest prices from among the 123 hospitals, it would achieve an 8.13 percent savings. However, for the purpose of our calculation of 3.1 percent in "financial waste," we assume that only the current average matters, even though it may be very possible to develop strategies that would create greater average savings among all hospitals. In fact, policy makers are considering options such as bundling payments to physicians and hospitals, which they believe will create greater incentives for these parties to work together to lower prices. Were this to happen and were secrecy clauses limited or banned, it would be possible to imagine savings in excess of 3.1 percent.[17]

To illustrate this possibility, we summarized the prices hospitals paid for a small sample of PPIs (Table 5-5). Different-sized hospitals buying

"Since national sales of implantable devices are approximately $65 billion annually, with an expected growth in utilization of close to 20 percent, the potential of adding 8 to 15 percent annual price increases to the expenditures clearly demands attention." The years on which he based his data are unknown. If PPI prices and/or utilization expand at a greater rate than other technologies, and if new, more expensive models continue to proliferate at a rapid rate, then the importance of being able to negotiate prices most effectively will increase as well.

[16] No hospital in the study currently negotiates to the average price for every item purchased.

[17] Additional strategies are described in Lerner et al. (2008) and Burns (2002).

TABLE 5-4 Medical/Surgical Supplies and Implants: Total Spending and Potential Savings from a Sampling of Hospitals

Facility	Total Spending	Potential Savings If Lowest Price Achieved	Percentage Savings If Lowest Price Achieved	Potential Savings If Average Price Achieved	Percentage Savings If Average Price Achieved
Hospital #1	$165,287,541	$13,452,180	8.1	$2,854,653	1.7
Hospital #2	$132,869,401	$13,380,529	10.1	$2,467,469	1.9
Hospital #3	$128,241,519	$16,382,166	12.8	$4,310,728	3.4
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Hospital #121	$1,213,521	$152,161	12.5	$50,228	4.1
Hospital #122	$1,179,089	$28,629	2.4	$6,594	0.6
Hospital #123	$1,112,824	$67,479	6.1	$13,997	1.3
Average			12.3		3.1

SOURCE: Reprinted with permission from ECRI Institute.

different volumes of the same brand and model of pacemaker paid different prices. While that might seem intuitive, the pattern illustrated is not. Essentially, there is no pattern. For example, a 1,900-bed hospital/health system buying 25 pacemakers paid $287 more per pacemaker than a 200-bed hospital buying only 9 pacemakers. Because hospitals are ignorant of the prices they pay relative to other consumers, they may simply accept statements by manufacturer sales representatives that the hospital is getting the best price. Manufacturers have a great deal more aggregated information on prices offered to customers than do individual hospital customers. Enhancing the transparency in the market allows the purchaser to verify claims and to negotiate prices more effectively.

TABLE 5-5 Volume and Price Paid per Unit for the Same Brand of Model of Pacemakers by a Variety of Hospitals

Number of Beds*	Volume Purchased	Price Paid per Unit
600	6	$4,400
1,100	17	$4,500
200	9	$4,513
600	33	$4,650
300	15	$4,700
1,900	25	$4,800
500	20	$4,837
100	38	$5,000

*Number of beds rounded to the nearest 100 beds.
SOURCE: Reprinted with permission from ECRI Institute.

An analysis of a subset of data consisting only of PPIs from the 123 hospitals studied showed an average potential savings of 27 percent as opposed to 3.1 percent for all technologies combined.

Capital Equipment Purchases

The final category of medical devices we need to consider is capital equipment (e.g., computed tomography scanners, anesthesia units, linear accelerators, electric beds, laboratory analyzers). These technologies are purchased less frequently than supplies, but they represent very large expenditures. Unfortunately, we do not have a satisfying estimate of the proportion of the $153 billion device market is made up of capital equipment purchases (Burns, 2002).[18] We do, however, have evidence of great variation in prices offered to hospitals. Table 5-6 shows data from 1,500 hospitals and health systems and prices for five types of capital equipment studied between May 1, 2008, and May 1, 2009.

This table indicates that hospitals are quoted prices that are on average 29.6 percent lower than the list price. Hospitals in this study did not report the actual prices paid after their negotiations. In this way, it is different from the price-paid supplies data that was cited previously. Consequently, we assumed only that an additional 3.1 percent of the capital portion of the expenditure could be saved (i.e., the same percentage we used for the supplies).

Notably, as with PPI purchases, small hospitals buying the exact same equipment may pay less for it than large hospitals. For example, based on ECRI Institute study data, ACME Imaging offered a community hospital a cardiac ultrasound system at a 43.7 percent discount while offering only a 33 percent discount on the same brand and model system to a larger hospital. It might come as something of a shock to the executive teams in large hospitals that, despite their beliefs, they are not always offered the best discounts.

Conclusion

The above analysis shows substantial savings but perhaps less than some policy makers might believe possible. These policy makers might note that the United States spends far more per capita on medical devices than the second largest purchaser of medical devices in the world, Japan, or the third largest purchaser, Germany (Table 5-7).

Analyses conducted by the McKinsey Global Institute that were discussed as part of this workshop demonstrate that the United States spent

[18] Definitions of what comprises capital equipment vary. They may be merged with capital expenditures on buildings and they may also include durable medical equipment.

TABLE 5-6 Prices and Discounts Obtained for Capital Equipment

Device	Average Percentage Discount, % (Range)	Average List Price	Number of Hospitals Reporting Data
Scanning systems, computed tomography	35.8 (12.0-58.1)	$1,582,591	76
Anesthesia units	24.2 (10.0-45.8)	$59,378	171
Radiotherapy systems, linear accelerator	46.6 (13.5-66.2)	$4,467,482	34
Beds, electric	30.1 (7.2-45.0)	$16,658	162
Analyzers, laboratory, hematology, cell counting, automated	35.1 (1.0-72.0)	$157,138	93

SOURCE: Reprinted with permission from ECRI Institute.

TABLE 5-7 Comparison of Medical Device Expenditures Across Countries

	MD Expenditures as a Percentage of THE	THE as a Percentage of GDP	MD Expenditure per Capita (€)*
United States	5.1	13.9	278
Japan	5.1	7.6	158
Germany	8.6	10.7	230
France	5.8	8.6	107
United Kingdom	4.8	7.6	97

NOTE: GDP = gross domestic product; MD = medical devices; THE = total health expenditures.

*Prices are expressed in Euros.

SOURCE: Adapted from CERM, 2005.

$18 billion above the Estimated Spending According to Wealth (ESAW) on medical devices. "The U.S. spends 54 percent above its ESAW on the top 5 inpatient devices—defibrillators, pacemakers, coronary stents, hip implants, and knee implants—when compared with Europe and Japan" (Angrisano et al., 2007). The report goes on to say that the wealth-adjusted cost of a knee implant is 32 percent higher and hip implants 60 percent higher than the average of those in France, Germany, Italy, and the United Kingdom (Angrisano et al., 2007).

Whether due to the higher prices, greater utilization, or additional factors such as "upselling," it is complex to alter the current organizational structure and condition of health care in the United States.[19]

Even when we restrict our analysis of financial waste to prices alone, there are many caveats. In addition to those we have already mentioned,

[19] Upselling takes place when manufacturer representatives present in the operating room suggest using more expensive devices to surgeons.

our reliance on information for supplies as a proxy for all U.S. device expenditures and potential savings is a limitation. Hospitals are the major purchasers of medical devices, but they are not the only purchasers. Outpatient clinics and physician groups buy devices, but we were not able to study the prices they pay. The figure of $152.65 billion dollars in 2008 also includes, for example, durable medical equipment bought by home health agencies and patients. But since no figures are available to perform a reliable analysis, we have based our analysis on what we do know.

In summary, we believe that close to $5 billion (3.1 percent of total national expenditures for medical equipment) could have been saved in 2008, and similar savings would accrue in the future, if better negotiating processes were deployed in hospitals. The latter includes using benchmarking data to the fullest extent possible to achieve average prices. Even current savings will decline if aggressive efforts to make prices opaque are not remediated.

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6

Missed Prevention Opportunities

INTRODUCTION

"An ounce of prevention is worth a pound of cure." This saying is reflected in proposed health reform plans and the efforts to increase investments in prevention throughout the U.S. healthcare delivery system. With evidence that nearly 40 percent of all deaths in the United States are due to behavioral causes, attention to prevention has encompassed obesity and tobacco smoking prevention in addition to vaccinations and cancer screening (Mokdad et al., 2004). An aging population, many with multiple chronic conditions (Martini et al., 2007; Meara et al., 2004), has resulted in targeted prevention of additional complications and hospitalizations. In this concluding session of the May workshop, the speakers reframed the discussion by exploring how changing demographic trends in the population's health status and underinvestment in population health contribute to missed prevention opportunities, and focusing not simply on the potential costs of missed prevention opportunities but on the added value of increasing the delivery of preventive efforts to patients.

Steven H. Woolf of Virginia Commonwealth University opens the session by emphasizing the consequences of an inadequate focus on disease prevention, including greater morbidity and mortality and lower quality of life. While he emphasizes the importance of community- or population-based prevention services, he uses obesity as a case study to demonstrate how lost opportunities in prevention result in measurable health costs and excess resource consumption. Woolf concludes his presentation by asserting that slowing the growth of healthcare spending will ultimately

necessitate redistributing current expenditures to high-value services such as prevention.

Thomas J. Flottemesch of HealthPartners Research Foundation suggests that preventive services at the primary and secondary levels yields mixed results in terms of net medical savings to the healthcare system, highlighting the importance of expanding the conversation on prevention beyond costs alone to include value and benefits not captured by pure dollars. Although primary preventive services, such as daily aspirin use and alcohol and tobacco use screenings, could have yielded net savings of nearly $1.5 billion in his analysis, the use of secondary preventive services, such as mammograms and depression screenings, actually results in net costs of almost $2 billion. He also acknowledges that certain costs could have been omitted or double-counted due to insufficient data. Flottemesch concludes that, while different types of evidence-based clinical preventive services have the potential for differential impacts depending upon current delivery rates and target populations, evidence-based preventive services should be embraced, and their use encouraged, because of their positive health impact.

Michael P. Pignone of the University of North Carolina-Chapel Hill focuses on tertiary preventive care, explaining that individuals with one or more chronic conditions account for approximately $1.5 trillion in healthcare spending per year. Focusing on high-risk patients with chronic conditions offers high savings and cost-effectiveness margins because the likelihood of needing high-cost treatments are far greater than the costs incurred by provision of preventive services, he argues. Based on his calculations, widespread use of effective interventions, such as disease management, postdischarge care, and case management for key chronic conditions could produce substantial savings, perhaps as much as $45 billion per year. However, he also explains that translating successful interventions to new populations and settings and realizing savings may be difficult because of the differing organizational and population needs of individual institutions. Despite these limitations, he ultimately suggests that better use of effective tertiary prevention possesses strong potential for improving health and reducing spending.

THE PRICE PAID FOR NOT PREVENTING DISEASES

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In considering strategies to control the rising costs of health care, the projected increase in the prevalence of chronic diseases is both cause for concern and an opportunity for intervention. The aging population and advances in medical care that enhance life expectancy are increasing the

prevalence of chronic diseases, exerting upward pressure on healthcare spending. Past increases in the prevalence of chronic disease accounted for an estimated $211 billion of the $314 billion increase in healthcare spending in the United States between 1987 and 2000 (Thorpe, 2005). Between 2005 and 2030, the number of individuals with chronic disease is predicted to increase from 133 million to 171 million (Horvath, 2002), with profound implications for public health and the economy.

A large proportion of the chronic diseases of concern are preventable, providing an opportunity to exploit prevention as a strategy to bend the curve and reduce growth in disease burden and its associated costs. Fully 38 percent of all deaths in the United States are attributable to four health behaviors (smoking, unhealthy diet, physical activity, and problem drinking) (Mokdad et al., 2004). But interventions aimed at these behaviors can yield impressive results. Randomized trials have demonstrated that intensive lifestyle change can reduce new cases of diabetes by more than 50 percent (Diabetes Prevention Program, 2002). Early detection of certain cancers and other chronic diseases through screening can reduce mortality from these conditions by 15 to 20 percent (AHRQ, 2008). Taken together, the potential leverage of prevention in calibrating the morbidity and costs associated with chronic disease is substantial, potentially averting 70 percent of such cases (CDC, 2004).

The obesity epidemic enhances the leverage of disease prevention because of its prominent role as a risk factor for cardiovascular disease, diabetes, and other major contributors to mortality and costs. Some economists predict that the obesity epidemic, if unchecked, will increase Medicare spending by 34 percent (Lakdawalla et al., 2005), a forecast not lost on policy makers. Testifying in Congress in 2008 as director of the Congressional Budget Office (CBO), Peter R. Orszag (now director of the White House Office of Management and Budget) noted that per capita health spending in 2001 was $2,783 for persons of normal weight but $3,737 and $4,725 for obese and morbidly obese persons, respectively (U.S. Senate, 2008). State governments, payers, and employers have made similar calculations (Texas Comptroller of Public Accountants, 2007). They recognize the need to address obesity or face adverse economic and workforce consequences.

Defining Prevention

The classic categories of prevention include *primary prevention*, controlling modifiable risk factors to avert the occurrence of disease; *secondary prevention*, the early detection of disease before it manifests clinical symptoms; and *tertiary prevention*, the control of existing diseases to prevent more serious complications. These distinctions are important, but a source of confusion is failing to differentiate between *clinical* and *community-* or *population-based* settings for prevention. Primary, secondary, and tertiary

TABLE 6-1 Matrix for Classifying Categories of Prevention

	Primary Prevention	Secondary Prevention	Tertiary Prevention
Clinical prevention	Behavioral counseling by clinicians; immunizations	Testing by clinicians for early detection of cancer, heart disease, and other conditions	Chronic illness care and disease management administered by clinicians
Community- or population-based prevention	Altering the community and environment to promote healthy lifestyles and reduce risks for disease and injuries	Screening fairs and other community venues for disease testing	Self-care; disease management at home, work, school

NOTE: primary prevention = controlling modifiable risk factors to avert the occurrence of disease; secondary prevention = the early detection of disease before it manifests clinical symptoms; tertiary prevention = the control of existing diseases to prevent more serious complications.

prevention can take the form of *clinical preventive services*, as when clinicians offer nutritional counseling or perform periodic examinations, blood tests, or imaging studies to screen for diseases. Prevention can also occur in the community, often with greater effectiveness, to help the general public adopt healthier lifestyles and reduce harmful exposures that precipitate diseases and injuries. Worksite wellness programs, school policies, information technology and other resources for self-care at home, nutrient labeling at restaurants and supermarkets, media and advertising countermarketing messages, changes to the built environment to facilitate exercise, legislation (e.g., indoor smoking bans), and counseling services in the community to help modify health behaviors can together accomplish far more than a physician's intervention. The health benefits, science base, and economic merits can vary for each cell in the matrix (Table 6-1), and therefore the specific context of the intervention should be specified when characterizing the benefits and cost-effectiveness of "prevention."

Defining the Price Paid

Loss of Human Life or Quality of Life

The consequences of inadequate emphasis on disease prevention are first measured in human terms: the price paid in terms of greater illness (e.g., morbidity, incidence and prevalence of disease, impaired functional status/quality of life) and premature mortality (e.g., deaths before age 65, diminished life expectancy, healthy years of life lost). According to the National Commission on Prevention Priorities, fully 100,000 deaths would be

averted each year by improving the delivery of just five preventive services (National Commission on Prevention Priorities, 2007).

Lost Productivity and Other Economic Losses

Health effects carry obvious economic implications. The price paid for inadequate emphasis on prevention includes the costs of excess medical care for avertable diseases and complications, as well as the deleterious economic effects of illness on a healthy workforce, corporate competitiveness, children's education, mental health, and community well-being. The Milken Institute estimates that chronic illnesses cost the economy $4 in lost productivity for every $1 spent on health care (DeVol et al., 2007). Some of these intangibles are difficult for economic studies to measure, and some require longer time horizons to capture, but they make up the broader benefits of preventing disease.

Underusing High-Value Prevention

By making too little use of the forms of prevention that offer high economic value—greater health benefits per dollar—the opportunity to do more with the same resources, and to save more lives in the process, is also forfeited. This opportunity cost, albeit subtle, may be the more important economic price paid for inadequate emphasis on prevention. The majority of the $2 trillion that society spends annually on health care goes toward interventions of low-economic value (e.g., services costing $50,000 to $1 million per quality-adjusted life year [QALY]) gained. Services of high-economic value (e.g., costing less than $50,000 per QALY) represent the minority of healthcare services, of which only a small fraction are known to produce net savings (economic benefits that exceed the costs of delivery). Examples of the latter include childhood immunizations and counseling smokers to quit (Maciosek et al., 2006). Many companies report cost savings by promoting policies that improve the health of their workforce (Goetzel and Ozminkowski, 2008). PriceWaterhouseCoopers estimates that the nation could save almost $500 billion per year by addressing obesity, smoking, and other modifiable risk factors (PriceWaterhouseCoopers, 2008). The Trust for America's Health estimates that community-based interventions could save $5 for every $1 invested (Levi et al., 2008).

Shifting the Focus from Cost Savings to High Value

However, the first priority in bending the curve to slow growth in spending is less about searching for the handful of services that produce net savings and more about shifting spending from low-value to high-value services. This redistribution of spending can achieve greater health gains for

TABLE 6-2 Cost-Effectiveness of 15 Out of 25 Clinical Preventive Services Reviewed by the National Commission on Prevention Priorities

Cost-Effectiveness	Preventive Service
CE ratio < 0 (cost saving)	Advising at-risk adults to take aspirin
	Childhood immunization
	Smoking cessation advice and help to quit
	Screening adults for alcohol misuse and brief counseling
	Vision screening (for adults age 65 and older)
CE ratio = $0-13,999/QALY	Chlamydia screening (sexually active adolescents and young women)
	Colorectal cancer screening (adults age 50 and older)
	Influenza immunization (adults age 50 and older)
	Pneumococcal immunization (adults age 65 and older)
	Vision screening in preschool age children
CE ratio = $14,000-34,999/QALY	Cervical cancer screening (all women)
	Counseling women of childbearing age to take folic acid supplements
	Counseling women to use calcium supplements
	Injury prevention counseling for parents of young children
	Hypertension screening (all adults)

NOTE: CE = cost-effectiveness; QALY = quality-adjusted life year.

the same resource investment while also reducing outlays for costly services that offer modest or no benefits. Channeling resources toward health services that optimize economic value can save more lives for the same dollar, and failing to do so has measurable human and monetary consequences.

The preventive services that offer high value are clearly identified. Reputable review panels, such as the U.S. Preventive Services Task Force, have identified a core set of clinical preventive services of established effectiveness. Of 25 such services reviewed by the National Commission on Prevention Priorities, 15 cost less than $35,000 per QALY (Table 6-2). The Community Task Force on Preventive Services has identified a similar cadre of effective population-based interventions (Zaza et al., 2005). Investment in such high-value, effective preventive services is one element of a larger transformation to value-based priorities in health spending.

Conclusion

The Wrong Question: How Much Can We Save?

Current policy discussions about prevention are preoccupied with the question of whether it will "save money," and in some cases it can, but whether health spending (preventive or otherwise) produces savings is ultimately the wrong question. Health is a good, and goods are not purchased to reduce spending. Expenditures by individuals (e.g., grocery shopping) and by society (e.g., national defense) are made to purchase goods of value,

not to save money. Discussions about "saving money," whether for groceries or battleships, are about getting more for the dollar (i.e., improved efficiency), not about acquiring goods at no cost (cost neutrality).

Health is no different; spending on diagnostic tests and treatments is not conditioned on cost savings. Society is willing to spend money for good health; the nation now spends 17 percent of its gross domestic product on health. The challenge of our time is how to purchase health more efficiently to restore sustainable growth rates. Scrutiny must be applied across the board—in reviewing the full portfolio of health expenditures—to find more effective ways to enhance value and produce better health outcomes for the same dollar. This question is not just for prevention but for all classes of health-related spending.

The Right Question: How Do We Maximize Value?

This question has always been germane, but the current economic crisis adds urgency. With government budgets and corporate survival imperiled by healthcare costs, the search for "savings" in prevention, which accounts for an estimated 3 percent of spending, not only misses the point but risks overlooking the major cost drivers responsible for spending. The crisis calls for a shift in attitude that places prevention on the same playing field as all of health care and poses the same questions of any service, whether its purpose is prevention, diagnostic testing, or treatment: (1) Does the intervention improve health outcomes, and how strong is the evidence? (2) If the intervention is effective, is it cost-effective (a good value)? and (3) Can other options achieve better results, or the same results at lower cost? The evidence identifies a cadre of effective preventive services, in the clinical and community setting, that can help optimize value and reduce the burden of chronic diseases for the current population and the generation to come. The long-term human and economic consequences of diseases that need not occur constitute the ultimate price paid for inadequate emphasis on prevention.

COST SAVINGS FROM PRIMARY AND SECONDARY PREVENTION

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The current economic realities confronting the U.S. medical system require a focus upon value. In this context, there has been increased attention paid to the use, and current underuse, of preventive services. Some view preventive services—such as immunizations, screening, and counseling—as

a potential windfall. Others question that premise and instead emphasize value. They state that prevention must be viewed alongside other medical services, and payers must balance benefits and costs in determining value (Brown, 2008; Cohen et al., 2008; Frieden and Mostashari, 2008; Woolf, 2008). In this view, costs minimization and improved efficiency will only be realized by emphasizing the use of high-value services, be they prevention or treatment.

One undisputed fact is that clinical preventive services are currently underused (CDC, 2008b; National Commission on Prevention Priorities, 2007). According to data from the Centers for Disease Control and Prevention's (CDC's) National Health Interview Survey and Behavioral Risk Factor Surveillance System, only 37 percent of adults are routinely immunized for influenza, and 28 percent of adults are routinely screened for tobacco use and provided assistance to quit. In addition, obesity, alcohol, and depression are not routinely screened for during clinical visits. Clearly, these missed opportunities for improving health and increasing quality have financial ramifications. Here, we discuss these ramifications in terms of the costs and potential savings of improving the delivery of baskets of evidence-based primary and secondary preventive services.

Generating National Estimates

This inquiry estimates the direct costs and potential savings in 2006 of increasing the delivery rate of the select clinical preventive services as listed in Table 6-3. We segment these evidence-based services into two baskets: primary and secondary preventive clinical services. We classify primary preventive clinical services as those services delivered by primary care providers with the intent of preventing the occurrence of one or more medical conditions or events (e.g., vaccinations, sexually transmitted disease [STD] screenings, tobacco counseling, and obesity counseling). We classify secondary clinical preventive services as those clinical services delivered by primary care providers with the intent of identifying medical conditions in an asymptomatic state (e.g., depression and cancer screening). Some of the services we include in this analysis, such as childhood vision screening, are cross-classified as they have both a primary (preventing amblyopia) and secondary (correcting visual acuity) purpose.

The estimates are calculated using models developed in support of the work of the National Commission on Prevention Priorities (NCPP) (Maciosek et al., 2006). NCPP models are carefully designed so as to allow consistent comparison among and between clinical preventive services. The data underlying the models are obtained from structured literature reviews (Maciosek et al., 2006). The scope of the NCPP's work is preventative services recommended for the general population by the U.S. Preventive

TABLE 6-3 Evidence-Based Package of 20 Clinical Preventive Services

Clinical Preventive Service	Type of Prevention	Description and Target Population
Tetanus-diphtheria booster	Primary	Immunize adults every 10 years
Folic acid use	Primary	Counsel women of childbearing age routinely on the use of folic acid supplements to prevent birth defects
Chlamydia screening	Primary	Screen sexually active women under age 25 routinely
Pneumococcal immunization	Primary	Immunize adults age 65 and older against pneumococcal disease with one dose
Osteoporosis screening	Primary	Screen routinely women age 65 and older and age 60 and older at increased risk for osteoporosis and discuss the benefits and harms of treatment options
Influenza immunization	Primary	Immunize adults age 50 and older against influenza once annually
Obesity screening	Primary	Screen adults age 18 and older routinely for obesity and offer high-intensity counseling about diet, exercise, or both together with behavioral interventions for at least 1 year
Cholesterol screening	Primary	Screen routinely for lipid disorders among men age 35 and older and women age 45 and older and treat with lipid-lowering drugs to prevent cardiovascular disease
Alcohol screening	Primary	Screen adults age 18 and older routinely to identify those whose alcohol use places them at increased risk and provide brief counseling with follow-up
Tobacco	Primary	Screen adults age 18 and older for tobacco use, provide brief counseling, offer medication, and make referrals for more intensive counseling
Hypertension screening	Primary	Measure blood pressure routinely in all adults age 18 and older and treat with antihypertensive medication to prevent cardiovascular disease
Childhood immunizations	Primary	Immunize children under age 5 against diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, *Haemophilus influenza* type b, varicella, pneumococcal, and influenza
Daily aspirin use	Primary	Discuss daily aspirin use with men age 40 and older, women age 50 and older, and others at increased risk to prevent heart disease
Depression screening	Secondary	Screen adults age 18 and older for depression in clinical practices with systems in place to assure accurate diagnosis, treatment and follow-up

continued

TABLE 6-3 Continued

Clinical Preventive Service	Type of Prevention	Description and Target Population
Hearing screening	Secondary	Screen for hearing impairments in adults age 65 and older and make referrals to specialists for treatment
Breast cancer screening	Secondary	Screen women age 50 and older routinely with mammography alone or with clinical breast examination and discuss screening with women 40-49 to choose an age to initiate screening
Vision screening	Cross-classified	Screen children under age 5 routinely to detect amblyopia, strabismus, and defects in visual acuity
Vision screening	Cross-classified	Screen adults age 65 and older routinely for diminished vision with the Snellen visual acuity chart and make referrals
Cervical cancer screening	Cross-classified	Screen women who have been sexually active and have a cervix within 3 years of onset of sexual activity or age 21 routinely with cervical cytology (Pap smears)
Colorectal cancer screening	Cross-classified	Screen adults age 50 and older routinely with fecal occult blood test, sigmoidoscopy, or colonoscopy

Services Task Force (USPSTF) or Advisory Committee on Immunization Practices (ACIP). The USPSTF recommends primary and secondary preventive services offered by primary care clinicians to asymptomatic people in clinical settings where sufficient evidence of effectiveness is found. For example, obesity screening is recommended only for adults and only when follow-up is the form of intensive behavioral therapy for adults with a BMI ≥ 30. The USPSTF found insufficient evidence of effectiveness for less intensive interventions, screening children, or primary obesity prevention through dietary or activity counseling. Thus, the estimates provided here must be interpreted in the context of USPSTF or ACIP recommendations that strictly define each intervention and its target population as noted in Table 6-3.

We use the NCPP models to estimate the per person medical costs and savings per year of intervention with the goal of determining the net impact upon 2006 healthcare expenditures of increasing delivery rates of our selected clinical preventative services to 90 percent from current levels. In following this cross-sectional perspective, future costs and savings are expressed in terms of their present value and not discounted. For those services that are currently uncommon (obesity, alcohol, depression screening) we assumed conservative current delivery rates of 25 percent.

Four key dimensions drive our results: (1) delivery costs, (2) potential medical savings, (3) target populations, and (4) current delivery rate. We

selected a 90 percent target rate to reflect limitations to even the most effective delivery strategy due to contraindications for portions of the target population and variation in individual choice (Maciosek et al., 2006). We included only direct medical costs such as the initial cost of the service (screening or counseling) and any necessary follow-up including diagnostic testing, pharmacotherapy, and intensive interventions, and, in the case of cost savings, the direct medical costs of treatments averted. Excluded are indirect costs such as the value of patient time, productivity gains/losses, and any transition costs incurred as a result of increasing delivery rates to 90 percent (e.g., promotion, patient/provider education, and increasing capacity). The medical savings reflect the reduced use that would have been incurred by the 2006 U.S. population had it been consistently receiving the services.

Our cost estimates are also dependent upon the frequency and duration of a screening service. A service recommended every year for 10 years will have a higher annual cost than a screen with a biannual recommendation.

Key Findings

Table 6-4 lists the target population, current delivery rates, and net impact of 90 percent service delivery for 2006. Aside from adult vision screening, which is cross-classified, all of the services with an estimated net cost reduction are primary preventive services. Among these, the service with the greatest net impact is tobacco screening with an estimated cost saving of $5.6 billion dollars for 2006.

Current delivery rates and target population size significantly impact net effects. While seven of the recommended preventive services (childhood immunization, pneumococcal immunization, daily aspirin use, tobacco screening, adult vision screening, alcohol screening, and obesity screening) are cost saving, the service with the greatest per person marginal cost reduction, childhood immunization ($270/person), has no impact upon overall medical costs due to its current high rate of delivery. Conversely, while alcohol screening has relative small individual impact ($11/person/year) its overall financial impact is large due to both a large target population and current low rate of delivery (assumed to be 25 percent).

Table 6-5 presents the costs, savings, and net impact upon personal healthcare expenditures of primary and secondary preventive services. The first three columns calculate total costs of 90 percent delivery of both primary and secondary preventive services (i.e., the costs and savings of delivering the service to 90 percent of the target population). As can be seen, potential delivery costs and savings differ by category. A 90 percent delivery rate of primary preventive services could reduce expenditures by $53.9 billion (3.1 percent of 2006 personal healthcare expenditures [PHCE]) at a

TABLE 6-4 Impact of Preventive Services

Clinical Preventive Service	Target Population Size*	Current Delivery Rate (%)	Net Cost Impact of a 90% Delivery Rate ($ billions)
Tetanus-diphtheria booster	217,319,378	50	0.3
Folic acid chemoprophylaxis	48,446,619	25	0.2
Chlamydia screening	9,703,067	30	0.034
Pneumococcal immunization	2,248,747	54	–0.054
Osteoporosis screening	37,260,352	50	1.1
Influenza immunization	89,327,640	37	0.74
Obesity screening	225,662,922	20	–0.48
Cholesterol screening	133,975,491	79	1.5
Alcohol screening	225,662,922	25	–1.7
Tobacco screening	225,662,922	28	–5.6
Hypertension screening	225,662,922	87	0.23
Childhood immunizations	20,417,636	>90	—
Discuss daily aspirin use	138,172,243	33	–3.3
Total for primary prevention			–7.0
Depression screening	11,283,146	25	0.31
Hearing screening	37,260,352	50	0.34
Breast cancer screening	71,235,621	67	1.0
Total for secondary prevention			1.6
Vision screening—children	4,021,602	75	0.008
Vision screening—adults	37,260,352	50	0.3
Cervical cancer screening	115,885,477	80	0.47
Colorectal cancer screening	225,662,922	48	1.4
Total for cross-classified services			2.2

*Based on U.S. population in 2006.

cost of $52.1 billion for a net cost reduction of 1.8 billion (.1 percent of 2006 PHCE). Achieving the same delivery rate of secondary services would cost an estimated $5.3 billion with an associated savings of $.2 billion for a net cost increase of $5.1 billion (.3 percent of 2006 PHCE).

The remaining columns show the marginal impact of increasing current delivery rates to 90 percent from their current level. Primary clinical preventive services have an estimated net savings of $7 billion (–0.4 percent of 2006 PHCE) compared with costs of 1.6 billion for secondary and 1.7 billion for cross-classified services.

Limitations and Caveats

As with any analysis, ours is subject to certain limitations and requires the proper context. When arriving at the broad population-level results pre-

TABLE 6-5 Impact of Preventive Service Type on 2006 Personal Healthcare Expenditures

	Total Delivery Costs to Reach 90% use ($ billions)	Total Savings with 90% use ($ billions)	Net Health Expenditures ($ billions)	Marginal Delivery Costs to Reach 90% use ($ billions)	Marginal Savings with 90% use ($ billions)	Marginal Net Health Expenditures ($ billions)
Primary prevention	$52.1	$53.9	–$1.8	$11.6	$18.6	–$7.0
As percent of PCHE	3.0%	3.1%	–0.1%	0.7%	1.1%	–0.4%
Secondary prevention	$5.3	$0.2	$5.1	$1.7	$.047	$1.6
As percent of PCHE	0.3%	0.0%	0.3%	0.1%	0.0%	0.1%

NOTE: PCHE = personal healthcare expenditures.

sented here, it is possible that certain costs were omitted or double-counted. For example, available data did not allow us to estimate the marginal benefit of tobacco cessation counseling on heart disease after cholesterol screening reaches 90 percent. Further, depending on whether multiple risk factors act additively or multiplicatively on health events, our estimates may overstate, or understate, potential savings. In addition, the cost of delivery and treatment were abstracted from different sources and adjusted to 2006 dollars. Variation across sources and inherent inaccuracies of price indices reduces the validity of strict comparisons of the service-by-service estimates in Table 6-4. Instead, one should view our results in terms of the magnitude of differences across services in terms of their target populations, current delivery rates, and potential impact and the cost impact of primary and secondary preventive services as baskets of services.

Context and Discussion

Prevention is often lumped into one large undifferentiated group (Woolf, 2008). Our analyses indicate that different types of evidence-based clinical preventive services have the potential for differential impacts depending upon current delivery rates and target populations. Further, there are certainly questionable preventive services for which there is not yet a

good evidence base. Payers, policy makers, and consumers should focus on evidence-based recommendations from reputable sources such as those of the USPSTF.

This analysis suggests that investing in an evidence-based package of primary preventive services could produce net cost savings. Our estimates show the potential cost savings of clinical preventive services after the cost of their delivery and necessary follow-up are taken into account. However, these savings were small relative to overall healthcare expenditures. Further, we did not include costs of reminders to patients, media campaigns, patient incentives, or changes to delivery systems needed to achieve increased use and these costs likely rise as one attempts to realize higher and higher levels of use. Thus, while the package of evidence-based clinical primary preventive services appears cost savings, it is best viewed as cost neutral. Similarly, the package of secondary preventive services has a net cost that is virtually cost-neutral when viewed as a percent of PCHE.

That is not to say evidence-based preventive services, such as those considered here, should not be promoted. Instead, support for prevention should be given for the right reasons and with reasonable expectations. The true question confronting patients, payers, and policy makers is one of value. As with any medical expenditure, dollars spent on prevention should be gauged in terms of the benefit they provide, be it improved quality of life, productivity, or both. All of the services considered here are recommended by the USPSTF and/or ACIP because a significant evidence base of their effectiveness exists. A preventive service should not be written off simply because it does not appear to save money following a modeling exercise. Evidence-based preventive services should be embraced, and their use encouraged, because of their health impact. These services preserve health and well-being and, thereby, provide a significant return on investment. As noted in our introduction, the choice of whether or not to invest in prevention is one of spending toward the avoidance of disease in the hope of improving overall quality of life or spending in reaction to and in treatment of disease whose deleterious physical and mental effects may have already been incurred.

TERTIARY PREVENTION AND TREATMENT COSTS

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Rising healthcare costs, increasing numbers of uninsured, and the increasing burden of chronic illness in the United States compel policy makers to identify better means of improving the value of health care in the

United States. Fortunately, interventions have been identified that have the potential to both improve clinical care and reduce healthcare spending. Although such interventions have been examined in research, they have not been widely integrated into usual practice. Better implementation and use of effective cost-saving services could yield significant healthcare savings.

In this paper, we focus on the costs of incomplete use of effective services for tertiary prevention. Tertiary prevention focuses on patients with established health conditions, particularly chronic conditions, with the goals of preventing additional morbidity, improving quality of life, and reducing disability. In doing so, such programs present an excellent opportunity to lower costs because baseline use of expensive health services (particularly hospital care) for patients with chronic conditions is high. The key elements of tertiary preventive services (often called care coordination or disease management services) include the prescription of effective therapies and rehabilitative services; care coordination by multidisciplinary teams; self-care training; adherence support; and measurement and attention to quality improvement. To be cost saving, these programs must achieve effectiveness at a reasonable cost (considering both fixed programmatic costs and variable per patient costs). They must focus on high-risk patients, as the potential costs for such patients are higher, maximizing the potential benefits.

Opportunities for Tertiary Prevention

Effective and cost-saving interventions have been developed for several individual chronic conditions, including diabetes, heart failure, and depression, as well as for patients in certain care situations, such as having been recently discharged from the hospital or living with terminal illnesses.

Disease Management

For example, Rubin examined diabetes disease management for a retrospective cohort of 7,000 patients enrolled in several health maintenance organizations (HMOs) and found that the annual admission rate decreased from 239 to 196 per 1,000 and costs decreased by $44 per member per month (Rubin et al., 1999). For heart failure, McAlister and colleagues conducted a systematic review of intervention trials and found that 15 of 18 that examined costs found cost savings, mainly through reduced hospital admissions. Effective interventions included use of multidisciplinary teams, telephone-based follow-up to prevent or treat exacerbations, and self-management training (McAlister et al., 2004). For depression, several trials of collaborative care have demonstrated effectiveness in improving depressive symptoms (Goetzel et al., 2005). While they have not generally reduced

healthcare spending, their overall economic impact has been positive due to improvements in absenteeism and productivity (Simon et al., 2007).

Reducing Rehospitalizations

Prevention of rehospitalizations following discharge is another form of tertiary prevention with substantial opportunity for cost savings. About 20 percent of Medicare beneficiaries are rehospitalized within 30 days and 34 percent within 90 days of an initial hospitalization (Jencks et al., 2009). Almost half of those rehospitalized had no evidence of an outpatient follow-up visit between admissions. In 2004, the costs associated with rehospitalization were estimated to be $17 billion.

Coleman and colleagues found that an intervention based on discharge coaching reduced rehospitalization for adults with 11 selected conditions at 180 days; mean costs were $2,058 for intervention patients versus $2,546 for controls. Recently, Jack and colleagues demonstrated a 30 percent decrease in rehospitalization after interventions with nurse and pharmacist support. That decrease translated into a $412 reduction in cost per participant (Coleman et al., 2006).

Palliative Care

Only a few trials of limited quality have examined the effects of specialized palliative care compared with usual care in patients with terminal illnesses. In general, they have found lower costs with specialized palliative care teams, as well as greater patient satisfaction. Larger, higher-quality studies are needed to confirm these findings and ensure their generalizability (Zimmermann et al., 2008).

Tertiary Prevention Does Not Universally Produce Savings

Despite these successful examples, not all evaluations of disease management or care coordination programs have found them to be effective or to produce cost savings. Peikes and colleagues recently reported on the initial evaluation of the Medicare demonstration trial for care coordination. They examined the effect of 15 different care coordination programs. Most used nurse telephonic support as their main intervention. The investigators found little evidence of improved processes of care or better adherence, and few of the programs had lower costs (Peikes et al., 2009).

Translating successful interventions to new populations and settings may also be difficult. Successful interventions are often incompletely described in publications, making it difficult to replicate programs. The original programs often have highly experienced and specially trained staff with

high levels of enthusiasm who have dedicated themselves to the mission of programmatic success. When applied more broadly, limitations in skills or training and lower degrees of enthusiasm may produce more modest results.

Organizations often have other issues that limit their ability to implement effective interventions, including administrative structures and budgeting procedures that limit the establishment and maintenance of multidisciplinary, patient-centered teams. External financial and reimbursement structures also limit implementation: cost savings accrue to payers; providers may see no effect or could even have reduced income. Interventions that reduce nonmedical spending, such as better depression care, may not be implemented because their economic benefits accrue mainly to the patients or their employers, rather than to payers or healthcare providers. Within the current fee-for-service environment, many payers have no means of compensating providers for more efficient, nontraditional means of service delivery, such as e-mail or home visits (Siu et al., 2009).

Savings from Enhanced Tertiary Prevention

With these limitations in mind, we can attempt to estimate how the widespread implementation of effective tertiary preventive services could affect healthcare costs. Current total annual health spending on patients with chronic conditions is $1.5 trillion (CDC, 2008a). If we estimate that 30 percent ($450 billion) of that spending is potentially amenable to interventions (based on the proportion of spending on chronic conditions that is accounted for by pathology that would be amendable to effective tertiary prevention activities), we can then base an estimate of potential savings on a relatively conservative assumption about program efficacy. If, based on the effect sizes of cost reductions achieved in the evaluations of successful interventions, the available interventions can produce 10 percent reductions in spending on average, then widespread adoption of effective programs for key chronic conditions could produce substantial savings, perhaps as much as $45 billion per year.

Such an estimate is uncertain for several reasons. First, the proportion of real-world spending amenable to tertiary prevention is difficult to estimate. Secondly, as mentioned above, the effectiveness and economic impact of real-world interventions may differ when implemented widely. Thirdly, tertiary prevention overlaps with many other types of cost-saving interventions being considered, making the total dollar savings dependent on the degree of implementation of other effective interventions. Despite these limitations, the available evidence suggests that better use of effective tertiary prevention has strong potential for improving health and reducing spending.

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Section II

Strategies That Work

7

Strategies That Work

INTRODUCTION

In response to the stresses induced by rapidly escalating healthcare costs, discussions about a multitude of strategies to lower spending have engaged the leadership of hospitals and clinics, health plans, pharmaceutical and device companies, economists, academics, and elected officials. Suggestions have focused on such varied reforms as bundled payments, accountable care organizations, regulation of medication prices, quality transparency, tort reform, administrative simplification, and structured discharge planning and follow-up (Antos, 2009; Berenson et al., 2009; Clancy, 2009; The Commonwealth Fund, 2009; Healthcare Administration Simplification Coalition, 2009; Mello and Brennan, 2009; UnitedHealth Group, 2009; U.S. Congress, 2008). The goal of the second workshop in the series was, following a brief review of the estimates of excess costs presented at the first workshop, to explore the evidence and ideas behind these strategies as possible solutions to improving the delivery and efficiency of the U.S. healthcare system.

In the opening session, a review of the May workshop engaged the analytics presented on the amount of potentially controllable waste and inefficiency in healthcare spending. These estimates focused on five broad areas: unnecessary services, inefficiently delivered services, excess administrative costs, prices that are too high, and missed prevention opportunities. Focusing on these estimates, Dana Goldman of RAND, Eric Jensen of McKinsey Global Institute, Jonathan S. Skinner of Dartmouth College, Len Nichols of the New American Foundation, and Robert D. Reischauer of the Urban

Institute offered reflections on the estimates and the relative contributions from among the five areas, the considerations needed to assure accuracy and utility of the numbers, and the implications for the reform process. The moderator summarized the written comments of the first three, and Nichols and Reischauer addressed participants directly.

The panelists frequently converged in their comments, specifically highlighting the ideas of: *dimensionalities*, including the suggestions to additionally consider the nuances of identifying concrete examples of inefficiency, the varying components of pricing, the benefits of some administrative activities, and the application of such estimates to the reform process and clinical care; *technical challenges*, including limitations of the data and consideration of the circumstances of individual localities when implementing policy changes; and *opportunities*, including obesity as an area of underinvestment in prevention and the development of further refinements in the analytics that facilitate action by policy makers.

Laying the groundwork for subsequent presentations with his keynote address for the second workshop, Glenn Steele, Jr., draws on his experience leading Geisinger Health System to provide real-life examples of effective strategies to bend the cost curve. Highlighting how Geisinger has leveraged its position as both provider and payer to innovate within the current delivery system without developing new operational and financial problems, he describes their pioneering work with bundled payments for cardiac surgery, which has yielded significant improvements in the delivery of evidence-based care and decreased rehospitalizations within 30 days by 44 percent. With a focus on the high-use chronic disease population, Steele relays that their care management initiative has reduced readmission rates among the targeted population by nearly 30 percent within a year and decreased total medical costs by 4 percent—a return on investment of 250 percent. He also describes the positive externalities arising from their innovations, citing how the teachers in Danville, Pennsylvania, received an average raise of $7,000 because of Geisinger's ability to decrease health insurance costs. Identifying Geisinger's organization, local marketplace, financial health and planning, and the sociology of its catchment area as key elements of their local environment, he characterizes the success of their interventions in acute and chronic care as steeped in their ability to innovate, experiment, and learn "on the fly."

In a complementary presentation, Gerard F. Anderson discusses potentially transplantable initiatives and approaches used by other nations to achieve the twin goals of expenditure control and outcomes improvement, specifically focusing on payment reforms, no-fault malpractice insurance, and care coordination. Noting that specialists in the United States earn up to 300 percent more than those in other countries, that prices for branded drugs cost up to twice as much, and that hospitals stays are up to

200 percent more expensive, he suggests that cost control mechanisms in other nations such as Germany have helped control spending growth and could yield significant savings if applied here. With respect to differences in medical liability costs, Anderson relays that while Canada and the United Kingdom have similar types of malpractice insurance as the United States and similar rates of litigation and award levels, the no fault malpractice model in New Zealand has resulted in lower premiums and fewer lawsuits. Finally, he also discusses Germany's focus on care coordination for individuals with chronic conditions and their provider, payer and consumer incentives, which together have lead to decreasing rates of hospitalizations for this population.

REVISITING "UNDERSTANDING THE TARGETS"

Translating Estimates into Policy

The commenters spoke of the opportunities in terms of the costs and potential savings discussed at the May workshop, as well as the very intuitive nature of many of the interventions discussed. Many of the ideas, such as standardizing billing software reconciliation and administrative simplification, appear obvious and straightforward, said Nichols. He also emphasized the significant technical challenge in the implementation of these strategies. He additionally spoke of the importance of specificity in defining the processes and levers of execution for those savings, particularly in terms of application and dissemination—critical elements of the policy discussion. Building on this idea, Reischauer identified the potential savings in preference-sensitive care, such as patient education and shared decision making, as an area of "low-hanging fruit" because of the ease of envisioning effective and politically sustainable policies that could engender savings in this area. Finally, Nichols encouraged consideration of policies designed to invoke change yet simultaneously deal with political barriers as a method of finessing strategies to lower costs and improve outcomes in a manner that could be applied from rural Pennsylvania to throughout the country.

Reflections on the Analytics

Reischauer continued the discussion by focusing on specific considerations for the major areas covered during the first workshop. While additional analyses will be required to refine the analytics, he stated that the comparison between the best and worst performers in terms of quality and cost superficially appeared to be an intuitively sound method for determining the cost of unnecessary services. The moderator, J. Michael McGinnis, summarizing the comments of Goldman, Jensen, and Nichols, also reported

that, while analyses of regional variations could identify spending outliers, further insights into the subtleties in spending patterns, such as the components of expenditures driven by inappropriate compared to discretionary care, will require further investigation.

In this category of savings opportunities, Reischauer suggested that further research should include identifying what excess services might be provided even by the "best" providers, as well as clearly describing what truly suboptimal use of services might be. Another focus in determining the scope of unnecessary services was Medicare. However, Reischauer explained that care must be taken in generalizing the findings in a Medicare population to the private healthcare sector. In addition, geographic differences likely are significant in Medicare, he asserted. As an example, he discussed the possibility that, in areas where Medicare is a relatively good payer—in terms of payment level and ease of payment—relative to private insurers, the incentives are to provide more services to Medicare beneficiaries. Where the inverse is true, incentives drive in the opposite direction. As such, the methods of maximizing the impact of strategies to lower costs and improve outcomes will require consideration of the unique milieu in individual markets.

Reischauer discussed how high administrative costs, some portion of which has been defined as excess administrative costs, are the result of the structure of our healthcare system. Because the American public values choice, quality, and innovation—all of which adds to the costs of administration—he urged careful consideration of the benefits accrued by such spending against the costs and drawbacks. The panelists further identified how some administrative activities are duplicative and redundant while others support safety initiatives, quality improvement efforts, and fraud prevention. Lacking financial pressure and inelastic demand, Reischauer identified these areas as potential policy targets to create stronger incentives for providers and payers to maximize their administrative efficiencies.

In terms of prices, Reischauer defined four dimensions to the issue: (1) some payers pay more than necessary; (2) the overall level of prices are too high and allow for too much profit; (3) controlling the growth rate of prices may not yield significant savings; and (4) prices for new medical products and services fail to decrease over time as they do in most high-tech markets. He identified a need to address these components of pricing singularly in order to facilitate translation of the estimates into policy recommendations. McGinnis further discussed how the panelists suggested that shifting the focus from the selling price of medical products to the price per unit of health might also yield insights.

McGinnis also mentioned how the commenters discussed how underinvestment in prevention stems partly from frequent turnover in health insurance coverage, where short tenures in multiple private insurance systems fail

to create incentives for payers to invest in prevention. The panelists argued that current incentives and metrics have not yet captured the importance of preventive care. Considering areas for long-term gains, the commenters identified the need for focus on obesity prevention, citing national trends and projected expenditures resulting from obesity and its health sequelae.

Where Do We Go from Here?

The panelists commented that the work engaged represented an excellent starting point, especially considering the methodological challenges and data limitations. To maximize their utility in the reform discussions, the panelists emphasized the need for continued work and refinement of the estimates, with a focus on the development of further actionable opportunities for policy makers to consider.

STRATEGIES THAT WORK AND HOW TO GET THERE

Glenn Steele, Jr., M.D., Ph.D.
Geisinger Health System

Over the past decade, the Geisinger Health System has been able to leverage its market share, its continuum of care, and its strong partnerships with payers and providers throughout Pennsylvania to innovate in ways that produce real cost savings and positive health outcomes among those consumers with the highest disease burdens. The key to success at Geisinger has been a thoughtful plan to experiment and "hedge" its innovations so as to find solutions that drive shared health goals without sacrificing the financial or operational health of the system. It is our belief that, while Geisinger's environment may contain some unique elements, this milieu of innovation and experimentation is replicable and scalable beyond our experience.

Hedging: Creating Opportunities to Innovate

The Geisinger Health System has been uniquely positioned over the past decade to innovate for a number of reasons, but primarily because we have been able to take different approaches with the 30 percent of our patient population where we are both provider and payer. This "hedging" strategy has allowed us to innovate without developing new operational and financial problems, as other health systems have experienced when they have experimented with adjusting the perverse incentive structures in health care today. Geisinger has also been well positioned to expand its innovative practices, because for the 70 percent of our patients from payers

like Capital Blue Cross, Northeast Blue Cross, Coventry, and Highmark, our market share, credibility, and capacity for continuum of care afford us the opportunity to negotiate great rates and partner in ways that support some of these innovations. As a result, Geisinger has been able to experiment and get results much more quickly than some other health plans in the marketplace today.

ProvenCare for Acute Episodic Care

Geisinger started its innovation on acute episodic care by focusing on elective coronary artery bypass graft (CABG) surgeries. Here we sought to identify high-volume diagnosis-related groups, determine best practices, deliver evidence-based care, and create a global, single-fee payment system for acute episodic care. As defined by Pennsylvania Health Care Cost Containment Council (PHC4), our outcomes from CABGs were already extraordinarily good, with low mortality and morbidity rates. The goal was to make these good outcomes even better by applying a complete reengineering process to eliminate unjustified clinical variation.

At the center of this effort was the definition of specific guidelines for care related to CABGs based on the 2004 American College of Cardiology/American Heart Association guidelines for CABG surgery. Physicians throughout our system reviewed these guidelines carefully along with the evidence in the field, which built the necessary buy-in to adopt approximately 40 best practice components of care. All were either evidence- or consensus-based and thought or shown individually to be associated with best outcomes. Questions such as "When do we start and stop the antibiotic?" and "What should the patient's temperature be when the patient leaves the operating room and goes to the recovery room?" were considered. All these care components had never previously been incorporated into a completely reengineered clinical care process; this was the opportunity for Geisinger to "experiment." Interestingly, as we started ProvenCare, we found that, even though we already had great outcomes and good value (by the PHC4 data), we were only employing all of these best practices just over half of the time.

We also reengineered our payment structure by developing a single price that included a significant discount on the historical complication charges when we looked over the 2 years prior to starting ProvenCare. While this payment structure seemed risky, we were able to move ahead as both provider and payer for our targeted 30 percent patient population.

Today, most of our CABG care is 100 percent compliant with our guidelines. Health outcomes have improved across the board (Table 7-1). Not only has mortality and morbidity dropped even more, but costs have also decreased. Our total insurance cost for CABG had already been rela-

TABLE 7-1 Quality/Value: Clinical Outcomes (18 months)

	Before ProvenCare® (n=132)	With ProvenCare® (n=181)	% Improvement (Reduction)
In-hospital mortality	1.5%	0%	
Patients with *any* complications (STS)	38%	30%	21%
Patients with >1 complication	7.6%	5.5%	28%
Atrial fibrulation	23%	19%	17%
Neurologic complication	1.5%	0.6%	60%
Any pulmonary complication	7%	4%	43%
Blood products used	23%	18%	22%
Re-operation for bleeding	3.8%	1.7%	55%
Deep sternal wound infection	0.8%	0.6%	25%
Readmission within 30 days	6.9%	3.8%	44%

Financial Outcomes	% Improvement with ProvenCare®
Average total length of stay	8.0%
Hospital net revenue	7.8%
Contribution margin of index hospitalization	16.9%
30-day readmission rate	44%

NOTE: LOS = length of stay; STS = The Society of Thoracic Surgeons.
SOURCE: Casale, A. S., R. A. Paulus, M. J. Selna, M. C. Doll, A. E. Bothe, Jr., K. E. McKinley, S. A. Berry, D. E. Davis, R. J. Gilfillan, B. H. Hamory, and G. D. Steele, Jr. 2007. ProvenCare: A provider-driven pay-for-performance program for acute episodic cardiac surgical care. *Ann Surg* 246(4):613-621; discussion 621-613. Reprinted with permission from Wolters Kluwer Health.

tively low. But since the introduction of this project, costs have fallen even more.

ProvenCare Chronic Disease Optimization

Extending the lessons and innovation of our work with acute episodic care, Geisinger has also looked at optimizing care for chronic diseases, such as coronary vascular disease, diabetes, chronic kidney disease, and preventive care. The major difference is, in addition to relative-value unit payments, up to 20 percent of total cash compensation is based on performance metrics.

The results have been somewhat mixed. For type 2 diabetes, we identified nine performance criteria or quality targets. When we started this work, only 2.4 percent of patients had all nine of these best practice goals achieved. However, as we continued to focus on this work, our results have improved. In 2007, the number rose to 10 percent. In 2008, the incidence

rose to 12 percent, with the rate leveling off at approximately 11 percent in March 2009.

Despite these improvements, we have not yet seen demonstrated improvement in outcomes. Diabetic nephropathy, diabetic retinopathy, and diabetic vasculopathy have not been noted to decrease over this time. Nor has the hospitalization rate for this group decreased. The commitment to this particular kind of performance-based payment system may yet prove effective, but at least we have modeled a way to shift the perverse piece rate payment incentives of the healthcare system to one that is aligned with what is thought to be better care.

ProvenHealth Navigator

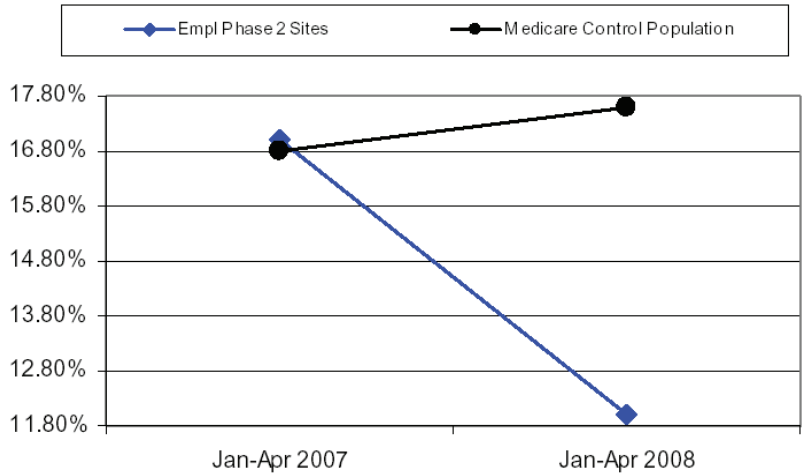
Lastly, in the case of ProvenHealth Navigator, we have worked collaboratively with payers, community clinics, and other providers to develop a targeted solution focused on the highest-use chronic disease patient population. These are typically 75-year-old patients with 4 or 5 chronic conditions who are taking 20 medications a day. We wanted to see if we could decrease hospitalizations and rehospitalizations by improving home-based or community-based chronic disease management.

Our community practice leadership and our insurance company, Geisinger Health Plan, together developed a program of a series of patient-centric aims: patient engagement, physician endorsement and oversight of the care continuum, individualized care plans, automated assessment and triage, and coordinated care. Geisinger's insurance company supported nurses who were embedded in our community practice sites. Each nurse was responsible for 125-150 of the sickest, highest-using patients. These nurses were in essence the first triage contact regarding anything that occurred with these patients or their caregivers. Additionally, we had a commitment to complete, accurate, and searchable data and registries to facilitate the continuum of care.

Initial results have been remarkable; readmission rates among the targeted population dropped by nearly 30 percent within a year (Figure 7-1), and total medical costs have decreased 4 percent—a return on investment to the insurance company of an astounding 250 percent. Today, the program is in its third phase with about 35,000 Medicare patients and 30,000 commercial patients. Already, we see similar results emerging in this larger cohort.

Drivers of Success

The success of ProvenCare has been a function of four factors—anatomy, market, financial health and planning, and sociology—discussed in the following sections. However, one of the major messages from our



	Jan-Apr 2007	Jan-Apr 2008	Change	Trend
Employed Phase 2	17.0%	12.0%	-5.0%	-29.4%
Medicare Control Population	16.8%	17.6%	0.8%	4.8%

FIGURE 7-1 Readmission rate.

experience is that these successes need not be specific to Geisinger or even to integrated health systems like Geisinger. We believe that what has made this work so powerful is that it included non-Geisinger physicians as well as partners who do not have electronic health records.

Anatomy

Geisinger employs a continuum of care model that includes the full range of healthcare services from primary care to specialty and subspecialty care. Furthermore, this system has involved not just its own doctors and medical staff, but non-Geisinger physicians, casting a wider net and expanding the opportunities. Significantly, we have been electronically connected since 1995, covering everything from primary care to specialty and subspecialty care. In all of the cases discussed here, we have worked hard to align incentives and to work in partnership with payers and providers to define those goals.

Market

The Geisinger Health System has a large market across the Commonwealth of Pennsylvania where it encompasses both the insurance and

provider side. Furthermore, the demography of the coverage area is very stable, which includes a population of aging, poor residents, who carry one of the largest disease burdens in the country.

Financial Health and Planning

Having sound finances—a strong balance sheet and sound operations—has been critical to sustaining these innovations. All of this work involved risk taking, so planning for those risks and "hedging" by targeting the innovations has been critical.

Sociology

Although Geisinger represents an integrated health system, the lack of that financial structure and culture does not have to be a barrier to these kinds of changes. We have found significant interest by all physicians—even those in nonintegrated systems—in experimenting with improving outcomes and lowering excess costs. The power of professionalism and good intention in medicine has been a key driver. Along the same lines, the patient-centric paradigm has facilitated much of the ProvenCare model. Thinking about how to get care out to patients instead of how to bring patients into our hospitals is an enormous advantage. That paradigm is intrinsic to how we frame conversations and build partnerships with all the stakeholders.

Conclusion

As we share these successes with the broader medical community and as the national conversation continues about reforming the healthcare delivery system, ProvenCare and Geisinger provide a useful lesson in the power of experimentation. What Geisinger has been able to do is to learn "on the fly." Within a short time we have found some programs and initiatives that appear to work well and others that need continued tinkering. Our experience has also shown us that continued attention and devotion to improvement is needed to maintain any gains achieved. Recidivism and inertia remain the baseline!

The nation will need a great deal more innovation to "bend the curve" in healthcare costs. Not everything will work the first time around. Yet we have drawn this major lesson from our initiatives and efforts: many of the challenges facing our healthcare system today can be addressed directly with thoughtful planning and goals, creative experimentation, and considerable flexibility.

INTERNATIONAL SUCCESS AT COST CONTAINMENT

Gerard F. Anderson, Ph.D.
Johns Hopkins University

The 30 industrialized countries that form the Organisation for Economic Co-operation and Development (OECD) are all interested in controlling healthcare costs. Their varied approaches to healthcare system design and successful cost control should inform the United States as it faces its own challenges with cost containment. The United States spends over twice as much per capita and 50 percent more of its gross domestic product (GDP) on health care than these other countries. Even so, the health outcomes in these other countries are often better than the outcomes in the United States, demonstrating that it is possible to control costs without sacrificing good outcomes. While many examples of successful cost containment initiatives exist internationally, this paper focuses on three areas: (1) payment reforms; (2) no-fault malpractice insurance; and (3) care coordination.

Payment Reforms

Most of the attention in the United States has been on controlling the volume of health care. However, international comparisons suggest that more attention should be given to prices. Compared to other OECD countries, the prices for certain medical goods and services are significantly higher in the United States (Reinhardt et al., 2002). Consider the following examples:

- Prices for branded drugs are 25 to 100 percent higher.
- Specialists earn 100 to 200 percent more than specialists in other countries.
- Hospital stays are 100 to 200 percent more expensive than in other countries.

At the same time, the quantity of services is approximately equivalent. There are similar numbers of doctors and doctor visits per capita, slightly fewer hospital beds and hospital days per capita in the United States, and about the same number of drugs prescribed per capita. Notably, there are higher levels of some procedures and tests performed in the United States although not in all cases. All of this has led to the general observation that prices are a major driver of out-of-control costs when comparing the expenditures in the United States to those in other industrialized countries (Anderson et al., 2003).

Prices for Medications

Drug prices for brand-name drugs are controlled in other countries using a variety of systems, including value-based purchasing (Sweden), formularies (Australia), comparative effectiveness (United Kingdom [UK]), efficiency frontiers (Germany), and reference pricing (many European countries) (Wagner and McCarthy, 2004). The United States could adopt one of these approaches or adopt a variant of one of these approaches. We have already started down the road of comparative effectiveness, but the current legislation does not include costs as a component of the analysis. This would need to change in order to be able to obtain lower prices for brand-name drugs. All the other countries that conduct comparative effectiveness research include costs in their calculations. Each system is different, and each provides different incentives to substitute generic for brand-name drugs and different incentives for drug companies to innovate. The programs are generally successful at controlling drug prices, and the result is that drug prices are 25 to 100 percent lower for brand-name drugs (Anderson et al., 2004). There seems to be little difference in prices for generic drugs. Because of the mix of brand and generic drugs in the United States, if prices of brand-name drugs in the United States were made equal to international prices, total expenditures for drugs in the United States would drop by 25 percent. Even though a commonly cited concern is that lower prices could lead to less resources being allocated to research and development, drug companies only spend approximately 17 percent of their revenues on research and development. It is unclear how much they would actually reduce research and development and how much they would reduce marketing and other spending.

Physician Incomes

Specialists in the United States earn 200 to 300 percent more than specialists in other OECD countries, while the incomes for generalists are much more comparable (Reinhardt et al., 2004). Most countries use fee schedules to pay physicians similar to the Medicare resource-based relative-value system. The major difference in other countries is that the fee schedules are not weighted toward specialty medicine; in fact, in many northern European countries, the generalist physician is paid a higher income than the specialist. In the UK, for example, the generalist has control over access to the specialty physician and typically earns a higher income than the specialist. In Denmark, the ophthalmologists who diagnose the patients are paid higher incomes than the ophthalmologist who performs the surgery. If the United States were to adopt the system of paying specialists the same rates as generalists, then expenditures for physician services would drop

by 60 percent. Clearly, this change could not happen overnight, and it may be necessary to increase the income of generalists in order to continue to attract the best and brightest into medicine. It is, however, something to consider when revising the resource-based relative-value scale schedule. One possibility is to examine the relative weights used in other countries as a model for revising the resource-based relative-value scale.

Payments for Hospital Care

Hospitals in the United States are often paid as much for the first day of a hospital stay as hospitals in other countries are paid for the entire visit. While we do not have data to completely understand the reasons for all of the difference, the three main reasons appear to be: (1) greater administrative expenses in the United States dealing with a multipayer system, (2) much higher salaries paid to administrators and hospital staff, and (3) greater use of medical technology.

Hospital managers are fond of comparing their costs and performance to other hospitals in the United States. A study tour comparing the costs and performance in other countries could also be enlightening. Other countries have adopted capital controls (Canada) and an all-payer rate setting for hospitals (Germany), and these have been successful in controlling costs. In Canada capital costs are allocated directly by the provincial governments. In Germany all sickness funds pay the same rates to the hospital and the rate is negotiated between all the sickness funds and the individual hospital. If U.S. hospital costs could approximate the costs in other industrialized countries, then hospital expenditures could be reduced by 50 percent. The first step in this process would be a detailed comparison of the costs of hospital care in the United States and other countries. Is the cost difference due to different use of medical technology, greater use of nursing and other services, higher wages, or some other factor? Once the difference has been identified, it would be possible to see the changes in cost structure needed in the United States. Clearly, this would need to be phased in over many years. It is surprising, however, how much more expensive U.S. hospitals are compared to hospitals in other countries.

In summary, payment reforms in the areas of drug spending, specialty physician compensation, and hospital-care spending could yield significant savings if we replicate the cost controls found in other OECD countries.

No-Fault Malpractice Insurance

One of the major concerns of U.S. physicians is malpractice litigation (Mello et al., 2003). As a response, many physicians report that they practice some form of defensive medicine. While empirical studies are unclear

on exactly how much malpractice premiums or defensive medicine adds to the cost of U.S. health care, it remains a major public policy concern; yet, once again, there are alternative policy responses found in OECD peer countries (Kessler and McClellan, 2002).

Countries such as Canada and the United Kingdom have a similar type of malpractice insurance and, much to the surprise of many U.S. physicians and policy makers, they also have similar rates of litigation and similar levels of awards. On the other hand, New Zealand has adopted no-fault malpractice insurance and has significantly lower rates of malpractice claims, lower and more consistent monetary awards, greater cooperation in identifying and fixing medical errors, and much lower legal expenses. In spite of a much easier system to bring a claim, it is also surprising that in New Zealand relatively few people actually bring a claim. The best estimate is that only 1 in 30 potential claimants actually sues (Bismark and Paterson, 2006).

Adoption of no-fault insurance would have multiple benefits. There would be lower malpractice premiums and less defensive medicine. There would be lower legal costs and fewer barriers to filing a malpractice claim. And perhaps the greatest benefit would be a greater willingness to share information about medical errors, which can lead to more effective and targeted interventions to prevent them.

Care Coordination

In the United States most disease management and care coordination initiatives, especially in the Medicare and Medicaid programs, have demonstrated little improvement in controlling costs or improving outcomes. This is especially important for the Medicare program where two-thirds of all Medicare spending is on behalf of beneficiaries with five or more chronic conditions and where outcomes are especially poor (Anderson, 2005).

Germany has taken a somewhat different approach to care coordination and disease management. First, it pays the sickness funds (health insurers) a much higher rate for individuals with chronic conditions. In the United States the current risk adjustment systems used by Medicare and other insurers overpay for the healthy and underpay for those with multiple chronic conditions (Kautter et al., 2008). In Germany the payment bias is reversed with the sickest patients getting the most money. This different orientation provides an incentive for German sickness funds to focus on the needs of people with multiple chronic conditions. Second, the sickness funds create separate programs for people with chronic conditions. This allows these programs to specialize in people with chronic conditions. Many U.S. health insurers try to integrate persons with chronic conditions into the traditional health insurance system. In the United States there are special

needs plans but these are generally small and cover only a small portion of the chronically ill. Third, there are strong financial incentives for German physicians to specialize in the care for people with chronic conditions. The payment rates are significantly higher and compensate the physicians for the additional workload these patients require. The United States is debating how to pay for such things as care coordination while Germany has been doing this for several years. Fourth, people with chronic conditions are given financial incentives to enroll.

The bottom line is that more than half of all Germans with a chronic condition enroll in one of these programs and enrollment is disproportionately high for people with multiple and complex chronic conditions. It is still too early to tell how much the program is actually saving, although preliminary estimates show significant declines in hospitalization rates, suggesting high returns of value from the healthcare services and significant cost savings.

Summary

The United States spends twice as much per capita on health care than its peers, and yet the United States does not get any better outcomes—in some cases, it actually gets worse outcomes. A great deal can be gleaned by looking to the practices and policies of these peer countries, and in this paper, three specific areas are considered as a beginning: (1) paying international prices for goods and services, (2) adopting no-fault malpractice insurance, and (3) creating separate programs for people with multiple chronic conditions. In just these three examples, the United States can learn quite a bit about lowering costs at margins from 25 to 300 percent of cost while also enhancing value for patients.

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8

Knowledge Enhancement

INTRODUCTION

While medical insights emerging from ongoing clinical care and research in emerging areas such as proteomics and genomics have contributed to a rapidly expanding pool of information about health and human disease, the sheer volume of data has overwhelmed the cognitive capacity of humans (Stead, 2007). Yet the ability to apply the information emerging from scientific journal publications, research studies, specialty society guidelines, and recommendations from health agencies like the Centers for Disease Control and Prevention (CDC) at the point of care is critical to helping patients and their clinicians decide on the best care options to pursue at any moment in time. In the American Recovery and Reinvestment Act of 2009, significant resources have been devoted to both developing the knowledge needed to assist patients, providers, payers, and purchasers in their decision-making processes, and to creating the infrastructure needed to improve the quality of care delivered. Expanding on these investments in comparative effectiveness research and health information technology, speakers in this session focus on the essential strategies to enable more efficient generation and application of knowledge during the care process. In particular, they highlight tools for generating high quality, consistent treatment, with a focus on the medically complex; timely, independent, and understandable evidence; reliable, sharable, and secure clinical records; protected but accessible data; and patient-centered care.

Highlighting the potential for evidence-based guidelines to assist clinicians in applying state-of-the-art knowledge to clinical care, Lucy A. Savitz

of Intermountain Healthcare discusses how evidence-based care process models (CPMs) have enabled improvements in care quality with simultaneous cost savings. Savitz illustrates the success of this strategy by discussing outcomes with implementation of the care of febrile infants evidence-based CPM, explaining that infant stays have dropped to an average of 36 hours from 69 hours previously, readmissions have decreased, and adverse events, including preventable bacterial infections, have fallen significantly. While suggesting that Intermountain's protocols could be adopted across different models of care delivery, she additionally discusses the larger challenge of sustainability of savings beyond initial implementation.

Rainu Kaushal of Weill-Cornell Medical College posits that electronic health records (EHRs) are defined very differently across the country and that looking at the benefits and costs of interventions involving EHRs necessitates building a common language. However, she asserts that EHRs possess many benefits, including connecting physicians and other healthcare providers in the interest of furthering quality care. Citing some recent studies on EHRs, Kaushal reviews estimates of cost savings from implementation of the various components of EHRs that range up to $77 billion annually and projects even greater savings from long-term chronic disease prevention and management. However, she underscores that the estimates described are restrained by the limited availability of primary data and consequent heavy reliance on expert estimates. She also suggests that the critical cofactors needed for successful implementation and use of EHRs include financial support, technical support (i.e., regional extension center services), and refinement of standards.

Carolyn M. Clancy of the Agency for Healthcare Research and Quality (AHRQ) outlines the work of AHRQ in advancing comparative effectiveness research (CER). She describes CER as a powerful tool in providing the information needed to drive improvement in clinical care. Not only can it assist clinicians and patients in deciding on the best care option at a particular time, but, with the translation of research findings into practical tools, CER additionally promises to address many inequities in health care. She concludes by describing AHRQ's goals of (1) ensuring that effectiveness data are more widely used, and (2) promoting an open and collaborative approach to comparative effectiveness, which have been facilitated with the support of $300 million in federal dollars dedicated to AHRQ specifically for CER.

Peter K. Smith of Duke University describes the importance of enhancing clinical data as a knowledge utility. Employing the metaphor of the Christmas tree to describe medical records today, he compares current medical records to a tree riddled with a multitude of ornamental information in apparent disarray. Smith suggests that today's medical record is less a knowledge utility to guide practice and more a tool for controlling

malpractice liability and for driving proper billing and payment. Shedding light on the 9,000 fee schedule codes necessary for physician payment, he expresses the view that the goals of the expansive clinical regulatory requirements may well be misaligned and possibly contrary to effective healthcare delivery.

SUCCESSES WITH COST AND QUALITY

Lucy A. Savitz, Ph.D., M.B.A.
Intermountain Healthcare[1]

Intermountain Healthcare is a nonprofit health system based in Salt Lake City, Utah. Serving the healthcare needs of Utah and southeastern Idaho residents, Intermountain's system of 21 hospitals, more than 700 physicians, 130 clinics, and an owned health plan (Select Health) provides clinically excellent medical care at affordable rates across the full rural-urban continuum. The system has been recognized as a national leader in high-performance healthcare delivery (Bohmer, 2009; Staines, 2009).

This paper leverages the experience of Intermountain Healthcare to provide background and examples of evidence-based CPMs that have reduced costs while maintaining and improving quality of care for our patients.

The Problem

Intermountain's clinical investigators have long recognized the need to reduce variation in compliance with evidence-based guidelines together with making these guidelines adequately explicit. A guideline is a systematic statement of policy rules or principles, representing state-of-the-art knowledge, that often direct a clinician in where to go but do not necessarily specify how to get there. Conversely, protocols or CPMs are precise and detailed plans for the study of a medical problem and/or for a regimen of therapy, indicating how to get there. An adequately explicit protocol or CPM provides enough detail to lead different clinicians to the same patient-specific decision via a reproducible clinical decision method. Clinical decision support tools can then include all ways in which healthcare

[1]The author wishes to give special thanks to Institute for Health Care Delivery Research analysts Erick Henry, Craig Gale, Karen Valentine, Thomas French, and Pascal Briot for providing summary results of clinical program CPMs. The author would also like to thank Brent James, Director of the Institute and Chief Quality Officer at Intermountain Healthcare, for his vision and leadership in providing analytic infrastructure to clinical programs as well as guidance in placing Intermountain Healthcare's quality improvement work on the national agenda. Finally, thanks to Byington and Morris for agreeing to share their work that exemplifies the impact of evidence-based CPMs.

knowledge is represented in health information systems. The advantages of evidence-based CPMs are that they:

- Provide readily accessible references and allow access to knowledge in guidelines that have been selected for use in a specific clinical context,
- Often improve the clarity of a guideline,
- Can be tailored to a patient's clinical state, and
- Propose timely decision support that is specific for the patient.

Key components of our strategy for developing such protocols or CPMs are to:

- Identify the problem;
- Establish the evidence base; and
- Develop, test, and implement using quality improvement tools (e.g., Six Sigma—define, measure, analyze, improve, control—Plan, Do, Study, Act).

Evidence-Based Care Process Model

The development of evidence-based CPMs at Intermountain Healthcare is anchored in our clinical programs—primary care, pediatrics, women and newborns, intensive medicine, cardiovascular, surgical services, oncology, and behavioral health. Clinical programs are staffed with a medical director, nurse administrator, statistician, and support team that includes information technology and finance personnel. Clinical program workgroups identify problems and work to develop, test, and implement evidence-based CPMs in a phased approach as warranted. Bohmer (2009) provides a detailed description of clinical programs and the role of the Institute for Health Care Delivery.[2]

Five example Intermountain Healthcare evidence-based CPMs are provided in Table 8-1 together with indication of clinical program, cost drivers impacted, observed cost savings, and scope. While many more CPMs have been implemented across our clinical programs,[3] this sample demonstrates that the common cost drivers targeted are reduced length of stay, readmissions, and emergency room (ER) visits. Unfortunately, given perversities in our current reimbursement system, it will also be necessary to incentivize nonintegrated systems of care to coordinate and minimize financial penal-

[2] See http://intermountainhealthcare.org/about/quality/institute/Pages/home.aspx.

[3] See http://intermountainhealthcare.org/about/quality/institute/clinicalmanagement/Pages/home.aspx.

TABLE 8-1 Example Evidence-Based Care Process Models at Intermountain Healthcare

Evidence-Based Care Process Model[a]	Clinical Program	Cost Driver(s) Impacted	Observed Cost Savings	Scope
Care of the febrile infant	Pediatrics	Avoided unnecessary admissions, reduced readmission, avoided adverse events	$3,000 per infant → $6 million per year to IH system; extrapolated to $2 billion per year for the United States[b]	4 hospitals
Multidisciplinary colon surgery	Surgical services	ALOS, readmission	$1,534 decreased hospital cost per admission; 1.7% reduction in 30-day readmission rate → $1.3 million estimated savings to IH system	Systemwide
Management of elective labor induction	Women and newborns	ALOS	$100 per case cost savings and CPM noncompliance went from 28% to 2% → $600,000 per year savings to IH system	Systemwide
Achieving optimal extubation times for patients following surgery	Cardiovascular	Reduction in ICU and hospital LOS	Median extubation time < 7 hours for CABG → $20,000 per patient at IH	Systemwide
Mental health integration	Primary care	Reduction in ER visits and ALOS	$667 per patient with depression diagnosis if treated in MHI clinic vs. usual care at IH	69 clinics; clinics in 5 other states including FQHCs

NOTE: ALOS = average length of stay; CABG = coronary artery bypass graft; CPM = care process model; FQHCs = federally qualified health centers; ICU = intensive care unit; IH = Intermountain Healthcare; LOS = length of stay; MHI = mental health integration.

[a] Contact corresponding author for more detailed information.

[b] 670,000 infants, $3,000 = approximately $2 billion nationally.

ties when achieving such cost savings, shifting care across the continuum from inpatient to outpatient service.

Carrie Byington's work provides a specific example in terms of the care of the febrile infant evidence-based CPM. Byington practices at Intermountain's Primary Children's Medical Center and is a clinical leader in

our Pediatric Clinical Program and a Professor of Pediatrics and Infectious Disease at the University of Utah. Impetus for Byington's problem identification (Byington et al., 2004) in addressing care of the febrile infant is attributable to knowledge that:

- Expert guidelines were published in 1993 to address the issues of diagnostic testing and hospitalization for febrile infants;
- Existing guidelines, developed before 1990, provide no information regarding viral diagnostic testing or management of infants with confirmed viral illness who make up the majority of the group;
- Our ability to rapidly diagnose viral illness has changed significantly; and
- Physicians need guidance regarding the appropriateness of viral diagnostic tests and implications of positive/negative test results on risk for serious bacterial infection.

The University of Utah/Intermountain evidence-based CPM was developed using an evidence base derived from prospective research together with a Six Sigma process. We further were aware that fever in infants 1 to 90 days of age is one of the most common reasons for medical encounters (i.e., 20 percent of physician visits and 58 percent of all ER visits at Primary Children's Medical Center). Fever of 38°C or higher is associated with serious bacterial infection—bacteremia, meningitis, and urinary tract infection, with the latter being the most common serious bacterial infection. We documented that only 49 percent of febrile infants managed in hospital-based outpatient facilities had both a complete blood count and a urine analysis, as recommended by guidelines. This understanding of the problem led Byington's team to conduct the following analyses:

- Reanalyze Rochester Criteria and risk for serious bacterial infection.
- Analyze age and risk for serious bacterial infection.
- Analyze viral diagnostic testing and risk for serious bacterial infection.
- Analyze complete blood count and urine analysis as predictors for serious bacterial infection.
- Analyze missed serious bacterial infection.

Sixteen peer-reviewed publications document this foundational work to develop and guide clinicians in an adequately explicit protocol that incorporates state-of-the-art medical knowledge and more newly developed laboratory testing capabilities. From this, the work in developing the evidence base led to the development, testing, and spread of a CPM and

standing orders involving complete blood count and urine analysis of febrile infants (approximately $60/patient tested), which seems minor relative to the estimated cost of $1 million for a missed case of meningitis. Key quality measures used to monitor the process and clinical compliance with the CPM include the following:

- Receive core laboratory tests and viral testing as indicated.
- Admit patients at high risk for serious bacterial infection as indicated by CPM threshold.
- Give appropriate antibiotics per CPM.
- Stop antibiotics within 36 hours for febrile admission with bacterial negative cultures.
- Length of stay must be 42 hours or less.

Appropriate evaluation in 100 percent of infants is our goal. Figure 8-1 presents change in the median length of stay observed across four facilities over time, documenting achieved decreases in length-of-stay variation. These data depict replication in adult ER settings outside the children's hospital setting where the evidence-based CPM was developed. Targeted cost drivers include: patient volume, prolonged/unnecessary length of stay, reduced repeat ER visits and readmissions; decreased morbidity and mortal-

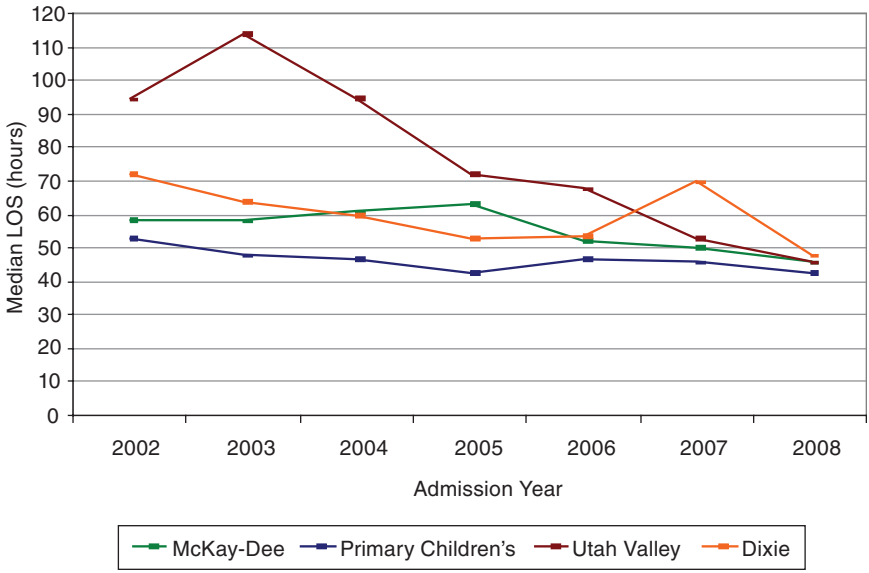

FIGURE 8-1 Median length of stay (LOS) for febrile infant admissions with negative cultures by admission year.

ity; and minimized family burden. The overall effect on costs of the care of the febrile infant CPM includes:

- Getting infants from a 3-day (mean 69-hour stay) to a 36-hour stay, this saves $3,000/infant (note that societal vs. payer savings would be much larger; also this represents a loss in hospital revenues given reimbursement perversity);
- Ten percent or less of infants develop a fever in the first 90 days;
- Decreased readmission; and
- Less adverse events, including preventable bacterial infection.

The care of the febrile infant evidence-based CPM has been tested at four Intermountain Healthcare facilities with similar quality and cost results. Byington and the lead author have been awarded a grant to expand this evidence-based CPM and document the cost effectiveness across all Intermountain Healthcare facilities. Further, this evidence-based CPM was adopted by the American Board of Pediatrics for maintenance and certification requirements.

Caveats

Evidence-based health care does not spread automatically (Dopson and Fitzgerald, 2005); diffusion of such innovations will require national attention, training, and perhaps national priority setting. As described by Bohmer (2009) and Staines (2009), Intermountain Healthcare provides:

- Supportive infrastructure and culture for improvement;
- Commitment from leadership; and
- Necessary staff training, education, and feedback.

We have also documented the value of clinical decision support tools to accommodate use of evidence-based CPMs across our clinical programs.

The question at hand is how much of the Intermountain Healthcare savings can be realized by adopting clinics, hospitals, and health systems. As shown by the Institute for Healthcare Improvement in its 100,000 Lives Campaign (Wachter and Pronovost, 2006), improvements can be realized across disparate systems of care when there is a focused effort; we have also seen others show improvements from adopted models with grant funding. Alan Morris has reported replicable results across disparate care settings for his eProtocol-insulin (i.e., another example)—at the LDS Hospital, National University Hospital in Singapore, University of Virginia, and Baystate Health (Morris et al., 2008). The real, unanswered question is

how sustainable these cost savings are beyond the focused implementation initiative and/or grant award.

Potentially Achievable Results

There are several tangible results that can be potentially achieved via recognition of the evidence-based CPM strategy. These include

- Widespread adoption of febrile infant evidence-based CPM at Intermountain Healthcare and beyond;
- Demonstrated value of evidence-based CPMs leading to application/modeling in other areas;
- Electronic medical record vendors building capacity to integrate clinical decision support for evidence-based CPMs;
- Useful outcomes comparisons supported through collaboratives or focused national efforts led by government agencies such as the Centers for Medicare & Medicaid Services (CMS) or AHRQ; and
- Documentation of significant national cost savings.

Policy Options

Several policy options follow from consideration of the effect of evidence-based CPMs as a strategy to reduce costs while maintaining and improving the quality of care. These include requiring research translation to include evidence-based CPMs based on comparative effectiveness research results; providing resources to create a clearinghouse for evidence-based CPMs that can be implemented in electronic medical records (minimizing waste and duplicated efforts and encouraging modeling); and eliminating reimbursement perversities in the system via payment reform and/or the provision of financial incentives.

THE VALUE OF ELECTRONIC HEALTH RECORDS WITH DECISION SUPPORT

Rainu Kaushal, M.D., M.P.H., and Lisa M. Kern, M.D.
Weill-Cornell Medical College

Health care in the United States today is plagued by high costs, substantial fragmentation, and poor quality. Communities spending the most money on health care may actually have the lowest quality of care (Gawande, 2009). At the same time, the communication burden on individual physicians is increasing; for example, an individual physician must interact

with 99 other physicians in 53 different practices for every 100 Medicare patients (Pham et al., 2009).

EHRs are a potentially powerful tool to address economic, quality, communication, and structural delivery issues in health care today. The National Alliance for Health Information Technology defined an EHR in 2008 as an

> Electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians across more than one healthcare organization. (National Alliance for Health Information Technology, 2008)

An important aspect of this definition is interoperability, which is the electronic exchange of information across multiple healthcare providers, thereby improving information access with improvements in efficiency and quality, as well as resultant decreases in costs and fragmentation of care. However, it should be noted that the inclusion of interoperability was not consistently incorporated into definitions of EHRs prior to this. In addition, EHRs have clinical decision support, which are electronic alerts and reminders provided to a physician at the point of care to improve medical decision making. Most EHRs include applications for ordering medications and tests, referred to as computerized physician order entry (CPOE) in the inpatient setting or e-prescribing in the outpatient setting. EHRs frequently incorporate additional support to improve the accuracy of billing and coding.

EHRs target several large healthcare cost drivers, including preventive care delivery, chronic care management, transitions of care, medications, radiology testing, and laboratory testing. In each of these areas, EHRs can improve the efficiency, quality, and/or safety of care. Furthermore, EHRs can facilitate clinical data access and retrieval for quality reporting, public health surveillance, and research. Finally, EHRs can be critical methods of restructuring healthcare delivery, as for example, through the medical home model.

Savings from Use of Electronic Health Records

National Estimates

There is an increasing amount of data regarding potential national and local savings from the use of EHRs. In 2005, both Walker and colleagues from the Center for IT Leadership and Hillestad and colleagues from RAND came to similar estimates of cost impacts on widespread adoption of EHRs despite different assumptions and methodologies. Assuming uni-

versal adoption over 5 years, Walker estimated $77 billion annual savings from implementation and use of interoperable EHRs (Walker et al., 2005). Hillestad also estimated $77 billion in annual savings, assuming 90 percent nationwide adoption of interoperable EHRs (Hillestad et al., 2005). Both studies relied on a review of expert opinions and the available published literature. Hillestad included further savings projections, estimating an additional $147 billion savings per year from long-term chronic disease prevention and management. Over 15 years, cumulative net hospital efficiency and safety savings could be $371 billion, and physician practice savings could be $142 billion. The net savings estimates could double with the inclusion of chronic disease prevention and management.

However, a Congressional Budget Office (CBO) report released in May 2008, titled *Evidence on the Costs and Benefits of Health Information Technology*, challenged both the Center for Information Technology Leadership and RAND studies as guides for legislative proposals (CBO, 2008). The CBO stated that both studies estimated "potential" rather than "likely" impact and overrelied on studies demonstrating positive effects. They also felt that several specific assumptions were overly optimistic in each study.

Most recently, in June 2009, the Commonwealth Fund issued a report authored by Nuzum and colleagues summarizing financial benefits of various healthcare reform policies by presenting estimates from the CBO and the Lewin Group (Nuzum et al., 2009). The CBO estimated that the Health Information Technology for Economic and Clinical Health (HITECH) Act, which is part of the 2009 American Recovery and Reinvestment Act, will expend $20 billion to achieve 70 percent EHR adoption for hospitals and 90 percent for physicians and will save Medicare and Medicaid $13 billion over 10 years (CBO, 2009). In an earlier estimate in 2008, the CBO had estimated $4 billion in federal savings over 10 years through a bonus (for the first 5 years)/penalty (for the next 5 years) system for using/not using EHRs, and $61 billion in savings over 10 years if EHR use were required for Medicare participation (CBO, 2008).

The Lewin group report suggested $70 billion in federal savings and $180 billion in total health system savings over 10 years through requiring electronic reporting of key health outcomes to qualify for payment updates, thereby achieving a predicted 96 percent use of EHRs.

These reports suggest very significant savings opportunities from interoperable EHRs nationally. The savings may be even more significant when measurements of other effects of EHRs are included. Notably, the savings are dependent both on the widespread adoption of EHRs and the effective incorporation of interoperability.

Local and Regional Estimates

In addition to these national estimates, there have been some setting-specific estimates. In 2003, Wang and colleagues used a simulation model to estimate the costs and benefits of EHR adoption in a generic primary care setting (Wang et al., 2003). The model relied on data from the authors' institution and literature reviews, although data were somewhat limited in 2003. They estimated a net benefit over 5 years of $86,400 per provider, driven by reductions in paper chart pulls and transcription, reduced adverse drug events, more economically efficient prescribing, reduced laboratory and radiology ordering, and increased revenue or reduced losses brought about by improved billing accuracy.

In 2004, Barlow and colleagues used a pre–post study design to examine the economic effect of implementing an EHR in a multicenter, multispecialist ambulatory care organization in central Utah (Barlow et al., 2004). Their study included the savings achieved by more efficient records management and billing. However, it is not clear what, if any costs, were factored into the analysis. They estimated savings of $8.2 million over 5 years for a 59-physician multispecialty group practice.

In 2005, Miller and colleagues published an in-depth case series (retrospective pre–post design) examining the experience of EHR adoption in the context of solo or small group practices (Miller et al., 2005). The authors included comprehensive lists of relevant costs and benefits and collected their data through extensive interviews and direct observation. They concluded that practices generally recover their EHR costs in 2.5 years and then accrue approximately $33,000 in savings per provider annually.

Finally, in 2007 Grieger and colleagues used a pre–post study to evaluate the implementation of an EHR in six ambulatory care practices affiliated with an academic medical center in Rochester, New York (Grieger et al., 2007). The largest component of savings they estimated was through reduced chart pulls and reduced staffing needs. They found recapture of initial costs within 16 months and estimated ongoing annual savings of $10,000 per provider.

Other studies have focused on specific aspects of EHRs, such as CPOE or e-prescribing. Kaushal and colleagues, using published studies and institutional expert opinions, estimated financial savings of $950,000 annually for a tertiary academic hospital through the use of CPOE (Kaushal et al., 2006). The CPOE system elements that resulted in the greatest savings were renal dosing guidance, nursing time use, specific drug guidance, and adverse drug event prevention. A Massachusetts-based report suggested that the average community hospital accrued annual savings of $2.7 million from a CPOE system with robust clinical decision support (Massachusetts Technology Collaborative & New England Healthcare Institute, 2009). Fi-

nally, Fischer and colleagues examined changes in prescribing behavior and savings resulting from the use of a handheld e-prescribing device with formulary decision support. They suggested savings of $845,000 per 100,000 patients each year through improved formulary compliance (Fischer et al., 2008).

Challenges and Limitations of Estimates

These setting-specific studies, and to a lesser degree the national estimates, highlight the significant variations among and limitations of the efforts to quantify the impact of EHRs. Among the confounding factors in any analysis of this body of literature are the heterogeneity of assumptions along several domains, including the perspective taken (e.g., federal government or an individual provider); unit of analysis; study design; time horizon; characterization of the EHR (e.g., included applications, implementation versus actual use, and level of decision support); and characterization of interoperability (e.g., amount of coded data, architecture, and external data sources). Furthermore, important contextual issues, such as payment systems, are rarely addressed.

The difficulties are compounded by limited availability of primary data and consequently a heavy reliance on expert estimates. Because successful and broad-based adoption and use of EHRs is difficult—requiring extensive capital, workflow redesign, and technical support—we have a dearth of primary data to drive cost and savings estimates. Achieving interoperability may be even harder as few successful community-wide data exchanges exist nationally.

Opportunities

Currently, only 7.6 percent of hospitals and 13 percent of office practices have EHRs (DesRoches et al., 2008; Jha et al., 2009). Fortunately, those rates may soon change for the better. There are significant national investments in interoperable EHRs underway. The American Recovery and Reinvestment Act stipulates a minimum investment of $19 billion (Steinbrook, 2009; U.S. House of Representatives and U.S. Senate, 2009). Kaiser invested $3 billion in KP Health Connect (Garrido et al., 2004). In New York State, the HEAL NY program is investing $250 million with significant private matching funds, and other states are also making substantial investments (New York State Department of Health, 2006).

As above, implementation of EHRs and the realization of interoperability are challenging, consistent with the low adoption rates today. Some critical cofactors for successful implementation and use of EHRs include financial support, technical support (i.e., regional extension center

services), and refinement of standards. Supporting interoperability is a significant task unto itself; while many existing EHRs have the technical capacity to be interoperable, very few are actively exchanging data. Successful interoperability will depend on further development of state and federal policies, including those focused on privacy and security, development of community-wide governance for health information exchange, and technical development by vendors.

COMPARATIVE EFFECTIVENESS RESEARCH

Carolyn M. Clancy, M.D.
Agency for Healthcare Research and Quality

We are in a climate of growing concern about healthcare spending—spending that already exceeds $2 trillion per year and is projected to keep growing at alarming rates (Elmendorf, 2009). Some of the major drivers of this spending have been discussed already in compendium, and among them include the wide variation in clinical care, uncertainty about best practices, and pervasive issues of quality, safety and equity. While striving to provide the right treatment for the right patient at the right time, the potential impact of comparative effectiveness research (CER) translates into the need for practical tools for patients and physicians alike that can inform the decision-making process.

Which Is Better?

The application of CER findings has inspired concerns but has not always been well defined in the national discussion. The question of its role is in many ways like the basic question for baseball enthusiasts of "Which is better—an aluminum bat or a wooden bat?" The best answer to that question is another question: "Better for what?" as aluminum bats are often better for younger children, while professional players tend to use wooden bats. This playful sports analogy illustrates the point of CER: the findings have less often declared affirmatively that one option is superior to another. More often than not, the answer is more nuanced, just as clinical decision making is complex.

The Role of AHRQ

AHRQ has emerged as a frontrunner in defining the role of CER and in framing the debate in a different light. Our mission is to improve the quality, safety, efficiency, and effectiveness of health care for all Americans. Over the past few years, we have worked effectively with congressional mandates to forward this mission with growing support from the national

healthcare community. Our work has included patient safety and health information technology, among others.

As we look at CER, the landscape we find is quite ad hoc. It is a well-intentioned, albeit uncoordinated, effort that is hindered both by limited capacity to do research and by even less capacity to translate the research into meaningful, usable applications. It is here where we would argue that the opportunity for CER has fallen most tragically short.

AHRQ has been very encouraged by the Institute of Medicine's (IOM's) recent elaboration of CER as a public good. The notion is a powerful one for the healthcare discussion. CER as a public good provides healthcare decision makers—patients, clinicians, purchasers, and policy makers—access to the latest, unbiased evidence-based information about treatment options. And, as such, it helps inform choices and, where possible, is closely aligned with the sequence of decisions patients and clinicians face.

AHRQ is one of three major partners identified by the American Recovery and Reinvestment Act of 2009 to invest in the development of CER. In addition to $800 million for the National Institutes of Health and for the Secretary of Health and Human Services, AHRQ receives $300 million to support its efforts.

The investment in CER by the American Recovery and Reinvestment Act is a significant down payment on the kind of scientific infrastructure we need to develop and sustain a healthcare system that is information rich and patient focused. In late June 2009, both the IOM and the Federal Coordinating Council independently defined the CER agenda as broader than the specific focus on clinical interventions. Instead, and again this is where AHRQ has focused its attention on CER, the agenda was one that included the context and the care delivery interventions necessary to make it feasible for patients and clinicians to use information to drive decisions.

AHRQ envisions CER as providing the information needed to drive improvement in clinical care by:

- Providing information that can be used on the front lines of treatment;
- Helping to make decisions more consistent, transparent, and rational;
- Ensuring the effectiveness data is more widely used; and
- Promoting an open and collaborative approach to comparative effectiveness.

Building Scientific Infrastructure to Support Reform

We believe AHRQ's role in defining CER is building the scientific infrastructure needed for health reform. AHRQ has operationalized the Effective Healthcare Program into three major areas in order to build this founda-

tion: evidence synthesis, evidence generation, and evidence communication and translation.

In the first area, we have been working on systematically reviewing, synthesizing, and comparing existing evidence on treatment effectiveness. In the second, we have sought to close some of the knowledge gaps in the research and to accelerate practical studies. We have worked closely with partners such as the DECIDE network and the Centers for Education & Research on Therapeutics to generate evidence from large clinical databases.

But the most exciting area, and perhaps the most relevant to the broader definition of CER, is our work with the John M. Eisenberg Center for Clinical Decisions and Communications Science. Here, we have been aggressively addressing the challenges of communicating scientific information in plain language to policy makers, patients, and their families. While there have certainly been "patient guides" for many years, available resources are often better resources for doctors who are looking for quick information outside of their specialties than they are accessible resources for patients. These past efforts have not provided patients with the tools to translate information and with a framework to look at the information that supports informed decision making. Faced with an array of options with different benefits and harms, how does the patient think about what is right for him or her? AHRQ continues to work on developing these types of consumer guides for patients and tackling the question of dissemination that broadens the scope of influence beyond reliance on our formidable partners, like the National Business Group on Health, American Association of Retired Persons (AARP), and the Consumers Union, among others.

Consistent with our focus, we will be investing the $300 million appropriated to AHRQ in the American Recovery and Reinvestment Act in evidence synthesis and generation, evidence communication and translation, and continued support for methods, training, and data development.

- **Evidence synthesis and generation** We have had standing announcements to researchers for career development and other types of training awards in order to build research capacity. Additionally, we are investing in large, pragmatic prospective studies that include underrepresented populations in significant numbers as an effort to address systematic reviews that have relied on studies that, despite federal policies for inclusion, have samples of minorities too small to yield any definitive findings relevant to those populations.
- **Evidence communication and translation** We will continue our commitment to this work and increase our investment to innovative broad dissemination and translation.
- **Continued support for methods, training, and data development** The unprecedented investment in CER provided by the

Recovery Act coincides with an unparalleled public investment in health information technology. The latter will accelerate broad adoption of electronic health records and other applications by practitioners, hospitals, and others. In addition, broad adoption can help transform care delivery to a platform for discovery and rapid translation of scientific findings. In short, these investments set the stage for achieving the Learning Health System envisioned by the IOM Roundtable on Value & Science-Driven Health Care—a vision integral to achieving high quality, affordable care for all Americans.

Conclusion

In the end, CER is an essential tool in a much larger toolkit; CER is necessary but not sufficient. CER is descriptive rather than prescriptive: it does not make policy, and it does not make healthcare decisions. What it can do—and now more than ever there is a coalition around this broader purpose—is to weigh the evidence and present it in ways that help patients, clinicians, and other stakeholders make the best possible decisions about their healthcare choices. In doing so, CER can also help us identify what is known and not known (e.g., where the gaps in our research base are) and help direct attention to shifting the landscape from ad hoc environment to a coordinated and focused effort on driving and improving healthcare choices at the individual patient–doctor level.

ENHANCING CLINICAL DATA AS A KNOWLEDGE UTILITY

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Clinical data are critical to the maintenance and improvement of health for individual patients and to the advancement of our systematic understanding of the treatment of acute and chronic diseases. Yet the medical records that hold the promise for centralizing all of these clinical data fall short of the task, instead bringing together excess information and obscuring other critical information that impedes better care and better research.

The current medical record can be likened to a Christmas tree with the data elements being ornaments. Our current "Christmas tree" is trimmed with a vast excess of ornaments placed in disarray, with duplication in many areas and obvious critical gaps. This is the result of the uncontrolled growth of clinical data demand without reference to clinical data utility, with too many stakeholders who are not aligned with the objective of relevant knowledge creation. Put another way, clinical data are not easily

converted into knowledge to guide therapy for individuals and to evaluate the effects of new treatment options.

The clinical data in the medical record include demographics and patient identifiers; history and symptoms; lab and test results; medications; and ongoing observations and records of treatment. These data can then be translated at the clinical level into knowledge that supports the care of each patient by each doctor, as well as the many handoffs between healthcare professionals that may occur over time. The medical record is a knowledge utility, but in order for it to best perform in that regard, we need comprehensive restructuring of our clinical data collection (Fiesta, 1993; Joint Commission, 2008).

Three major opportunities for this comprehensive restructuring lie in physician documentation requirements for physician payment; nursing documentation related to hospital and nursing liability claims; and nursing documentation requirements for home healthcare payment. Major change in the data collection in these areas (documentation requirements) would not only improve healthcare delivery, but also add to our systemic knowledge while reducing healthcare costs.

Physician Documentation Requirements for Payment

There are over 9,000 Current Procedural Terminology (CPT) codes that describe the physician fee schedule, which defines physician work, practice, and liability reimbursement. Looking at one evaluation and management code, 99223, reveals just how complex and onerous these codes can be at the clinical level. Code 99223 describes the highest level initial inpatient visit and was performed 5,696,413 times for Medicare beneficiaries in 2007 (AMA, 2008).

To be paid, this visit must be composed of a comprehensive history, physical exam, and review of systems and also include high-level medical decision making (AMA, 2009). Specifically, 9 of 14 elements must be included in the physical exam. Furthermore, each of those nine elements must have at least two specific points addressed. In the case of the cardiovascular system, there are at least seven possible bullet points from which to choose. These include palpation of the heart (location, size, thrills), auscultation of the heart with notation of abnormal sounds and murmurs, and assessment of lower extremities for edema and/or varicosities.

All in all, 18 clinical elements must be recorded, and each may contain many further individual data elements beyond the two levels described above. When considering the entire service, more than 100 identifiable clinical data elements are required. And, there is no absolute requirement that the chosen elements be related to the medical necessity diagnosis. Indeed,

there are no requirements that the recorded information be relevant in either a positive or negative sense to the patient or an identified problem.

For this code, the physician is allotted 20 minutes to document the clinical data, coordinate care with other providers, and counsel the patient. The utility of these data are therefore limited by a variety of inherent problems, even if entered into an electronic record. The likelihood that these data will be accurate, relevant, and comprehensive is vanishingly small. Consequently, conversion of these data into knowledge that can be transmitted to other caregivers is also limited.

The drivers of these limitations and of this incredibly complicated system governing a physician visit are inherent in the design of the system. The evaluation and management database is designed to ensure that a sufficient amount of physician work is performed to justify payment and to allow auditing to result in payment denial, payment reduction, or prosecution for fraud. Clinical relevance and utility are secondary and dispensable concerns rather than goals. The onerous nature of the documentation requirements has led to the creation of electronic systems designed to meet these requirements and to the aggregation of meaningless, irrelevant, and inaccurate clinical data.

Nursing Documentation to Reduce Vulnerability Liability Claims

"If it is not in the medical record, it didn't happen." This quotation is a major driving force determining the clinical data elements recorded by our nation's nursing workforce (Joint Commission, 2005). Unfortunately, it seems a foregone conclusion that the philosophy underlying this statement will continue in the next phase of healthcare reform. Our tort system will continue to distort healthcare delivery and significantly impair the collection of clinical data and the creation of medical knowledge (Iglehart, 2004). The medical record will serve more as an instrument for post hoc adjudication rather than as a prospective knowledge utility.

Our nurses have become scribes in a clinical data system whose burden is stultifying and whose only objective is to record everything that happened and everything that did not happen. As a result, the information in the hospital record is frequently unincorporated into care transitions, and even less so relied upon by physicians to augment their understanding of the patient's response to therapy (Miller and Miller, 2007). A review of the hospital documentation for an 8-hour nursing shift for relevant information takes at least 30 minutes, much of which is spent parsing an electronically generated boilerplate for any real care information.

Numerous studies have shown that nursing documentation is a large component of the working time of the average nurse, that the proportion of time is increasing, and that the information recorded is poorly utilized

(Brooks, 1998; Korst et al., 2003; Pabst et al., 1996; Smeltzer et al., 1996; Trossman, 2001; Upenicks, 1998; Urden, 1997). The most recently available information indicates that 35 percent of nursing work hours are devoted to documentation and only 7 percent to patient assessment and determining vital signs (Hendrich et al., 2008) (Figure 8-2). Documentation is expensive, costing an estimated $146 billion annually in the United States (Table 8-2). A 60 percent reduction in documentation time would result in sufficient savings to pay for all physician services to Medicare beneficiaries. Or, of course, we could reinvest that time in increased patient assessment and care for our patients, who currently experience only a fraction of the benefit that could be provided if nurses could more fully apply their experience and training (Blachly and Young, 1998; Brunt et al., 1999; Hendrich et al., 2009; IOM, 2004a, 2004b; LaDuke, 2001).

Nursing Documentation to Enable Home Healthcare Payments

Another area where the administrative burden of data collection and codification may have significant impact on cost and quality is in home health care with OASIS data. On August 4, 1999, Centers for Medicare & Medicaid Services (CMS) (then the Health Care Financial Administration [HCFA]) mandated "the use, collection, encoding, and transmission of Outcome and Assessment Information Set (OASIS) for home health agencies"

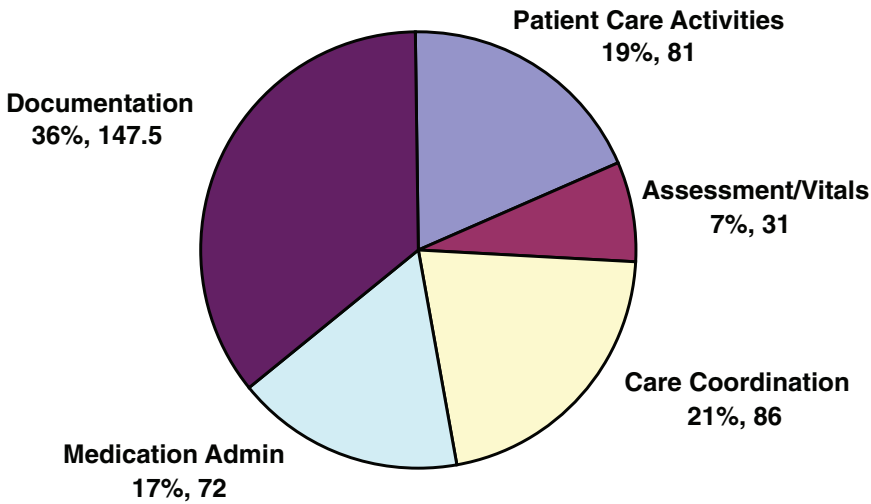

FIGURE 8-2 Distribution of nursing work time per shift (percentage, minutes).

TABLE 8-2 Annual U.S. Healthcare Spending

Total healthcare spending	$2,100,000 M
Hospital (38% of total)	$798,000 M
Nursing (52% of hospital)	$415,000 M
Documentation (35.3% of nursing)	$146,000 M
Savings from a 60% reduction in nursing documentation	$88,000 M
Spending for Medicare Part B	$85,000 M
Spending for Medicare Part B-cardiac and thoracic surgery	$700 M

NOTE: M = million.

(HCFA, 1999). OASIS data must be collected and submitted on admission, resumption of care after an inpatient stay, recertification every 60 days, transfer, and at discharge. In its most recent rendition, now proposed for enhancement, there is a 175-page date specification file describing the 375 required data lines (OASIS data specifications, n.d.).

For example, nurses are asked to assess what level of cognitive function their patients exhibit (Data Element M1700), whether and how patients exhibit confusion (Data Element M1710), and whether and how they exhibit anxiety (Data Element M1720). While, these data are clinically important and relevant, they are also intrusive (Moffit, 1999; Moffit et al., 1999), as well as nondiagnostic. Furthermore, they represent less than 1 percent of the required data in OASIS, but a patient and family interview by a skilled healthcare provider would be required to answer them.

Indeed, the process is so complex and detailed that an industry has evolved to train users to complete this process to their advantage. The national estimate for training, assessment data collection, and training new staff is over 15,000,000 hours for 2009.[4]

Conclusion

These three examples all represent failings of the bureaucratic systems in health care to remain focused on patient care. Instead, the goals are aligned more with preventing fraud and reducing liability than achieving better health outcomes and increasing patient satisfaction. The failings discussed here could be addressed, in large measure, by a uniform patient problem list and a national patient identifier. Any change in our healthcare system is doomed to failure unless the physician and nursing problem lists are merged, codified, and placed in a national repository for each patient

[4]Interested readers should evaluate the mandated Paperwork Reduction Act publication's contention that no additional burden will occur with the implementation for OASIS-C (CMS, 1995).

who is in turn identified unequivocally. Longitudinal reference to these clinical data is the key to understanding the safety and efficacy of our healthcare system. Furthermore, a major reduction in the number of clinical data elements collected is in order, with the requirements tested for clinical relevance and research relevance. All three examples share the common theme that the goals of our expansive bureaucratic regulation are at best misaligned and at worst contrary to effective healthcare delivery. Addressing these problems means the difference between delivering affordable and high-quality health care and continued and escalating failure.

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9

Care Culture and System Redesign

INTRODUCTION

Lowering healthcare spending and improving care outcomes will not only necessitate better application of existing medical insights at the point of care, but also require significant changes to the delivery system (Center for American Progress and Institute on Medicine as a Profession, 2008; Hackbarth, 2009; Senate Finance Committee, 2009). Care fragmentation, non-value-added activities, workflow inefficiencies, and defensive medicine, among many others, reflect elements of a broken system and are highlighted in many of the earlier chapters. While the presentations in this session are diverse, all the strategies discussed throughout the chapter share the central idea of shifting the current culture to one of patient-centered care through such levers as streamlined and harmonized health insurance regulation, quality and consistency in treatment with a focus on the medically complex, sharable clinical records, and medical liability reform.

Michelle J. Lyn of the Duke University Medical Center discusses refocusing the paradigm from physicians in healthcare facilities to one of multidisciplinary partnerships involving community members, nonprofit organizations, governmental health and human services entities, hospitals, and medical practices. Illustrating the impact of these community-based strategies, Lyn discusses two examples of success that have not only improved clinical outcomes and decreased acute care needs, but also yielded significant savings. She concludes that, despite limited experience transitioning to systems of care for an increasingly diverse, aging population, community-engaged system redesign must be part of healthcare reform.

Focusing on workflow efficiency, Kim R. Pittenger of Virginia Mason Medical Center and Sandeep Green Vaswani of the Institute for Healthcare Optimization describe different approaches to maximize the current resources in the health system. Describing the Virginia Mason Medical Center (VMMC) production system, Pittenger emphasizes the importance of flow production, mistake proofing, and standardizing work, suggesting that nationwide use of this type of strategy (extrapolated from results seen at VMMC) could yield clinical and patient safety savings of $44 billion and operational savings of over $7 billion. Vaswani describes the related process of managing variability in hospital operations and management in order to improve patient safety and quality of care. While describing successful case studies and outlining the assumptions made to extrapolate nationally, he suggests that the annual savings opportunity from application of variability methodology at the national level is in the range of $35 to $112 billion.

Meanwhile, Timothy G. Ferris of Massachusetts General Hospital (MGH) discusses care coordination, specifically describing how one demonstration project has already yielded promising results. By focusing on those patients with the highest illness burden, a similar national effort could potentially save up to $1 billion for the Medicare program annually. He cautions that several of MGH's characteristics—integration of hospital and physician services, existing electronic medical records system, extensive primary care service network—may limit generalizability of their success. However, he concludes that the apparent success of the MGH Care Management Program suggests that prospective payment for the enhanced management of high-risk patients holds some promise for reducing costs.

Building on the idea of integration, coordination across providers, and information technology as central elements of care coordination, Ashish Jha of Harvard University describes interoperability of health information technology as a method of facilitating health information exchange (HIE). He reviews the literature suggesting that widespread health information exchange can not only streamline the over 30 billion healthcare transactions occurring each year within the delivery system, but it can simultaneously decrease annual healthcare spending by nearly $80 billion annually. Jha cites the formation of a national strategy and standardized infrastructure protocols as keys to driving the success of HIE.

Turning to regulatory interventions, Roger Feldman of the University of Minnesota moves the discussion to the broader context of market competition and antitrust regulations. While he frames antitrust policy as an important tool for ensuring that markets provide goods and services at the lowest price to consumers, he elaborates on the reasons why it has not been as effective in the healthcare arena and provides specific suggestions to increase its impact. Frank A. Sloan of Duke University provides an overview of a strategy to control increases in capital healthcare expenditures: service capacity restrictions. After reviewing the history of certificate-of-

need (CON) requirements, he asserts that CON-type regulations have been hampered by major shortcomings, such as poor definition of "need" and lack of capital budgets for CON programs. However, if these issues are addressed, Sloan suggests that capital expenditure regulation may be a viable option for cost containment if used appropriately. Closing the session on system design, Randall R. Bovbjerg of the Urban Institute discusses the potential for malpractice liability reform to lower liability premiums and decrease the practice of defensive medicine. Although he calculates that tort reform could decrease medical expenditures by 0.9 percent (almost $20 billion in 2010), he believes that bundling liability reform with other reform initiatives could achieve even greater synergistic savings.

COMMUNITY-ENGAGED MODELS OF TEAM CARE

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Our nation's healthcare system, which is predominately focused on acute care provided by physicians in healthcare facilities, has resulted in higher than necessary healthcare costs and lower than optimal healthcare outcomes for our population. Reforming healthcare financing alone will not resolve these problems. We need innovative models to provide care earlier, more effectively, and at lower cost. These models should be developed and implemented through a collaborative problem-solving approach that uses the knowledge and resources of all stakeholders and is attentive to the varying conditions of different communities. This approach requires fundamental redesign, not the creation of substitution models or "lesser" models of care.

Such an approach is embodied in the community-engaged, iterative, data-driven process that has been undertaken with communities around Duke University Medical Center in response to growing concerns about access, cost, and quality. Still early in our work, we have built multidisciplinary partnerships involving community members, nonprofit organizations, governmental health and human services entities, hospitals, and medical practices to craft responses to community health needs that improve health and reduce costs. Although the resulting healthcare models are varied, they share a number of common elements. The models employ teams of traditional and nontraditional providers; they stratify the population according to risk (medical, social, and environmental); and they use information technology to coordinate community, primary, and specialty care for some of our community's most vulnerable populations. In this brief, we share examples, describe the prerequisites of—and potential platforms for—more widespread implementation of this approach, and suggest

policy changes that would allow health systems and providers more flexibility in meeting population health needs, creating a match between needs and resources, and promoting dissemination, adoption, and adaptation of effective models of care. These models must be accountable for improving health, meaning they should answer the basic question: What measurable improvement can we make in improving health outcomes for individuals and entire communities?

Changing Our Healthcare Models

The need for new models of care developed through community engagement begins with the failings of our current system. The well-documented persistence of socioeconomic and racial health disparities (which cannot be explained away by variation in insurance status [Smedley et al., 2003]) is but one indicator of the varied healthcare needs and barriers to health in our population. We also continue to demonstrate deficiencies in preventing and managing the chronic diseases that dominate healthcare needs and costs. Chronic disease management and prevention require the patient to change what he or she does on a daily basis, a challenge that requires ongoing education and support. Physicians are expensive and in short supply, and they are not well-suited for the counseling and coaching that lead to patient behavior change. Conversely, their limited time should be employed with the patients who require their unique clinical skills and knowledge. And while the medical community is not and cannot be responsible for changing environmental conditions that affect health and healthcare use, our efforts to improve health will fail if we do not take those conditions into account to the extent possible. For example, inadequate transportation is consistently found to be one of the major nonfinancial barriers to obtaining care (Arcury et al., 2005; Baker et al., 1996). Health care must be provided in locations that are accessible (something that varies by geographic communities and subpopulations), and other barriers to patient access must be identified and, when possible, addressed.

Collaborating with the community to determine what services can be most effectively provided (where, when, how, and by whom) starts with analyzing the health needs and strengths of our diverse communities. This should include small-area analyses of variations in disease burden and neighborhood-level clusters of illness and care patterns and the identification of institutional and community readiness for change. For effective and affordable health care, providers, payers, and patients have to be willing to use the right provider at the right time for the right level of care. The strategic and cost–benefit analyses should employ appropriate economic and health metrics and be iterative, as the needs and resources of communities change over time.

Just for Us

Just for Us (JFU), is an integrated in-home program of care for the low-income frail elderly and disabled, and it exemplifies the approach just described. The program was developed in 1999 in response to data showing high levels of unmet need among Durham's elderly population. The model grew from a collaboration among Duke (the Division of Community Health and the Nursing School), local government entities (including the county department of social services, the local area mental health entity, and the housing authority), and Lincoln Community Health Center, the area's federally qualified health center. The JFU program deploys an interdisciplinary team of providers to serve clients in their homes, providing medical care, management of chronic illnesses, and case management. Lincoln contracts with Duke to provide the clinical services of a part-time supervising physician and mid-level providers (nurse practitioners or physicians' assistants) who offer primary care in the home every 5 to 6 weeks for chronic disease management and as needed for acute conditions. A social worker from the department of social services and a health educator employed by Duke provide case management. Patients are assisted in accessing mental health services, personal care assistance, and other medical and support services.

A review of Medicaid expenditures for Just for Us enrollees enrolled in both JFU and Medicaid over a 2-year period from (2003-2004) suggests how JFU has changed health and healthcare use for its enrollees. From the first to the second year, ambulance costs were down 49 percent, emergency room (ER) costs were down 41 percent, and inpatient costs were down 68 percent. At the same time, prescription costs were up 25 percent, and home health costs were up 52 percent (Yaggy et al., 2006). Another study, currently ongoing, shows statistically significant improvement in hypertension control among enrollees over the course of 1 year.

Community Care of North Carolina

Community Care of North Carolina (CCNC), a program of the North Carolina Department of Health and Human Services, demonstrates the community-engaged, team-based approach to systems change on a statewide level. Launched in 1998 for Medicaid, CCNC is composed of networks of physicians, hospitals, health departments, social services agencies, and so on. These networks form community-based delivery systems and collaboratively deploy teams of social workers, nurses, health educators, dieticians, community health workers, and others who work in concert with physicians to provide care and disease management and assure appropriate access to services. As the communities across North Carolina are different, each network has its own composition. The estimated overall annual state savings under CCNC compared to projected costs under primary care case

management were $150 million to $170 million for fiscal year (FY) 2006 (Mercer, 2007).

Evaluating This Approach

The fields of health services research and public health provide a number of tools for evaluating models such as those we describe. At Duke, sample evaluation measures include traditional Healthcare Effectiveness Data and Information Set (HEDIS) measures to assess clinical programs and ER diversion. More thought needs to be given, however, to how we would estimate the effect of the proposed approach at a national level. The challenges of access and chronic disease prevention and management are shared by all communities, but each community has its own starting point, and there is no one solution, no one team composition that fits all communities.

One thing that is certain is that we should strive to measure our success by patient outcomes and meaningful indicators of system–provider interactions, rather than by adherence to a specific set of structures (e.g., how many exam rooms a clinic has) and less meaningful but easily counted measures of process. Moreover, the community focus of the community-engaged, team-based approach to system change highlights the importance of analytic questions that are always relevant but more easily ignored in a context in which the unit of analysis is individual patients and the process being assessed is the physician–patient encounter. For example, what is the best time frame in which to assess the benefits of disease prevention, evolving health behaviors, and lifestyle changes that are potentially passed from one generation to the next? What ancillary costs and benefits or larger societal effects of our healthcare initiatives do we include in our estimate? Do we include, for example, the effects on workplace productivity of improved health, worksite health care that might reduce absenteeism, and school-based health centers that allow children to receive treatment without parents having to retrieve them from school?

We should be cautious about claims that any system change will rapidly improve outcomes cheaply. One study of primary care case management programs, for example, showed that many changes did indeed reduce healthcare expenditures for their enrollees. However, these savings were outweighed by the costs of the programs themselves (Wheatley, 2002). The study of Medicaid expenditures in the JFU example previously described did show a reduction in the targeted costs—ambulance, ER, and hospital. However, the simultaneous rise in prescription drug costs and personal care assistance resulted in a net increase in Medicaid expenditures. We continue to experiment with how to improve the health of JFU patients while reducing costs, such as by promoting physical activity, with the intention that this will prevent the need for personal care in some patients.

The Challenge of Accountability

The starting point of the approach we describe is the shift we must make as a nation to developing accountable health care that improves the health of populations, not just the health of individual patients. On a daily basis, however, accountability is an ongoing challenge, especially if we have a multiplicity of models to assess and a multiplicity of places people can get care in one community. The medical home model—through which a primary care provider, together with the patient, takes primary responsibility for a patient's health and system utilization—will provide an answer in some, but likely not all cases. When realistic, patients should be more empowered to manage their own health, while physicians need to do what only they can do—complex care and unknown illnesses, and teams of providers manage the routine acute and chronic care.

The work is evolving, but the power of this approach comes from working with our communities to figure out how to develop and deploy the right providers, how to function as coordinated teams so as to deliver the right care, at the right time, at the right place, by the right level of provider. This approach shares a great deal in common with the movement toward Accountable Care Organizations and Medical Homes, and with Clinical Translational Science Awards, the goal of which is to translate evidence into clinical practice and ultimately population health, while promoting a bi-directional approach to understanding community priorities. Policy changes are needed that will permit and encourage state/local experiments to develop and implement new models of care. These include start-up funding and funding for demonstration projects, and the ability to scale demonstration projects to larger regional and national projects. Reform of the healthcare delivery system offers enormous potential for spending our healthcare dollars more effectively. Despite decades of small-scale experiments, the work of transitioning to systems of care for an increasingly diverse, aging population with growing rates of chronic disease is yet in its infancy. But we know enough to know that community-engaged system redesign must be part of healthcare reform.

USING PRODUCTION SYSTEM METHODS IN MEDICAL PRACTICE: IMPROVING MEDICAL COSTS AND OUTCOMES

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President Barack Obama's Council of Economic Advisers estimates that 30 percent of U.S. healthcare expenditures do not contribute to positive healthcare outcomes (Romer, 2009). Inappropriate and unsafe care and waste probably make up the greater part of this estimate, representing costs

in the hundreds of billions nationally. In 2002, Virginia Mason Medical Center (VMMC) adopted a production system methodology, based on the Toyota Production System, to relentlessly improve quality and safety (Ben-Tovim et al., 2008; Choe et al., 2008; King et al., 2007; Muder et al., 2008; Persoon et al., 2006; Raab et al., 2006; Wood et al., 2008). Production-system methods such as the VMMC production system reduce turnaround times of lab tests, improve accuracy of thyroid needle biopsies, and improve diabetic blood pressure control. Transformations of large departments or entire systems of hospital care reduce lengths of stay, waiting times for treatment, nurse dissatisfaction, and medicolegal events (Ben-Tovim et al., 2008; Choe et al., 2008; King et al., 2007; Muder et al., 2008; Persoon et al., 2006; Raab et al., 2006; Wood et al., 2008). The VMMC production system employs flow production, mistake proofing, and standard work to achieve these changes.

Flow production Production of small lots of work take place as the needs arise, instead of batch production, which is usually associated with waiting times, delays, errors, and higher costs of work (Virginia Mason Medical Center, 2004). For example, a physician processing a large batch of lab results every half day requires more time than processing two or three results in between patient visits. Additionally, if the assistant sorts the results according to abnormal and normal values before giving them to the doctor, costly delays in action are avoided.

Mistake proofing Devices and practices are refined in order to reduce errors at all levels of care. For example, a photographic "shadow board" of materials and instruments for a procedure prevents delays in procedures and mistakes in their execution. The VMMC health maintenance module sorts through each electronic chart as it is accessed and identifies disease management and preventive testing that is due or overdue.

Standard work Medical steps in care are specified and healthcare team members are trained and audited for performance. The production system ingrains standard work in care processes to prevent errors and sustain savings from redesign. Many errors in medicine are believed to arise from lack of discipline in standardizing work, so providers and medical assistants receive training on standard rooming and visit initiation. They are observed and audited for hand washing, adherence to standard use of the health maintenance module, and standard procedure setup.

The use of production systems to improve outcomes and reduce costs is in its infancy. Even though the literature is limited and no studies detail cost savings, our experience demonstrates that the application of production

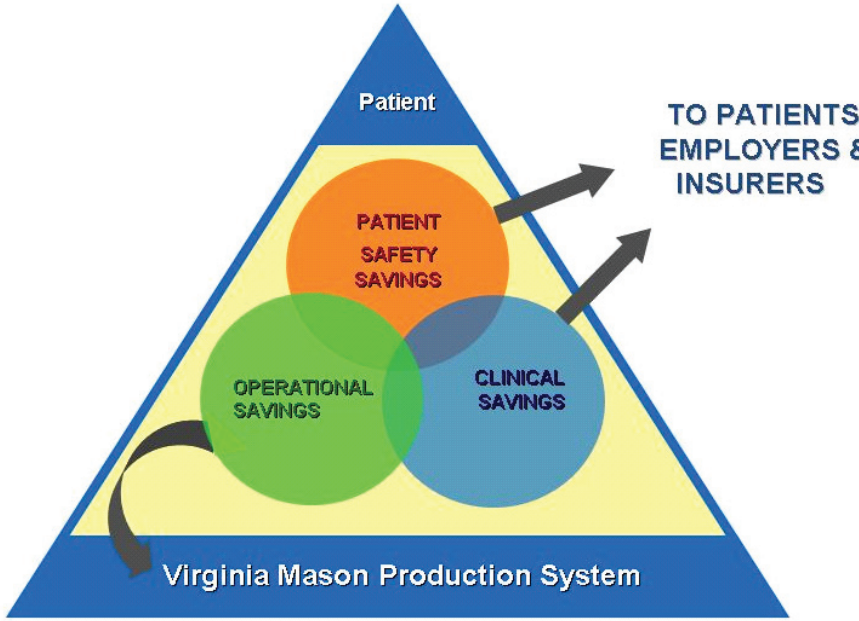

FIGURE 9-1 Savings accrued from the VMMC production system.
SOURCE: Virginia Mason Medical Center.

system methods to healthcare delivery can indeed yield significant savings. These dollar savings can be redirected internally to reinvest or can accrue to patients, their employers, and insurers. The types of savings experienced at VMMC have taken three forms: (1) operational, (2) clinical, and (3) patient safety (Figure 9-1).

Operational Savings

The production system reduces waste (time, space, mistakes) and yields direct savings for VMMC. Examples include

- Savings of $11 million in planned capital investment over 8 years by using space more efficiently;
- Savings of more than $1 million (35 percent) over 2 years in VMMC liability and malpractice premium costs since 2007;
- Margin improvement of $5.6 million over 7 years in the department of gastroenterology as a result of flow production methods;
- Savings of $2 million in the same department as access to care increased by 50 percent, delaying space expansion;

- A decrease in cost per relative value unit (RVU) in primary care by 10 percent in 2.5 years, again as a result of flow production, now focused on result reporting, incoming phone calls, and refills; and
- An increase in percent potential margin for primary care provider practices from 2 percent to 19 percent.

Driven by this production system, VMMC is on track to reach a 2009 margin of $28 million (3.6 percent operating margin) with no layoffs during the recession—a distinction in the healthcare market. These savings can translate to the national level as well.

Extrapolating Nationally

Taking the example of the savings in liability and malpractice premium costs experienced by VMMC, national premiums could drop by 30 percent yielding a savings of $3.2 billion from today's estimated national cost of $10.7 billion (A.M. Best, 2009). Another dramatic example of potential national savings is in the reduction of cost per RVU. VMMC experienced a 10 percent reduction in its primary care cost per RVU, which at the national level could translate to savings of another $4.3 billion per year.[1]

Clinical Savings

In collaboration with Boeing, VMMC provided intensive management of 350 patients comprising the top 20 percent of Boeing's healthcare spending. More than half had diabetes, and more than half had three chronic conditions. The Boeing Intensive Outpatient Care Program followed the VMMC production system to provide patients with standard care management in their medical home, complete with enhanced phone care enabled by a modest per member per month additional reimbursement. The results exceeded Boeing's goal of a 15 percent reduction in healthcare costs. A 35 percent cost reduction was achieved compared to predictions based on current usual care. The VMMC model surpassed other participating deliv-

[1]Using Medical Group Management Association data on cost per RVU (Jessee, 2009), a 10 percent reduction across primary care would lower the annual costs in primary care $30,000 for a provider in the 25th percentile of cost/RVU and $56,000 for a provider in the 90th percentile of cost/RVU. In a multispecialty group at the mean cost per RVU ($58) this would reduce costs by $7 million in a 200-full-time equivalent (FTE) group. Extrapolated to a national level—302 million visits for preventive care at 1.36 RVU/visit, 351 million visits for chronic conditions at 1.1 RVU per visit. A national provider force reducing cost per RVU by 10 percent would yield a savings to medical groups of $4.3 billion per year (Burt et al., 2007).

ery systems, which used an ambulatory intensive care unit model, disjoining patients from their primary care provider team.

Focusing on redesigned care for diabetes, the VMMC production system specified standard work for diabetic visits with physicians or registered nurses, phone care, pharmacist visits, registry management and pull systems, and evidence-based drug treatment. As a result, the outcomes of this definition of standard work translated into more than just cost savings—the care for diabetic patients has improved markedly since the beginning of this program and has surpassed national averages (Tables 9-1 and 9-2).

Extrapolating Nationally

Continuing with the example of diabetes, where disease management programs are most evolved, national savings could be as high as $35 billion from this effort. Reduction of HbA1c, LDL, and blood pressure are proven to postpone endpoints and may reduce costs (American Diabetes Association, 2002, 2009; McGuire et al., 1998; Sever et al., 2005; Wagner et al., 2001). Additionally, the room for reduction in cost is vast; estimates from 2007 of direct medical costs of diabetes care in the United States totaled $116 billion. A 30 percent savings using integrated care like that used at VMMC might achieve $35 billion in savings. If the Boeing population is representative of the nation's "sicker," employed, vascular disease patients,

TABLE 9-1 National and VMMC Outcomes on Quality Metrics, 2008

Metric	VMMC Level	National
A1C measured	88%	88%
LDL measured	86%	84%
A1C < 7	54%	46%
A1C > 9	8%	29%
LDL < 100	56%	44% commercial, 47% Medicare
BP < 130/80	42%	32%

NOTE: A1C = hemoglobin A1C; BP = blood pressure; LDL = low-density lipoprotein.

TABLE 9-2 Intermediate Outcomes for VMMC, 2007, 2009

Metric	2007	2009
LDL < 100	52%	59%
A1C < 8	67.5%	73.5%
A1C < 9	7.8%	7.2%
A1C < 7	49%	56%

NOTE: A1C = hemoglobin A1C; LDL = low-density lipoprotein.

the savings could be even greater—in excess of $40 billion nationally. This supports Michael P. Pignone's (2009) estimate of up to $45 billion in savings via disease management programs for complex chronic conditions, including diabetes, congestive heart failure, and post hospital transitions of care.

Patient Safety Savings

Lastly, the VMMC production system reduces costs and improves outcomes by enhancing patient safety in several nationally monitored metrics. This starts with all staff being empowered to call a patient safety alert (Figure 9-2).

As of June 2009, in the last 6 months of monitoring, VMMC patients have experienced no cases of ventilator-acquired pneumonia. In 2003, when we began our improvement efforts, we reported 13 cases. We have also seen reductions in central-line and surgical-site infections. All other patient safety metrics have remained static, leveling our costs (Table 9-3).

Based on these trends, VMMC clinical decision support has conservatively estimated the following percentage reductions in these three adverse events. For ventilator-associated pneumonia, we experienced a marked reduction in the past rolling year; however, we are reluctant to claim a 100 percent reduction. For the purposes of this manuscript we will assume we have a 50 percent reduction since the trend was not linear during 2005-2009. For central-line infection, we are certain of a 56 percent reduction between 2005 and 2008. And for surgical site infection, we are certain of a 39 percent reduction between 2000 and 2008.

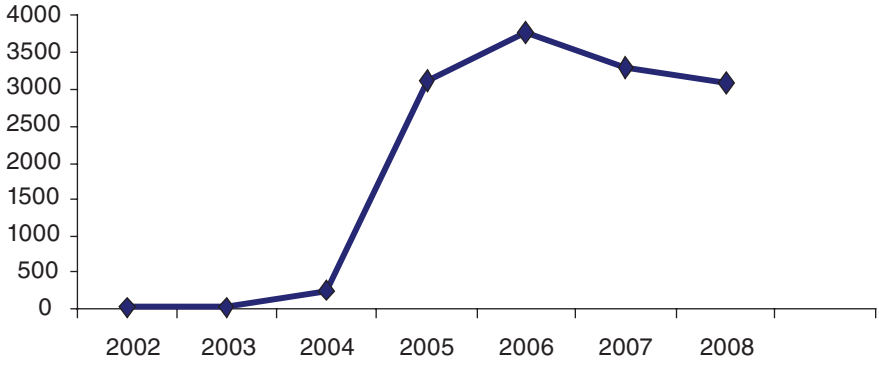

FIGURE 9-2 Reported patient safety alerts by year.
SOURCE: VMMC, 2009.

TABLE 9-3 National and VMMC Trends in Safety Metrics, 2005-2008

Safety Indicator	VMMC 2005 (%)	VMMC 2008 (%)	VMMC 2009* (%)	National (%)
Ventilator-associated pneumonia (% per 100 ventilator days)	1.79	1.97	0	10-20
Central-line infection (% per 1,000 central-line days)	4.81	1.62	—	1-5.6
Surgical site infection (% per 100 procedures)	4.99	0.9	0.83	0.22-9.9

*Data through August 2009.

Extrapolating Nationally

Applying the same trends in the reduction of ventilator-associated pneumonia, central-line infections, and surgical site infections, the VMMC production system experience translates into national savings deliverable to patients, payers, and employers estimated at $4.1 billion.

Summary

Our experience with the VMMC production system suggests production systems can reduce institutional waste and medical errors while improving patient safety. The resultant cost per RVU, capital, and liability cost savings could yield $7.5 billion for medical provider groups. This, plus attendant margin improvement, provide a stable platform for relentless improvement and further savings. For VMMC, a strategy of cost reduction through improving access and quality is more reliable and sustainable than a strategy of revenue enhancement. The sum of the estimated clinical and patient safety savings on a national scale is more than $44 billion. We estimate this figure from a selected set of chronic care model and patient safety improvement yields.

The VMMC production system is the methodology that drives our improvements, providing a model for national savings. We propose that research and promotion of systematized care design and continuous improvement—which we call a production system—become a vital component of healthcare reform. The operating principles of a production system focus our effort on operational, clinical, and patient safety savings through relentless improvement of care—as opposed to relentless expansion of care. Although we know the "end line" in the expansion of medical costs—failure of the U.S. healthcare system—we do not know where it is in waste

reduction and defect reductions in care. It all depends upon how much waste and inefficiency we as a profession are willing to tolerate—or how much systematic improvement and standardization we are willing to build into our work.

MANAGING VARIABILITY IN HEALTHCARE DELIVERY

Eugene Litvak, Ph.D., Sandeep Green Vaswani, M.B.A., Michael C. Long, M.D., and Brad Prenney, M.S., M.P.A.
Institute for Healthcare Optimization

The healthcare delivery system falls short for all stakeholders: patients, providers, and payers. Indeed, despite record-breaking and fast growing costs, today's healthcare system is still characterized by overcrowded ERs, stressed and overloaded clinicians, unnecessarily low quality of care, and extensive waste. And although many factors have been cited as drivers of this state of affairs, one key driver is often overlooked: unmanaged variability in patient flow.

Artificial Flow Variability

Variability, particularly in the flow of patients through the healthcare delivery process, impedes cost reduction and improvement of patient safety and quality of care (Aiken et al., 2002; Joint Commission Resources, 2009; Litvak, 2005, 2007; Litvak and Long, 2000; McManus et al., 2003). Some patient flow variability is natural, such as the flow of patients admitted to a hospital unit through the ER. However, it is the artificial variability where there is room for improvement. Artificial variability is the result of mismanagement. It is not driven by the timing of patients' illnesses but by the mismanagement of scheduling and allocating limited hospital resources. Furthermore, it is simultaneously neither random nor predictable (Litvak and Long, 2000). The flow of elective admissions (such as elective surgical, catheterization lab, oncology admissions) to a hospital is just such an example of artificial variability. In fact, it is often comparable if not greater than the natural variability in ER admissions (see elective surgery example in Figure 9-3).

Effects of Artificial Variability in Patient Flow

While the most visible effects of artificial flow variability on hospital function are in ER overcrowding, boarding, and diversion, this unnecessary variation drives problems in quality, capacity, and cost.

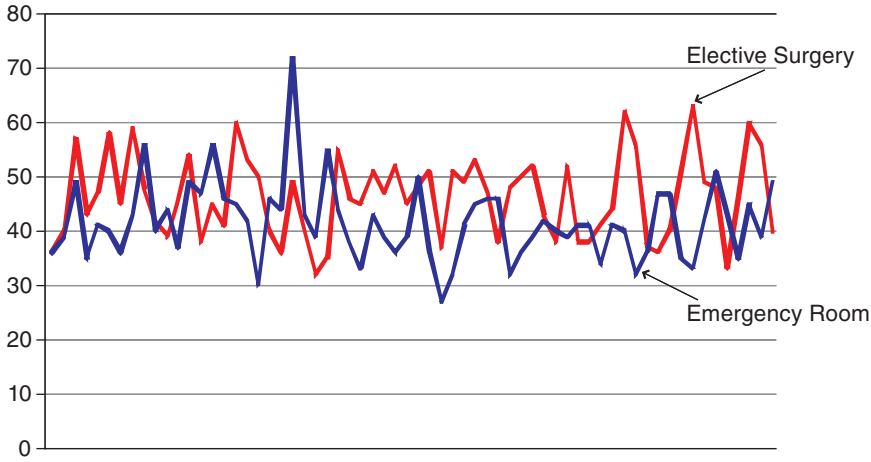

FIGURE 9-3 Daily weekday emergency and elective surgical admissions.

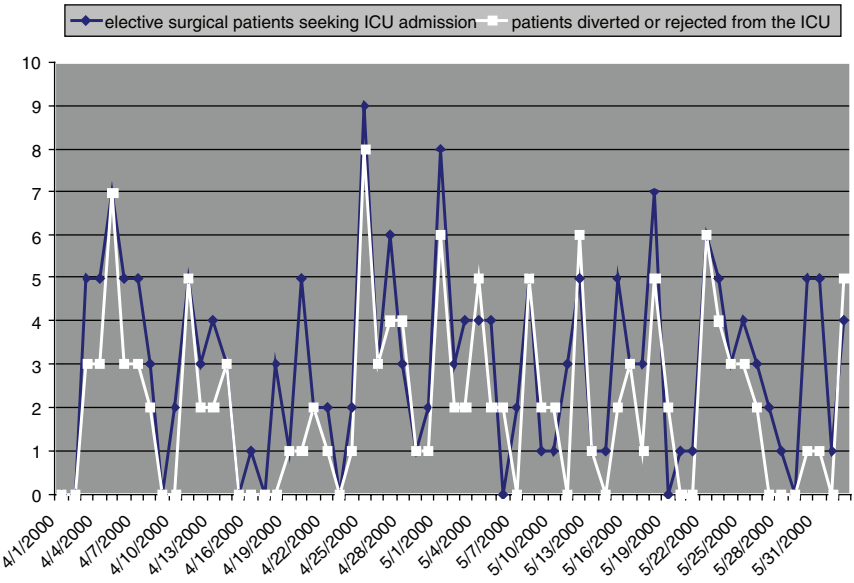

FIGURE 9-4 Elective surgical admission requests vs. patient diversion or rejection from an intensive care unit.
SOURCE: McManus, M. L., M. C. Long, A. Cooper, J. Mandell, D. M. Berwick, M. Pagano, and E. Litvak. 2003. Variability in surgical caseload and access to intensive care services. *Anesthesiology* 98(6):1491-1496. Reprinted with permission from Wolters Kluwer Health.

Unnecessary competition for inpatient beds Boston Children's Hospital, (McManus et al., 2003) found that the number of elective surgical patients needing a bed in the pediatric intensive care unit (ICU) was highly correlated with the number of rejections or diversions from that unit (most of the other admissions were from the ER) (see Figure 9-4).

Worse health outcomes driven by extreme fluctuations in patient census Litvak and colleagues (2005) found that when the patient census increased 25 percent above the normal staffing level in an inpatient unit, the mortality risk for all patients jumped by 7 percent. The kind of extreme peaks and valleys in the patient census have real consequences for patients' health outcomes.

Higher stress and lower satisfaction In addition to these glaring quality of care issues, artificial variability also results in increased staff stress, lower staff satisfaction, and lower patient satisfaction (as a result of delays and unpredictability) (Aiken et al., 2002; Litvak et al., 2005).

Higher costs and diminished access to care Paradoxically, artificial variability leads to both underuse of assets (as measured by inpatient bed occupancy or operating room prime time use) and frequent periods when demand approaches or exceeds capacity. The system-wide effects are unnecessary decreases in throughput and access to care and consequent increases in cost per patient.

Variability Methodology

The size and complexity of healthcare delivery systems makes it impossible to manage operations based on intuition, feeling, brainstorming, and benchmarking. While there is a robust science of operations management, it does not address the problem of artificial variability we see in health care. To address the problems in this system, the Institute for Healthcare Optimization has developed variability methodology. At its core, variability methodology involves identification, quantification, and elimination (i.e., smoothing) of artificial variability so that the smoothed elective flow and remaining naturally variable flow (of unscheduled cases) can be managed based on operations management principles (Joint Commission Resources, 2009).

As mentioned earlier, the primary drivers of artificial flow variability in a hospital setting are scheduled admissions through the operating room, cardiac catheterization labs, and other sources such as medical cancer services. Usually, the operating room is the most significant source of elective admissions to a hospital, which makes it a prime candidate for flow

smoothing, although the same principles apply to the other sources. The Institute of Medicine (IOM) has recognized the importance of variability methodology in making the following recommendation (IOM, 2006): "By applying variability methodology, queuing theory, and the Input-Transform-Outcome Model, hospitals can identify and eliminate many of the patient flow impediments caused by operational inefficiencies." The American Hospital Association's Quality Center has also recognized variability methodology as a key principle (American Hospital Association, 2009) for achieving IOM's six aims for improvement: care that is safe, timely, effective, efficient, equitable, and patient centered.

Evidence of Quality Improvement and Cost Savings

Numerous hospitals have already succeeded in using variability methodology and operations management to increase throughput without addition of commensurate resources and to simultaneously decrease waiting times, particularly for urgent and emergent surgeries. In addition, patient and staff satisfaction has risen, as overtime and cancellations or delays of cases have fallen.

Cincinnati Children's Hospital Medical Center Weekend waiting time (for urgent or emergent surgeries) decreased 34 percent despite a 37 percent volume increase. Weekday waiting time decreased 28 percent despite a 24 percent volume increase (results for the first 3 months after implementation). Surgery volume has sustained 7 percent growth per year for the last 2 years. The equivalent of one operating room (OR) capacity was freed up in the first year of the project, and OR overtime was down by 57 percent (approximately $0.5 million saved annually). Inpatient occupancy increased from 76 percent to 91 percent. One hundred new beds did not need to be purchased resulting in more than a $100 million savings in capital expense. Patient revenue has increased by $137 million per year (Joint Commission Resources, 2009). And the work satisfaction of the care providers substantially improved (Litvak, 2007).

Boston Medical Center Delayed or cancelled elective surgeries decreased 99.5 percent. Nurse stress was reduced by a half-hour reduction (6 percent) in nurse hours per patient day in one unit ($130,000 annual savings). ER waiting time decreased by 33 percent: a 2.8 hour wait in one of state's busiest ERs versus waiting 4-5 hours or more for other leading academic institutions in Boston (Litvak, 2007).

Palmetto Health Richland Waiting time for urgent or emergent surgical cases decreased 38 percent while overall surgical volume grew about 3 per-

cent. An annual margin growth opportunity of $8 million per year was created. These results were achieved in less than 1 year (Joint Commission Resources, 2009).

National Opportunity

Until recently, the most common approaches to addressing the problem of hospital overcrowding has been to add more capacity and to decrease the length of the care delivery process, thereby increasing throughput in existing capacity (Litvak and Long, 2000; McManus et al., 2003). However, neither has proven a particularly successful strategy. Although the cost plus reimbursement environment has made adding capacity a common solution to address peaks in patient demand for services, the strategy is far too costly. For example, adding a new inpatient room can cost in excess of $1 million in up-front capital expense and $0.3 to $0.8 million in annual operating expenses (Butterfield, 2007) (Table 9-4). Inpatient discharges grew by about 9 percent from 1997 to 2006 based on Organisation for Economic Co-operation and Development (OECD) Health Data (OECD, 2009). If we were to project a similar growth over the next 10 years and assume inpatient length of stay remains unchanged, we will need to add 75,000 inpatient beds costing about $75 billion up-front, assuming $1 million per bed. Additionally, an annual operating cost of about $10 billion to $32 billion (see Table 9-4) will need to be absorbed by the healthcare system.

Decreasing the length of the care process has been underway for several years, particularly in the inpatient area. But since length of stay is partly determined by factors outside of a department's control, such as bottlenecks in the downstream patient flow caused by artificial variability, the amount of achievable reduction is limited.

Increasing throughput by eliminating (i.e., smoothing) artificial vari-

TABLE 9-4 New Capacity Cost Estimates

Resource	Cost
Inpatient beds	$1 million per bed in up-front capital, $250,000-$800,000 annual operating expense
Operating rooms	$2-$7 million per OR in up-front capital, $250,000 or more in annual operating expense
Major imaging: CT, MRI, PET/CT, etc.	Approx. $1 million or more in up-front capital
Cardiac catheterization	Approx. $2 million or more in up-front capital

NOTE: CT = computed tomography; MRI = magnetic resonance imaging; PET/CT = positron emission tomography/computed tomography.

ability in the flow of scheduled patients is a far more viable solution. To develop a preliminary national cost savings estimate, we took the example of inpatient beds alone. If all of the admissions to a hospital came through the ER and hence were random in nature, queuing theory would suggest that inpatient bed occupancy can be increased from the current 65 percent to 80 percent without creating excessive waiting times (Litvak, 2005). If a hospital has a significant portion of elective admissions, bed occupancy could be increased to more than 90 percent by smoothing artificial variability (Litvak, 2005).

Even if occupancy were to be increased only to 80 percent by closing unneeded beds, our preliminary estimate for nationwide annual savings opportunity is in the range of $35 billion to $112 billion (Table 9-5). If demand grows by 10 percent over the next 10 years, we would otherwise need to add about 75,000 beds nationwide, for an additional annual cost burden of $12 billion to $35 billion (see Table 9-4). But by employing these smoothing methodologies to eliminate artificial variability, we can completely obviate the need for this cost over the next decade.

More study is needed to refine these cost-saving estimates, and we present these with several caveats. First, we assume that current staffed beds are indeed fully staffed. If 5 percent of the staffed beds are actually not staffed, then the savings estimate without growth would decrease from $35 billion to $112 billion to $26 billion to $82 billion per year. Second, while the estimates here reflect only inpatient beds, other opportunities for cost savings can be found in clinics, ambulatory surgery centers, and post acute care facilities.

Policy Implications

The policy implications for the employment of variability methodologies are compelling. It is a key tool for policy makers and other healthcare leaders in tackling a number of major operational and cost burden issues in this system.

Staffing At least some, and potentially a large part of, clinical staff shortages are driven by inefficient use of personnel. Several attempts to mandate or control nurse-to-patient staffing ratios have not fully succeeded and are unlikely to succeed without smoothing out artificial variability.

Physical assets Addition of new facilities adds significantly to the national healthcare cost burden. It is most prudent to ensure that current assets are being efficiently used before making the significant investments required to increase physical assets.

TABLE 9-5 Preliminary Cost Saving Estimates from Management of Variability in Healthcare Delivery

Beds (year 2007 excluding nursing home units)[a]		743,401
Occupancy[b]		65%
Current staffing (assumed)	100%	743,401
Beds used		482,379
Beds needed based on queuing assuming all random demand[b]	80%	602,973
Cost saving from current base assuming no growth		
Number of beds that can be "un-staffed"		140,428
Annual Operating Cost per bed and percent variable (alt. 1)[c]	100%	250,000
Annual Operating Cost per bed and percent variable (alt. 2)[d]	100%	800,000
Annual savings estimate 1 ($ M) [A]		35,107
Annual savings estimate 2 ($ M) [B]		112,342
Growth scenario		
Projected 10 year total growth		10%
Total Occupied beds needed		48,238
Number of beds needed at 80%		60,297
Number of new beds that would be needed at current occupancy		73,340
Staffed beds at current levels (number of beds)		73,340
Cost saving from current base assuming growth		
Beds needed per year (@ 80% occupancy)		6,030
10 year Average annual operating cost estimate 1 ($ M) [C]		8,291
10 year Average annual operating cost estimate 2 ($ M) [D]		26,531
10 year Average annual savings estimate 1 ($ M) [E=A-C]		28,816
10 year Average annual savings estimate 2 ($ M) [F=B-D]		85,811
Cost saving from trend assuming growth		
Beds added per year (@ current occupancy)		7,434
Capital cost ($ M based on $1M per bed)[d]		7,434
10 year Annual depreciation cost assuming 15 year amortization		496
Total 10 year depreciation expense		27,258
Annual amortized capital over 15 years ($ M) [G]		2,726
10 year Average annual operating cost estimate 1 ($ M) [H]		10,222
10 year Average annual operating cost estimate 2 ($ M) [I]		32,710
10 year Average annual savings estimate 1 ($ M) [E+G+H]		39,764
10 year Average annual savings estimate 2 ($ M) [F+G+I]		121,247

[a] AHA 2007 data.

[b] Litvak Ph.D., Eugene, Optimizing Patient Flow by Managing its Variability, Front Office to Front Line, Joint Commission Resources.

[c] ACP Hospitalist, December 2007, A new Rx for crowded hospitals: Math, Stacey Butterfield interviews Eugene Livak, Ph.D.

[d] Estimate based on IHO experience.

Healthcare information technology (IT) Although significant investment is being directed toward clinical IT, we should not lose sight of what can be achieved by focusing also on operational (i.e., administrative) IT systems. For example, data on waiting times throughout the care delivery process are virtually unobtainable, thereby masking inefficiencies and making it harder to redesign operations. Unlike clinical IT, operational IT systems already exist; they just need to be directed to measure appropriate statistics.

Cost saving from managing clinical variability Efforts to contain use based on clinical variability are not sufficient as a strategy for cost containment. Cost savings necessitate addressing both clinical and artificial flow variability to decrease excess capacity in the healthcare system. Variability methodology and operational management complement comparative effectiveness research and other efforts to reduce clinical variability to realize cost savings in the near future.

Opportunities for Implementation: Short- and Long-Term Goals

The core principles of variability methodology have been well established and proof of the concept has been demonstrated. Once hospital executives and physician leaders are educated about variability methodology and operational management and the process changes involved, they typically become strong advocates. The main missing ingredient for large-scale adoption is the lack of technical expertise and educational resources for hospitals interested in these methods. The newly established Institute for Healthcare Optimization aims to train 10 percent of U.S. hospitals in application of variability methodology over the next 5 years. In the long run, variability methodology should become the standard for design and improvement of healthcare delivery systems.

COST SAVINGS FROM MANAGING HIGH-RISK PATIENTS

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In all the current attention to healthcare costs, the concentration of healthcare costs among a relatively small fraction of patients presents one

[2]The authors would like to acknowledge the contributions to this work by the staff of the Office of Research, Development, and Information at the Center for Medicare and Medicaid Services, the MassGeneral Care Management Program staff, RTI International, ARC Cor-

of the most attractive opportunities for savings. Conventional wisdom suggests that a significant fraction of the costs of care of these patients reflects inefficient delivery and poor coordination of care. Despite the recent interest, efforts to better manage the care of the highest-risk patients are decades old, and the results have been mixed.

"Carve-outs," including Medicare's Program for All-Inclusive Care for the Elderly (Blumenthal and Buntin, 1998), have effectively contained costs among high-risk Medicare patients, but this approach has not been widely adopted (Gross et al., 2004). Working within the fee-for-service system, commercial insurance companies have approached cost reduction among the chronically ill primarily through nurse-based telephonic coaching services. Regardless of the effectiveness of these approaches, about which there is some debate, the applicability of these approaches to Medicare patients is unclear. Commercial populations have much lower costs than Medicare patients, and their costs are not as concentrated among a relatively small proportion of beneficiaries because commercially insured patients, generally being younger, are much less likely to have multiple chronic conditions. Delivery systems that operate within a budget (such as Kaiser Permanente and Group Health of Puget Sound) deploy care coordination services for high-risk patients, but because such services are not covered by conventional Medicare it is rare to find them in our predominantly fee-for-service delivery system. Care coordination services for high-risk patients are a key component of so-called medical home proposals.

Research on care coordination programs has shown mixed results; this highlights the difficulty of effectively improving quality and simultaneously reducing costs (Bott et al., 2009; Holtz-Eakin, 2004; Peikes et al., 2009; UnitedHealth Group, 2009). Explanations for the mixed results have included the heterogeneity of the interventions, numerous technical difficulties associated with conducting high-quality research on this topic, as well as the difficulties in effectively executing care coordination programs. Cost savings from care management requires the successful execution of a series of steps: (1) identification of patients who will eventually be high cost, (2) engagement of those patients in care management, (3) identification of the patient's needs, and (4) effectively addressing the patients' needs. As Eisenberg noted in his model of effective service delivery (Eisenberg and Power, 2000), imperfections at any of these steps will degrade the effectiveness of the service. Experience has shown that although a number of programs have done well with some of these steps, executing effectively on all is difficult (Ayanian, 2009).

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poration, Thomas Elliot, and the primary care doctors of Massachusetts General Physician's Organization.

CMS Demonstration at MGH

As part of their efforts to develop better systems of care delivery, Massachusetts General Hospital (MGH) and the Massachusetts General Physician's Organization (MGPO) jointly applied to participate in the CMS Care Management for High Cost Beneficiaries demonstration (CMS, 2005). This 3-year demonstration was designed to identify effective models of care delivery for high-risk patients. Key terms of the demonstration agreement were (1) MGPO would be paid a monthly management fee ($120) for each enrolled patient, (2) the patients would continue to participate in their usual fee-for-service care leaving primary care relationships intact, and (3) MGPO would need to achieve 5 percent savings on the identified population in addition to covering the costs of the management fees. (The determination of savings was based on a comparison with a case-matched control group selected from other Boston academic medical centers and adjusted for baseline differences.)

This report provides a high-level description of the selection of patients and controls, the intervention and some preliminary results. A more detailed report is expected to be available in 2010.

The decision to participate included the assessment of several variables, but most importantly the hospital and physicians needed to know what fraction of the high-risk patient's total costs was generated from care provided by MGH and the affiliated physicians. Given the fact that these patients could choose to receive their care anywhere, it was important to know that a substantial fraction of their costs was for care provided in a setting that the hospital and physicians could control. An analysis of preliminary data suggested that (1) the more expensive the patient, the higher proportion of care they received at MGH, and (2) for the highest-risk patients an average of 65 percent of their costs were from care delivered within MGH.

Selection of Intervention and Control Patients

We included the Medicare patients of all 19 of our primary care practices (190 internal medicine physicians). Medicare identified potentially eligible patients using the provider tax identification numbers of the MGH physicians and applied several inclusion and exclusion criteria (Figure 9-5). The claims of all 15,230 patients were placed in an analytic database. Table 9-6 shows the distribution of the patients by risk, using the Centers for Medicare & Medicaid Services (CMS) Hierarchical Condition Category (HCC) risk adjustment system (Pope et al., 2004), and cost. The shaded cells indicate the risk and cost strata of the 2,619 patients chosen to participate in the demonstration project.

Who were these patients? On average they were 76 years old and

Inclusion	Reside in Suffolk, Essex, Middlesex, Norfolk, and Plymouth counties
	Meet HCC risk score >= 2.0 and annual cost >= $2,000 *or* Meet HCC risk score >= 3.0 and annual cost >= $1,000
	Two visits to MGH physicians in 12-month period *and* No inpatient visits or 50% of visits to MGH inpatient facilities
Exclusion	End-stage renal disease
	Residing in a skilled nursing facility or nursing home
	Participating in other CMS demonstration
	Hospice, at start of program
	Medicare Advantage
	Medicare as secondary payer
	No Part A or B
	On dialysis

FIGURE 9-5 Participation criteria.

51 percent female. A significant fraction (11 percent) were under 65 years old and qualified for Medicare based on a disability. These patients averaged 3.4 acute care hospitalizations per year and had 12.6 active medications on their medication list. The eligible high-risk patients had average annual costs of $22,520 and total costs of $58,716,619 in the year prior to enrollment. When presented with the list of their own eligible patients, MGH physicians responded that the eligible patients were indeed among the sickest, most complex, and highest-risk patients in their panel.

Comparison group patients were selected from patients that visited other Boston medical centers and met the inclusion and exclusion criteria. Instead of using physician identifiers to attribute patients to these centers, we used an algorithm that relied on the frequency of physician visits. Once the pool of eligible comparison patients was identified, the comparison patients were selected using a matching process that included criteria based on age, sex, several common chronic conditions, risk score, and cost.

TABLE 9-6 The Number of Patients Falling Within Incremental Units of CMS-HCC Risk Score* and Costs for the Eligible Population. Shaded Cells Identify the Risk and Cost Cells from Which the Eligible Patients Were Selected for the MGH Program

HCC Risk Score	Annual Cost									
	$0	$500	$1,000	$2,000	$3,000	$4,000	$5,000	$6,000	$7,000	$8,000
≥ 0	15,230	14,154	12,163	8,859	6,799	5,481	4,615	4,009	3,587	3,264
≥ 1.5	5,009	4,975	4,826	4,282	3,729	3,306	2,982	2,727	2,531	2,363
≥ 1.6	4,557	4,528	4,423	3,973	3,493	3,109	2,829	2,602	2,426	2,269
≥ 1.7	4,128	4,103	4,024	3,657	3,250	2,923	2,676	2,471	2,304	2,161
≥ 1.8	3,747	3,732	3,671	3,373	3,024	2,738	2,521	2,336	2,187	2,056
≥ 1.9	3,434	3,421	3,373	3,126	2,832	2,584	2,395	2,228	2,090	1,974
≥ 2.0	3,113	3,103	3,064	2,870	2,622	2,405	2,241	2,096	1,982	1,874
≥ 2.5	1,921	1,919	1,912	1,841	1,752	1,659	1,566	1,496	1,449	1,394
≥ 3.0	1,222	1,222	1,221	1,210	1,179	1,137	1,097	1,063	1,032	1,005
≥ 3.5	795	795	795	791	779	757	743	732	720	703
≥ 4.0	506	506	506	506	503	496	493	488	482	474
≥ 4.5	335	335	335	335	335	332	332	328	327	324
≥ 5.0	216	216	216	216	216	216	216	216	215	214
≥ 5.5	142	142	142	142	142	142	142	142	141	140
≥ 6.0	93	93	93	93	93	93	93	93	93	92

*Higher risk score indicates greater illness burden and greater likelihood of higher costs in future years.

MGH Care Management Program

The program enrolled patients using a combination of welcome letters, phone calls, and face-to-face meetings in physician offices. Among the 10 percent of eligible patients who declined to enroll, the most commonly stated reason was that the additional services were not necessary. Enrollment calls from the physician's office and the physicians themselves were particularly effective, distinguishing this program from outreach under some other demonstration where no prior relationship with the beneficiary exists.

The intervention principally relied on the assignment of a nurse care manager to each of the enrolled patients. Each group of practicing physicians was assigned a care manager who worked directly with the physicians in their offices and managed the care of about 200 patients. Using a large-scale customization approach, each patient's needs and care barriers were assessed, and interventions were tailored to meet their care needs or address their barriers to care. The major types of interventions included in the MGH Care Management Program are:

- Annual nurse assessment and care plan review with an MD,
- Telemonitoring for appropriate patients,
- Surveillance calls,
- Regular pharmacy review,
- Assistance with transitions from home to hospital or hospital to home,
- Advanced directives and end-of-life counseling,
- Facilitated communication among care team members,
- Urgent response and facilitated office access, and
- Psychosocial evaluations and management.

Even with this list, care managers had considerable flexibility to be creative in addressing their patients' care coordination issues. Physicians were paid a small management fee to cover the additional time they spent with the care managers, though as the program progressed they found that the care managers actually saved them time.

The program used information technology in three distinct ways. First, all physicians within the organization used an electronic record allowing real-time communication of changes in patient status or care plans. We facilitated communication by adding an icon to the electronic records of all enrolled patients. The icon identified the patient, the care manager, and the care manager's contact information. Second, administrative systems allowed for tracking of patients, management of care manager workflow, and automatic notification of physicians and care managers of the arrival

of an enrolled patient in the ER. Third, data from care management systems and administrative systems were loaded into an analytic database on a weekly basis to create a performance dashboard that allowed tracking of trends in use.

Experience and Preliminary Results

After 3 years of operations and 2 years and 9 months of claims data there has been sufficient experience and data to make some preliminary statements about the performance of the program. On the operational side, the program appeared to perform well on the criteria for success noted above. The patient selection process using billing data correctly identified high-risk patients with significant ongoing healthcare needs. The high patient enrollment (90 percent), completion of assessments on all patients, and high contact rates between care managers and enrolled patients suggest that opportunities for care coordination were identified. The high retention of care managers (100 percent) and survey results indicating high physician satisfaction suggest the program was well integrated into the fabric of the organization.

Monitoring reports from CMS indicated that the intervention group had consistently lower costs and fewer admissions than the comparison group even after adjusting for baseline differences and trimming of outliers (Table 9-7). Costs of the eligible intervention population initially increased compared to the comparison population, but after 6 months the intervention group costs were consistently below the comparison group costs.

The following results include all eligible patients (intention to treat) and adjust for baseline differences between the intervention and comparison groups (difference in differences). The program reached the break-even point (savings in the claims experience of the intervention group exceeded the management payments from CMS) at 16 months. The cumulative savings at the end of 2 years of operations was $6 million, which represented 4.3 percent savings after covering the costs of management fees. During the third year of operations for which we have completed claims information (9 months), the cumulative savings after fees was 4.7 percent (savings peaked midway through the third year at 5.8 percent). This performance factored into the decision to grant the program a 3-year extension and expand the program to more sites (CMS, 2005). Internal data showed that much of the cost savings came from preventing admissions and readmissions to the hospital. Savings also accrued from increased use of hospice even though mortality in the intervention group was consistently lower than mortality in the comparison group.

A number of challenges related to the specific needs of the patient population and the work of the care managers surfaced during the program. The

TABLE 9-7 Calculation of Cost Savings to MGH Population Based on Savings Achieved Within the Eligible High-Risk Population[a]

Characteristic	High-Risk Population, n (%)
Size, N = 15,230[b]	2,619 (17.2)
Total cost[c]	$58,619,716 (58.3)
Various Savings Scenarios	
Percentage Net Savings[e,f,g] Compared to Control Group	Savings on High-Risk Population (% of total population costs[d])
3	$1,758,591 (1.7)
4	$2,344,789 (2.3)
5	$2,930,986 (2.9)
6	$3,517,183 (3.5)
7	$4,103,380 (4.1)

[a] Data based on preliminary reports generated after 2.5 years of a 3-year project.

[b] Because of the way the population was selected, the exact size of the denominator is not known.

[c] Assumes average cost across total population of $6,600 per year per patient.

[d] Uses baseline year cost; costs varied over time.

[e] Savings after costs has varied between 3.5 and 6.8 percent over the period for which we have data.

[f] Because intervention was less costly than control at baseline, and thus potentially more managed, these savings projections may underestimate program savings in less managed populations.

[g] Outlier trimming affected control group more than intervention group so these savings projections may underestimate actual savings.

burden of issues related to mental health and cognitive impairment within this population (>50 percent with some impairment) required shifting resources to increase social services support. End-of-life issues were predictably common in this population (18 percent of the intervention patients died during each of the first 2 years of the program), and the associated care needs are challenging under the best of circumstances.

With regard to the care managers' work, the patient load for each nurse care manager was relatively high, with an average of 30 active patients at any one time and approximately 170 patients receiving routine surveillance. Weekly case discussions helped the care managers address the unavoidable tension between spending less time with more patients or more time with fewer patients. Care managers also needed to balance time spent building relationships with patients and doctors, with time spent working to address specific patient issues. Finally, the software used for tracking the care manager's work needed further optimization.

Demonstration leaders noted several opportunities to further improve

care and reduce costs, including incorporating a limited number of home visits (particularly to address urgent issues), improved office access, improved support from care managers during non-business hours, and an exemption from the rule requiring Medicare patients to remain within an acute care hospital for 72 hours before they can be discharged to a sub-acute facility. Admissions from post-acute care settings remained high among the intervention patients and were no better in the intervention than in the comparison group.

Potential Impact on Total Costs of Care

In determining the potential impact on costs of care for the Medicare population cared for at MGH, the first step is to determine the savings for the total population from which the high-risk group was selected. Table 9-7 shows a model for calculating population-level savings from the program. Although our program appears to be delivering net savings of between 4 and 5 percent, in order to provide additional context we show population-level savings of between 3 and 7 percent at 1 percent increments. This relatively simplistic approach to calculating savings has several limitations. Nonetheless, the sensitivity analysis suggests that the program delivers a 1 to 3 percent savings on the population as a whole (the high-risk population plus the population they were selected from).

Estimating the potential impact of similarly structured programs on national Medicare costs may be an illustrative exercise, but also requires additional assumptions.[3] These assumptions lead to an estimated savings over a 2-year period of between $604 million and $1.5 billion.

Policy Considerations

The apparent success of the MGH Care Management Program suggests that prospective payment for the enhanced management of high-risk patients holds some promise for reducing costs. Nonetheless, several important considerations limit the translation of this demonstration to policy. First, MGH has several uncommon characteristics that may limit

[3] We used a relatively simple model that shows 1.6 percent population savings (from Table 9-6) and 45 million Medicare beneficiaries with an average annual cost of $7,000. We also estimated (1) the size of the Medicare population receiving care within an integrated delivery system, and (2) the proportion of those integrated delivery systems that have the necessary information technology infrastructure. Both of these variables are currently in flux, and their rate of change will depend on future policy decisions, but for the sake of this exercise we assumed that between 40 percent and 60 percent of the U.S. population could receive care within an integrated delivery system and that between 30 percent and 50 percent of these delivery systems would have the required information technology infrastructure.

the generalizability of the program. Important among these characteristics are the integration of physician and hospital services, universal use of an electronic medical record, advanced clinical and administrative information systems, an extensive primary care network, and a full range of acute and chronic care services. On the other hand, the lower baseline costs of the intervention population may suggest that the MGH patients were relatively well managed prior to the start of the program, possibly indicating that there is even greater opportunity in less well-managed populations. In addition, recent research suggests that the infrastructure required for operating this type of program is increasing among large physician organizations (DesRoches et al., 2008; Shortell et al., 2009). Also, the results described here are consistent with those found in a similar trial conducted at Johns Hopkins (Leff et al., 2009).

Unlike most proposals to fund the infrastructure for medical homes, of which care coordination of high-risk patients is a key component, the MGH program included financial risk for the management fees. Whether or not financial risk is an essential element of this type of care management program remains unclear though it would certainly be possible to put in place the infrastructure for care management without effectively reducing costs. Future demonstrations will be necessary to clarify or resolve these questions.

HEALTH INFORMATION EXCHANGE AND CARE EFFICIENCY

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It is widely believed that the adoption of electronic health records (EHRs) and the development of an interoperable health information infrastructure that facilitates the flow of clinical and administrative data throughout the healthcare delivery system is critical to realizing healthcare cost savings, increased efficiency, and improved quality of care. Federal (and state) policy makers are increasingly promoting health information exchange (HIE), recently investing nearly $30 billion to the Department of Health and Human Services in the American Recovery and Reinvestment Act of 2009 to spur adoption and promote the meaningful use of health information technology. Currently, over 30 billion healthcare transactions occur each year in an expensive, fragmented delivery system; most of these transactions are still conducted by phone, fax, or mail (Menduno, 1999). The lack of coordination and electronic data sharing between healthcare entities accrues large administrative costs and results in the absence of clinical information at the point of care. These system deficiencies yield redundant tests, unnecessary or harmful care that is often expensive, and

unnecessary hospitalizations that promote substantial wasteful expenses to the delivery system.

Although robust empirical data on the potential cost savings attributable to interoperable electronic health records and HIE is limited, studies indicate that substantial savings may be accrued while improving patient care if these systems are widely adopted and effectively used.

Effectiveness of EHRs and HIE

The 2005 *Health Affairs* publication by Richard Hillestad and colleagues presents the most comprehensive estimate of the potential national health benefits, savings, and costs from adoption and implementation of effective interoperable EHR systems (Hillestad et al., 2005). Projected savings are approximately $81 billion annually through improvements in healthcare safety and efficiency. The largest cost reductions were found from reducing hospital lengths of stay ($19.3 billion), nurses' administrative time ($7.1 billion), drug usage in hospitals ($2.0 billion), and drug ($6.2 billion) and radiology usage ($1.7 billion) in the outpatient setting. Computerized physician order entry was projected to avoid 200,000 adverse drug events in the inpatient setting and 2 million adverse drug events in the ambulatory setting, yielding an annual savings of $2 billion and $3.5 billion, respectively. However, the majority of savings would not be immediately realized and require successful system implementation and appropriate process changes. These savings did not focus on electronic health information exchange per se.

A more targeted modeling exercise was performed by Jan Walker and colleagues, who estimated that the implementation of standardized, encoded, electronic HIE infrastructures would lead to $337 billion in savings over a 10-year implementation period (Walker et al., 2005). Savings after the 10-year implementation period are projected to equal $77.8 billion per year (2003 dollars). The savings will be achieved primarily through two mechanisms: (1) reducing administrative burden of paper-based data exchange (e.g., sending laboratory results, chart requests, and referrals), and (2) decreasing redundant tests (e.g., laboratory and radiology tests).

Despite unclear evidence of the cost savings of HIE, the adoption of a strategy for widespread HIE infrastructure is critical and will certainly promote numerous clinical benefits that were not included in the estimates by Hillestad or Walker. Such clinical gains include improved access to longitudinal patient data across providers, reduced fragmentation of care, better communication among providers, more robust referral processes, and earlier recognition of emerging disease outbreaks.

Primary Caveats and Assumptions

Despite the best efforts of the studies mentioned above, each contains limitations. The lack of strong evidence led Hillestad and colleagues to base savings, costs, and benefits projections on the adoption and effective use of an interconnected, interoperable EHR system, and thus report savings that would only accrue if pivotal delivery system changes occur. Further, the cost projections assumed that 20 percent of hospitals had adopted an EHR system. However, new data suggests that this figure is only 7.6 percent for a basic EHR and 1.5 percent for comprehensive EHRs, yielding larger adoption costs than included in projections (Jha et al., 2009). Savings that would result from less expensive transactions, reductions in malpractice costs, and public health savings, as well as certain domains such as long-term care, were also not included in the model. Technological advancements of more effective and efficient systems since the article's publication may contribute to an understatement of savings. Results above the mean were also not reported, suggesting that the projected annual savings of $81 billion may be conservative. Monte Carlo simulations were used to account for variations in the data and to compensate for some weaknesses in the data. Yet, they assumed that benefits would be achieved by all newly adopting organizations, regardless of the presence or lack of the pivotal process and organizational changes that drive effectiveness.

Because of a dearth of empirical data on the value of HIE, estimates by Walker were based on expert consensus, which produces weak data. However, their projection that 14.3 percent of all tests are redundant, based on two small, single-institution studies have gained traction, because this estimate has significant face validity. The analysis model also included an expert-panel estimate of the administrative cost incurred per laboratory or radiology test to be $19.25, which is almost surely higher than the actual figure. The approach employed a static model that fails to consider that ease of ordering and receiving tests, which occurs when there is widespread deployment of EHRs and HIE, may encourage increased testing. Together, these factors may inflate overall savings projections. However, potentially important costs and benefits were not included in the model, such as increased access to clinical data and reduced fragmentation of care, suggesting that a fully standardized HIE network is likely to yield considerably larger savings than projected.

Current Strategies for HIE

The framework for a comprehensive HIE strategy may be developed from a regulatory approach, a market-based approached, or a combination of the two. To date, the main mechanisms for HIE in the United States are regional health information organizations (RHIOs) that use a

market-based approach. RHIOs bring together independent entities in a defined geographic region to create networks that will set up an electronic health information infrastructure. RHIOs' efforts are focused on convening stakeholders, determining a governance approach, securing funding, designing and implementing technical infrastructure, launching the organization itself, building a sustainable business model, and planning for long-term growth.

A recent *Health Affairs* publication describes the current state of RHIOs in the United States, based on a survey of all identified RHIOS between January 2001 and June 2009 (Adler-Milstein et al., 2009). As of June 2008, there are 131 RHIOs, of which only 44 are operational and actively exchanging clinical data. The data exchanged by RHIOs falls short of comprehensive data exchange and are predominately limited to test results (84 percent of RHIOs exchanging data), inpatient data (70 percent), medication histories (66 percent), and ambulatory data (64 percent). Operational RHIOs commonly use time and in-kind resources, recurring fees, and grants as means of financial support. However, the majority are unable to remain financially self-sustainable as indicated by a high failure rate of 20 to –25 percent. RHIOs most commonly identified a lack of funding as a barrier to development, followed by privacy and security concerns, unexpectedly high costs, and competition. The survey found that characteristics associated with operationally successful RHIOs included convening a broad group of stakeholders and exchanging narrow types of data. Financially viable RHIOs were commonly associated with securing early financial support from participating organizations, relying on no or little grant support, and providers acting as the primary data recipients.

The sixth annual eHealth Initiative's survey of the state of HIE identified 193 HIE initiatives in 2009, of which 57 are operational and exchanging data (eHealth Initiative, 2009). The survey reports substantially increased interest and progress of HIE efforts to improve efficiencies and quality of care in all 50 states and the District of Columbia. Results indicate that operational HIEs reported cost savings for multiple stakeholders, positive impacts on physician practice, increased focus on addressing privacy and security concerns, and decreased dependence on federal funding.

These data and a lack of interoperable standards are reason for concern if the United States decides to continue using the current RHIO model as a viable strategy for effective, sustainable growth.

Next Steps

Eliminating the waste associated with the billions of paper-based transactions that occur each year in a fragmented U.S. healthcare delivery system could save the system tens if not hundreds of billions of dollars each year. The best estimate to date places savings at $77.8 billion annually, or ap-

proximately 5 percent of all healthcare spending. To achieve savings like these, we need greater standardization of data, substantial interest in HIE by providers and the public to drive interoperability, and both quality and cost metrics that hold providers accountable for providing efficient, high-quality care. The National Health Information Network (NHIN) aims to provide a national health information infrastructure and develop standards for secure data exchange (Department of Health and Human Services, 2009b). The American Recovery and Reinvestment Act specifically allocated $300 million to support HIE efforts at the regional level (111th Congress, 2009). Furthermore, CMS will provide reimbursement incentives to hospitals and providers who are able to demonstrate "meaningful use" of EHRs through stimulus funds. The definition of *meaningful use*, currently being developed by the Office of the National Coordination for Health Information Technology, will require EHRs to be interoperable and able to "exchange meaningful clinical information among professional healthcare teams" (Department of Health and Human Services, 2009a).

The federal efforts will likely spur adoption rates, yet the state of the most prevalent HIE strategy in the United States causes reason for concern. Direct funding of RHIOs appears to be problematic, and policy makers will need to design a multifaceted approach to overcome financial issues for long-term success. To date, providers have little incentive to use data from outside sources even when available as these data are not integrated into the clinical workflow and thus lead to additional work. Further, which stakeholders accrue financial benefits from HIE is ambiguous in their current form. New payment reform models, such as patient-centered medical homes or accountable care organizations, are salient sources for integrating HIE at the point of care. The formation of a national strategy and standardized infrastructure protocols, as well as the ability for healthcare reform efforts to catalyze changes in the delivery system, will drive the success of HIE and its ability to improve patient outcomes while concurrently eliminating inefficiencies and saving billions of dollars.

ANTITRUST POLICY IN HEALTH CARE

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The two major federal antitrust laws are the Sherman Act (1890) and the Clayton Act (1914). Section 2 of the Sherman Act, prohibiting monopolization and attempts to monopolize, is intended to prevent monopoly power in a single firm. It does not prohibit monopoly gained passively or by merit (e.g., by being more efficient), only monopoly gained by acts that involve misconduct or coercion. Section 7 of the Clayton Act prohibits

mergers and acquisitions that may substantially lessen competition or create a monopoly. States in turn have their own antitrust laws patterned after the Sherman and Clayton Acts. Federal antitrust laws are enforced by the Department of Justice (DOJ) and the Federal Trade Commission (FTC).

The mechanisms used for antitrust enforcement today are driven by lesser known but important laws and regulations. The Hart-Scott-Rodino Act, passed in 1976, mandates that parties to certain mergers must notify the FTC and DOJ in advance of the merger and cannot close the transaction until one of the agencies has evaluated its effect on competition. The Hart-Scott-Rodino Act guarantees premerger review of many proposed mergers, but its financial trigger for premerger notification—indexed by the change in the gross national product (GNP) and equal to $130.3 million in 2009—is too high for many healthcare mergers.

Another antitrust tool is the business review letter, in which the parties to a proposed business practice request a prior opinion from the DOJ regarding whether it would challenge the proposed merger. Business review letters have been used in mergers involving physician groups.

Rising Prices, Falling Quality

Antitrust is important in hospital markets, as we see from the experience of the 1990s (Figure 9-6). In 1990, the average American lived in a city with a "moderately concentrated" hospital market, according to a widely used measure known as the Herfindahl-Hirschman Index or HHI (the HHI is the sum of squared market shares of the hospitals). By 2003, the HHI for those same cities had escalated to "highly concentrated" because of mergers and acquisitions.

Econometric estimates indicate that this increased concentration and, by extension, hospital mergers increase prices by between 5 and 40 percent (Vogt and Town, 2006). Estimates based on actual mergers (known as "event studies") indicate prices increased by at least 10 percent following actual mergers, compared with prices at hospitals that did not merge. As these price increases translate into higher insurance premiums, mergers disproportionately hurt minorities and lower-income communities, as more and more people cannot afford insurance coverage (Town et al., 2007). Other evidence suggests that quality suffers as well; the quality of care for Medicare patients with acute myocardial infarction has been found to suffer as a result of hospital mergers (Kessler and McClellan, 2000).

Combining the data in Figure 9-6 with the median assessment of the effect of hospital mergers on prices, it is possible to conclude that hospital mergers from 1990 to 2003 raised prices by approximately 7.5 percent. Given that the demand for hospital care is highly price inelastic and that hospital spending accounted for 37 percent of personal healthcare spending

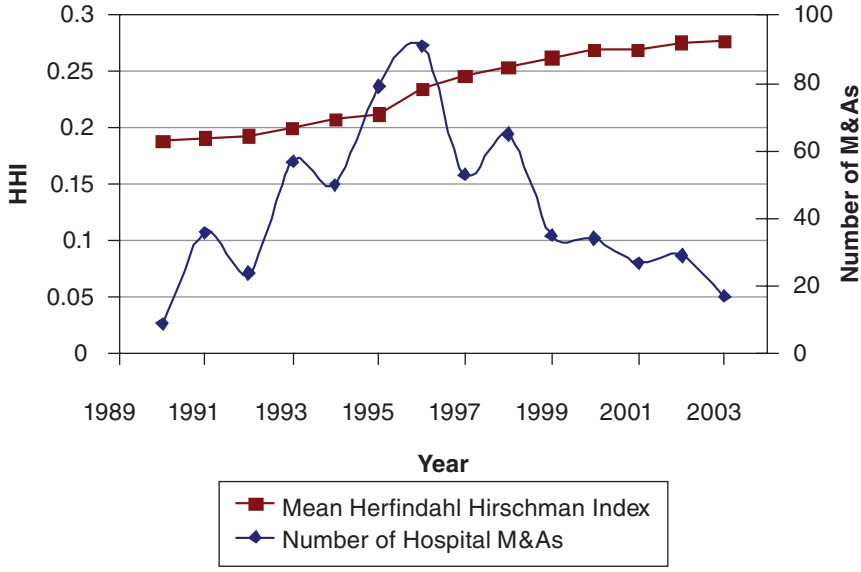

FIGURE 9-6 Hospital Mergers and Acquisitions and Market Concentration, 1990-2003.
SOURCE: Town, R. J., D. R. Wholey, R. D. Feldman, and L. R. Burns. 2007. Hospital consolidation and racial/income disparities in health insurance coverage. *Health Affairs (Millwood)* 26(4):1170-1180. Reproduced with permission from Wolters Kluwer Health.

in 2007, hospital mergers from 1990 to 2003 added about 2.75 percent to personal health spending in 2007.

Some of this increase in spending could have been offset by increased efficiency that would reduce costs after a merger. However, to achieve efficiency gains, hospitals would need to consolidate their services more fully, and the business incentives of mergers do not favor such consolidation. To the contrary, merged hospitals can increase their bargaining power vis-à-vis managed care plans by unconsolidating and locating some services exclusively in each hospital, thereby making both hospitals essential to include in the plans' provider networks.

Despite the importance of hospital mergers, the FTC and DOJ were singularly unsuccessful in five challenges to hospital mergers from 1995 through 1999 (Table 9-8). In three cases, federal courts held that the mergers would not lessen competition because the geographic market was very large; in one case the court decided there was no danger of monopoly because the product market was very broad; and in another case the court accepted flimsy evidence that a merger of two nonprofit hospitals was ac-

TABLE 9-8 Hospital Merger Challenges, 1995-1999

Setting	Year	Reason for Court's Rejection of Government Case
Jopkin, MO	1995	Large geographic market
Dubuque, IA	1995	Large geographic market
Grand Rapids, MI	1996	Not-for-profit hospitals
Long Island, NY	1997	Broad product market
Poplar Bluff, MO	1997	Large geographic market

SOURCE: Haas-Wilson, 2003. Reprinted by permission of the publisher from MANAGED CARE AND MONOPOLY POWER: THE ANTITRUST CHALLENGE by Deborag Haas-Wilson, p. 91, Cambridge, Mass.: The Harvard University Press, Copyright © 2003 by the President and Fellows of Harvard College.

ceptable even if it created market power because nonprofit hospitals would not abuse such power. Other hospital mergers have been allowed to proceed with "community payments" (e.g., the hospitals promise to provide more charity care). Yet, such promises are very difficult to enforce.

The Changing Tide

The tide has recently begun to turn. In 2004, the FTC challenged a merger of two hospitals in suburban Chicago, Illinois, that had occurred 4 years earlier. Although an administrative law judge ordered the merger dissolved, the FTC eventually decided that it was tolerable provided the hospitals set up separate teams to negotiate contracts with insurers (FTC, 2008a). In a second case involving a proposed hospital merger in northern Virginia, the parties called off the merger after the FTC announced that it would undertake a full administrative hearing of the matter (FTC, 2008b).

These cases, known respectively as "Evanston Hospital" and "Inova," have demonstrated the FTC's willingness to use its internal administrative processes to challenge hospital mergers rather than seeking relief through the federal courts. While the Evanston Hospital remedy is disappointing, the two recent cases set a precedent that may undo the deleterious effects of previous government failures to prevail in hospital merger cases.

Physician and Health Plan Mergers

While there are no national data on physician market structure levels and changes, there is plenty of anecdotal evidence that physicians have market power. For example, physician groups are threatening to withdraw from health plans' provider networks unless their payment demands are met (Strunk et al., 2001). Nevertheless, the FTC and DOJ have not chal-

lenged any physician merger (although they have blocked attempts by physicians to fix prices). Despite the lack of formal challenges, the DOJ's business review letters have established guidelines that indicate it will define the geographic market for physicians' services locally and the product market narrowly.

The DOJ has prevailed in three mergers involving health plans: Aetna-Prudential (1999); UnitedHealth Group-Pacificare (2005); and United-Health Group-Sierra Health Services (2008) (DOJ, 1999, 2005, 2008). These cases have established clear rules for defining geographic markets for health plan merger cases: managed care plans require local provider networks, and plans located outside the local area (generally a metropolitan statistical area [MSA]) are not a competitive constraint to a merger.

Unanswered Questions

In a vertical merger, the merging firms are located "upstream" and "downstream" in a production process; for example, a hospital (downstream) may acquire a physician group (upstream). The economics and law of vertical mergers are not settled. On one hand, vertical mergers may increase efficiency. This is the idea behind proposals to create "accountable care organizations" (Fisher et al., 2009). On the other hand, vertical mergers may increase market power and lead to exclusion of competitors. The FTC and DOJ view vertical mergers using the rule of reason, and it remains to be seen whether this standard will be successful or not at protecting the quality and pricing of health services. The rule of reason in antitrust policy stipulates that monopolies or otherwise larger companies are not intrinsically illegal or anticompetitive. The question is whether they *unreasonably* restrain trade.

Limitations of Antitrust Policy

As already suggested, antitrust policy in health care has several significant shortcomings. Antitrust cases are long, complex, and expensive, and the outcome is subject to the whim of a court. Enforcement agencies have a poor track record in opposing hospital mergers and have not challenged a single physician merger. Most troublesome, healthcare mergers may be too numerous for antitrust to be a meaningful strategy. Health care is a local industry; in many markets physicians and hospitals have high market shares, making almost every merger potentially anticompetitive, yet they are too numerous to challenge.

However, short of government price controls and monopsony buying power, antitrust policy is the only recourse for controlling healthcare pric-

ing. The following reforms could make antitrust enforcement policy more effective:

- The Hart-Scott-Rodino financial triggers for healthcare mergers should be lowered. This would allow mergers to be challenged before the fact when it is easy to prevent them, rather than after the fact when it is hard to dissolve them.
- Federal and state agencies should coordinate their antitrust actions. In particular, state agencies should pursue local mergers, leaving the FTC and DOJ to investigate national consolidations. State attorneys general should be allowed to conduct administrative reviews of mergers, and the FTC and DOJ should not approve a proposed merger while the state agency is investigating.
- The FTC and DOJ should challenge physician mergers such as the merger of two large, single-specialty physician groups in a midsize city.
- The agencies should be prepared to insist on divestiture as a merger remedy.
- The agencies should not accept the "community payments" justification for mergers.

Some of these changes (e.g., lowering the HSR triggers) require legislative action, but others could be accomplished through the agencies' existing regulatory authority. The result would be strengthening this critical tool for preserving competition in health care.

REDUCING SERVICE CAPACITY: EVIDENCE AND POLICY OPTIONS

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Since the 1950s and especially since the late 1960s, soon after Medicare and Medicaid were implemented, healthcare cost containment has been an important policy issue. Since the 1970s, excess capacity of the U.S. health system has reached center stage in the cost-containment discussion. Policy researchers argued that such excess capacity was increasing private and public expenditures on personal healthcare services.

The Medical Arms Race

The argument goes as follows. Because of widespread health insurance coverage, healthcare consumers are isolated from the costs they incur when

they use healthcare services. Thus, their demand for healthcare services is inelastic; this means that the use of health services is not very responsive to prices set by providers. Because consumers do not pay much extra when they use more services, they often demand services that offer little or no benefit. Physicians value high quantity and quality of care as reflected in high "intensity" of services for both financial and nonfinancial reasons. Hence, for example, when there is a choice between two hospitals at which to admit a patient, physicians will choose the one that offers a broader range of services and amenities (Devers et al., 2003; Robinson and Luft, 1987). Hospital administrators have no incentive to say "no" to demands from their medical staffs for more service offerings when hospitals were paid on a retrospective cost or a similar basis. Under retrospective cost reimbursement, the hospital is guaranteed recovery of its investment outlays. Roughly speaking, if Medicare beneficiaries receive 35 percent of all services delivered by a hospital in a given year, Medicare is responsible for 35 percent of hospital cost. Thus, even if a particular service, for example a computed tomography (CT) scanner, were highly underused, Medicare would cover 35 percent of the cost. Given this guarantee of revenue coupled with patient and physician demand for the service, hospital administrators would be foolish not to undertake the investment in the CT scanner.

A physician's threat to admit patients elsewhere is more credible if there is competition among hospitals in the market. This process of nonprice competition among facilities in which hospitals compete by investing in facilities and services has been termed the "medical arms race." At the time this phrase was coined, competition worked perversely to increase the cost of care. When there was more competition, hospitals would compete by offering more and more types of services. Insurance coverage was more complete for hospital services than for physicians' and other types of personal health services. Thus, the medical arms race in the hospital sector was most evident.

Roemer's law stated that a bed created is a bed used. This term could apply to other health services capacity as well. Roemer's law was said to have validity for at least two reasons. First, additional capacity increases patient access to care. If it is easier to be admitted near to one's home, more persons will be admitted. Second, there was the notion that supply creates its own demand. When there is excess capacity under a "piece rate" system, provision of more services results in higher revenues.

Capital Expenditures Regulation

The National Health Planning and Resources Development Act of 1974 mandated that each state adopt a certificate-of-need (CON) law and form a health planning agency to enforce its CON program and made receipt of

federal funding for health resources contingent on state compliance with federal law. By 1974, several states had already adopted CON policies, starting with New York in 1968. CON policy required that healthcare facilities obtain permission from a state CON agency before beginning any construction of a new facility, expanding capacity, or introducing major new services. To obtain a CON, facilities had to provide evidence of need, based on criteria specified by the state CON program. In 1972, Section 1122 programs were implemented for Medicare and Medicaid programs. This federal law required prior review and approval of capital expenditures as a condition of Medicare and Medicaid coverage of a service that required the investment.

In sum, until the early 1980s, federal policy reflected the view that health cost containment could be achieved by setting limits on capacity. As the largest single component of health care, hospitals were the main target of CON, although nursing homes were also important targets. If there are fewer beds in nursing homes, it was argued, there would be fewer bed days for Medicaid to cover. Medicaid was and remains, an important source of payment for nursing home care. In states with CON, hospitals must provide evidence of need for their services and demonstrate qualifications to fulfill this need.

Competition in Markets for Healthcare Services

In 1982, California implemented a selective contracting law; such laws were implemented in other states subsequently. Previously, insurers were prohibited from channeling the persons they covered to particular providers. Such channeling was seen as an intrusion in the practice of medicine. Under selective contracting, insurers can channel the people they insure to those providers with whom they have contracts. Selective contracting gave insurers an important bargaining tool with hospitals. If the hospital did not agree to attractive contract terms (from the insurer's standpoint), the insurer could credibly threaten to channel the individuals it insures elsewhere. At about the same time, in 1983, Congress passed the Prospective Payment Program for hospitals (PPS). The PPS phased out retrospective cost reimbursement for hospitals over 4 years and replaced it with a payment system that was prospective in that prices were set in advance, and these prices were fixed. Under retrospective cost reimbursement, inefficiency is rewarded in that a dollar of additional cost results in about a dollar of increased revenue. In contrast, under prospective payment, a dollar of extra cost results in virtually no additional revenue. Other payers followed Medicare's lead although there are differences in details of how their payment programs have been implemented.

The change to a prospective payment system markedly altered hospital

incentives, as did the ability of insurers to channel patients to facilities with which they obtained contracts. The change in the laws also called the continued relevance of Roemer's law into question. A hospital with a monopoly in its market area is not subject to much market discipline. However, when it faces competition, the hospital has to exercise particular care in not expanding capacity that would place it at a competitive disadvantage relative to its competitors. In the changed world of health insurance payment practices, coupled with selective contracting, reducing capacity and facility consolidation no longer achieves cost containment. In fact, this could result in higher rates of healthcare inflation.

Repeal of Capital Expenditure Regulation

Largely for this reason, the provision of the federal 1974 law that required states to have CON was repealed in 1983. Currently, 27 states have retained CON for acute care services. Other states, such as Ohio, have repealed CON for acute care services but retain CON regulation of nursing homes.

The Future—Will Capacity Reduction Achieve Cost Containment?

This much is history. As we look ahead, can we expect that reductions in service capacity will lead to reductions in spending on personal healthcare services? My answer is that of a two-armed economist. It depends on whether or not we will rely on market forces in health care in the future. If we continue to rely on market forces to contain healthcare outlays, capital expenditure/service regulation and capacity reduction are not relevant cost-containment tools. However, if healthcare prices are to be set by government agencies, capital expenditure regulation may be useful. Even in a government-financed and run system, price must cover cost of service provision. If cost is lower, prices can also be lower. However, if prices are set too high relative to cost, providers will compete on a nonprice basis. When airline fares were subject to government regulation and prices were set above average cost, airlines competed by offering the flying public various amenities, such as better food and service.

In the environment prevailing from the 1950s to the 1970s, less competition among hospitals (higher hospital concentration) led to lower hospital spending. In the late 1980s and 1990s, less competition among hospitals and less excess capacity led to higher hospital spending mainly through higher prices. More recently, the relationship between hospital concentration and spending may be reverting to the pattern prevailing before the late 1980s (Dranove et al., 2008). Likely causes of the change in the relationship between concentration and prices are (1) the increase in concentration of

hospitals in many markets (many hospitals having closed or merged in the past two decades), and (2) the difficulties insurers have faced in channeling patients to a fixed set of providers following the backlash against managed care. If insurers do not have the ability to credibly threaten to channel their patients to other competing providers, providers (hospitals) will not make price concessions (Wu, 2009).

If Capacity Reduction Is Desirable, How Should This Be Done?

To the extent that capacity reduction will be a desirable goal in the future, the question remains as to how this will be done. An advantage of CON policy is that we have about four decades' experience with these programs. Overall, the empirical evidence suggests that CON programs have not succeeded in cost containment, and the evidence on their accomplishments in improving patient access to care and quality of care is mixed (see Salkever [2000] for a review of much of this evidence).

Structural weaknesses of CON programs have been identified. The concept of "need" is not well defined or even definable. Rather than think about need, policy makers should make decisions in terms of marginal benefit of the added services versus its marginal cost. CON coverage has generally excluded physicians' offices. It more directly applies to capital expenditures while expenditures on labor are not directly affected. CON programs do not have a capital budget. Thus, saying "no" to one capital project does not leave more funds for approving others. This leaves CON programs open to pressures from the stakeholders. CON is designed to limit entry, but there is little or no ongoing supervision of facilities following CON approval. In effect, CON gives a de facto franchise to incumbents. It is not surprising that the empirical evidence shows quite conclusively that CON programs on average have not constrained cost growth. Further, when CON has been lifted by states, no surge in spending on personal healthcare services has occurred (Conover and Sloan, 1998). CON regulation has achieved some reduction in beds, but it increased hospital investment (in some studies) with no net impact on total hospital investment.[4]

[4]Particularly since about 1980, CON programs have had other goals. Some proponents of such programs emphasize the important of access enhancement. For example, left on their own, hospitals would move from inner cities to the suburbs. Empirical evidence of CON programs on access to care, however, is mixed. For example, a recent study of relaxation of CON entry barriers in New Jersey reported a reduction in white/black differences in use of angioplasty in that state after CON entry barriers for this service were relaxed (Delia et al., 2009). Evidence of the effect of CON programs on hospital quality is also mixed. Shortell and Hughes (1988) found that hospitals in states with stringent CON programs experienced higher in-hospital death rates. However, Vaughn-Sarrazin et al. (2002) reported that mortal-

Many of these deficiencies of CON programs could be remedied. CON applicants could provide cost–benefit analysis on a project-specific basis and assess uncertainties in the cost–benefit calculations. CON coverage could be expanded to include capital expenditures in physicians' offices. State CON agencies could be provided with a capital budget out of which approved capital projects would be financed. This system would replace tax-exempt bond financing, which currently favors major healthcare capital projects over investments in other sectors. CON agency operating budgets could be increased to permit ongoing monitoring of whether promises made in CON applications are in fact kept. CON programs could gather and disseminate information on facility quality.

In conclusion, we cannot know whether or not service capacity reduction will constrain cost growth until we know how the healthcare system will be structured in the future. There are circumstances under which CON-type programs are desirable. But if capital expenditure regulation is desirable, it should be not ended but mended.

MALPRACTICE REFORM AND HEALTHCARE COSTS

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Malpractice reforms, in the form of limits on traditional personal injury rules or processes, can save almost 1 percent of total health spending or health insurance premiums over the next decade. Three types of savings are achievable: (1) lower liability premiums, (2) lower incidence of defensive medicine, and (3) enhanced savings under other reforms enacted simultaneously. In addition, reforming liability as part of health reform also adds value for patients; successful health reform can offer better ways than do traditional liability laws to promote patient safety, rehabilitate the injured, and compensate for injuries (Berenson et al., 2009).

Conventional "tort reform" achieves savings by limiting traditional liability, not by fundamentally altering its approach. Other reforms would likely work better to improve the performance of the liability "system" in

ity rates following coronary bypass surgery (CABG) were appreciably higher (22 percent) in states without CON than in those states with CON. The mean annual volume per hospital with CABG was 84 percent lower in states without CON, and outcomes are generally better in hospitals with high volumes. Ross et al. (2007) found rates of questionable catheterizations lower in states with CON. But Ho and colleagues (2009) reported that states dropping CON saw an increase in the number of hospitals at which CABG and angioplasty were offered. But overall volume of these procedures were unchanged, and mortality following CABG fell in states lifting CON. There was no change in mortality following angioplasty after CON was lifted.

achieving its three central goals of compensating injuries, deterring negligence that causes them, and promoting justice. Broader reforms include alternative compensation systems and institutional responsibility (Bovbjerg and Tancredi, 2005). An IOM committee has endorsed demonstrations of some alternative approaches to compensation and safety that hold great promise for improvement (IOM, 2002). Other reforms have not been widely implemented, however. Their evidence base is thus scant, so fiscal estimates are uncertain; and the measures are not yet "shovel ready" for implementation as part of health reform. Nonetheless, over time broader strategies are warranted to improve patient safety and achieve other goals not directly advanced by tort limitations.

The following discussion details the three forms of tort-reform savings just noted and ends with consideration of broader safety-oriented reforms.

Lower Liability Premiums

Some state tort reforms have reduced malpractice payouts (Danzon, 1986) and hence also the associated liability premiums charged to medical care providers (Zuckerman et al., 1990). The biggest impact comes from a cap on total malpractice awards or on their nonmonetary component, that is, "pain and suffering" (Nelson et al., 2007; U.S. Congress Office of Technology Assessment, 1994). The Congressional Budget Office (CBO) has estimated that implementing California-style reforms nationally, most importantly a $250,000 cap on noneconomic damage awards, would reduce physician liability premiums by an average of 25 to 30 percent, more in states with weak tort reform than where reform is already strong (CBO, 2004). These findings are consistent with providers' persistent lobbying for tort reforms.

Changes in provider costs for malpractice insurance should thereafter be reflected in lower patient charges and hence in health insurance premiums.[5] The CBO estimate implies a savings on malpractice premiums of $7 billion to $9 billion for 2007 (most recent data available)—or some 0.3 percent to 0.4 percent of national health spending in that year (CMS, 2008; Towers Perrin, 2008).

[5]Tort reforms' effects on health premiums are less well documented than on liability premiums.

Lower Incidence of Defensive Medicine

Tort reforms also plausibly reduce the amount of defensive medicine practiced, the extra tests and procedures that medical providers say that they add to reduce the risk of lawsuit or to facilitate any needed legal defense. Practitioners have long reported such wastefulness, as early as the first congressional hearing on malpractice in 1969 (Medical Malpractice: The Patient Versus the Physician, 1969). How much have state tort reforms reduced defensiveness? The highest peer-reviewed estimate, from 1980s data, is that caps and similar reforms saved about 4 percent by cutting hospital spending (Kessler and McClellan, 1996). A more recent study found a 3 to 4 percent cut in state healthcare expenditures (Hellinger and Encinosa, 2006). However, the CBO was unable to replicate the former finding, and a recent extension of its methods that also included physician spending found no impacts (CBO, 2004; Sloan and Shadle, 2009). Most studies find savings in the range of 0 to 0.27 percent of health spending (Currie and MacLeod, 2008; Dubay et al., 1999; Sloan et al., 1997). A recent review of medical liability issues in health reform mentioned potential savings on defensiveness of 1 percent of health spending, though without documentation (Mello and Brennan, 2009). On balance, it seems plausible that savings from reduced defensiveness could equal or slightly exceed those on liability premiums, perhaps another 0.5 percent of total health spending, for a total savings of 0.9 percent.

Greater changes might be feasible if defensive services were simultaneously targeted by additional strategies, such as altered payment incentives, more effective utilization review, or enhanced promotion of evidence-based practice—which have merit in their own right and are discussed elsewhere in this volume. President Barack Obama has suggested a willingness to work with physicians to reduce defensive practices by creating some liability protection for defendants in compliance with authoritative guidelines (Stolberg and Pear, 2009). This position is promising, and there is some evidence that guidelines can protect against liability. But new approaches are needed to improve on unsuccessful prior state use of guidelines (Clark et al., 2008; LeCraw, 2007; Ransom et al., 2003).

Making Other Reforms More Effective

The estimated savings mentioned above on premiums and defensive medicine of 0.9 percent of all personal health spending would save almost $20 billion in 2010 and almost $260 billion over a full decade (Berenson et al., 2009). Savings would be shared across public- and private-sector spending.

Moreover, because malpractice reforms support other reform measures,

synergistic savings from bundling this effort with other reform initiatives will likely go further, as just noted (Gabel, 2009). For example, evidence-based medicine and other utilization initiatives may help promote the desired reductions in defensive practices beyond what has previously been observed.[6] Simultaneously, tort reform undercuts provider resistance to utilization oversight based on fears that any change in accustomed practice could subject them to objectionable legal liability.

How Inclusion Within Health Reform Makes Tort Reform More Positive for Patients

Finally, apart from dollar savings, making tort reform part of larger health reform also makes changes in liability more positive for patients. Healthcare reform shifts the policy discussion dramatically from the political-legal context of prior battles over tort reform geared to benefit providers. Starting in California and other states in the mid-1970s, stand-alone tort limits have had a very contentious history (Sloan and Chepke, 2008). Caps and other limits have long met strong political resistance—especially from Democrats, including then Senator Obama. Stand-alone tort reforms are seen as mere takeaways of patient rights that undercut patient compensation and incentives for safety. Some courts have similarly found state caps unconstitutional, holding for example that a short-term insurance crisis does not justify legislative changes to court-made liability rules (Nelson et al., 2007).

However, if tort changes help to build coalitions for comprehensive health reform (Bradley, 2009), they will benefit all patients. People permanently injured during medical care would especially benefit, as otherwise their injuries might make them difficult or impossible to insure, and very few now receive liability awards. A system that provides nearly universal coverage will ensure that individuals do not have to rely upon tort awards to finance their medical care. Legislators and judges should appreciate these broader public benefits.[7] Health reform also provides a platform for redoubling federal efforts to prevent medical injury, which should form part of health reform's promotion of better medical care. The incidence of avoidable injury remains unacceptably high, despite generations of increasing liability pressure. Patient safety efforts have the potential to reduce health

[6] No estimate of savings is given in this malpractice reform chapter, as synergy is not attributable to tort reform alone (nor to any other single type of reform). Moreover, estimates cannot much rely on prior experience, as such combined approaches have not yet been enacted. The plausibility of synergistic savings under broad health reform, however, bolsters confidence in the estimates of savings from reductions in defensive practices provided above.

[7] Federal legislation is also not subject to the same constitutional attacks as state legislation.

spending and, regardless of their impact on spending, are important in their own right (Clinton and Obama, 2006; Schoenbaum and Bovbjerg, 2004).

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10

Transparency of Cost and Performance

INTRODUCTION

The information asymmetry experienced by consumers, providers, and payers shield these critical stakeholders from the information they need to make decisions about what works best for them. However, with recent efforts such as those by the National Committee on Quality Assurance (NCQA) on health plans' quality transparency and Aetna's Aexcel initiative on transparency of providers' clinical quality and cost efficiency, attempts to bridge the gaps in information asymmetry have accelerated. Transparency—of the costs, prices, quality, and effectiveness of medical services and products—has been identified as a key tool to lower costs and improve outcomes (Fung et al., 2008; Mongan et al., 2008; Shea et al., 2007). In this series of discussions, the presenters address the potential of transparency on a variety of facets of the delivery system—including cost, quality, and outcomes—to illuminate vital information for consumers, providers, and payers and stimulate savings and quality improvements.

John Santa from Consumer's Union characterizes the U.S. healthcare market as one shrouded by obscurity around costs, prices, and quality. Santa suggests that even though the healthcare system depends on market forces to allocate care services, it falls short and places patients and consumers at a distinct disadvantage. However, opportunities to address the information asymmetry in the healthcare market are many. He provides an overview of some of these strategies, including a focus on comparative effectiveness research, which if performed by neutral, credible, and inde-

pendent sources, could provide meaningful comparisons and enable fair cost analyses.

Suggesting that neither price transparency nor comparative effectiveness research are sufficient to optimize healthcare resource allocation, G. Scott Gazelle from the Institute for Technology Assessment at Massachusetts General Hospital contextualizes not only the call for more transparency but the value of cost-effectiveness analysis (CEA). He suggests that CEA provides a method for evaluating the health outcomes and costs of healthcare services relative to one another in a standardized manner in order to ensure that resources are spent on the most effective services. Following a discussion of examples of how CEA has influenced policy, he closes with a description of some of the limits to expanding use of CEA today, including the lack of standards, insufficient investments in workforce training, and political barriers.

Paul B. Ginsburg of the Center for Studying Health System Change addresses the issue of transparency by parsing out price transparency from quality transparency. In a system where consumers feel little impact from variations in pricing because of insurance coverage, for instance, Ginsburg states that the impact of price transparency is significantly mitigated, barring fundamental change to the healthcare market. However, he suggests that quality transparency provides a better tool for engaging providers and informing consumer choices. Access to these data in the form of physical access but also in the form of providing information that is easily understood and used by consumers will drive better quality in health care as consumer decisions supply an incentive for better care.

Peter K. Lindenauer from Tufts University School of Medicine concurs that quality transparency, or what he terms performance transparency, holds promise for enhancing the level of care at lower costs. However, Lindenauer highlights the limited research documenting the effects of these efforts. He explains that performance transparency drives improvements in value through one of two pathways: (1) the selection pathway, whereby patients, physicians, and insurers use information about performance to preferentially seek care from higher-quality or lower-cost providers, and (2) the change pathway, whereby the release of performance data catalyzes provider improvement efforts by appealing to the professionalism of physicians and nurses. While much more research needs to take place to quantify the success of such efforts, Lindenauer estimates that $5 billion in annual savings could be realized through the public reporting of hospital readmission, complication, and healthcare-associated infection rates. He additionally suggests that while there is limited evidence for benefits of transparency on hospital outcomes, assigning savings to transparency could be inherently problematic at some level, since reporting initiatives provide the stimulus for changes in care, but do not directly change care itself.

Margaret E. O'Kane of the NCQA concludes this session by discussing NCQA's work over the past two decades in advancing an agenda of transparency. Their health plan accreditation and physician recognition programs and the collection and analysis of clinical quality (Healthcare Effectiveness Data and Information Set [HEDIS]) and patient experience/satisfaction (Consumer Assessment of Healthcare Providers and Systems [CAHPS]) measures have already been used across the country to inform plans, providers, patients, and purchasers about the performance of the healthcare system in delivering evidence-based care. O'Kane cites some of the resulting improvements in quality, such as the percentage of children under age 2 years receiving the full complement of vaccinations jumping from 30 percent in 1997 to more than 80 percent in 2007. Even so, she states that the effect on cost trends has not been significant because the national transparency agenda has been naïve and limited. Describing transparency as a major enabler of the value agenda, she outlines a set of policy initiatives to complement the transparency agenda that will optimize quality improvements and address costs.

TRANSPARENCY IN THE COST OF CARE

John Santa, M.D., M.P.H.
Consumers Union

The American healthcare system relies on market forces to ration care. However, these market forces are not those normally considered constructive or functional. Rather than price competition, America rations healthcare costs by not covering a portion of the population for timely health care while requiring the provision of emergency care for all without explicit funding. This leads to a unique set of dysfunctional market behaviors—substantial cost shifting between public and private sectors, increasing preference for healthy patients rather than sick ones, and pricing arrangements that reward errors, inefficiency, and poor outcomes. There are several reasons for this odd construct, but especially notable is the lack of transparency related to price and cost. If we hope to create constructive market forces in health care, some of our solutions must lead to more transparency.

Transparency of Cost and Quality in Health Care

Patients and consumers are now especially disadvantaged when it comes to the lack of transparency around the price and cost of healthcare products and services. Shielded in the past by comprehensive public or private insurance coverage, consumers are faced with substantial increases in

cost sharing. Significant increases in bankruptcy related to healthcare costs for insured middle-class Americans indicate how perilous this transition has become. As costs increase, market proponents should insist that consumers have access to comparative information, the price and cost of the products or services compared, and an analysis of the possible scenarios relevant to their purchasing decision.

Multiple third parties are involved in the American healthcare system that influences the purchasing process. In the case of those publicly insured, various federal and state laws govern the purchasing of health products and services. The political process is the major driver. Many Americans are skeptical of the government's ability to purchase efficiently and are worried about their market power when they do. For those privately insured, employers are influential in purchasing and setting the levels of cost sharing. As the cost of health care increases and the economic climate worsens, employers are less able to absorb these costs.

Since the 1950s Americans have relied on another third party, health insurers, to purchase services in aggregate and spread the risk among large numbers. Yet, health insurers are unable to influence costs and are often rewarded financially for avoiding sick patients rather than improving care. The recent Ingenix settlement with the New York Attorney General to end the practice of manipulating rates to overcharge patients (U.S. Office of the Attorney General, 2009), for instance, offers yet another reason for Americans to distrust insurers (Booz Allen Hamilton, 2006).

Lastly, consumers rely heavily on their physicians to purchase on their behalf. Consumers are very satisfied with the relationships they have with their individual doctor, though they are less satisfied with their physician's performance when it comes to costs (Consumer Reports National Research Center, 2009). Consumers believe their doctor's advice is based on scientific evidence and expert experience. As a profession, physicians have assured Americans for decades that professional behavior, including a commitment to put the fiduciary interests of patients in front of their own fiduciary interests, prevails. However, studies show that practitioners commonly do not provide care consistent with evidence or expert opinion (McGlynn et al., 2003). A recent *Consumer Reports* poll showed only 4 percent of consumers learned the cost of a prescription drug from the doctor who prescribed it (2009). And large numbers of physicians have pharmaceutical, hospital, and other financial relationships that consumers are unaware of but likely create influential fiduciary relationships in conflict with those of consumers (Campbell et al., 2007).

Opportunities for Change

We are fortunate to have an opportunity to change this process. Comparative effectiveness research, if done by neutral, credible, independent

sources, can provide meaningful comparisons to Americans and enable fair cost analysis. Presented in a transparent, trustworthy context using understandable language, symbols, summaries, and ratings, it may be possible to significantly change the purchasing process for both physicians and consumers. For example, comparative information related to prescription drugs when linked transparently to price and cost information could significantly change the purchasing behavior of Americans (Donohue et al., 2008). Although developing a similar approach for devices, services, institutions, and practitioners will require substantial time and effort, it seems reasonable to pursue next steps.

The Agenda Ahead

A serious commitment to transparency means that we will strive to provide consumers with a comprehensive price and cost analysis, including effectiveness, adverse events, administration, and the impact of individual preferences related to convenience and access. Comprehensive price transparency may seem difficult to do but multiple innovations suggest otherwise. Well-organized practitioner groups, hospitals, and insurers have demonstrated the ability to provide high-quality care at much lower costs while satisfying consumers. They are usually data-driven organizations that are able to understand and track the elements of an outcome and constantly strive to improve value. Evidence is emerging that such approaches may be more likely to satisfy consumers than much more expensive approaches (Rovner, 2009).

Redesign of primary care especially offers a "green field" for better dealing with these issues (Kilo, 2005). Our challenge will be to find an effective way of presenting these choices in a transparent context that includes price and costs.

We know that even modest costs can discourage patients from purchasing health products and services regardless of effectiveness (Lohr, 1986). Our current cost-sharing tools are much too blunt to encourage good outcomes through pricing. But if we have reliable comparative evidence, more sophisticated economic analytic tools can provide consumers with more comprehensive price and cost information (CEA Registry). And we know that patients make different decisions when all the options are presented fairly (Informed Medical Decisions). Americans understand the value of a level "market" playing field—they have just rarely experienced one in health care.

None of this will happen without a sustained commitment to comparative effectiveness research. Price and cost are only relevant in a reliable comparative context. Communication to American practitioners and consumers has been dominated by an industry-influenced context focused on providing more services, not necessarily better or more effective ones. Such reform

requires multiple efforts moving forward while learning lessons from previous mistakes. But once reform is in place, the "invisible hand" of market competition will create a more explicit process that more Americans will be comfortable with than the inequitable process we have now. Imagine a healthcare system that rewards genuine discoveries, exceptional care, and responsiveness to individual preferences and values while driving down the prices for products and services that are similar.

TRANSPARENCY IN COMPARATIVE VALUE OF TREATMENT OPTIONS

G. Scott Gazelle, M.D., Ph.D., M.P.H.
Massachusetts General Hospital and Harvard Medical School

The explosive growth in medical technology and procedures during the last several decades has resulted in improved capability for prevention, screening, diagnosis, and treatment of an ever-expanding number of diseases. The availability and use of these new medical technologies and procedures has also contributed to increased spending, which has put pressure on already strained healthcare budgets. As a result, physicians, payers, and policy makers are increasingly faced with choosing the best or most cost-effective healthcare services from among worthy alternatives, rather than merely differentiating the ones that are effective from those that are not.

When considering the effects of medical technology and procedures ("healthcare services") on health outcomes and costs, and particularly when evaluating strategies for limiting spending or spending growth, there are several challenges. First, most healthcare services are not cost saving. Some provide better value than others, but virtually all have positive net costs. Second, some healthcare services may not contribute to improved health, either because they are simply not effective or because they do not have beneficial effects if used in the wrong patients or at the wrong time.

Recently, increased attention has been focused on comparative effectiveness research as a means to improve decision making regarding which healthcare services should be used in which patients and under what circumstances. There has also been a call for increased transparency regarding prices, either the prices of specific healthcare services or, more generally, the price profiles of individual providers and hospitals. However, neither comparative effectiveness research nor price transparency alone provide sufficient information to optimize healthcare resource allocation. The only way to systematically reduce costs without reducing health—at the societal or population level—is to reallocate healthcare resources from healthcare services that are less cost-effective to those that are more cost-effective. More generally, to optimize the benefits of healthcare spending, resources must

be allocated based on the relative cost-effectiveness of specific healthcare services. In a very real and meaningful sense, therefore, "cost-effectiveness" defines value, and cost-effectiveness analysis is an essential component of any strategy that seeks to incorporate value transparency into healthcare reform.

Cost-Effectiveness Analysis

CEA is a method for evaluating the health outcomes and costs of healthcare services relative to one another (Russell et al., 1996; Weinstein and Stason, 1977). CEA evaluates relevant alternatives via the incremental cost-effectiveness ratio (ICER). The ICER includes differences in costs between services of interest in the numerator and differences in health effects in the denominator. For ICERs to provide useful metrics for comparison across technologies and diseases, common units for both the numerator and denominator are essential. Thus, ICERs are commonly expressed in terms of dollars per life-year or per quality-adjusted life-year (QALY) gained.

There has been some concern in the United States about including cost—at least explicitly—in comparisons of healthcare services, suggesting that Americans are uncomfortable with the concept of making decisions concerning healthcare spending even partially based on cost. However, as spending continues to grow at unsustainable rates, ignoring cost appears unreasonable. There has also been concern that the use of CEA will lead to rationing of healthcare services, despite the undeniable truth that healthcare services are already de facto rationed in the United States by a number of mechanisms, including: price (tiering, copays, deductibles), constraints on capacity (certificate of need/determination of need rules); and limits on use (preauthorization). Moreover, CEA does not, and need not, invariably lead to rationing, because it combines cost and effectiveness in a transparent manner. Allocating resources based on CEA would be more logical than the current systems used to ration healthcare services.

Using Cost-Effectiveness Analysis in Policy

The potential effect of using CEA in this manner is substantial. If one were to base decisions concerning the allocation of healthcare resources—even partially—on cost-effectiveness, any and all cost drivers could be targeted. Of course, this would depend on the availability of data to inform decision making, but there are numerous examples where rigorously conducted CEA has already been used to support the adoption of cost-effective healthcare services and/or to influence guidelines concerning their use. For example, Prosser and colleagues studied the cost-effectiveness of diet and statin-based cholesterol-lowering therapies according to differ-

ent patient risk factors (Prosser et al., 2000). They found that while most of the strategies recommended by the National Cholesterol Education Program were cost-effective (defined as having an ICER of <$50,000/QALY), several were not (e.g., primary prevention with a statin in patients with a limited number of risk factors). Based in part on their work, the National Cholesterol Education Program guidelines have since been modified. Using a similar analytic approach, Weinstein and colleagues evaluated the cost-effectiveness of genotypic antiretroviral-resistance testing (GART) at the time of virologic failure to guide the choice of subsequent therapy in HIV-infected patients under a wide range of assumptions regarding effectiveness and cost (Weinstein et al., 2001). They found that GART is not only cost-effective in this setting, but that it is also more cost-effective (i.e., lower ICER) than many widely used HIV interventions. This work accelerated the adoption of GART as the standard of care. Finally, Goldie and colleagues evaluated the cost-effectiveness of human papillomavirus (HPV) testing as a primary cervical cancer screening test in combination with cervical cytology in women over the age of 30 (Goldie et al., 2004). Compared with annual screening using conventional cervical cytology, they found that screening at 2- or 3-year intervals with either liquid-based cytology (using HPV DNA testing to guide management of equivocal results) or combined HPV DNA testing and cytology would provide increased protection against cervical cancer while at the same time reducing the average lifetime costs associated with screening. Goldie's work has influenced screening guidelines in the United States and internationally.

In addition to the formal CEAs cited above, recent efforts by the Institute for Clinical and Economic Review of the Massachusetts General Hospital Institute for Technology Assessment provides an example of how information on the comparative value of healthcare services can be used to influence coverage and reimbursement policy. The institute's approach is to combine comprehensive review of the medical literature, targeted formal CEA, and input from an expert review group composed of relevant stakeholders to provide an assessment of the comparative effectiveness and value of specific healthcare services. One example of the institute's work is their assessment of coronary computerized tomography (CT) angiography, upon which the State of Washington Health Care Authority's coverage policy is based.

Capitalizing on the Potential of Cost-Effectiveness Analysis

CEA has the potential to improve the efficiency of healthcare resource allocation in both the short and long term. In the short term, there are numerous completed or ongoing CEAs that are relevant to critical issues in healthcare policy; a few representative examples were briefly summarized

above. Though each of these has had some influence on the adoption of cost-effective healthcare services, the use of these analyses and others like them to influence healthcare policy could be expanded. In the longer term, given sufficient attention to addressing the challenges in the preceding paragraph, virtually all healthcare resource allocation decisions could be guided by CEA. Even if factors other than the ICERs of specific healthcare services were allowed to influence coverage and reimbursement policy, such an approach has the potential to curtail spending growth or reduce costs without reducing the health of the population. Ultimately, the extent to which we "bend the curve" versus reducing overall healthcare spending with such a strategy would depend on the threshold ICER below which services are considered cost-effective.

Looking Forward

In sum, when considering the potential of value transparency to help reduce costs and improve outcomes, CEAs are a critical component for success. If the U.S. healthcare system were to move toward more explicit use of CEA to influence coverage and/or reimbursement policy, a number of challenges will need to be addressed. First, though several well-conducted, policy-relevant analyses have been published or are underway, the CEA evidence base is currently insufficient to guide comprehensive healthcare policy. Second, the quality of existing analyses is variable; for example, not all have adhered to the consensus recommendations of the U.S. Department of Health and Human Services Panel on Cost-Effectiveness in Health and Medicine (Gold et al., 1996; Russell et al., 1996; Siegel et al., 1996; Weinstein et al., 1996). Third, the pool of investigators who can conduct these analyses is currently limited. Fourth, the infrastructure—and funding—to prioritize and support the research is underdeveloped. Fifth, failed prior experiments (e.g., Oregon's attempt in the mid-1990s) may bias against the feasibility and acceptability of such an approach.

Potential policy approaches range widely. Starting with the most aggressive, one could approve or deny coverage for all healthcare services based on a single explicit ICER threshold. This would require a comprehensive evidence base of rigorous CEAs that were conducted according to established analytic guidelines. A somewhat less aggressive approach would be to create incentives for patients and providers to forego marginally beneficial services (i.e., those with high ICERs) using strategies such as tiering, copayments, and coinsurance that are based on the relative cost-effectiveness of different services (this would still require a sufficiently robust evidence base). If a more hands-off approach were desired, a possible strategy would be to develop standards for CEA, establish priorities to guide the research, expand funding, and then trust the market to use the information wisely.

What we cannot do is to ignore costs while focusing on comparative clinical effectiveness alone and hope that somehow this will lead to the use of beneficial services that are not too expensive. Ultimately, perhaps the biggest challenge will be to get the message right; namely, that allowing the concept of value to influence decisions about healthcare spending will improve the efficiency and quality of the healthcare system, not worsen it.

PROVIDER PRICE AND QUALITY TRANSPARENCY

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Amidst the healthcare debate, a general call for greater transparency has emerged. The confluence of two major trends has fueled the fire behind this call. First, there has been an ongoing movement to more open and accountable institutions throughout society. Second, the healthcare consumerism movement has gained momentum, envisioning consumers assuming more responsibility for and control over their health and health care.

Theoretically, greater transparency about price and quality can work through two mechanisms. First and most straightforward are wiser provider choices. To the degree that transparency leads to different provider choices and volume is shifted to providers that are more efficient or higher in quality, this will improve health care overall. But the superior providers have only so much capacity to increase patient loads. This suggests that larger effects will require changes by lower-performing providers to improve, motivated by loss of patients who are seeking improved efficiency and quality.

To achieve that will require a critical mass of patients choosing differently on the basis of improved data. But today's reality is far from this ideal. Few patients have financial incentives to consider provider efficiency, and most have little awareness of provider quality differences. As such, the potential for transparency to have major impacts on efficiency and quality in the near term is not underappreciated but overstated. However, quality transparency as an engine for better consumer choices and more engagement by providers to raise the bar of practice has the most potential for success.

Price Transparency: A Limited Approach

Consumer responsiveness to price requires price data that are meaningful to them. For example, when consumers need to have a problem addressed, they have more interest in what the episode of care will cost them than in the prices of individual services that make up the episode. But

most price data available today is unit prices rather than price for episodes. Although hospital price transparency started off with the publication of "chargemasters," insurers are increasingly providing averages of ranges of costs per admission for different types of patients. But care is still priced by service. Should provider payment reform advance so that payment moves from fee-for-service to payment for episodes or for patients' needs over a period of time, this would advance the effectiveness of price transparency. Providers would then be quoting prices for units of care that are more meaningful to consumers.

A separate challenge in making price data meaningful to consumers involves customizing price data for a consumer's health insurance. This is a major shortcoming of government price transparency initiatives, which do not reflect what insured patients will have to pay. Insurers have the potential to play a valuable intermediary function, since they can present information to their enrollees that reflects not only the benefit structure of their plan but prices that the insurer has negotiated with providers (for care delivered by network providers). Insurers have the potential to go to the next level by analyzing data on provider practice patterns to inform their enrollees about costs per episode, but individual insurers often have insufficient data on physicians to capture their practice patterns. Pooling data among private insurers and Medicare could sharply improve insurers' ability to support their enrollees with meaningful data on price.

Most current insurance benefit structures mute the effects of price in a normal market and do not provide the incentives for patients to choose lower-cost providers. Copayments, such as a uniform dollar amount per hospital day or per admission or per physician visit, provide no incentive whatsoever. Coinsurance, where the patient pays a percentage of the bill, such as 25 percent, dilutes the price difference substantially. Even large deductibles, which have the potential for providing undiluted incentives to choose providers on the basis of price, do not work if the patient expects to exceed the deductible, which will be the case for almost every inpatient hospital admission.

Price transparency becomes more meaningful under reference pricing, which is a mechanism in which a low-cost provider is identified as the reference or baseline. Consumers are covered for the price of that baseline level of service, but they can choose services provided by others and pay the price above and beyond the reference price. This approach is used for prescription drug benefits in Germany and other countries; many manufacturers reduce their price to the reference price. This strategy balances the importance of covering healthcare services with the need for some market forces acting on controlling pricing and costs.

Insurers today have a great opportunity to provide consumers with pricing information about both in-network and out-of-network care. By

lifting the mask on prices that comes with flat fee copayment structures, for example, consumers have more information with which to make decisions about what providers to use. The recent settlement between New York State Attorney General Cuomo and health insurers to build a publicly accessible database of billed charges is a substantial step forward toward this goal.

Quality Transparency: The Harder Hitting Strategy

Transparency initiatives focused on quality transparency may in fact be more successful in the nearer term than the price transparency just discussed. Unlike price transparency, where there are formidable obstacles to price data affecting consumer choice, data on quality of providers has a much clearer path to consumer decision making.

Everyone wants to go to the best doctor and receive the best care. But even so, it is critical still to raise consumer awareness of the existence of gaps in provider quality and in the consequences of those gaps (Hibbard and Pawlson, 2004). The more aware consumers are of the ill effects of poor-quality care, the stronger the movement to build transparency initiatives that help patients choose providers wisely and inspire physicians, hospitals, and other providers to improve their performances.

Transparency means much more than access to data on quality. Effective quality reporting needs to reflect different consumer abilities to understand and use information. Sophisticated consumers may seek and understand more detailed and complex data, while others might be satisfied with less-detailed descriptions of provider quality. A key aspect of presenting quality information is how much data aggregation to perform. The most aggregated data would be a simple binary score for a hospital or physician, such as "preferred" or "not preferred." The opposite extreme would be specific quality information for each service provided. The virtue of highly aggregated information is the packaging of complex information into understandable and actionable concepts. For consumers with lower levels of literacy and numeracy, visual cues, such as a star rating, or simple designations, such as "high performance," may be useful (Peters, 2008). Research shows that comparative information on hospital quality can be presented in different ways "to ease the cognitive burden and highlight the meaning of important information" (Peters et al., 2007).

The downside of aggregation is that condensing complex information into simple measures may not meet the information needs of all consumer audiences. For example, a hospital might receive very different quality ratings for different types of patients or services. A hospital could have outstanding quality for cardiovascular surgery but be poor at treating congestive heart failure or performing hip replacements. So aggregating hospi-

tal quality into a single measure would mask variation, potentially masking a great deal of information that could be valuable to consumers.

But consumers are not the only ones whose choices and behaviors change in the face of quality data. Providers have repeatedly shown substantial responsiveness to data on quality. Research by the Center for Studying Health System Change has documented the degree to which hospitals are working to improve their scores on items measured by the Centers for Medicare & Medicaid Services (CMS) and the Joint Commission (Pham et al., 2006). Elements of strategic planning (the potential that measures will be used by payers or patients in the future) or professionalism (few want to knowingly deliver poor quality services or be perceived poorly by peers) probably play a role in motivating efforts to improve quality that is measured and available to the public. Quality data on specialists can also help primary care physicians make better referrals.

Realizing Quality Transparency

Defining quality is challenging, but how the approach is implemented is also important. Involving providers in the development of measures is critical to foster credibility of the information to providers, who have the potential to influence patient acceptance as well as use the data to improve quality. The experience of California Hospital Compare, which audits hospital quality data, has demonstrated how important an audit process can be (Tu and Lauer, 2009). Intermediaries that are trusted by consumers, such as Consumers Union, can play an instrumental role in analyzing publicly reported quality data and disseminating it to different audiences. Government too can play a key role. It can collect quality data; convene payers and providers to foster agreements on measurement of quality; support the pooling of information about providers that today is spread over both public insurers and private insurers; and, finally, set standards for integrated technology and subsidize efforts to build the necessary information technology to support those systems.

TRANSPARENCY TO IMPROVE THE VALUE OF HOSPITAL CARE

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Spending on hospital care consumes roughly $700 billion each year in the United States, approximately 32 percent of the national healthcare budget, and it is increasing 7 percent annually, nearly twice the overall rate of inflation (Hartman et al., 2009). Rising prices drive less than half of this increase, with growing service intensity per individual patient, number of

encounters per patient, and population growth driving the remainder of the increase. Yet growing expenditures have not led to increasing quality and safety of care, but instead persistent, wide variation in care. Gregory reported recently that 22 percent of newborn deliveries in California were associated with a maternal or child complication, the rate varying from 30 to 90 percent across hospitals (Gregory et al., 2009). Jencks observed that rates of rehospitalization of Medicare beneficiaries within 30 days of discharge vary dramatically across the United States—ranging from less than 15 percent in some Western states to over 21 percent in the South (Jencks et al., 2009). Mounting evidence suggests that additional spending does not translate into improved performance on quality measures or better outcomes. Yasaitis and colleagues examined the relationship between end-of-life spending on chronically ill Medicare beneficiaries at hospitals in New York and Los Angeles and found little if any correlation between spending patterns and hospital relative performance on quality of care measures for patients with acute myocardial infarction, heart failure, or pneumonia (Yasaitis et al., 2009). Jha noted that the mortality rates at hospitals with higher-risk adjusted cost of care were no better than those whose costs were lower (Jha et al., 2009).

A Suggested Solution

Among the many strategies aimed at improving quality and decreasing costs, transparency has become a central focus of both public and private efforts (Marshall et al., 2000). In principle, greater transparency of hospital quality and price information might improve the value of hospital care through two interrelated pathways (Figure 10-1) (Berwick et al., 2003; Fung et al., 2008). First is the selection pathway. Patients, physicians, and insurers use information about performance to preferentially seek care from higher-quality or lower-cost providers. The net effect is a greater proportion of patients being cared for at higher-quality institutions. Second is the change pathway. The release of performance data catalyzes improvement efforts at hospitals by appealing to the professionalism of physicians and nurses and the desire of senior hospital leaders to preserve or enhance the hospital's reputation and market share.

Attractive Strategy, But Limited Evidence of Efficacy

Yet while transparency may be an appealing strategy, the evidence of its impact remains limited. RAND recently completed a systematic review of some 50 studies that have evaluated the impact of transparency and found the methodological quality of most studies to be relatively weak; most were simple before-after studies without controls or were qualitative (Fung et al.,

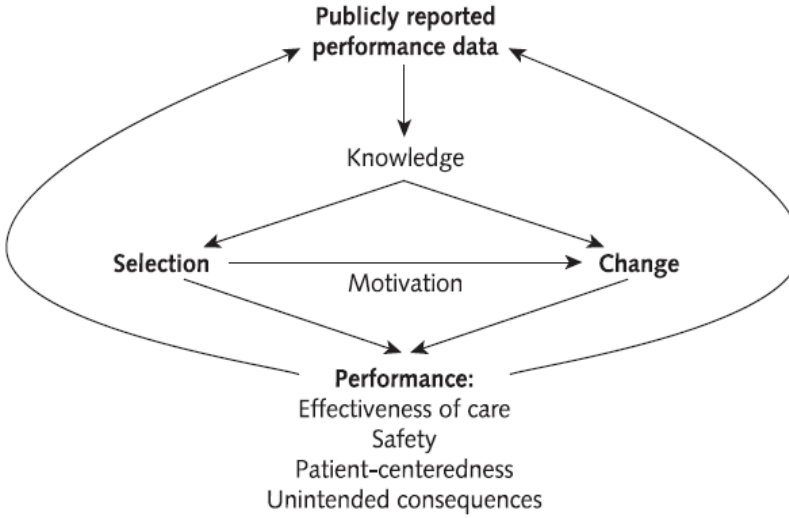

FIGURE 10-1 Two pathways through which transparency might lead to improved hospital value.

2008). Results from those focused on hospital care suggest that while the public release of performance data consistently stimulates quality improvement activity, its effects on outcomes are less certain, and it has had little if any impact on patient selection. In one well known example, Hibbard and colleagues described the results of a trial of transparency in Wisconsin, in which hospitals were assigned to public reporting, private reporting, or no reporting of performance. Like most studies focused on assessing the impact of reporting on the change pathway, she found that those in the public reporting group reported nearly twice as many quality improvement activities as control hospitals (Hibbard et al., 2003). In a study which sought to determine the effects of the New York State Cardiac Surgery Reporting System, Peterson reported that 30-day mortality following coronary bypass surgery declined 33 percent between 1987 and 1992, while over the same time period national mortality rates declined by only 19 percent (Peterson et al., 1998). Yet, in another study of the New York State Cardiac Surgery Reporting System, Jha found that hospitals identified as having high risk adjusted mortality rates experienced no decline in their market share (Jha and Epstein, 2006).

Transparency is unlikely to have a marked effect on hospital selection by patients for several reasons. First, hospital care is complex, and patients often do not know what condition they have or what services they need—and they rely on physicians to tell them. Second, patients are often

not in a position to choose which hospital to go to. In emergency settings the ambulance typically chooses the nearest facility, while in elective settings patients usually select a physician, whose admitting privileges determines hospital choice. Third, information about quality remains limited and conflicting, with the results and recommendations dependent on which Web site one chooses to search. Finally, there are often few hospital providers in a local market, limiting the scope of choice.

Another Possible (Yet Limited) Strategy: Price Transparency

While evidence about the benefits of transparency of information about the *quality* of hospital care is limited, even less is known about the effects of *price* transparency. In theory, price transparency could reduce price discrimination (different prices charged to different patients) and price dispersion (variation in prices for the same condition or procedure across hospitals), but it can have unintended consequences on average prices, especially in concentrated markets (Austin and Gravelle, 2007). Further, there are multiple reasons why hospital price transparency is unlikely to have substantial effects on *selection by patients*. In addition to the reasons highlighted earlier relating to patient's use of information about quality, third-party payment blunts the impact of prices—even for those in high-deductible plans—since a typical hospital admission quickly exceeds even the largest of copayments. Finally, price is often confused by patients as a signal for quality, with higher prices indicating better care (Ginsburg, 2007). One of the few natural experiments with price transparency for hospital care has taken place in California, where legislation was enacted in 2003 requiring hospitals to make information about prices available to the public. Over the next several years officials observed no change in price dispersion for newborn delivery, a condition which is better suited than acute myocardial infarction for patients to use pricing information to guide selection, and found no correlation between changes in average daily charges and delivery volumes (Austin and Gravelle, 2007).

How Might Transparency Lead to Cost Savings and Better Outcomes

Unlike many other transparency initiatives, the public reporting of readmission, complication, and healthcare-associated infection rates offers the promise of simultaneously lowering costs while improving the outcomes of care. Extrapolating from the benefits of the New York State Cardiac Surgery Reporting System, and relying on data from the Medicare Payment Advisory Commission, Centers for Disease Control and Prevention (CDC), and the Agency for Healthcare Research and Quality on the costs and preventability of these complications, transparency could in theory result in as

much as $5 billion in annual savings (MedPAC, 2008; Scott II, 2009; Zhan and Miller, 2003) (Table 10-1).

But, again, there are several caveats to this estimate. First, as has been discussed, evidence for the benefits of transparency on hospital outcomes is weak from an evidence-based medicine perspective. Second, assigning savings to transparency is inherently problematic since reporting initiatives provide the *stimulus* for changes in care, but do not *directly* improve care themselves, thus creating a risk of double counting savings. For example, hospitals may address high medication-related complication rates by investing in a computerized provider order entry system with decision support. Yet it is not entirely clear how one ought to apportion the resulting savings between the two strategies. Another caveat is that hospital leaders may be less motivated to reduce high readmission rates than high mortality or poor process measures since readmission is less clearly a marker of poor quality and because in today's environment readmissions represent a significant source of hospital revenue. This suggests that financial incentives are likely to be a necessary adjunct to readmission reporting. Additionally, hospital beds "opened up" by fewer readmissions and shorter lengths of stay from decreased complications may actually be filled by other patients—some of whom may be undergoing unnecessary procedures that contribute to the overall rise in healthcare spending.

TABLE 10-1 Estimating Savings from Reduced Readmission, Healthcare-Associated Infections and Complications

Rehospitalization	If reporting led to *10-20% reduction* in readmissions: 170,000-340,000 readmissions avoided @ $7,000/event = $1.2-$2.4 billion per year
Healthcare-associated infections	If reporting led to *10-20% reduction* in rate of preventable healthcare-associated infections: 10-20% * $8 billion/year = $0.8-$1.6 billion/year
Complications	If reporting led to *10-20% reduction* in injury rates: 10-20% * $4.6 billion/yr = $460-$920 million/year
	Total potential savings: $2.46-$4.92 billion per year

NOTE: A number of key assumptions need to be made to arrive at this estimate. Most importantly (or significantly), that transparency *can stimulate an additional 10-20 percent reduction in readmission, healthcare-associated infection, and complication rates beyond that occurring as a result of other ongoing quality improvement activities*. This effect estimate is based upon the 14 percent incremental improvement in mortality reduction credited to public reporting of coronary artery bypass graft mortality in New York. Other relevant data to support the magnitude of improvement that may be possible include the 20 percent difference between readmissions rate in California (19.5 percent) and Oregon (15.7 percent) (Jencks et al., 2009) and the 9.6 percent reduction in healthcare-associated infection rates in Pennsylvania between 2006 and 2007 in the setting of public reporting (Pennsylvania Health Care Cost Containment Council, 2009). Another key assumption is that the cost savings from reducing complications and healthcare-associated infections will be passed on to employers and other payers.

Conclusion

Achieving the potential benefits of transparency requires a great deal more development and work to advance from the current position. Limited by scant evidence of effect and inconsistent characterizations of price and performance transparency, the implementation of this strategy may be promising but difficult to realize. We will need to broaden and strengthen readmission, complication, and healthcare-associated infection reporting requirements, necessitating an investment in measure development and risk adjustment methodologies, improvements in documentation and coding, standardization of reporting, and tighter linkage to payment. Further, given that awareness and trust of public reporting sites is still low, those leading reporting initiatives must make an even greater effort to engage patients in using performance data—through advertising, better Web design, and the incorporation of social networking features into the Web sites. For example, in a recent Kaiser Family Foundation survey only 8 percent of U.S. adults were aware of the government Web site Hospital Compare (Kaiser Family Foundation, 2008).

Over the longer term it is imperative that we develop and implement measures with greater value to patients. This means paying greater attention to elective procedures and measuring outcomes other than mortality and complications. To achieve this vision the effort of collecting the necessary data must be streamlined, and better incorporated in the workflow of frontline physicians and nurses through the electronic medical record. More ambitious goals, such as extending the reporting beyond the inpatient or even 30-day window or combining physician and hospital quality and cost information, will require fundamental changes to how hospital care is paid for. Ultimately, transparency is an essential feature of open, democratic societies, one that is impossible to adequately value in economic terms. This, in itself, is reason enough to support the strengthening of current and future reporting initiatives.

HEALTH PLAN TRANSPARENCY

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National Committee for Quality Assurance

For 20 years, the National Committee for Quality Assurance has advanced an agenda rooted in the concepts of measurement, transparency, and accountability. Through our health plan accreditation and physician recognition programs and collection and analysis of clinical quality (HEDIS) and patient experience/satisfaction (CAHPS) measures, we have informed plans, providers, patients, and purchasers about the performance of the healthcare

system in delivering evidence-based care. We have publicized this information through public report cards, frequent reports on the state of healthcare quality and, most recently, through our joint venture with *U.S. News and World Report* ranking America's best health insurance plans.

These efforts have produced some dramatic improvements in quality performance. For example, the percentage of patients in accountable health plans that receive a beta blocker after a heart attack rose from 63 percent in 1996 to 98 percent in 2006. The percentage of children under age 2 years receiving the full complement of vaccinations jumped from 30 percent in 1997 to more than 80 percent in 2007. Finally, the percentage of diabetic patients with controlled blood pressure (less than 140/90 mmHg) jumped from 39 percent in 1999 to 62 percent in 2007 (National Committee for Quality Assurance, 2008).

Current Challenges

Despite these improvements, much more progress is clearly needed. The successes, while important, have been limited to the portion of the healthcare industry that has either embraced accountability on its own or has done so in response to regulatory requirements or purchaser demand. In 2008, for example, 106 million Americans were covered by plans that report HEDIS, the highest in history. Yet that leaves nearly 200 million people outside that circle. But among both those plans that have adopted accountability systems and those that have not, much more could be done to be transparent. Current obstacles to more transparency are many. For instance, as costs balloon, large purchasers increasingly select plans on the basis of costs or provider discount. Another obstacle is that small employers typically have little leverage with plans and are not in a position to drive a quality agenda. Also, with some prominent exceptions, purchasers have not rewarded high-performing plans. And, though many Medicaid programs have used pay for performance for plans and providers, Medicare is woefully behind the times in the use of these effective incentives. One large obstacle is that consumers often have little or no choice of health plans. Finally, many health plans have been ambivalent about their role in quality.

It is fair to say that transparency has had little to no effect on health insurance cost trends and the overall performance of plans for several reasons. The ability of plans to create value networks has been limited by monopsony[1] providers, market pressure for broad networks, and "any willing provider" requirements. The retreat from capitation to fee-for-service

[1]Monopsony is a market in which goods or services are offered by several sellers, but there is only one buyer.

fueled massive growth in medical premiums and spending. Purchaser and plan ambivalence about use management has limited the ability of plans to deny coverage of unproven treatments and technologies. Finally, concerns by some purchasers and many consumers that they will need to trade costs for quality leave them wary of addressing either.

But even where transparency has improved quality, the effect on cost trends in health insurance has not been significant. We have had a naïve transparency agenda, often predicated on the idea that the free market works in health care. The assumption is that the mere publication of price and quality information will drive people to choose the best health plans. However, this assumption depends on health care operating as a free market—an enormous logical leap.

It is useful to recall that the economic conditions for a perfect market include many suppliers and few barriers to entry; consumer willingness to pay as a source of financial discipline; a relatively homogeneous product; and enough useful consumer information for consumers to make the best buy (Lipsey and Lancaster, 1957). None of these conditions exist in health care: there is an uneven distribution of providers and often monopsony market conditions, third-party payers insulate consumers from true costs, the product is extremely variable and difficult to define, and quality information is still limited and difficult for most consumers to understand.

Further complicating matters, policy makers are ambivalent about driving a value agenda; providers induce demand for their services; patients are not in a position to choose when services are actually received; and benefit design differences make it difficult to compare options.

The Value Agenda

We are at a moment in time when the desire by the federal government to drive a value agenda has become clear. Transparency is a major enabler of the value agenda, but it needs to be accompanied by other reforms in order to optimize quality improvement and address costs. A value agenda must motivate significant action among health plans, hospitals, and other institutional providers, physicians, and consumers. Such an agenda would include the following:

- Public programs should require health plans to report HEDIS and CAHPS and maintain accreditation.
- "Insurance exchanges" should mandate collection and reporting of performance data by participating plans and demonstrate, through their accreditation, that they protect consumers' rights. These exchanges can also use benchmarked performance results, prices, and other proven methods to influence consumers to select high-value plans.

- Hospital payments should be aligned with performance across public and private payers. So-called never events should not be reimbursed, hospital infection rates should be publicly reported with payments adjusted accordingly, and there should be payment rewards for other aspects of high performance. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS), for example, offers many opportunities for improvement that go beyond patient satisfaction to patients' experiences with inpatient care.
- Physician payment should be reformed to reward coordination of care and enable use of new technology and team-based care (Shih et al., 2008).
- Consumer incentives also need to be aligned for value, with serious rewards for those who use value networks and participate in medical homes, disease management, or wellness programs according to their health needs. Value-based insurance design should encourage the use of high-value treatments and discourage treatments of small or negative value.

This agenda needs to be accompanied by a major education and communication strategy that explains to all Americans their role in the reform of health care. Transparency of health plan information has delivered some benefits, but it has also taught us that transparency needs to be coupled with a multifaceted strategy of payment reform, delivery system redesign, and consumer incentives and education if we are to achieve affordable high-quality health care.

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11

Payment and Payer-Based Strategies

INTRODUCTION

To obtain better value for investments made in health care, significant discussion has emerged on how best to align economic and health incentives to achieve these goals (Dudley et al., 2007; IOM, 2007; Orszag and Ellis, 2007). Focusing on providers, attention has turned to the current fee-for-service reimbursement model. By placing the incentives on volume over value, fee-for-service fails to create incentives for preventive care and care coordination among providers (MedPAC, 2008; Miller, 2007). As physician practices spend an average of 3 hours a week interacting with health plans at a national cost of $23 billion to $31 billion a year, the administrative complexity created by multiple documentation requirements to varying billing, precertification, and credentialing forms takes time away from clinical care (Casalino et al., 2009). Failure to clearly differentiate the value and benefits of alternative providers, treatments, and health plans obfuscates the signals to consumers (Chernew et al., 2007). The papers in this chapter cover a range of strategies targeting the payment and payer systems as sources of opportunities for lowering costs and improving outcomes, underscoring the importance of streamlined and harmonized health insurance regulation, administrative simplification and consistency, and payment redesign to focus incentives on results and value.

Harold D. Miller of the Center for Healthcare Quality and Payment Reform reviews the broader evidence base of payment reform's impact on costs and quality and provides a conceptual framework for possible payment policies. Building on Miller's comments and recommendations on

strategies for transitioning to more value-based payment structures, Amita Rastogi of Bridges to Excellence discusses the promising effects of the PROMETHEUS (Provider payment Reform for Outcomes, Margins, Evidence, Transparency, Hassle-reduction, Excellence, Understandability, and Sustainability) payment system, based on a fee-for-episode system. She focuses in particular on the allowance in the PROMETHEUS system for potentially avoidable complications, which is designed to encourage reduction in such complications by at least 50 percent. Translating their estimates to the national level, she reports a potential cost savings of $165 billion nationally from reducing potentially avoidable complications in 13 medical conditions in the commercially insured population.

David R. Riemer of the Community Advocates Public Policy Institute highlights health insurance exchanges as a promising practice for introducing managed competition into the insurance market. Drawing on the lessons learned from one of the nation's most long-lasting and successful exchanges, operated by the Wisconsin State Employee Health Plan in Dane County, he suggests that three conditions must be in place to maximize the ability of health insurance exchanges in lowering costs: the pool of potential enrollees should have an average or near-average risk profile; the pool of enrollees must be at least 20 percent of the population; and the enrollees must have clear financial incentives for selecting health insurance plans that have the lowest risk-adjusted bids.

Turning to consumer incentives, Niteesh K. Choudhry from Harvard University discusses value-based insurance design, focusing on the potential impact of tiering copayments for medications based on evidence-based value. He explains that, with insurance copayments set in a one-size-fits-all style, copayments for essential, high-value services are often set too high, and their resultant underuse leads to missed opportunities to prevent and treat morbid and expensive diseases while copayments for nonessential, low-value services are sometimes not set high enough to minimize their unnecessary use. Although the evidence base is limited, existing studies suggest that value-based insurance design for five chronic conditions may reduce costs by 1 to 6 percent, the equivalent of more than $2 billion annually. However, he cautions that these preliminary estimates, by necessity, aggregate groups of conditions into single disease categories, such as "heart disease," do not account for patients with more than one related condition, and do not distinguish between the impact on patients of different disease severities. In a complementary discussion, Lisa Carrara of Aetna describes a variant of value-based insurance design with a discussion of tiered provider networks and consumer-directed health plans. Based on the experience of the Aetna Aexcel network of designating providers based on clinical quality and cost efficiency, she estimates that up to a 3 to 4 percent reduction in first year claims could be realized by customers if all Aetna patients demonstrated a 90 percent utilization of Aexcel-designated physicians.

Both Robin J. Thomashauer from the Council for Affordable Quality Healthcare (CAQH) and David S. Wichmann from UnitedHealth Group conclude this session by discussing different approaches to administrative simplification. Thomashauer describes CAQH's work in driving payer collaboration and process consolidation through multistakeholder initiatives—the Committee on Operating Rules for Information Exchange (CORE) and the Universal Provider Datasource (UPD). Through development of standardized operating rules to facilitate administrative data exchange and promote interoperability, she relays that industry-wide adoption of CORE rules could save $3 billion over the next 3 years. Citing the success of this cross-industry, public–private collaboration, Thomashauer outlines the need for continued collaboration focused on both short- and long-term goals, coupled with appropriate policy support through the federal government. Meanwhile, Wichmann outlines how the use of current technology could improve payment speed and accuracy and streamline provider credentialing, privileging, and quality designation processes, yielding savings of $332 billion over the next decade. To achieve these savings and improve healthcare delivery, he urges shared, consistent action across all payers—commercial and governmental—in partnership with physicians and hospitals.

VALUE-BASED PAYMENTS, OUTCOMES, AND COSTS

Harold D. Miller, M.Sc.
Center for Healthcare Quality and Payment Reform

The goals of value-based payment are to give healthcare providers adequate resources to deliver efficient, quality care and to remove the penalties that exist today for improving quality and efficiency. Episode-of-care payment and comprehensive care payment systems can help providers prevent health problems; prevent the occurrence of acute episodes among individuals who have health conditions; prevent poor outcomes during major acute episodes, such as infections, complications, and hospital readmissions; and reduce the costs of successful treatment. By using payment changes to help address these major sources of waste and inefficiency, healthcare costs can be reduced significantly without "rationing" or denying care that patients need (Figure 11-1).

Using Episode-of-Care Payment to Reduce Waste and Inefficiency

Poor outcomes and high costs of major acute episodes can be reduced through the use of episode-of-care payment systems; this system defines a *single* amount to cover *all* of the services that are provided to a patient during a single episode of care (e.g., the treatment of a heart attack), rather than making separate payments for each individual service (Robinson,

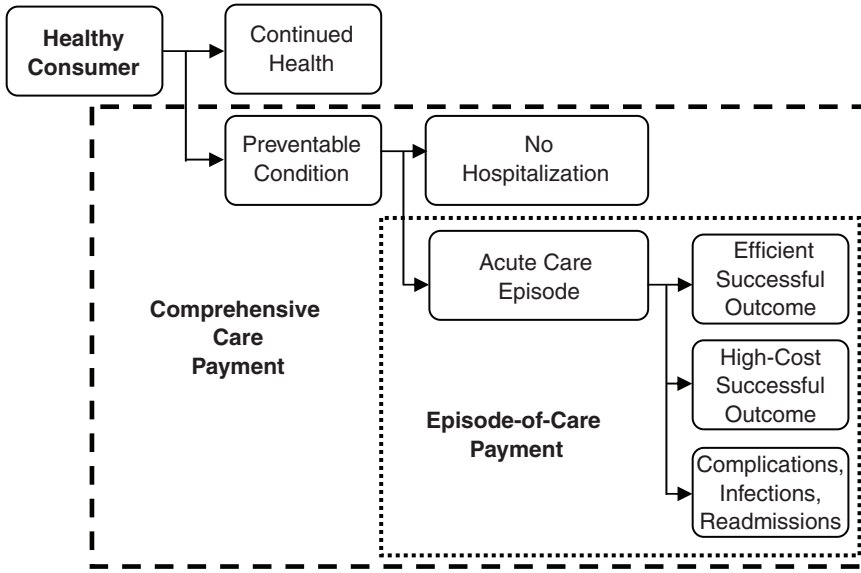

FIGURE 11-1 How value-based payment systems address sources of waste and inefficiency.

2001). Episode-of-care payment gives the involved providers an incentive to coordinate their activities, eliminate unnecessary services, and avoid complications that require additional services (Miller, 2009).

Defining an Episode-of-Care

There are different versions of episode-of-care payment that address different types of waste and inefficiency (Table 11-1). Although only the fourth and fifth categories—full-episode payments with a limited warranty based on either the type of treatment or diagnosis—can address the full range of problems that occur within a major acute episode, the narrower forms of episode-of-care payment could be used for types of patients where only one issue is of concern, or the narrower forms could be used as transitional steps toward full-episode payment (Center for Healthcare Quality and Payment Reform, 2009b).

Encouraging the Use of Higher-Value Providers and Services

As indicated in the fourth and fifth categories in Table 11-1, episode-of-care payment can be based on a particular type of treatment, or it can be based solely on the patient's diagnosis, particularly where there is clear

TABLE 11-1 Variants of Episode-of-Care Payment That Address Different Aspects of Waste and Inefficiency in Major Acute Episodes

Category	Component of Treatment	Current Payment System	Impact of Current System on Waste and Inefficiency	Improved Payment Approach
1	Treatment for conditions present on admission to the hospital	Hospitals and doctors are paid separately and independently for the care they provide. Most physicians (except surgeons and obstetricians) are paid on a fee-for-service basis.	No financial incentive exists for doctors and hospitals to work together to improve hospital efficiency. Payers and consumers cannot determine the full cost of treatment in advance.	Inpatient bundled payment: a single payment covering both hospital and physician services for inpatient treatment
2	Treatment for hospital-acquired conditions	Hospitals are paid for higher diagnosis-related groups (DRGs) or given outlier payments when infections or complications occur. Most physicians are paid additional fees when additional care is provided.	No financial penalty exists for infections, complications, or readmissions. Payers do not know the full cost of treatment in advance.	Inpatient warranty: a payment for inpatient services based only on the cost of treatment of conditions present upon admission to the hospital
3	Care after discharge from the hospital (e.g., rehabilitation, home health, outpatient care)	Each provider is paid separately for any services they provide.	No incentive exists to use posthospital care efficiently. Some desirable services may not be paid for at all. Payers do not know the full cost of treatment in advance.	Bundled payment for inpatient and postacute services: a single payment covering both inpatient treatment and postacute care

continued

TABLE 11-1 Continued

Category	Component of Treatment	Current Payment System	Impact of Current System on Waste and Inefficiency	Improved Payment Approach
4	Readmissions to the hospital for reasons related to the original stay	Hospitals and physicians are paid for any readmissions in addition to payment for the initial hospital stay.	No incentive exists to prevent readmissions. Payers do not know the full cost of treatment in advance.	Full-episode payment with a limited warranty (based on type of treatment): a single payment covering inpatient, postacute care, and preventable readmissions based on the cost of treatment for conditions present on the initial admission
5	Choice of the highest-value treatment and facility for addressing the patient's conditions	Hospitals and doctors are paid based on the types of treatment provided (e.g., coronary artery bypass surgery) rather than based on the patient's conditions (e.g., coronary artery blockage).	No incentive to use lower-cost treatments or facilities that can achieve similar outcomes for the patient's conditions.	Full-episode payment with a limited warranty (based on type of diagnosis): a single payment to cover all needed services based on the cost of the highest-value treatment available for a patient's diagnosis

evidence as to the appropriate treatment(s) for the diagnosis. Basing payment on diagnosis creates an incentive for a provider to use higher-value treatments—those with equivalent outcomes and lower costs.[1]

Episode-of-care payment also enables providers to define a single, comprehensive price for an episode of care, which in turn would enable payers (and consumers, if the price is made public) to more easily see the full cost of treatment and to more accurately compare the costs of different providers that could provide the same treatment. Although there is evidence that costs for the same treatment can vary significantly among providers in the same community (Pennsylvania Healthcare Cost Containment Council,

[1]Although the Medicare Inpatient Prospective Payment System is based on Diagnosis-Related Groups (DRGs), many of the DRGs are actually based on the treatment given, rather than just the diagnosis.

2007), most payers (e.g., Medicare and major health insurance plans) do not give patients strong incentives to use providers who achieve similar outcomes at lower costs.

Why Episode-of-Care Payment Is Better Than Other Payment Reforms

Other payment changes that have been proposed or implemented in an effort to reduce infections, complications, and readmissions are not as effective in changing incentives as a true episode-of-care payment that includes a limited warranty. For example, pay-for-performance systems that give bonuses to hospitals for reducing infections do not change the underlying payment system and its rewards for providing more services. Medicare's rules that exclude hospital-acquired infections from the diagnosis-related group (DRG) formula do not prevent hospitals from being paid for the complications resulting from those infections or from receiving outlier payments for those cases.

In contrast, if a hospital and physician commit to a "limited warranty," similar to what has been done by Geisinger Health System through its ProvenCare program (Casale et al., 2007), they have both a financial and quality incentive to improve, and they can also advertise the warranty to patients and payers as a sign of high-quality care.

Experience with Episode-of-Care Payment

Although Medicare has been successfully using a narrow form of episode-of-care payment for over 25 years through the Inpatient Prospective Payment System, there has been relatively limited experience using episode-of-care payments that incorporate warranties or bundle together payments for multiple providers. The projects that have been evaluated have all focused on surgery episodes; the evaluations indicate that payers received savings ranging from 10 to 40 percent, without negative impacts on quality (Cromwell et al., 1997; Edmonds and Hallman, 1995; Johnson and Becker, 1994).

Using Comprehensive Care Payment to Help Prevent Episodes and to Encourage Use of High-Value Services

Despite the many improvements of episode-of-care payment over current fee-for-service payment systems, it still does not encourage *preventing* episodes of care from occurring in the first place. For example, the primary goal for patients with chronic diseases should not be to reduce the *cost of each episode of hospitalization*, but to reduce the *number of hospitalizations*. Many studies have demonstrated that large reductions in

hospitalizations—20 to 40 percent or more—can be achieved through relatively simple, low-cost services such as patient education, self-management support, telemonitoring, and so on (Bourbeau et al., 2003; Cordisco et al., 1999; Gadoury et al., 2005). However, many of these services are not paid for under Medicare or private insurance plans, whereas hospitals and physicians are paid for all hospitalizations, no matter how frequently they occur.

Comprehensive care payment is designed to solve this problem by defining a single amount to cover all of the services needed to manage a patient's conditions during a fixed period of time, regardless of how many separate episodes of care occur (Miller, 2009). This gives the providers involved in the patient's care the flexibility to try innovative approaches and tailor services based on the patient's needs, and it gives them an incentive to avoid hospitalizations and unnecessary or overly expensive services.

In addition to supporting better care management of chronic diseases, comprehensive care payment can encourage the use of higher-value services for treatment of conditions by providing physicians with both the resources and incentive to engage in shared decision making with their patients. Research has shown that the frequency of many types of surgery can be reduced by 20 to 40 percent (O'Connor et al., 2004) and that the inappropriate use of diagnostic imaging can be reduced significantly (Bottles, 2009) when a neutral advisor helps patients make an informed choice, but providers are not compensated or rewarded for doing this under fee-for-service payment.

Table 11-2 provides a side-by-side comparison of episode-of-care payment and comprehensive care payment.

In theory, comprehensive care payment could also be used to encourage greater emphasis on preventing health conditions from occurring in the first place. However, a patient would have to commit to obtain care from the same provider over a multiyear period (and the patient would need a consistent health insurance plan that encouraged such multiyear arrangements) so that if the provider incurred higher costs for prevention today, there would be an assurance that it could reap the benefits of lower treatment expenditures in the future.

Why Comprehensive Care Payment Is Better Than Other Payment Reforms

Although "medical home" initiatives are attempting to change payment systems in order to fill some of the gaps defined above, there is no assurance that these programs will reduce spending since medical homes are not given explicit accountability for improved outcomes (Network for Regional Healthcare Improvement, 2009). At the other end of the spectrum,

TABLE 11-2 Comparing Episode-of-Care Payment to Comprehensive Care Payment

Episode-of-Care Payment	Comprehensive Care Payment
• A single, bundled payment would be paid to a provider or group of providers to cover all of the healthcare services needed by the patient during a specific episode of care (e.g., treatment for a heart attack, or surgery to replace a broken hip). This single amount would be paid instead of individual fees to doctors, DRG payments to hospitals, etc. • The providers involved in the episode could create joint arrangements for accepting and dividing up the episode-of-care payment among themselves, or the episode-of-care payment could be treated as a budget, and the payer (e.g., a health plan) could divide the payment among the involved providers based on their proportional shares of the care (Gosfield, 2009). • The amount of the episode-of-care payment would vary based on the patient's diagnosis or treatment and other patient-specific factors. However, there would be no increase in payment to cover preventable adverse events such as errors, infections, or hospital readmissions. • Methods would be established for monitoring and reporting on the quality of health care delivered by providers during each episode, and there could also be bonuses or penalties for the providers based on the quality of care or the outcomes achieved. • Ideally, patients would also receive incentives to use higher-quality or lower-cost providers and adhere to care processes jointly developed by them and their providers.	• A periodic (e.g., monthly or quarterly) payment would be paid to a provider to cover all of the healthcare services (including care management, preventive care, and acute care services) needed for management of the patient's health conditions during that period of time. This single amount would be paid instead of individual fees for services. • A single provider (e.g., a "medical home") could accept the comprehensive care payment and make payments from it to other providers who deliver care during the time period covered, or the comprehensive care payment could be treated as a budget, and the payer (e.g., a health plan) could divide the payment among the involved providers based on their proportional shares of the total services provided. • The amount of the comprehensive care payment would vary based on the patient's characteristics—both the specific health conditions they have and other factors affecting the level of healthcare services they will need (e.g., whether they speak English). • Methods would be established for monitoring and reporting on the quality of health care delivered by providers during the period of time covered by the payment, and there could also be bonuses or penalties for the providers based on the quality of care or the outcomes achieved. • Ideally, patients would also receive incentives to use higher-quality or lower-cost providers and adhere to care processes jointly developed by them and their providers.

proposals for "shared savings" payments to providers require a focus on outcomes, but do not change the underlying fee-for-service structure and fail to provide any up-front resources to implement new services (Center for Healthcare Quality and Payment Reform, 2009a). In contrast, comprehensive care payment gives physicians and other providers both greater

flexibility and greater accountability for the use of resources to deliver high-quality efficient care.

A comprehensive care payment system also avoids penalizing providers for treating sicker patients—one of the major problems with traditional capitation payment systems—because the amount of the comprehensive care payment would vary depending on the number and severity of a patient's health conditions (Miller, 2009).

Experience with Comprehensive Care Payment

Although capitation systems have been widely used, there is little experience with true comprehensive care payment systems. One example is the Patient Choice program in Minnesota, in which groups of doctors and hospitals are paid based on the risk-adjusted cost of providing care to a population of patients (Robinow, 2008). An evaluation indicated that it contained costs without negatively affecting quality (Lyles et al., 2002). In 2009, PROMETHEUS Payment, Inc. began a yearlong pilot test of "evidence-informed case rates" for chronic disease patients (Prometheus Payment, Inc., 2009), and Blue Cross Blue Shield of Massachusetts implemented its Alternative Quality Contract (Blue Cross Blue Shield of Massachusetts, 2008), both of which incorporate key elements of comprehensive care payment.

Choosing a Value-Based Payment System

Different types of patients and conditions have different types of waste and inefficiency problems, and different types of payment systems are appropriate for addressing them (Miller, 2009). Episode-of-care payments are most appropriate for conditions where there is not a problem with overuse of treatment (e.g., hip fractures and labor and delivery) but where there are opportunities to reduce the cost and complications of the treatment. As noted earlier, comprehensive care payment should be used for conditions such as chronic diseases where there is concern about unnecessarily high rates of hospitalizations. It should also be used for conditions where there is concern about overuse of certain types of procedures (e.g., heart surgery vs. medical management of heart disease). Areas of underutilization, such as the delivery of prevention services with long-term impacts, may be best addressed through fee-for-service payment.

Setting the Payment Amount

Setting the right payment *amount* (i.e., the price) is as important as using the right payment *method* (Miller, 2009). If the amount is too low, providers will be unable to deliver quality care, and if it is too high, there is

no incentive to seek out efficiencies. There are several alternative methods of setting payment amounts, each with advantages and disadvantages (Table 11-3). Different price-setting approaches will likely be needed in different regions and for different providers and services depending on the local market structure; for example, regulation may be needed in regions where providers have a monopoly on particular services, whereas competition can be used in regions where there are multiple providers for most services.

TABLE 11-3 Alternative Ways of Setting Prices in a Payment System

Price-Setting Method	Example	Advantages	Disadvantages
Regulation: government defines the prices that a provider can charge.	The Maryland Health Services Cost Review Commission sets all-payer rates for hospitals (Health Services Cost Review Commission).	Avoids cost shifting to small payers. Enables sharing by all payers of costs of uncompensated care and of necessary but expensive services.	Requires the regulator to determine the "right" price for services. Discourages price competition on services where multiple providers exist.
Price-setting by large payers: large payers define the amounts they will pay providers.	Congress and the Centers for Medicare & Medicaid Services (CMS) establish the rates that Medicare will pay.	Enables consistent pricing of services regardless of a provider's market power.	Requires the payer to determine the "right" price for services. Discourages competition on price where multiple providers exist.
Negotiation between payers and providers: payers negotiate with providers to determine prices.	Commercial health insurance plans negotiate payment rates with major providers in most markets.	Enables prices to be set based on the cost of delivering services and the value of the services to the payer and its member consumers.	Result depends on size of payer vs. provider; monopoly/oligopoly providers can demand premium prices, particularly from small payers.
Competition by providers: providers set prices in order to attract consumers.	The State of Minnesota has created a process to define "baskets of care" for asthma, back pain, obstetrics, and others; providers who want to offer those packages of services set their price, and all (commercial) payers will be required to pay the same price (Institute for Clinical Systems Improvement; Minnesota Department of Health).	Enables providers to define the "right" price for services, and gives them the opportunity to attract additional volume based on greater efficiency.	Requires existence of multiple providers with similar quality to enable competition on price and with sufficient capacity to handle shifts in patient volume. Requires a benefit design that gives consumers an incentive to use lower-cost providers.

Achieving Alignment of Multiple Payers

Finally, for changes in payment systems to enable a healthcare provider to transform the way it delivers care for all of its patients, most, if not all, of the payers in the community need to change their payment systems in similar ways. To avoid antitrust concerns, states or nonprofit regional health improvement collaboratives can facilitate consensus among local payers on payment changes (Miller, 2009). However, Medicare needs the ability to participate in such regionally defined payment reforms in order to achieve true alignment of incentives.

BUNDLED AND FEE-FOR-EPISODE PAYMENTS: AN EXAMPLE

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Bridges to Excellence

Ideas about how to pay providers to improve quality and reduce costs are the foundation for many current discussions about national healthcare reform. Most experts agree that a fundamental problem of the nation's health system is that both the current fee-for-service and the capitation-style models of reimbursing providers encourage *volume-based* practice patterns rather than *value-driven* care (Lee and Ferris, 2009). Providers are rewarded for "doing things" (often too many or not enough), rather than delivering *quality* services that are proven to keep people healthy, reduce errors, and help avoid unnecessary care.

As opposed to fee-for-service, bundled payments place the focus of care on the entire continuum for a given condition (Paulus et al., 2008). Contrary to capitation that is based on per population payment irrespective of whether a member has a condition or not, payment by episodes are triggered only when a member has a condition and insulates providers from risk of occurrence. Creating a single reimbursement fee for a condition holds the providers accountable for delivering quality care in the most cost-effective manner, while adjusting payments based on patient-severity factors makes the system fair. Fee-for-episode payments with the right incentives would focus providers in managing care proactively in a patient-centered, coordinated fashion, reducing complications and improving outcomes across the continuum of care (Mechanic and Altman, 2009).

PROMETHEUS Payment is one such approach that seeks to ignite a transformation in healthcare payment by challenging the way providers and insurers conduct business—moving away from unit-of-service payment to episode-of-care payment (de Brantes and Rastogi, 2008). This consumer-centered model has developed "evidence-informed" case rates for several chronic, acute medical and procedural conditions, defining what services

are included in episode payments and adjusting reimbursements based on patient severity. It is built on a quality-improvement framework where a physician scorecard is tied to the potential for reducing complications. The model was launched in 2006 (Prometheus Payment Inc., 2008), and now has four pilots across the country through the support of the Robert Wood Johnson Foundation and is also being tested informally in several communities. This report outlines the lessons learned from PROMETHEUS.

Episodes of Care

At its core, the PROMETHEUS Payment model centers on packaging payment around a comprehensive episode of medical care that covers *all* patient services related to a single illness or condition. Covered services are determined by commonly accepted clinical guidelines or expert opinion that lay out the tested, medically accepted method for treating the condition from beginning to end.

To date, PROMETHEUS Payment has developed evidence-informed case rates for a significant number of acute events, procedures, and chronic care, including heart attacks, hip and knee replacement, diabetes, asthma, congestive heart failure, and hypertension, to name a few (Rastogi et al., 2009). These existing evidence-informed case rates can potentially affect payment for almost 33 percent of the entire insured adult population and represent a significant amount of dollars spent by employers and plans.

Evidence-informed case rates are budgeted at the patient level and encompass costs of all necessary care for a given condition (physician visits, prescriptions, lab tests, imaging, etc.) across the care continuum for a predefined period of time. The covered services are bundled across all providers who would treat a given patient and the case rate is adjusted to take into account the severity and complexity of the individual patient's condition. However, services normally included within the total costs of patient care but used to care for potentially avoidable complications (PACs) are largely a result of care defects and are attributable to provider actions. Within PROMETHEUS, costs of these services are separated from costs attributable to patient factors and used to develop a warranty pool against care defects. The evidence-informed case rates therefore cover costs for typical and reliable care that is adjusted based on patient demographics and comorbidities, and an allowance that serves as a warranty or buffer against PACs.

Potentially Avoidable Complications (PACs)

PACs are usually deficiencies in care that cause harm to the patient, yet might have been prevented through more proactive care—for example, when a patient with diabetes ends up in the emergency room because of uncontrolled blood sugar levels. PACs represent a substantial opportunity

for improving patient care and reducing total cost of care. Unfortunately, PACs remain all too common in the U.S. healthcare system.

In analyzing large sets of national claims data, the PROMETHEUS Payment team found that an average of 21 to 77 cents of every dollar spent on chronic conditions and 15 to 34 cents of every dollar spent on acute medical care or procedural conditions are attributable to PACs (Figure 11-2). PACs are abundant and expensive, amounting to hundreds of billions of dollars for less than optimal care, and are a significant source of variation in costs due to errors, oversights, and failure of care coordination. Preventable hospitalizations constitute the bulk (67 percent) of all chronic medical PAC costs. The Centers for Medicare & Medicaid Services–defined "never events," hospital-acquired conditions (9.5 percent), and readmissions (44 percent) constitute the bulk of inpatient acute medical and procedural PAC costs, others being PAC costs during the index stay and professional and pharmacy costs associated with these PACs.

PACs represented about 15 percent of the total of $45 billion of annual costs of care in a large national claims dataset after modeling 13 evidence-

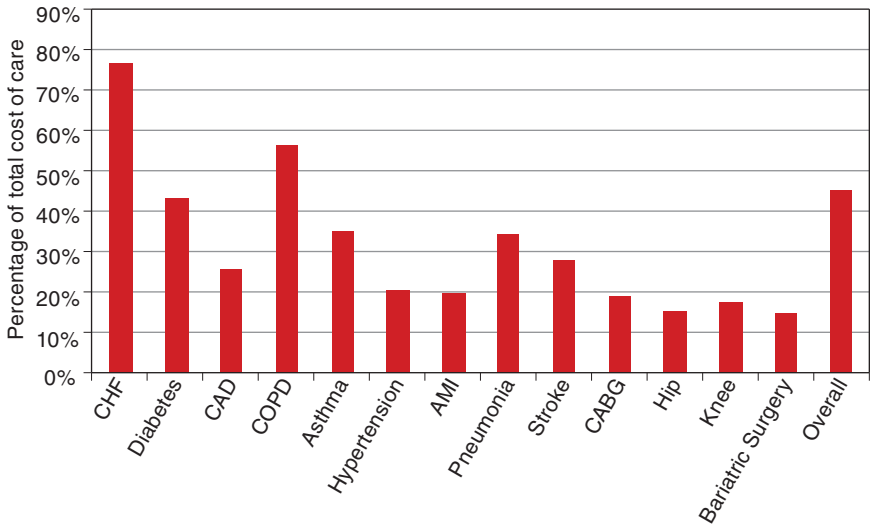

FIGURE 11-2 Cost of care defects as percentage of total costs of care for specified conditions/procedures.
NOTES: AMI = acute myocardial infarction; CABG = coronary artery bypass graft surgery; CAD = coronary artery disease; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; Hip = hip replacement surgery; Knee = knee replacement surgery; Overall = weighted average of costs all care defect as a proportion of all costs of care for the 13 evidence-informed case rates in this figure.

informed case rates.[2] Using best practices quoted in literature, these care defects could be decreased by half (de Brantes, under review) leading to a net savings opportunity of $3 billion (Table 11-4). Reducing these defects to zero would net close to $6.5 billion.

Given that there are 3.5 million covered lives under the age of 65 in this dataset, total potential savings for the 200 million commercially insured in the country could be approximately $165 billion. If these defects were reduced to zero, the U.S. healthcare system could save $355 billion.

Under PROMETHEUS Payment, the incentive for providers to act on and reduce PACs comes directly from the savings found in reducing them. A PAC allowance is calculated and included in each evidence-informed case rate price irrespective of the occurrence of PACs. This amounts to 50 percent of dollars spent today on these conditions. Should complications occur, this portion of the budget serves to offset the actual costs of the corrective treatment (de Brantes et al., 2009). The PROMETHEUS model rewards providers with fewer PAC rates and better-quality scores, giving them an additional allowance as "margin" for provider practice reengineering to improve care delivery. If providers can reduce or eliminate PACs, they can keep the entire allowance as a bonus and significantly improve their profit margin per patient, as the example depicted illustrates (Box 11-1).

One of the important features that makes PROMETHEUS Payment different from other healthcare payment systems and typical pay-for-performance models is its strong incentive for clinical collaboration to ensure positive patient outcomes. In addition to earning the base evidence-informed case rate payments, providers are given the opportunity to earn bonuses through a comprehensive quality "scorecard" tied to the reduction of potentially avoidable complications.

Comprehensive Quality Scorecard

The PROMETHEUS Payment comprehensive quality scorecard contains a variety of metrics built and expanded on the Bridges to Excellence Care Links that track and evaluate care across the entire scope of treatment (Rosenthal et al., 2008). These include scores for a range of items, including (1) each provider's performance in meeting the clinical practice guidelines that define the evidence-informed case rates, (2) positive intermediate outcomes that lead to patient risk reduction and the avoidance of preventable complications, and (3) the patient's satisfaction with care received.

When evidence-informed case rates are paid, a portion of the budget is withheld and then paid out depending on the scores that the providers and their clinical collaborators earn. To create a very clear incentive for clinical

[2] Authors' analysis of a commercially insured population database.

TABLE 11-4 Savings Estimate: Commercially Insured Population

	Total for Six Chronic Conditions[a] (n = 1,361,685)	Total for Seven Acute Medical / Procedures[b] (n = 22,242)	Total for 13 Conditions / Acute Medical / Procedures[c] (n = 1,383,927)	Total for 13 Conditions / Acute Medical / Procedures[c] (n = 1,383,927)
Base cost of care	$6,909,752,883	$736,537,303	$7,646,290,186	$7,646,290,186
Underuse allowance	$687,559,658	$0	$687,559,658	$687,559,658
Evidence-informed cost	$7,597,312,541	$736,537,303	$8,333,849,844	$8,333,849,844
PAC target rate	24%	10%	23%	0%
Allowance for PACs	$3,319,149,766	$95,329,613	$3,414,479,379	$0
Total expected cost	$10,916,462,307	$831,866,917	$11,748,329,224	$8,333,849,844
Net savings opportunity	$2,951,882,322	$95,329,613	$3,047,211,935	$6,461,691,315
Net savings for all commercially insured plan members	$162,353,527,710	$5,243,128,730	$167,596,656,440	$355,393,022,299

[a] These conditions include congestive heart failure (CHF), diabetes, coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), asthma, and hypertension.

[b] These conditions include acute myocardial infarction (AMI), pneumonia, stroke, coronary artery bypass graft surgery (CABG), hip replacement surgery, knee replacement surgery, and bariatric surgery.

[c] These conditions include the 13 conditions listed above.

BOX 11-1
Example of Payments Under PROMETHEUS Payment

A 45-year-old non-insulin-dependent diabetic with obesity and hyperlipidemia is routinely managed by an internist for control of his diabetes. He is also periodically seen by a cardiologist who is in a separate practice from the internist. The patient is adherent with his antidiabetic drugs, the antiplatelet therapy, and his daily statin intake. Given the patient's comorbidities, the severity-adjusted prospective budget for this patient for professional and pharmacy services would include $6,500 for 1 year of management of diabetes, an additional $1,000 for care coordination and provider practice reengineering efforts, and a $3,000 allowance for potentially avoidable costs, for a total budget of $10,500. The patient is managed proactively and does not have any emergency room visits or hospitalizations during the year. He does have an ultrasound of the heart and a retinal exam during the year, which are included in the typical portion of the budget. Overall the actual claims costs for professional and pharmacy services for this patient for 1 year total $6,700. The two physicians are therefore eligible for a "joint" bonus of $3,800.

collaboration, the final scores depend 70 percent on what the individual provider does and 30 percent on what every other provider treating that patient for that condition has done. The value of coordination across settings is critical, particularly in the management of chronic conditions.

Conclusion

Fee-for-episode payments when constructed fairly and with the right framework offer a realistic, rational, and sustainable blueprint for a new healthcare payment system. They could effectively promote and reward high-quality, efficient, patient-centered care; provide common performance incentives for all parties; and create an environment where doing the right things for patients would also allow providers and insurers to do well financially.

In the short term, successful implementation of a bundled payment system would not require any form of organizational change to the delivery system; it would simply require an act of collaboration in the current system. The savings achieved could be divided up among the collaborating providers based on a predefined formula according to the proportion of care they are accountable for. The payer could retain a role of an integrator across providers and as budgets are set prospectively, payment could continue for all fee-for-service claims submitted.

Quarterly, the actual spending could be reconciled against the budgets and bonuses paid for the upside, and any downside risk could be managed

by withholds. In the long term, as bundled payments would become the norm, provider groups would organize to create efficient provider communities that share in the upside and a more structured payment methodology would emerge.

Interestingly, early reports from the PROMETHEUS pilot implementation sites have demonstrated a curious ethical dilemma among hospital administrators against adopting PROMETHEUS. As demonstrated in the report, the savings are achieved primarily by reducing the waste within the healthcare system of which unnecessary hospitalizations are a major portion of the costs. This has caused a financial tension in the current hospital-centric provider organizations. Results from other pilot sites would demonstrate the extent to which bundled payments actually achieve their objective of decreasing costs and improving quality.

EFFECTIVE HEALTH INSURANCE EXCHANGES: AN EXAMPLE

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Health insurance exchanges can be a powerful mechanism for lowering healthcare costs and improving healthcare quality. Evidence from one of the nation's most long-lasting and successful exchanges, operated by the Wisconsin State Employee Health Plan in Dane County, suggests, however, that those savings and quality improvements can be realized only under the following specific conditions:

- The exchange overcomes adverse selection and presents health insurance companies with a pool of potential enrollees whose average or near-average risk profile does not discourage insurers from submitting bids.
- The exchange has a pool of enrollees that is large enough (20 percent or more of those not enrolled in Medicaid or Medicare) to make it economically necessary for insurers to submit bids.
- The enrollees in the pool have a clear economic incentive to select the health insurance plans that submit the lowest risk-adjusted bids, by requiring enrollees to pay most of the extra cost of plans whose risk-adjusted bids are higher.

If properly designed and implemented in all states, exchanges could function as the "public plan" that many in Congress and the President are looking for to discipline the U.S. health insurance market, lowering cost growth so as to "bend the cost curve" in health care and improving quality. Exchanges' cost-reducing and quality-improving potential both stem from

the same incentive they trigger: the incentive of health maintenance organizations (HMOs) and other insurance companies to gain customers, increase revenue, and enlarge profits by reducing the widespread error, waste, and inefficiency that permeate the delivery of health care in the United States.

What Is a Health Insurance Exchange?

An exchange is a formal structure, typically created (and at times managed) by government, which pools buyers of health insurance and gives them unimpeded access to multiple competing health insurance plans. Exchanges provide participating individuals with objective information about:

- Standard benefit packages[3] provided by plans;
- The features of the competing healthcare plans themselves;
- The plans' doctors, clinics, and hospitals;
- The plans' premiums;
- The portion of their premiums enrollees must pay to join a particular plan; and
- The enrollment process.

Through exchanges, individuals enroll in *their* choice of healthcare plan. There is no underwriting; renewal is guaranteed. The plans must agree to this requirement as a condition of obtaining access to the exchange's large pool of enrollees.

The exchanges—not the plans—also decide the "format" for setting premiums, such as whether premiums will be bid on a per-person or a family basis, or whether premiums may be adjusted based on age or other risk factors. Within these constraints, however, the plans set and bid their own premiums.

Finally, exchanges oversee and facilitate the enrollment process, coordinate the premium payments to chosen healthcare plans, and perform a variety of other essential administrative functions.[4]

[3] Exchanges function best when, like the Dane County exchange model, they offer a *single* standard benefit package. However, it may be possible for exchanges to be effective if they offer three or four *different* benefit packages. The higher the number of benefit packages, the greater the administrative complexity and the greater the risk of adverse selection, i.e., individuals and firms choosing a particular benefit package because of their estimate of their own health risk and, therefore, their need for a lesser or greater benefit. Exchanges will break down if they offer too many benefit packages.

[4] These include verifying the solvency of all plans whose bids are accepted, confirming the integrity of each bid price, assuring that the benefits promised are actually delivered, and assuring that the healthcare providers promised are actually available. To pay for all of the functions

Wisconsin's Health Insurance Exchange

Since 1983, the Wisconsin State Employee Health Plan, administered by the Department of Employee Trust Funds, has operated a health insurance exchange for approximately 80,000 state employees. The benefit package, negotiated with the American Federation of State, County, and Municipal Employees and other powerful unions, is uniform across the state and excellent in scope. The benefits are also the same whether an employee enrolls in an HMO, which submit bids in the counties of the HMO's choice, or the statewide fee-for-service Standard Plan. Employees choose during an annual open enrollment period among the "qualified" risk-bearing HMOs—there are at least two HMO choices in almost all counties, and four or more HMOs in many counties—or select the Department of Employee Trust Funds' self-insured Standard Plan (Wisconsin Department of Employee Trust Funds, 2004b). Employees have an incentive to choose a low-cost HMO plan because they pay much (if not most) of the extra cost of any higher-cost HMO plan or the higher-cost Standard Plan.[5] The current formula, in place since 2004, places all HMOs in one of three tiers based on their risk-adjusted premium bids. Tier 1 includes the HMOs that submit the lowest premiums or "close to" the lowest premiums. Tier 2 includes the significantly more expensive HMOs. Tier 3 is occupied by the high-cost fee-for-service Standard Plan. Employees have a clear economic incentive to choose a Tier 1 HMO because their share of the premiums is limited (in 2009) to $31 per month for single coverage and $78 per month for family coverage. A Tier 2 HMO costs more than twice as much per month—$69 for singles, $173 for families. The Tier 3 Standard Plan costs over twice as much again—$164 for singles and $412 for families.

The Dane County Exchange Model

The Department of Employee Trust Funds does not really operate a single statewide exchange; rather, it oversees 72 separate county exchanges. Depending on where a state employee resides, the employee enrolls in a different countywide exchange. The benefits are the same in all counties. The risk profile is comparable across counties. The incentives are identical in each county. The HMO selections, however, vary from county to county

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they perform, exchanges typically charge a small fee, which is built into the premiums paid by enrollees but, of course, retained by the exchanges themselves.

[5]Prior to 1983, employees had no incentive to select a low-cost plan. From 1983 to 2003, the employer (i.e., the State of Wisconsin) paid up to 105 percent of the premium bid by the lowest-cost HMO. Thus, employees paid nothing to enroll in any HMO that bid less than this 105 percent benchmark, but paid the extra cost to join any HMO that bid above the 105 percent level or the extra cost of the high-cost Standard Plan. In the 2003-2005 state budget, the governor proposed and the legislature modified the formula as described above.

(Wisconsin Department of Employee Trust Funds, 2004b). But the biggest contrast lies in the way the exchange operates in Dane County compared to how it works in the other 71 counties.

Dane County, the seat of state government and home to the University of Wisconsin-Madison, was the residence in 2006 for approximately 40 percent of all state employees, or 81,832 of the Department of Employee Trust Funds' covered lives. This large pool exceeded 20 percent of Dane County's entire population not enrolled in Medicaid,[6] Medicare, or other federally financed health insurance programs.

The exchange model in Wisconsin's other 71 counties has the same features: equal benefits, comparable risk profile, and identical incentives. But one essential element is missing: a large pool exceeding 20 percent of the non-Medicaid, non-Medicare population. In no other locale does the Department of Employee Trust Funds come close to having this big a pool in its countywide exchange.

Bending the Cost Curve

The results? In the Dane County exchange model, where enrollees get an annual choice among four excellent HMOs, premium rates are much lower than in the other 71 counties. The Dane County exchange model has monthly HMO premiums in 2009 that average $528 for singles and $1,316 for families. In the other counties, the monthly average premium is $628 for singles and $1,565 for families—an annual average of $1,198 *more* for singles and $2,995 *more* for families.[7]

Of equal importance, the inflation rate for the Dane County exchange model has been substantially less than the inflation rate for the exchanges in the state's other 71 counties. Between 2004 and 2009, the Dane County exchange model's HMO premiums increased 35 percent for singles and 37 percent for families. In the other 71 counties, meanwhile, HMO premiums grew by 42 percent for singles and 45 percent for families—an increase of at least 18 percent.[8]

It is important to note that the Dane County exchange model did not involve any significant alteration of deductibles or copays to achieve these results. By contrast, U.S. employers in general have steadily increased de-

[6] In Wisconsin, the portion of Medicaid that serves low-income families and, beginning in 2009, adults without dependent children is known as BadgerCarePlus (named, of course, after the state animal).

[7] The data for this comparison are drawn from the 2004 and 2009 editions of the Wisconsin Department of Employee Trust Funds publication (Wisconsin Department of Employee Trust Funds, 2004a). The calculations were made by the author.

[8] The data for this comparison are drawn from the 2004 and 2009 editions of the Wisconsin Department of Employee Trust Funds publication (Wisconsin Department of Employee Trust Funds, 2004a). The calculations were made by the author.

ductibles and copays in an artificial effort to contain premium growth. Yet despite this cost shift to workers, Kaiser Family Foundation data indicate that, compared to the most recent 6-year period (2004 through 2009) for the Dane County exchange model, U.S. employers' average premiums rose faster—39 percent for singles and 40 percent for families—during the most recent 6-year period for which we have national data (Kaiser Family Foundation, 2008).

The Lesson for Policy

As Congress and the President forge a compromise on health insurance reform that may require removing the so-called public option (i.e., a government-run, Medicare-like insurance program), Congress and the President should give serious consideration to the Dane County exchange model as an economically sound—and politically acceptable—mechanism for "bending the cost curve."

The model offers what liberal Democrats most want: excellent benefits, a wide choice of health insurers and providers, and lower cost growth. For conservative Democrats and Republicans, it offers a proven way to contain costs without a government-run insurance company; it instead deploys market forces—competition, choice, and incentives—to discipline insurers' premiums.

The Dane County exchange model also promotes quality. To bid competitive premiums, insurers must work closely with doctors, clinics, and hospitals to drive out the errors, waste, and inefficiency that permeate the healthcare system.

VALUE-BASED INSURANCE DESIGNS AND HEALTHCARE SPENDING

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Incentive formularies and other similar benefit designs are used by the majority of public and private insurers to reduce healthcare spending (Kaiser Family Foundation and Health Research and Educational Trust, 2009), yet available data suggest that they achieve their goals inefficiently (Goldman et al., 2007). Copayments are set in a one-size-fits-all style that may create imperfect incentives for patients. Copayments for essential, high-value services are often set too high, and their resultant underuse leads to missed opportunities to prevent and treat morbid and expensive diseases; copayments for nonessential, low-value services are sometimes not set high enough to minimize their unnecessary use.

Value-based insurance design (VBID) is a cost-sharing system that cre-

ates appropriate incentives for patients based on the evidence-based value of specific services. Copayments are set at low levels for high-value services and at high levels for those services that are less valuable. This is radically different from the conventional system of basing copayments on the expense of treatment or medicine. This strategy was first proposed to address the dual goals of quality improvement and cost reduction for prescription drugs (Chernew et al., 2007; Fendrick et al., 2001). VBID may also be applied to nondrug treatments, healthcare providers, and disease management programs, although these have received less attention. As of 2008, VBID plans involving incentive copayment reductions had been implemented by more than 15 percent of large self-insured employers, with virtually all others expressing interest in initiating a VBID plan within the next 5 years (Mercer National Survey of Employer-Sponsored Health Plans, 2008).

Limited but Promising Evidence Supporting VBID

The existing evidence evaluating VBID is limited but supports its ability to improve targeted service use and to potentially improve clinical outcomes and reduce overall healthcare costs. Some promising examples that suggest the broader impact of this new approach include the following:

- In a prospective study, a large employer eliminated copayments for generics, reduced copayments by 50 percent for brand-name drugs, and demonstrated a 3 to 4 percent increase in adherence, as compared to a control firm (Chernew et al., 2008).
- Cost-sharing reductions introduced by Pitney Bowes were associated with a 26 percent reduction in emergency department visits for patients with diabetes and a slower rate of growth of overall healthcare costs than benchmark companies (Mahoney, 2005).
- An HMO eliminated blood glucose monitor copayments for patients with diabetes and observed a doubling of the rate of self-monitoring initiation for patients treated with oral agents and a 0.6 percent reduction in hemoglobin A1c levels for initiators who had poor diabetes control at baseline (Soumerai et al., 2004).

Further supplementing the limited research base are several published, modeling studies (Table 11-5).

Two of these economic models evaluated the impact of eliminating cost-sharing for a standard secondary prevention regimen (beta-blockers, statins, angiotensin converting enzyme inhibitors [ACEI]/angiotensin receptor blockers [ARB], and aspirin) for acute myocardial infarction patients in typical insurance plans and those covered by Medicare Part D (Choudhry et al., 2007, 2008). Both analyses found that while providing full coverage increases drug expenditures, enhanced adherence will reduce mortality and

TABLE 11-5 Published Evaluations of Impact of Cost-Sharing Reductions on Total Health Care Costs

Disease	Drugs	Source	Analytic Method	Payor	Time Frame	Impact on per Patient Total Costs	
						Absolute	Relative[a]
Myocardial infarction	Beta-blockers, statins, ACEI, aspirin	Choudhry et al., 2008	Cost-effectiveness analysis	Medicare	Lifetime	–$2,453	–2%
	Beta-blockers, statins, ACEI/ARB, aspirin	Choudhry et al., 2007	Cost-effectiveness analysis	Commercial	3 years	–$1,181	–6%
High cholesterol at moderate or high risk of coronary artery disease	Statins	Goldman et al., 2006	Claims-based cross-sectional model	Commercial	1 year	–$5,628[b]	–1%
Diabetes	ACEI	Rosen et al., 2005	Cost-effectiveness model	Medicare	Lifetime	–$922	–1%

NOTE: ACEI = angiotensin converting enzyme inhibitors; ARB = angiotensin receptor blocker.

[a] Published VBID analyses provide estimates of *absolute* cost savings from copayment reductions. Because these models assess cost savings over a wide range of time frames, the estimates are not directly comparable. To overcome these differences, *relative* savings can be calculated from the published data.

rates of nonfatal reinfarction, stroke, and congestive heart failure readmission and consequently result in a net cost savings. Other analyses involving eliminating copayments for statins in patients at moderate or high risk of coronary artery disease (Goldman et al., 2006) and ACEI for patients with diabetes (Rosen et al., 2005) have also found substantial total cost savings. Although these analyses used different analytic techniques to evaluate different patient populations, drugs, payer perspectives, and time frames, their results are relatively consistent.

Despite the limitations of the published data evaluating VBID (Fairman and Curtiss, 2008), employers who have implemented these benefit design plans report success from them (Mercer National Survey of Employer-Sponsored Health Plans, 2008), and accordingly there has been substantial hope that the more widespread use of VBID plans will lead to reductions in overall healthcare spending.

Generating National Estimates

Generating national estimates of the impact of VBID scaled to national levels is significantly hampered by the nascent research base in the area—whether based on experimental design or on modeling. However, as a quicker approach, we can use estimates of the relative net savings from existing economic models of copayment reductions, apply these estimates to overall health expenditures for VBID candidate conditions, and test the generated results across a range of plausible relative savings estimates.

Applying the range of expected relative savings generated from existing economic evaluations to current national expenditure for the candidate conditions yields national estimates of health savings from VBID (Table 11-6). Even with a relatively conservative assumption of 1 percent cost reduction from VBID applied to just five conditions, annual savings are estimated to be more than $2 billion.

Limitations of This Approach

There are several potential limitations to this simplistic approach. First, because the true impact of VBID on healthcare expenditure is unknown, this analysis relies on estimates derived from economic models, which in turn are reliant on potentially imperfect estimates of elasticity of demand. Second, the use of relative rates as a basis for calculating national savings estimates may be inappropriate if the cost savings from copayment reductions do not accrue at a constant rate (i.e., if there is violation of a proportional hazards assumption). As observed, relative cost savings range from 1 to 6 percent and are not obviously related to the study time horizon, thereby minimizing this concern. Further, the magnitude of these results is

TABLE 11-6 Projected Annual National Savings from Selective Copayment Reduction for Five Common Chronic Conditions

Disease	Annual National Expenditure (excluding Medicaid) in Billions[a]	Annual Savings from VBID Across a Range of Relative Savings Estimates, in Billions		
		1%	2.5%	6%
Heart disease	$71.99	$0.72	$1.80	$4.32
COPD/Asthma	$44.22	$0.44	$1.11	$2.65
Hypertension	$43.65	$0.44	$1.09	$2.62
Diabetes	$41.83	$0.42	$1.05	$2.51
Hyperlipidemia	$25.34	$0.25	$0.63	$1.52
Total	$227.04	$2.27	$5.68	$13.62

[a] Recent nonoverlapping national estimates of total healthcare expenditures associated with different chronic conditions can be obtained from the Agency for Healthcare Research and Quality's 2006 Medical Expenditure Panel Survey (AHRQ, 2005b).VBID plans are unlikely to be implemented by public plans that have very little cost sharing, such as Medicaid; thus Medicaid's contribution to overall health spending for these conditions should be excluded from national expenditure estimates. Disease-specific estimates, less Medicaid expenditures, for those conditions for which relative cost savings were generated above are presented here.

consistent with those that would be expected from a large, although primary cross-sectional, literature examining the impact of increasing medication adherence on total healthcare spending (Balkrishnan et al., 2003; Sokol et al., 2005), which is the central mechanism by which VBID is believed to work. Third, VBID is unlikely to be used by payers who already set copayments at a very low level. Spending attributable to Medicaid, but not other payers, was removed from the calculations and thus the amount of spending that VBID could potentially affect may have been overestimated. Finally, the national expenditure estimates used for this analysis, by necessity, aggregate groups of conditions into single disease categories, such as "heart disease" and do not account for patients with more than one related condition (for example, copayments for ACEI may be offered to patients with diabetes and coronary disease). Further, these estimates do not distinguish between patients of different disease severities and, thus, the analysis ignores the fact that VBID may have little impact on health spending for some patients within these disease groupings and a large impact for others.

Strategies for Maximizing the Cost Savings from VBID

As more sophisticated modeling exercises are undertaken and the results of ongoing implementations become available, there are several strategies for maximizing the cost savings from VBID that should be carefully explored (Choudhry et al., 2007).

Because patients with a given disease are heterogeneous, the reduction in clinical events that results from more appropriate medication use should be greatest for patients at the highest risk for preventable events (Chernew et al., 2007). As a result, the potential cost savings from selective copayment reduction may be maximized by preferentially reducing copayments for high-risk patients with high-risk conditions, rather than reducing cost sharing for all patients with a given condition or for all patients receiving a particular treatment. In this way, VBID is sensitive to the characteristics of diseases, treatment, and patients. Targeting VBID is more resource intensive than broad-based copayment reductions, and these implications must be fully considered (Choudhry et al., unpublished).

Selectively raising copayments for low-value services may achieve cost-savings by directly reducing the use of unnecessary services. A wealth of data demonstrates the effect of this strategy, which may be particularly important to offset the initial increase in costs from copayment reductions, yet this important part of VBID has not been successfully implemented in practice. Goldman and colleagues modeled the effect of raising statin copayments for low-risk coronary artery disease prevention while lowering them for higher-risk patients and found no change in short-run health plan costs and reduced long-run costs that were similar in magnitude from those obtained by only reducing copayments for higher-risk patients (Goldman et al., 2006). The critical challenge remains to accurately identify the value of individual health services.

Although VBID has been used primarily for prescription drugs, its scope extends to other high-value medical interventions that are influenced by cost sharing. For example, relatively small differences in copayments are associated with substantial changes in mammography rates for women who are recommended to undergo screening (Trivedi et al., 2008). VBID can also be used to promote the choice of different treatment modalities for single diseases or the selection of healthcare providers. For example, the use of medical therapy rather than percutaneous intervention for patients with stable angina or watchful waiting rather than surgery for patients with localized prostatic cancer may be stimulated by copayment changes. Of course, these complex trade-offs often require a nuanced evaluation of clinical circumstance and patient preference. There may, nevertheless, be situations in which the clinical evidence is sufficiently clear to allow benefit design to assist in appropriate treatment choice.

Policy Implications

VBID is a novel benefit design strategy that has attracted much attention in the payer community. While the evidence supporting its ability to improve healthcare quality and reduce health spending has notable limita-

tions, reasonable analyses based on conservative assumptions support the promise of VBID to be a useful adjunct for maximizing healthcare value.

TIERED-PROVIDER NETWORKS AND VALUE

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Aetna

There is broad agreement among clinicians, payers, and employers that our current healthcare system needs improving. Along with cost-related concerns, there are healthcare inefficiencies and quality gaps in care delivery. As consumers take more responsibility for healthcare decision making, the demand for specific information on healthcare quality and costs is gaining momentum.

This paper focuses on Aetna's model of a tiered specialist network that is based on provider performance evaluations. Using certain industry-recognized clinical performance measures and cost efficiency criteria, Aetna analyzes performance of contracted physicians in 12 specialty categories.[9] Those who meet necessary standards receive the Aexcel designation. The success of this approach is predicated on the assumption that Aexcel designation can identify and then encourage patient access to specialists who have shown that they deliver efficient, effective care, which can lead to speedier recoveries, fewer complications, and fewer repeat procedures.

Managing Healthcare Costs

One option for managing healthcare costs has been the growth of consumer-directed health plans that place more decision making and financial responsibility directly on consumers. However, for consumer-directed health plans to be effective, consumers need clear, easy-to-understand information. A response to this call for more transparency of cost and clinical quality has been the growth of tiered networks and consumer decision support tools.

Aetna was the first national health insurer to add a consumer-directed health plan to our comprehensive product mix. This effort was closely followed by an introduction of a specialist designation program, called Aexcel, within a tiered network benefit design. The Aexcel designation is given to specialists who demonstrate effectiveness in the delivery of care based on a balance of certain measures of clinical performance and cost-efficiency. Like

[9]The 12 specialty categories include cardiology, cardiothoracic surgery, gastroenterology, general surgery, obstetrics and gynecology, orthopedics, otolaryngology, neurology, neurosurgery, plastic surgery, urology, and vascular surgery.

tiered pharmaceutical benefits, which set different copayments for generic, brand-name, and nonformulary drugs, tiered networks encourage patients to see Aexcel-designated physicians when in need of specialty care.

Aetna members in all or parts of 23 states and the District of Columbia have online access to clinical quality and efficiency information for Aetna-participating physicians in 12 specialty categories. These specialty categories account for 70 percent of specialty spending and 50 percent of overall medical costs. Specialists who have met certain clinical performance and cost-efficiency standards are designated as physicians that have met these Aexcel standards.

The clinical performance criteria are based on nationally recognized standards, consistent with leading associations, such as the National Quality Forum, National Committee for Quality Assurance, American Board of Medical Specialties, American Osteopathic Association, American Heart Association, American College of Obstetricians and Gynecologists, Agency for Healthcare Research and Quality, Society of Thoracic Surgeons, and Centers for Medicare & Medicaid Services. We also look at external recognition and board certification information specific to the physicians' Aexcel specialty. When evaluating efficiency, we analyze the cost for services and the number and type of services performed. Our review includes inpatient, outpatient, diagnostic, laboratory, and pharmacy claims. We also use risk-adjustment factors to account for differences in the use of healthcare resources.

Early Observations

Provider performance evaluation programs and the growth of tiered networks are starting to shift behaviors among patients, physicians, and other constituencies in health care. For example, we see a continuous increase in use of our Web-based decision support member tools. As a result, we hope that consumer engagement may ultimately lead to increased provider competition leading to greater value for the consumer. As consumers are better able to assess cost and clinical quality (through Web-based tools), they will make decisions that could result in providers improving their cost competitiveness and enhancing the clinical quality of their services.

Already one of the real benefits of Aexcel has been the way we are able to use the data to better engage physicians. We found many physicians do not have access to information about how their practice compares to their peers in the community. Through the Aexcel evaluation and designation process, we are able to work with physician groups to assist them in better understanding their practice patterns and where they might make improvements.

Savings Estimates

Aexcel providers have demonstrated performance that is 1 to 8 percent more cost-efficient than their peers within a given network. This efficiency calculation is derived based on a plan design that considers specialists in the 12 specialist categories who do not receive Aexcel designation as out-of-network providers for Aexcel members. This plan design also assumes no out-of-network benefits. By implementing such a plan design model and assuming roughly 90 percent use of Aexcel-designated specialists (some specialists that may not have met the Aexcel criteria may sometimes be needed for access purposes, consequently 100 percent use probably will not occur), we estimate a customer may save in a range of 3 to 4 percent of its annual claims in its first year, offset by a service charge.

If this type of tiering program were implemented more broadly, we could extrapolate our program savings calculation more broadly. A review of the experience of Aetna members in 2008 and 2009 showed that, on average, Medicare members used twice as many specialist services as their commercial counterparts and that Medicaid members used about the same, or slightly more. Aetna's Medicaid members are primarily under age 65 and not dually eligible.

Based on our experience, we hypothesize that the savings realized on a national scale might be similar or potentially greater than the savings that our commercial customers realize as savings are directly tied to use of specialist providers, which Medicare and Medicaid beneficiaries generally use at greater frequencies than commercially insured members at Aetna. Our estimates apply only to those specialties included in our tiered network design.

Drivers of Success

Aetna's experience has revealed some critical drivers of success that are essential in implementation of tiered networks. We establish a tiered network in markets where

- Significant customer commitment and willingness to collaborate exists,
- The existing Aetna network is sufficiently robust to allow for the selection of a performance specialist network, and
- Variation in cost-efficiency across specialists is significant such that selecting a performance network results in projected financial savings sufficient to warrant a limitation of the network.

Benefit plan design with member incentives that requires the exclusive use of Aexcel-designated physicians for the 12 specialty categories appears

to be more effective in persuading members to use specialists in the tiered networks. Physicians' participation in the designation process greatly contributes to the successful roll out and maintenance of tiered networks. We proactively collaborate with the medical community, including outreach to key medical organizations and local markets' staff engagement with providers in their geographical areas. Our Aexcel selection methodology aligns with the physician contracting process and allows for performance evaluation at the group level rather than individual physician level.

Future Considerations

Even though Aexcel provides a promising model for broader replication, there are still gaps in data that need to be considered as we move forward. The claim-based clinical quality and efficiency information is based on Aetna member claim data only. We support industry-wide data collection initiatives, and when this credible combined data becomes available, we will consider using it in our evaluations. The information used to evaluate physicians does not include all procedures, lab, or pharmacy data—only those for which Aetna has claim data. We strongly encourage physicians to reach out to us with additional data they might have in medical charts that is not available to us through claims data. Some providers and provider groups cannot be evaluated for Aexcel designation due to too few Aetna patient encounters for credible analysis. During the review process, we consider that some doctors may treat patients with more than one health issue or more complex conditions. While we use industry-recognized methods for accounting for this issue, a perfect mechanism that accounts for all variations between patient populations still does not exist.

Peer performance fluctuation—since providers are evaluated against their peers in the same specialty and in their geographical area, changes in peer performance affect performance results of a given provider, which may affect projected savings. Another consideration is that provider contracting and movement (e.g., leaving an existing group, joining a new practice, gaining or losing an affiliation with a hospital) causes fluctuation in network configuration and savings from year to year. This is a characteristic common to all provider networks.

Physician performance measurement initiatives and healthcare transparency are at the top of the list for professional medical organizations, health plans, legislators, consumer rights groups, and providers themselves. Many health plans now operate under the oversight of an external monitor, a third party that regularly audits these selection processes. Recommendations by the external monitor to the health plan are a natural and expected outcome of these audits and are intended to ensure complete compliance with the agreement provisions and review requirements. Health plans are expected to incorporate the recommendations and make adjustments to

their programs as appropriate in a timely manner. Failure to do so may result in disciplinary and financial consequences to the health plan.

Conclusion

The Aetna Performance Network featuring Aexcel-designated specialists is one of a series of industry-leading initiatives from Aetna designed to address rising medical costs, maintain access to quality care, and help consumers make more informed healthcare decisions. Aexcel designation can encourage access to specialists who have shown that they deliver efficient, effective care, which can lead to speedier recoveries, fewer complications, and fewer repeat procedures.

SIMPLIFYING ADMINISTRATIVE COMPLEXITY

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Council for Affordable Quality Healthcare

Recent studies estimate that between $30 billion and $33 billion of unnecessary costs can be extracted from the healthcare industry specifically by automating administration, which is still predominantly a manual and paper-based system (Goldstein, 2009; *U.S. Healthcare Efficiency Index*, 2009). Industry collaboration addressing the use of electronic administrative data are significantly reducing administrative burden for both payers and providers in several areas. These efforts have sparked renewed interest within the national dialogue on health reform.

The Council for Affordable Quality Healthcare, a nonprofit healthcare industry alliance that is helping drive payer collaboration and process consolidation through national, multistakeholder initiatives, is engaged in two initiatives that are producing real results in the marketplace today: the Committee on Operating Rules for Information Exchange (CORE) and the Universal Provider Datasource (UPD). This paper provides an overview of UPD and CORE as two examples of effective industry collaboration with a special focus on a recent study of the actual cost savings, benefits, and national implications of CORE certification.

Universal Provider Datasource (UPD)

UPD replaces multiple organization-specific paper processes with a single uniform system for the collection of provider data that is used for a wide range of purposes including credentialing and provider directories. Through a secure, centralized online service, the system has already reduced the administrative costs associated with credentialing healthcare provid-

ers by almost $90 million per year and eliminated more than 2.3 million legacy paper applications. Participating organizations report significant increases in the efficiency of numerous processes, including outreach to providers, data entry, application storage, and application turnaround time (Figure 11-3). UPD is used by over 745,000 providers and more than 500 public and private organizations throughout the United States, with enrollment increasing by approximately 8,000 providers per month. Use of the data is authorized only by the individual provider. Currently, 12 states have adopted the Council for Affordable Quality Healthcare Uniform Provider Credentialing application as their state standard. The initiative has received strong and broad-based industry support from America's Health Insurance Plans, American Academy of Family Physicians, American College of Physicians, American Health Information Management Association, American Medical Association, Medical Group Management Association, Healthcare Administrative Simplification Coalition, and others.

Although the UPD was originally conceived as a credentialing tool for hospitals and health plans, its value as a data source for other uses is quickly growing. Kentucky has the first state Medicaid agency to participate in UPD for its provider enrollment efforts, with New York, Pennsylvania, Arizona, and Virginia Medicaid agencies now in active discussions. The Council for Affordable Quality Healthcare is also piloting the use of UPD to enable providers to volunteer in the event of a large-scale emergency by allowing electronic forwarding of their data to designated state emergency responder registries. The Massachusetts System for Advanced Registration is the first such program to collaborate on this effort. In addition, hospitals are increasingly using UPD as an administrative simplification solution with almost 50 organizations currently participating. To address the interests of a range of different size hospitals, the Council for Affordable Quality Healthcare is working with natural aggregators such as the Vermont Association of Hospitals and Health Systems to encourage standardization of data collection for credentialing.

Benefits of UPD

- 8–10 day reduction in processing turnaround time
- 97% reduction in volume of paper credentialing packets to new providers
- 36% reduction in processing time for initial credentialing applications
- 19% reduction in annual credentialing costs
- 30% reduction in returned mail due to improved data quality
- Reduced physical storage requirements for paper applications
- Reduced data entry

FIGURE 11-3 Efficiencies reported to the Council for Affordable Quality Healthcare by UPD participants.

Additionally, the Council for Affordable Quality Healthcare is studying the feasibility of expanding the UPD functionality to include a continuous primary source verification process. There is potential for a game-changing approach to primary source verification that will eliminate the need for periodic recredentialing, while improving the quality, timeliness, and consistency of reported primary source data at a lower cost for the industry.

Committee on Operating Rules for Information Exchange (CORE)

CORE is developing and promulgating operating rules built on national standards, such as the Health Insurance Portability and Accountability Act (HIPAA), that are facilitating administrative data exchange and promoting interoperability. The vision of CORE is to enable provider access to healthcare administrative information before or at the time of service using the electronic system of their choice for any patient or health plan. A recent study concluded industry-wide implementation of CORE phase I could save the industry an estimated $3 billion over 3 years (IBM Global Business Services, 2009). Phase I rules target eligibility and benefits data to address the need for providers to receive actionable information when verifying patient coverage. Through subsequent phases, CORE is employing its operating rule concept to other administrative transactions in the claims process. Receiving this information electronically and in real time removes a key barrier to broader adoption of information technology by giving providers valuable information that affects their revenue cycle and creates a sustainable environment encouraging change.

A cost benefit study of CORE phase I rules conducted by IBM revealed that electronic transactions for eligibility verification increased 33 percent in one year for participating health plans (Table 11-7), with an average annual cost avoidance of over $2.6 million (Table 11-8) and total return on investment realized within the first 12 months.

Providers in the same study improved accounts receivables through reducing claim eligibility denials by 10 to 12 percent and saving $2.60 for every electronic verification (Table 11-8). Additionally, the average provider saw patient visit verifications increase by 24 percent while some doubled the number of patients verified.

Results common across stakeholder groups include enhanced flow of information between providers and health plans, and the ability of stakeholders to leverage current infrastructure investments and streamline implementations with partners that are CORE certified (Figure 11-4).

The study analyzed eligibility-related data from 3 months prior to health plan CORE certification and 1 year after, including eligibility verification methods and volumes, claim rejections and denials, customer satisfaction, and cost of adoption. Participants were from various stakeholder

TABLE 11-7 Change in Health Plan Electronic Eligibility Volumes 1 Year After CORE Certification

Method	Percent Change in Volumes (total for all plans)	Largest Percent Change for an Individual Plan	Smallest Percent Change for an Individual Plan	Comments
Real-time electronic eligibility, integrated and "on demand" (using HIPAA 270/271 eligibility transactions)	39%	48%	10%	Largest/smallest percentage changes exclude a plan that did not previously offer real time
Real-time electronic eligibility via direct data entry (using health plan or branded portal product)	30%	57%	18%	• User enters data directly via a portal and receives an immediate response • If via portal product, the vendor sends the inquiry on to the plan as a 270/271 transaction • Plan response meets the CORE rules for availability, content, and response time
Total electronic eligibility (real-time "on demand" plus real-time direct data entry and batch)	33%	74%	15%	Includes batch that was only reported by one plan and decreased when real time was offered

SOURCE: IBM Global Business Services, 2009.

groups with all but some providers CORE certified, including national and regional health plans, clearinghouses, vendors, and providers representing 33 million commercial members and 30 million claims per month.

Potential savings to the industry due to industry-wide CORE phase I certification are substantial, estimated at $3.3 billion over three years beginning in 2010 through 2012 (Table 11-9).[10] The foundation has been established to build on CORE in order to realize those savings. Beyond

[10] The total projection is based on the following assumptions:
- There are approximately 200 million commercial covered lives and 2.6 billion claims per year with approximately 50 percent of claims verified for eligibility.
- Forty percent of current eligibility transactions are electronic.

TABLE 11-8 Benefits to Health Plans and Providers

Stakeholder	Description of Benefit	Cost Benefit
Health plan results*	One-time cost of certification	$542,800
	Annual ongoing costs	$49,200
	Ratio of verification to claims	Up from .63 to .73
	Annual savings due to shift from telephone to electronic	$2,666,800
Provider results	Decrease in claim eligibility denials	10-12%
	Increase in percent of patients verified	24%
	Save 7 minutes per electronic verification	$2.60 per verification

*Percent change first quarter 2008 over first quarter 2007. Plans in the study had high baseline electronic eligibility volumes compared to the industry, so results could be even more substantial for health plans with lower electronic verification rates
SOURCE: IBM Global Business Services, 2009.

- More robust and accessible eligibility methods have enhanced the flow of information between providers and health plans
  - More patient visits are verified
  - Richer content reduces the need for secondary phone verification
  - Real-time methods show most growth
  - Providers need a variety of methods—integrated and "on demand" transactions, as well as direct data entry
- CORE rules help stakeholders leverage investments
  - Common infrastructure supports multiple methods
  - Solutions reusable with new partners
  - Infrastructure will support new transaction types in the future
- Streamlined implementation with CORE partners
  - Better technical skill and resources
  - Less customization, reduced testing
  - Lower cost connectivity using the Internet
- Costs to achieve CORE certification vary widely, depending on how much technology change is required

FIGURE 11-4 Results common to all stakeholders.
SOURCE: IBM Global Business Services, 2009.

phase I, CORE has established the industry structure for expanding the concept of operating rules across all administrative transactions, thereby

- Projected growth in electronic eligibility assumes a baseline increase of 10 percent per year and a CORE-related increase in electronic eligibility by 25 percent per year, which is below the 33 percent average realized in the study.
- Fully loaded savings per electronic vs. telephone transaction equals more than $4.60 ($2.10 for health plans and $2.50 for providers), and this is a conservative estimate.
- A 3 percent increase in the total number of eligibility verifications occurs for every 10 percent increase in electronic eligibility transactions
- Eligibility denial write-offs equal 2.5 percent of net patient revenue.

TABLE 11-9 Potential National Savings Due to Industry-Wide CORE Phase I Certification

	2010	2011	2012	3-Year Total
	(in millions)			
Savings/electronic eligibility volumes				
Estimated number of electronic eligibility transactions, baseline 10% *CAGR	572	629	692	1,893
Estimated number of electronic eligibility transactions with CORE, 25% CAGR	650	813	1,016	2,478
Additional electronic eligibility transactions due to CORE	78	183	324	585
Savings due to additional electronic transactions due to CORE	$359	$843	$1,488	$2,690
Foundation for other administrative healthcare transactions	$90	$211	$372	$673
TOTALS	$449	$1,054	$1,860	$3,363
Other Impacts				
Percentage of visits verified with CORE (target 100%)	55%	61%	69%	n/a
Reduced claim denials due to eligibility	10-12% reduction in denials, 0.5-1.5% of net patient revenue			
Reduced time to set up new information exchange partners	20-80%			
Reduced connectivity costs	To be determined			

*CAGR = compound annual growth rate.
SOURCE: IBM Global Business Services, 2009.

significantly increasing the potential savings. In fact, organizations can leverage the investment already made in CORE to support additional transactions and incorporate newer technologies such as swipe cards and real-time adjudication. As the partners of CORE-certified entities also begin to follow the rules, they can continue to shift transactions from proprietary solutions to standard real-time and batch electronic transactions. Although the full capabilities needed for interoperability will take time to evolve into marketplace reality, real, lasting, and broad change can happen now. For example, many providers are already enhancing the eligibility process by moving to electronic transactions, creating streamlined electronic connections, modifying work flow, and training staff to take advantage of the improved information coming from CORE-certified health plans.

Leveraging Clinical Information System Reform

As the federal government works to implement the Health Information Technology for Economic and Clinical Health Act (HITECH) of the American Recovery and Reinvestment Act, the inclusion of administrative data in the framework defining the "meaningful use" of health information technology is critical to realizing national policy priorities. The use of administrative data in the near and medium term represents an essential and available migration path to the eventual marriage of clinical and administrative data, providing visibility and transparency into the cost-effectiveness of high-quality healthcare services.

Until clinical data becomes more readily available, administrative data remains a key source of information with which to evaluate the progress toward a value-driven system. It can be used to support near-term population-level research priorities, to benchmark quality initiatives, and to support the growing adoption of electronic personal health records and electronic medical records.

Administrative data also serves as part of the foundation needed to promote coordination of care across providers in a health information exchange. For example, market adoption of the CORE transport has enabled one-to-one exchange between providers and payers across the country, creating a basis for one-to-many data exchange relationships that is essential to the proliferation of interoperable systems. In a study by the eHealth Initiative, eligibility inquiries represent some of the high transaction volumes within health information exchange efforts focused on clinical data interchange (eHealth Initiative, 2008). The more the "meaningful use" objectives incorporate current health information technology in federal efforts and/or industry initiatives that have significant momentum, the greater potential for accomplishing federal policy priorities. For example, the CORE technical specifications gaining momentum in administrative data transport, also known as connectivity, were designed to be aligned with the Healthcare Information Technology Standards Panel specifications. CORE also aligned its data content rules with the expected requirements for V5010 of HIPAA. Both of these examples demonstrate the importance of integrating multiple approaches in order to advance adoption. Through agreement on a common transport and its related authentication and security, the full potential of the Internet to serve as a mechanism in changing health care moves closer to becoming a reality.

Finally, administrative cost savings, such as those enabled by CORE, will help providers achieve the benefits they need to embrace the bigger vision of transforming the system since stimulus dollars alone will not be enough to fund the move to broader healthcare information technology needed in the care delivery process.

Final Note

Cross-industry, public–private collaboration is a successful strategy for developing solutions with lasting change. UPD is saving millions of dollars for providers, and its established framework is now being considered as a vehicle for achieving additional industry-wide savings and quality improvements. CORE continues to expand operating rules built on national standards that are helping organizations achieve the interoperability that has eluded the healthcare industry for many years. Continued collaboration focused on both short- and long-term goals, coupled with appropriate policy support through the federal government, is necessary to achieve the widespread adoption of administrative simplification solutions; solutions that promise real reform in both cost efficiency and quality.

TECHNOLOGY AND SIMPLIFYING HEALTHCARE ADMINISTRATION

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The nation is grappling with how to respond to the stark and disturbing realities of too little quality health care and too much waste. America is simply not getting good value for the $2.6 trillion it spends on health care (CBO, 2008a). Of the $2.6 trillion, an estimated $290 billion per year is spent on the administrative costs at care providers and public and private payers (CBO, 2008a).

This article identifies practical ways in which technology can save money by modernizing the administrative and transactional aspects of health care. Its focus is on savings across the healthcare system as a whole—savings that will initially accrue to physicians, hospitals, payers, and government—but ultimately to consumers of health care through reduced premiums, lower taxes, and improved diagnosis, treatment, and outcomes.

Through 12 building blocks, we have identified administrative savings opportunities of $332 billion in national health expenditures over the next decade (UnitedHealth Group, 2009). Of these savings, approximately 50 percent would accrue to providers, 20 percent directly to government in its role as healthcare payer, and 30 percent to commercial payers (UnitedHealth Group, 2009). These savings would likely benefit families and employers through lower healthcare costs. As importantly, they would simplify the lives of patients and eliminate much frustration on the part of doctors and hospitals.

These proposals and the savings estimates included herein are derived from UnitedHealth Group's experience—not just as a large payer and care

management organization, but as one of the largest healthcare technology companies in the United States. UnitedHealth Group's 12,000 technology professionals oversee 30 terabytes of healthcare data, invest 7 million hours in application development, and oversee 60 billion transactions annually. In funding and arranging $115 billion of health care we interact with over 5,000 hospitals and 650,000 physicians across the country.

In this analysis, we limit the discussion to administrative savings, but several of the options raised here easily translate into medical cost savings and better health outcomes. For instance, integrating essential elements of personal health and electronic medical records and using predictive modeling to prescore claims could save an additional $464 billion in medical costs over the next decade (UnitedHealth Group, 2009). None of these savings are included in the $332 billion administrative cost savings figure.

The Options

The ideas in this article are supportive of industry-wide approaches to administrative simplification being advanced by others. While not intended as a comprehensive list of options, we believe the 12 approaches identified provide a strong foundation from which to advance an ongoing administrative simplification agenda. The options we studied fall into three broad categories[11]:

- Use common technology and information standards with enhanced interoperability and connectivity. These reforms leverage the benefits of modern and available technology to reduce administrative waste.
- Use advanced systemwide techniques to improve payment speed and accuracy. Common claims handling and clearing improves claims processing and proactively prescores claims to prevent overpayments.

[11]Each of the options is thoroughly explained in the working paper prepared by the UnitedHealth Center for Health Reform & Modernization titled *Health Care Cost Containmen—How Technology Can Cut Red Tape and Simplify Health Care Administration*. These savings estimates mostly derive from real-life experience at UnitedHealth Group compared or applied to the available opportunity in broader industry as determined through external studies and sources: Council on Affordable Quality Healthcare (IBM Global Business Services, 2009), America's Health Insurance Plans (AHIP, 2006, 2009), Department of Health and Human Services (CMS, 2009), Centers for Medicare & Medicaid Services (CMS, 2008), McKinsey & Co. (LeCuyer and Singhal, 2007), Health Affairs (Casalino et al., 2009), Center for Information Technology Leadership (Kaelber and Pan, 2008), Oliver Wyman (Wyman, 2008). These savings estimates would be phased in assuming improved industry cooperation and broader governmental support.

- Streamline provider credentialing, privileging, and quality designation processes. There are numerous opportunities for deployment of select industry utilities to reduce administrative burdens, particularly on care providers.

In more detail, these three categories can be further broken down into 12 specific recommendations, summarized in Table 11-10. The cost drivers targeted in each of these options include excessive manual processing, duplicate entry of data, paper distribution of transaction authentication and other information, use of intermediaries where they enable excessive process variation, administration associated with medical overpayments, and the costs of process proliferation. In each case, where individual options are interdependent or potentially overlap, we sought to account for possibly duplicative savings estimates. Further, each estimate is prepared net of the costs to administer each option.

Use Common Technology and Information Standards, with Enhanced Interoperability and Connectivity

The necessary reforms for reducing administrative waste require a firm foundation. More rapid adoption of tighter data and transaction standards, starting with CORE phase I and II eligibility and benefit rules, should precede a quick move to tightened standards for exchanging other HIPAA items, including claims submission, claims inquiry, electronic funds transfer, electronic remittance and autoposting, prior authorization/notification, and demographic updates. These new standards should also cover critical encounter data, such as care plan, lab results, conditions, and medication orders. A health information exchange could facilitate the sharing of this information in a fully secure, private environment. The information will then assist care providers and health plans in engaging patients and coordinating care.

From this foundation, a number of other reforms will be necessary and, in fact, are natural extensions of the new commitment to interoperability and connectivity. Using secure swipe card technology—or an appropriate automated link to a doctor's or hospital's systems—the provider can view in real time the patient's eligibility for benefits, and accurately ascertain what will be reimbursed by the insurer/employer and process the claim. Consumers receive monthly health statements electronically instead of an explanation of benefits for each individual service. These statements would combine all healthcare activity and explain clearly to patients which elements their employer/insurer was responsible for. In fact, all providers should be required to receive both claims payments and remittance advices electronically, which eliminates millions of dollars in printing and postage

TABLE 11-10 Summary of Proposed Actions/Recommendations: 2010-2019 Savings

Option	2010-2019 Savings
A. Use of common technology and information standards, with enhanced interoperability and connectivity	
Option 1: Rapidly develop and adopt systemwide data and transaction standards to simplify administration and improve patients' diagnosis, treatment, and outcomes.	Foundational
Option 2: Use of automated cards to validate patient eligibility and benefits at the point of service.	~$18 billion
Option 3: Eliminate explanation of benefits for each transaction and replace with monthly personalized health statements, delivered through secure online portals where possible.	~$14 billion
Option 4: Eliminate paper checks and paper remittance advice in favor of electronic funds transfer and electronic remittance advice.	~$109 billion
Option 5: Implement multipayer transactional capability on practice management information systems.	~$29 billion
Option 6: Expand use of electronic data interchange for claims, eligibility, and coverage verification, notification/administration, and claims status.	~$31 billion
Option 7: Integrate practice management information systems and payer administrative systems.	~$11 billion
Option 8: Integrate essential elements of electronic medical records and personal health records and promote information sharing and use of data to improve prevention and coordination of care.	~$13 billion
B. Use advanced systemwide techniques to improve payment speed and accuracy	
Option 9: Use predictive modeling to prescore claims for coordination of benefits, upcoding, subrogation, fraud and medical management prior to payment.	~$47 billion
Option 10: Create a national payment accuracy clearinghouse to settle underpayments and overpayments.	~$41 billion
C. Streamline provider credentialing, privileging, and quality designation processes	
Option 11: Eliminate multiple payer credentialing and separate hospital privileging. Develop industry utility for credentialing.	~$18 billion
Option 12: Adopt common quality designation standards and create single health information database for quality determination.	~$1 billion

SOURCE: UnitedHealth Center for Health Reform & Modernization. 2009. *Health Care Cost and Containment—How Technology Can Cut Red Tape and Simplify Health Care Administration-Working Paper #2*. Minneapolis: UnitedHealth Center for Health Reform & Modernization. Reprinted with permission from UnitedHealth Center for Health Reform & Modernization.

costs and improves efficiency with bundled payments deposited directly into providers' bank accounts.

These systems require an information system infrastructure that is still far from a reality in most areas of this country. But if the variation arising from individual payers' requirements were meaningfully reduced or eliminated, direct provider Practice Management Information System to payer connectivity would be possible. The resulting system would support a few superregional hub gateways that aggregate payer connectivity and that provide gateways to direct provider connectivity or local geographic aggregator health information exchanges. These gateways would handle the full range of electronic connectivity for payers and could, in addition to providing administrative and financial functions, also provide clinical connectivity and analytics, surveillance, and other services.

Systemwide Techniques to Improve Payment Speed and Accuracy

A national predictive model prescoring service would actively monitor and flag claims prior to payment, leading to a more robust real-time adjudication process for most payments. This service, coupled with the establishment of a national payment accuracy clearinghouse, would reduce the instances of mispayment and administrative friction between payers and providers.

Provider Credentialing, Privileging, and Quality Designation Processes

Using a single standardized process for accreditation and licensing nationwide would reduce costs for physicians and hospitals without compromising quality. The government could facilitate this process by creating an antitrust safe harbor allowing hospitals and health plans to agree on common rules and standards. An industry program would then be developed and deployed for provider credentialing.

Similarly, we could accelerate the adoption of industry-wide rules and systems for data aggregation and measurement methodologies. Health plans and Medicare, working collaboratively with physicians, hospitals, and other key stakeholders, would agree on the infrastructures and processes necessary to efficiently pool local data across health plans and settings of care. A new independent public–private partnership at the national level would lead and accelerate consistency in the processes necessary to achieve this and ensure uniformity across the country. As a result, physicians would be able to access, correct, and use their local aggregated data for performance improvement. Researchers and others would benefit by using the aggregated data for tracking and developing quality improvement interventions. Regarding performance measures themselves, and the

methodologies underlying the process of performance measurement, there currently exists a useful infrastructure upon which to build (e.g., National Quality Forum and the American Medical Association's Performance Consortium for Performance Improvement).

Focusing on Administrative Waste in Context

Administrative programs can have important positive effects on reducing wasteful medical costs. Fraud reduction programs are the most obvious example, where there is ample evidence that Medicare's administrative underinvestment in fact costs taxpayers through avoidable fraud (GAO, 2008a, 2008b, 2009). Health plans—and self-insured employers—also spend administratively on a wide range of programs that provide patients information to support them in making informed choices, and that identify and offer incentives for best practices on the part of physicians and hospitals.

Even so, the Congressional Budget Office estimates that health plans' use of these administrative initiatives can reduce medical costs by 5 to 10 percent (CBO, 2008b). It follows that minimizing administrative costs should not be a public policy goal in isolation, and reform options for new programs should be assessed against their ability to tackle the well-documented problems of fraud, waste, and inappropriate use that affect U.S. health care today.[12]

What's Next?

Our experiences suggest that even where the technology exists and efforts have been made to introduce it, its full potential is not being realized. We believe that shared consistent action is now needed across all payers—commercial and governmental—in partnership with physicians and hospitals calling for tighter data and transaction standards, seamless health information exchanges, automated processes to replace antiquated manual systems, and standardization of such processes as credentialing and quality measurement.

With this commitment, we should be able to identify and support only those value-added administrative programs including those that make a substantive contribution to achieving better care.

The momentum is building. America's Health Insurance Plans, the Council for Affordable Quality Healthcare, the American Medical Associa-

[12] It is for this reason that the Congressional Budget Office argues that "medical cost ratios" (which measure the share of spending on medical costs versus administrative items) may not be good indicators of a plan's efficiency or value (CBO, 2008a).

tion, and others have been working with government and the private sector to address the opportunities outlined herein. Key to that success will be to first lay the foundations of tighter standards and information exchange through a series of public–private partnerships that overcome traditional barriers to implementation—while maintaining the spirit of innovation that rests within the private sector—and will improve health care for decades to come.

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12

Community-Based and Transitional Care

INTRODUCTION

Given the significant dependence of health status on the dynamics of physical, behavioral, and social determinants (WHO, 2009), community-based and transitional care initiatives represent opportunities to improve health through investments in population and public health. Yet, only approximately 6.4 percent of national health expenditures is spent on public and population health (CMS, 2009). Speakers participating in this session identify the critical role prevention and population health as well as quality and consistency in treatment, with a focus on the medically complex, could play in lowering the burden of chronic illness and improving productivity and quality of life.

Kenneth E. Thorpe of Emory University explains the growing need and proliferation of chronic disease management programs as well as greater opportunities for prevention, better care, and long-run cost savings. Whereas the medical home concept has addressed these needs for larger practices, Thorpe offers community health teams (CHTs) as a more viable approach for smaller practices. CHTs include care coordinators, nutritionists, behavioral and mental health specialists, nurses and nurse practitioners, and social, public health, and community health workers. Whereas these trained resources already exist in many communities, working with home health agencies, hospitals, health plans, and community-based health organizations, he suggests that a CHT's added benefit lays in coordination of these resources in the interest of addressing transitional care, palliative care, and prevention services.

Diane E. Meier of Mt. Sinai Medical Center builds on the idea of patient-centered care, describing the growing need for more robust palliative care programs. Reviewing the evidence, she relates that palliative care has been demonstrated to relieve physical and emotional distress; improve patient–family–professional communication and informed, patient-centered decision making; and coordinate and sustain care across the many transitions experienced by patients with complex chronic and serious illness. Meier posits that palliative care not only responds to the needs of this growing population of patients, but translates into better quality care and cost savings. Taken to a national scale, she suggests that palliative care could save $6 billion annually.

In his paper, Jeffrey Levi of Trust for America's Health presents the organization's collaboration with the Urban Institute, which focuses on developing an economic model that demonstrates the impact of certain community-based prevention programs targeting chronic diseases on healthcare costs. Based on their analysis, he reports that an investment of $10 per person per year in proven community-based programs to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than $16 billion annually within 5 years—a return of $5.60 for every $1 invested. Levi acknowledges that these estimates do not reflect the costs of implementation. He additionally notes a paradigm shift in the commitment to prevention efforts, reflected by the American Recovery and Reinvestment Act of 2009 investment of $650 million to introduce community-based prevention programs and study their impacts.

COMMUNITY HEALTH TEAMS: OUTCOMES AND COSTS

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The rising rate of diagnosed and treated chronic diseases, many associated with obesity, is a key factor in rising U.S. healthcare spending (Table 12-1) (Thorpe and Howard, 2006). Patients with chronic disease are estimated to account for 75 percent of overall health spending (CDC, 2008) and 99 percent of Medicare spending (Partnership for Solutions National Program Office, 2004). Multiple morbidities are common: more than half of Medicare beneficiaries are treated for five or more chronic conditions yearly (Thorpe and Howard, 2006). Six chronic ailments account for 40 percent of the recent rise in Medicare spending (Thorpe and Howard, 2006). Despite significant healthcare outlays, chronically ill patients receive just 55 percent of clinically recommended services (McGlynn et al., 2003), and that gap in care may explain a nontrivial portion of morbidity and mortality.

TABLE 12-1 Treated Chronic Disease Prevalence by Body Mass Index (BMI) for Top 10 Health Conditions, Medicare Beneficiaries, 1987, 1997, and 2006

	1987			1997			2006		
BMI distribution	Normal 45.0% (%)	Overweight 36.9% (%)	Obese 13.8% (%)	Normal 40.9% (%)	Overweight 36.3% (%)	Obese 19.9% (%)	Normal 32.4% (%)	Overweight 37.0% (%)	Obese 28.4% (%)
Treated condition (ranked by spending)									
Heart disease	28.6	27.1	27.3	28.9	28.8	33.2	24.7	26.3	30.5
Cancer	11.0	10.7	12.0	14.2	17.5	14.9	13.6	14.0	13.5
Trauma	17.8	15.0	17.9	22.2	19.7	20.2	13.8	14.3	18.1
Hypertension	31.4	42.4	51.7	32.7	44.0	57.0	45.2	56.2	63.0
Arthritis	17.4	23.9	31.8	25.9	30.1	41.7	19.9	23.6	33.5
Diabetes	8.6	14.5	23.3	8.8	15.6	29.2	11.2	19.8	35.9
Mental disorders	9.7	6.0	8.4	19.1	15.1	20.9	20.6	20.7	28.7
Pulmonary conditions	15.9	14.4	14.4	24.5	26.6	25.8	21.0	21.4	27.4
Kidney disease	2.4	1.7	4.0	1.9	2.7	4.1	3.1	2.9	5.3
Hyperlipidemia	3.3	3.2	2.6	9.6	15.6	13.0	28.0	40.0	42.5

NOTE: Authors' tabulations using 1987 National Medical Expenditure Survey and the 1997 and 2006 Household Component to the Medical Expenditure Panel Survey (MEPS-HC), restricted to adults with 6 or more months of Medicare coverage in the survey year, a population overwhelmingly 65 years of age and older, but also including smaller numbers of disabled adults younger than 65 in each year. The MEPS datasets provide nationally representative estimates of healthcare spending, insurance status, use of medical services, sources of payment, and disease prevalence along with a broad set of socioeconomic characteristics for the noninstitutionalized civilian population in the United States.

In response, chronic disease management programs have proliferated over the past decade in the private sector and are common in Medicaid and Medicare Advantage programs. But they are notably absent in traditional fee-for-service Medicare—a crucial gap, given that 81 percent of Medicare beneficiaries are enrolled in traditional fee-for-service Medicare and account for about 79 percent of the program's overall healthcare spending (Orszag, 2007). The Medicare program's fragmented benefit design and reimbursement policies discourage care coordination and disease management. At the same time, these conditions present opportunities for prevention, better care, and long-run cost savings (CBO, 2005). The medical home concept developed by the National Committee on Quality Assurance has attracted attention and interest as a potential solution, but it has limited scalability among the 83 percent of U.S. medical practices that comprise just one or two physicians (GAO, 2008; Sokol et al., 2005). An alternative (and complementary) approach is required to scale coordinated care nationwide. CHTs working with primary care practices, patients, and their families apply key functions and processes used by larger successful physician group practices and integrated plans and replicate them in less resourced and organized settings (Figure 12-1). CHTs include care coordinators, nutritionists, behavioral and mental health specialists, nurses and nurse practitioners, and social, public health, and community health workers. These trained resources already exist in many communities, working for home health agencies, hospitals, health plans, and community-based health organizations.

Evidence of Effectiveness and Cost Savings

Research supports the clinical and economic benefits of comprehensive, multidisciplinary, individualized interventions targeted to medically complex patients. Evidence-based components of CHT practice elements are listed in Table 12-2.

CHTs should include a number of critical foci in order to better address current healthcare needs and control financial costs. Four are discussed below.

Prevention services Taking lessons from the large-scale, randomized diabetes prevention program (DPP) (Department of Health and Human Services, 2001; Knowler et al., 2002; Wing et al., 2004)[1] trials, group-based DPP protocols have been administered in community settings and have produced impressive outcomes, reducing disease incidence at a fraction of

[1]At the time of the Department of Health and Human Services press release, the cost of the DPP was reported to be $174.3 million for 3,234 participants, and average cost of $53,896.10.

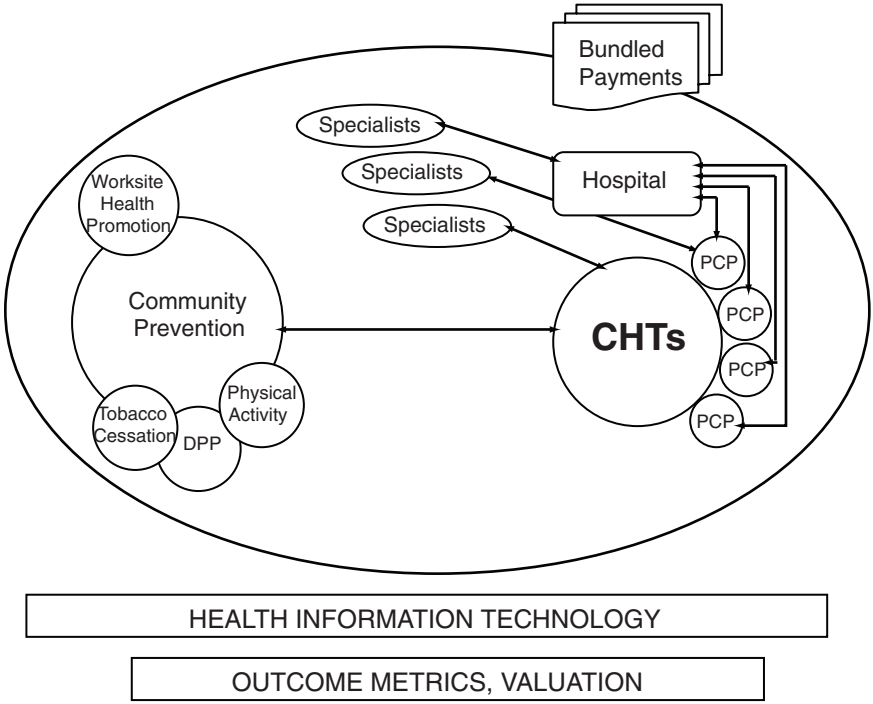

FIGURE 12-1 Intersectoral collaboration: Community health teams.
NOTE: CHT = community health team; DPP = diabetes prevention program; PCP = primary care providers.
SOURCE: Thorpe, 2009.

the cost of clinical intervention (Ackermann and Marrero, 2007). A broader investment of $10/person/year in community-based prevention could yield more than $16 billion in medical cost savings within 5 years (Levi et al., 2008). Indirect cost savings derived from preventing just the top seven chronic conditions could be four times higher, adding another $64 billion (DeVol et al., 2007).

Transitional care Medicare Payment Advisory Commission (MedPAC) has estimated that 18 percent of all hospital stays result in a readmission within 30 days, costing $15 billion annually. Approximately $12 billion is spent on potentially avoidable readmissions (Miller, 2008). A recent analysis by Jencks and colleagues reports that nearly 20 percent of Medicare beneficiaries are readmitted after an index hospital stay within 30 days and 34 percent within 90 days, costing $17.4 billion in 2004 (Jencks et al., 2009). Recent research from the University of Pennsylvania showed a

TABLE 12-2 Evidence-Based Components of CHT Practice Elements

Components	Sources
Targeting the right patients	Brown, 2009; Meyer and Smith, 2008; Peikes et al., 2009
Close integration	GAO, 2008; Meier, 2009; Morrison et al., 2008; Naylor et al., 2004
Medication and testing adherence	McDonald et al., 2002; Osterberg and Blaschke, 2005; Sokol et al., 2005
Transitional care programs	Naylor, 2003; Naylor et al., 1994, 1999; Norton et al., 2007
Palliative care programs	Elsayem et al., 2004; Meier, 2009; Morrison et al., 2008; Norton et al., 2007
Ability to link with and refer to effective community-based interventions	Ackermann and Marrero, 2007; Fielding and Teutsch, 2009; Lurie and Fremont, 2009
Real-time evaluation and information on clinical markers with feedback	Fielding and Teutsch, 2009; Lurie and Fremont, 2009; Morrison et al., 2008
Individualized care plans developed with patients, families, and primary providers	Boyd et al., 2008; Elsayem et al., 2004; Sylvia et al., 2008
Frequent contact with patients (and families) involving education, reminders, coaching, and self-management support	CMS, 2003; Elsayem et al., 2004; Esposito et al., 2009

56 percent reduction in readmissions and 65 percent fewer hospital days for frail elders in transitional care. At the 12-month mark, average costs were $4,845 lower for these patients (Naylor et al., 2004). If this model were scaled nationally with a 10-year investment of $25 billion, savings could reach $100 billion over the same period.

Medication adherence Medication adherence is 50 to 65 percent for common chronic conditions such as hypertension and diabetes (Sherman et al., 2009), and nonadherence is costly, reaching $100 billion/year for hospitalizations alone (Osterberg and Blaschke, 2005). Primary care providers and CHTs must implement proven strategies to increase adherence: patient education, improved dosing schedules, improved communication between providers and patients, and expanded access through additional clinic hours and/or electronic communication (McDonald et al., 2002; Osterberg and Blaschke, 2005). Studies have shown that increased adherence posts a substantial return on investment; for example: 7:1 for diabetes, 5.1:1 for hyperlipidemia, 3.98:1 for hypertension; and a reduction in overall healthcare spending of 15 percent for patients with chronic heart failure (Esposito et al., 2009; Sokol et al., 2005).

Palliative care Spending for beneficiaries in their last year of life is nearly six times more than for those who are not in their last year of life (about a quarter of Medicare outlays). Expenditures rapidly accelerate in the last few months of life, a result of inpatient hospitalizations. In the last month of life, expenditures are 20 times higher than for other beneficiaries (CMS, 2003). Increasing the uptake of palliative care services to just 7.5 percent of hospital discharges (from the current level of 1.5 percent) could save more than $37 billion over 10 years[2] and improve quality of life for patients with advanced illness (Zhang et al., 2009).

Funding and Financial Incentives

Making CHTs available to all beneficiaries enrolled in traditional fee-for-service Medicare would cost $1 billion annually in federal grants.[3] Because reimbursement for crucial elements of effective chronic disease management—education, patient counseling, care coordination, and patient monitoring—is limited in fee-for-service Medicare, payment reforms assume a powerful role in incentivizing the adoption of CHTs and the development of accountable health teams that also include hospitals and specialists. At least three potential payment reforms would provide strong incentives to move toward these integrated approaches and reduce some of the well-publicized problems with Medicare's current fee-for-service payment system.

Primary care reimbursements Medicare payment policy must change to reward coordinated care. A straightforward mechanism is a supplemental per person per month (PPPM) payment for physician practices that establish a formal relationship with a CHT. PPPM payments should increase as the practice successfully incorporates evidence-based components of the patient-centered medical home. Additional financial assistance should support the acquisition and implementation of electronic medical records.

Bundled payments Coordinated, accountable care can also be encouraged through bundled hospital payments, starting with seven high readmission Medicare Severity-Diagnosis Related Groups (MS-DRGs) identified

[2] Authors' estimates based on (Meier, 2009).

[3] This estimate is based on Vermont staffing models of approximately five full-time equivalent (FTE) healthcare providers per 20,000 patients. The 34 million enrollees in fee-for-service Medicare would thus require roughly 1,700 teams of five providers each, at a cost of $500,000 each, totaling $850 million. We have added another 20 percent for administrative costs to derive a total cost of approximately $1.02 billion.

by MedPAC[4] (2007) and, within a 3- to 5-year period, extending to all Medicare admissions. Payments would cover all acute services for the MS-DRG admission, and Medicare covered post-acute (30 days after discharge) spending. Hospitals with above-average readmission rates would receive reduced payments for patients readmitted within the 30-day period. This approach would create strong incentives for hospitals to contract with CHTs to focus on transitional care. The National Quality Forum is working to develop consensus measures focused on preventable hospital readmissions (National Quality Forum, 2006).

Bonus pools Incentives for improving health outcomes and reducing unnecessary care are an essential element of integrated care. Physicians and CHT staff should be eligible for additional payments if key performance measures are met. In addition to preventable readmissions, other quality measures should include improvement in clinically recommended services for common and costly chronic illnesses. To be eligible for bonus payments, health teams would have to meet a three-part test: First, Medicare per capita spending in the hospital service/referral area (as defined by the states in establishing the CHTs) would have to be lower than an established benchmark amount (lower than the average annual per capita growth for the prior 2 to 3 years). Second, readmissions for the seven MedPAC tracer hospital conditions would have to decline. Third, quality measures (starting with the Healthcare Effectiveness Data and Information Set [HEDIS] measures for managing and treating diabetes, hypertension, and other targeted conditions) would have to improve.

Next Steps

To scale CHTs nationally, they should be implemented in the Medicare program within 3 years, supported by federal funds flowing to state governments, which would create CHTs tied to hospital referral areas within or between states. Services within and outside the traditional health system should be covered—integrating public health and primary prevention initiatives (e.g., diet, exercise, weight loss, smoking cessation) with secondary and tertiary prevention (screening, treatment, and care). States could (and should) use CHTs to manage dual eligibles, Medicaid, Children's Health Insurance Program, or other patients. Self-insured firms and private health plans could (and should) contract with CHTs to manage medically complex patients and at-risk clients. Payment reforms that support and promote coordinated care and lower volume of services should encompass changes

[4]The seven conditions are heart failure, chronic obstructive pulmonary disease, pneumonia, acute myocardial infarction, coronary artery bypass graft, percutaneous transluminal coronary angioplasty, and a general category of "other vascular" conditions.

in physician reimbursements, bundled payments, and bonus pools. In addition, patients actively engaged in following their care plan (per their care coordinator) should receive all clinically indicated preventive services and generic drugs (or discounts for the use of brand-name drugs without a generic alternative) with no cost sharing. Improving chronically ill patients' care and health outcomes and reducing healthcare cost growth are intertwined. Each is essential to health reform in the United States. CHTs are a means to those ends and should be an integral part of a changed system.

PALLIATIVE CARE, QUALITY AND COSTS

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Palliative care programs in hospitals are a rapidly diffusing innovation (Goldsmith et al., 2008) and have been shown to both improve quality and reduce costs of care for America's sickest and most medically complex patients (Anderson, 2007; Back et al., 2005; Brumley et al., 2007; Carlson et al., 1988; Elsayem et al., 2004; Morrison et al., 2008; Penrod et al., 2006; Smith et al., 2003; Wright et al., 2008; Zhang et al., 2009). The chronically and seriously ill constitute only 5 to 10 percent of patients but account for well over half of the nation's healthcare costs (Kaiser Family Foundation, 2009; Potetz and Cubanski, 2009; Seow et al., 2009). Palliative care programs are a solution to this growing quality and cost crisis.

What Is Palliative Care?

Palliative care is medical care focused on relief of pain and other sources of suffering for patients with advanced illness and their families. It is appropriate at any point in a serious illness, whether the patient is expected to fully recover, will live for years with chronic illness, or is subject to progressive decline up to the time of death. Unlike hospice, palliative care is not prognosis driven, and eligibility depends strictly on need and likelihood of benefit (Figure 12-2). In contrast, hospice is a form of palliative care covered by a special insurance benefit restricted to patients with a prognosis of 6 months or less who agree to forego insurance coverage of curative or life-prolonging treatments (Figure 12-3).

Yet, until recently, palliative care services were typically available only to patients enrolled in hospice. Now, palliative care programs are increasingly found in hospitals—the main site of care for the seriously ill and site of death for 50 percent of adults on average nationwide (Brown University Center for Gerontology and Health Care Research, 2001). As of 2006, 53 percent of U.S. hospitals and 75 percent of hospitals with more than

New CMS Definition of Palliative Care *Does Not Mention Prognosis*

***Palliative care** means patient and family-centered care that optimizes quality of life* by anticipating, preventing, and treating suffering. Palliative care throughout the continuum of illness involves addressing physical, intellectual, emotional, social, and spiritual needs and to facilitate patient autonomy, access to information, and choice.

73 FR 32204, June 5, 2008
Medicare Hospice Conditions of Participation – Final Rule

FIGURE 12-2 New CMS definition of palliative care.
SOURCE: Medicare Hospice Conditions of Participation—Final Rule. 73 FR 32204, June 5, 2008.

300 beds reported the presence of a palliative care program—an increase of 97 percent from 2000 (American Hospital Association, 2009; Goldsmith et al., 2008). Palliative medicine is now an American Board of Medical Specialties-approved subspecialty with 10 parent boards and the Accreditation Council for Graduate Medical Education has certified the first 55 postgraduate fellowship training programs (American Academy of Hospice and Palliative Medicine, 2009) to develop the workforce necessary to meet

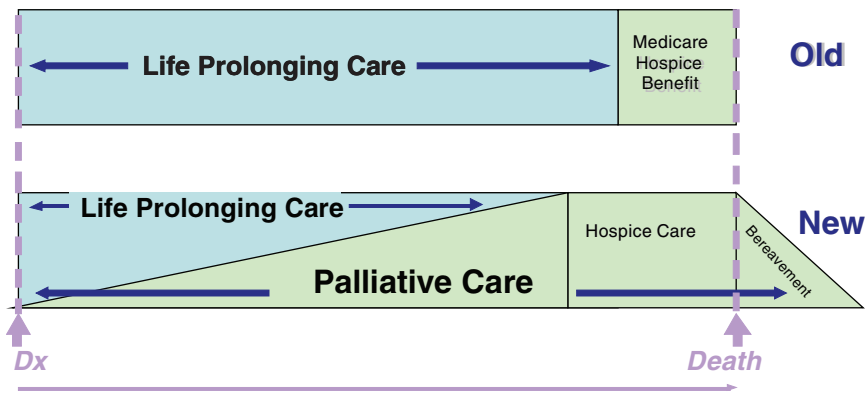

FIGURE 12-3 Conceptual shift for palliative care.
SOURCE: Reprinted with permission from the National Consensus Project. NCP, 2004.

the nation's needs (Casarett, 2000; Portenoy et al., 2006; Scharfenberger et al., 2008; Scott and Hughes, 2006; von Gunten, 2006).

As outlined by the National Quality Forum (2006) and the National Consensus Project for Quality Palliative Care (2004), the essential structural elements of hospital palliative care include an interdisciplinary team of clinical staff (physician, nurse, and social worker); staffing ratios determined by hospital size; staff trained, credentialed, and/or certified in palliative care; and access and responsiveness 24 hours per day, 7 days per week. These elements are designed to focus on better outcomes for patients through relief of physical and emotional distress; improved patient–family–professional communication and informed, patient-centered decision making; and coordination and continuity of care across the many transitions experienced by patients with complex chronic and serious illness (Morrison and Meier, 2004; National Consensus Project for Quality Palliative Care, 2004; National Quality Forum, 2006).

Why Palliative Care?

Despite enormous expenditures, studies demonstrate that patients with serious illness and their families receive poor quality medical care characterized by untreated symptoms, unmet personal care needs, high caregiver burden, and low patient and family satisfaction (Field and Cassel, 1997; Kaiser Family Foundation, 2005, 2009; Teno et al., 2004; Thorpe and Howard, 2006). Of the $426 billion spent by Medicare in 2008, 30 percent ($128 billion) was spent on acute care (hospital) services. A very small proportion—10 percent—of the sickest Medicare beneficiaries account for fully 63 percent of total program spending, at more than $44,220 per capita per year (Kaiser Family Foundation, 2005, 2009).

How Does Palliative Care Reduce Costs?

Palliative care programs target the cost drivers that lead to increased use of hospitals, specialists, and procedures, and promote delivery of coordinated, communicated, patient-centered care. This is done in the following ways:

- These programs address pain and symptoms that increase hospital complications and lengths of stay.
- Palliative care teams meet with patients and families to establish clear care goals.
- Treatments are reviewed to align with those goals, and those that do not meet them are not initiated or suspended.
- Patients and their teams develop comprehensive discharge plans.

This coordinated effort in palliative care programs reduces hospital costs, readmissions, and emergency department visits. Costs go down because fewer deaths occur in the hospital as a consequence of better family support, care coordination, and home care and hospice referrals; more admissions go directly to the palliative care service instead of a high-cost ICU bed; patients not benefiting from an ICU setting are transferred to more appropriate and lower-intensity settings; and nonbeneficial or futile imaging, laboratory, specialty consultation, and procedures are avoided (Figure 12-4). Controlled trials in Europe (Higginson et al., 2002; Jordhoy et al., 2000) and multisite studies in the United States suggest that the savings associated with palliative care can be substantial (Anderson, 2007; Back et al., 2005; Brumley et al., 2007; Carlson et al., 1988; Elsayem et al., 2004; Gomes et al., 2009; Harding et al., 2009; Higginson, 2009; Higginson and Foley, 2009; Morrison et al., 2008; Penrod et al., 2006; Smith and Cassel, 2009; Smith et al., 2003; Taylor et al., 2007; Wright et al., 2008).

Impact of Palliative Care on Annual Healthcare Costs

Based on recent data (Morrison et al., 2008), the per-patient costs saved by palliative care consultation are $2,659. Approximately 2 percent

	Live Discharges			Hospital Deaths		
Costs	Usual Care	Palliative Care	NetΔ	Usual Care	Palliative Care	NetΔ
Per Day	$830	$656	-$174*	$1,484	$1,110	-$374*
Per Admission	**$11,140**	**$9,445**	**-$1,696****	**$22,674**	**$17,765**	**-$4,908****
Laboratory	$1,227	$803	-$424*	$2,765	$1,838	-$926*
ICU	**$7,096**	**$1,917**	**-$5,178***	**$15,542**	**$7,929**	**-$6,613***
Pharmacy	$2,190	$2,001	-$190	$5,625	$4,081	-$1,544***
Imaging	$890	$949	$58	$1,673	$1,540	-$133

FIGURE 12-4 Hospital palliative care reduces costs: Cost and intensive care outcomes associated with palliative care consultation in eight U.S. hospitals.

[a] $P < .001$.

[b] $P < .01$.

[c] $P < .05$.

SOURCE: Morrison, R. S., J. D. Penrod, J. B. Cassel, M. Caust-Ellenbogen, A. Litke, L. Spragens, and D. E. Meier. 2008. Cost savings associated with U.S. hospital palliative care consultation programs. *Arch Intern Med* 168(16):1783-1790.

of all 30,181,406 annual hospitalizations in the United States end in death (AHRQ, 2002). Assuming that palliative care programs should be seeing most patients who die in the hospital, plus the approximately triple this number of hospitalized patients with advanced and complex chronic illness who are discharged alive (Siu et al., 2009), at scale, palliative care programs should be seeing more than 5 to 8 percent of all hospital discharges (patients who die plus very sick patients discharged alive). At present (2009) palliative care programs exist in 53 percent of U.S. hospitals (Goldsmith et al., 2008), and penetration reaches approximately 1.5 percent of all discharges, translating only to about $1.2 billion in avoided costs annually.[5] Once access to palliative care is at scale (when more than 90 percent of U.S. hospitals have a program reaching at least 7.5 percent of discharges), annual costs can save approximately $6 billion (Goldsmith et al., 2008; Morrison et al., 2008; Siu et al., 2009).

How Does Palliative Care Improve Quality?

Palliative care programs improve physical and psychological symptoms, family caregiver well-being, and patient, family, and consulting physician satisfaction (Casarett et al., 2008; Elsayem et al., 2004; Fallowfield and Jenkins, 2004; Fellowes et al., 2004; Higginson et al., 2003; Jordhoy et al., 2000, 2001; Lilly et al., 2000; Manfredi et al., 2000; Morrison et al., 2003; Rabow et al., 2004; Ringdal et al., 2002; Smith et al., 2002). Employing interdisciplinary teams of physicians, nurses, social workers, and additional personnel when needed (chaplains, physical therapists, psychologists, and others), palliative care teams identify and rapidly treat distressing symptoms that have been independently shown to increase medical complications and hospital use (Jordhoy et al., 2000; Manfredi et al., 2000; Morrison et al., 2003, 2009). Palliative care teams meet extensively with patients and their families to establish appropriate and realistic goals, support families in crisis, and plan for safe transitions out of hospitals to lower-intensity settings (home care, hospice, nursing home care with hospice, or inpatient hospice care). Communication about prognosis and patient goals by a dedicated team with time and expertise leads to decision making, clarity of the care plan, and consistent follow-through. Such discussions demonstrably reduce costs and improve family satisfaction and bereavement outcomes (Wright et al., 2008; Zhang et al., 2009). Finally, because of the assistance that they provide to already time-pressured physicians, palliative care programs are valued and used by referring physicians.

[5] 1.5 percent of all discharges × 30,181,406 annual discharges = 452,721 patients seen by a palliative care consultation service × $2,659 saved per case = $1.2 billion costs avoided now annually.

Assuring Access to Quality Palliative Care for All Americans in Need

Palliative care as a growing innovation holds much more than the promise of cost savings among the highest need and most expensive patients in the healthcare system. Most significantly, this form of care provides for better quality care for those patients most in need of broad-based support during very difficult battles with illness. Even so, palliative care still faces significant challenges in reaching all Americans with advanced or serious illness. Variability in access to palliative care based on geographic location, hospital size, and ownership limit access to palliative care (Billings and Block, 1997; Goldsmith et al., 2008). Lack of physician and nursing education (Billings and Block, 1997; Weissman and Block, 2002; Weissman and Blust, 2005; Weissman et al., 1999) and inadequate compensation and loan forgiveness opportunities to attract young professionals into the field translate into fewer team members qualified to deliver these coordinated services. Financial disincentives discouraging workforce development and organizational commitment, lack of regulatory and accreditation requirements for quality palliative care across healthcare settings, and lack of an evidence base guiding quality care (Gelfman and Morrison, 2008) represent additional barriers to the broad-based availability of palliative care.

In response, three categories of policies aimed at increasing access to quality palliative care have emerged in the United States: (1) workforce; (2) research to build the evidence base necessary for quality care; and (3) financial and regulatory incentives for healthcare organizations and providers across the continuum to develop and sustain access to quality palliative care services (Table 12-3). As the national focus on healthcare reform continues, attention to expanding access to palliative care is a priority, because it is targeting not only the most expensive patients to care for but those most in need of higher-quality services.

COMMUNITY PREVENTION AND HEALTHCARE COSTS

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Trust for America's Health

In July 2008, Trust for America's Health contracted with the Urban Institute to assess the effect on healthcare costs of certain proven community-based prevention programs that targeted some of the most expensive chronic diseases. As detailed in *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities*, we found that a small strategic investment in disease prevention could result in significant savings in U.S. healthcare costs and improvement in outcomes.

We found that many effective prevention programs cost less than $10

TABLE 12-3 Policies to Improve Access to Quality Palliative Care

Improve Access to Palliative Care
1. Workforce
Physician workforce capacity
• Assure postgraduate training (fellowship) opportunities for physicians via exemption to the cap on Graduate Medical Education (GME) slots for this area of workforce shortage.
• Distribute currently unused GME slots to accredited palliative medicine fellowship training programs.
Educational and training capacity
• Support young medical and nursing faculty entering the field through HRSA Title VII-supported career development awards (similar to Title VII Geriatric Health Professions Training Programs)
Offer incentives through educational loan forgiveness for physicians and advance practice nurses to enter the field.
2. Financial and regulatory incentives for delivery of palliative care services for hospitals, nursing homes, and providers receiving Medicare or Medicaid payments.
• Provide incremental payments to hospitals and nursing homes providing palliative care services to patients in high-need categories, with phase in of financial penalties over several years for failure to provide such services.
• Require access to quality non-hospice palliative care services for eligible beneficiaries in all proposed models of payment reform (including bundled payments, accountable care organizations, and the patient-centered medical home).
• Direct the Joint Commission and other deemed regulatory bodies to develop a voluntary certificate program for quality palliative care programs.
• Palliative care services must meet quality guidelines as a condition of accreditation and payment as a regulatory requirement for healthcare organizations receiving Medicare and Medicaid financing.
Improve Quality of Palliative Care
1. Health professional training and certification
• Assure adequate numbers of palliative care teaching faculty in the nation's nursing and medical schools.
• Mandate demonstration of core palliative medicine competencies at both undergraduate and postgraduate medical education levels as a condition of accreditation.
2. Research to strengthen the evidence base
• Designate funding for the National Institutes of Health (NIH), AHRQ, and the Veterans Administration (VA) to conduct research on prevention and relief of pain and other symptoms, and to improve communication, decision support, and care transitions in advanced illness.
• Designate funding for NIH Career Development (K) Awards in palliative care in AHRQ, the VA, and all appropriate NIH institutes.
• Direct the NIH, AHRQ, and VA to develop research centers of excellence in palliative care.
• Direct comparative effectiveness research funding to evaluate palliative care delivery models, alternative approaches to pain and symptom management, and effective means of communication, decision support, and transitional care coordination for seriously ill patient populations and their families.
• Direct the Secretary of Health and Human Services to conduct demonstrations and pilot projects testing hospital-, nursing home-, and community-based nonhospice palliative care programs for patients with multiple chronic conditions, functional decline, and/or serious illnesses.

per person annually, and these programs have succeeded in lowering rates of diseases that are related to physical activity, nutrition, and smoking. The evidence shows that implementing these programs in communities reduces rates of type 2 diabetes and high blood pressure by 5 percent within 2 years; reduces heart disease, kidney disease, and stroke by 5 percent within 5 years; and reduces some forms of cancer, arthritis, and chronic obstructive pulmonary disease by 2.5 percent within 10 to 20 years (Trust for America's Health, 2008). And the financial benefits are just as impressive: an investment of $10 per person per year in proven community-based programs to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than $16 billion annually within 5 years—a return of $5.60 for every $1 invested.

The Policy Context

The discussion about prevention efforts in health care has been focused away from the financial implications and much more on the health benefits to people. In fact, it is common knowledge that many prevention efforts in fact do *not* save money, even though they have impressive health outcomes. Despite this focus in public health circles, the national debate is one that necessitates consideration of cost and dollars saved. To that end, we focused on certain types of conditions and interventions that would actually yield a positive return on investment. In so doing, we hoped to demonstrate that prevention can make sense in terms of dollars *and* in terms of health outcomes. Furthermore, we want to push the healthcare discussion from inside the four walls of the clinic to what is happening in communities. The high-cost conditions that plague the healthcare system can be effectively addressed through supporting healthy communities, and those prevention efforts will cost far less than addressing the problems after disease has set in.

While discussions of healthcare coverage are critical, achieving good health outcomes requires healthy communities, not just healthy individuals. What precedes healthcare coverage and clinical intervention is just as important, especially since the primary drivers of health are in people's homes and in their communities. Health behaviors and environment drive 70 percent of patient health, yet as a country, we spend less than 5 percent on prevention efforts that would target these areas directly (CDC, 2000) (Figure 12-5).

But as we focus on community-based solutions, we are quickly struck by the relationship between disparities in chronic diseases and disparities in the health of communities. Unfortunately, those same poor communities where we see such high-cost health care are also least equipped to support healthy lifestyles. If you are told to eat healthily and you live in a

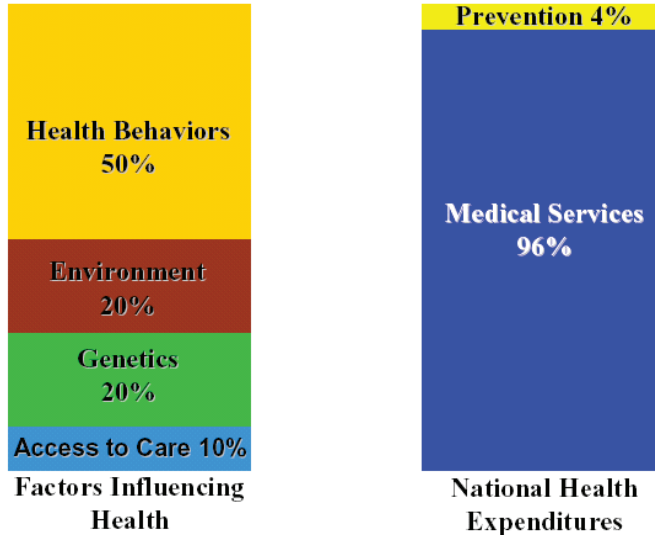

FIGURE 12-5 Imbalance of spending.
SOURCE: Reprinted with permission from Blue Sky Initiative, adapted from University of California at San Francisco, Institute of the Future.

neighborhood that does not have a supermarket, this limits your ability to eat healthily regardless of your desire to do so. If your doctor prescribes walking as exercise, you will have difficulty if you live in a neighborhood that does not have sidewalks or where the streets are unsafe. So, even as we discuss the implications of community-based prevention efforts, the issues here are complex and far reaching, and they require an investment commensurate with the role of communities in driving health.

What Is Community-Based Prevention?

Community-based prevention can take many forms, which makes understanding these efforts as part of healthcare reform challenging. This study was based on a systematic review of the literature conducted by the New York Academy of Medicine. Examples of the types of programs that reflect this community-based approach include:

- Shape Up Somerville: School food, school activities, parent and community outreach, restaurants, safe routes to school.
- Healthy Eating Active Communities (HEAC): Schools, after school, neighborhoods, healthcare sector, marketing changes.
- YMCA Pioneering Healthier Communities: Community coalitions, policy changes, leverage other funding.

What these efforts share is that they are community based, they leverage existing resources in their communities toward supporting healthy behaviors and healthy environments, and they are employing evidence-based prevention practices.

The Research Effort

In the economic model developed for this report, we focused on those diseases that were expensive, chronic, and most amenable to community-based prevention. In looking at the interventions themselves, we studied the types of intervention, their effects on disease, and their associated costs. The data for this study came from a literature review and the Medical Expenditures Panel Survey (MEPS), pooled from 2003-2005. While the literature supports that community-based interventions can have an impact of 10 percent on negative health outcomes, we modeled conservatively at 5 percent. Similarly, the data regarding per capita costs were widely variable, so we chose a conservative estimate of a cost of $10 per capita for these interventions. Unfortunately, one of the challenges we faced during the research was the wide variation in quality of studies and in information available about the prevention efforts themselves, their costs, and their impacts.

Community-Level Interventions Can Reduce Chronic Disease Levels

Again, the findings from the research are groundbreaking. Regardless of chronic condition targeted, most interventions targeted fell into four categories: physical activity, nutrition, obesity, and smoking cessation. In each case, the community-based prevention efforts reduced or delayed the incidence of disease. The current healthcare system focuses on management of disease or disability, but here, primary prevention delays or prevents disease or disability all together. These findings are more significant when you consider that these chronic diseases have not been found to shorten life, only to make a larger proportion of life under the influence of disease. While some suggest that prolonging life is only pushing costs into the future, there is growing evidence to support the compression of morbidity—the extension of healthy life expectancy rather than the extension of total life expectancy by compressing *chronic disease and disability* into a smaller proportion of life. Thus there is a potential net savings in healthcare costs even as life is extended.

Related to this report's findings, the need for prevention efforts will only continue to grow. Trust for America's Health just released its annual obesity report, where we found that, on average, among the 55 to 64 age cohort, the obesity rates are 10 percent higher than the current 65 and older age cohort. The opportunity is ripe for prevention efforts aimed at

this 55 to 64 cohort to obviate some of the high costs of obesity-related disease that we will certainly be seeing as they age into retirement and go onto Medicare.

The Numbers

Again, an investment of $10 per person per year in proven community-based programs to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than $16 billion annually within 5 years—a return of $5.60 for every $1 invested. Out of the $16 billion, Medicare could save more than $5 billion; Medicaid could save more than $1.9 billion; and private payers could save more than $9 billion within 5 years (Table 12-4). Within 10 to 20 years, the United States could recoup more than $18 billion, a return on investment of $6.20 for every $1 (Table 12-5).

Caveats and Limitations

The estimates generated are likely to be conservative. As noted above, the model assumes costs in the higher range and benefits in the low range. Furthermore, the model does not take into account any costs of institutional care. Chronic disease often leads to disability or frailty that may necessitate

TABLE 12-4 Net Savings by Payer: 5 Percent Impact at $10 per Capita Cost (in 2004 dollars)

	1-2 Years	5 Years	10-20 Years
Medicare	$487 million	$5.213 billion	$5.971 billion
Medicaid	$370 million	$1.951 billion	$2.195 billion
Private Payers/Out of Pocket	$1.991 billion	$9.380 billion	$10.285 billion

SOURCE: Reprinted with permission from Trust for America's Health, 2008.

TABLE 12-5 Net Savings: 5 Percent Impact at $10 per Capita Cost (in Millions) (in 2004 dollars)

	Short	Medium	Long
U.S. (Mid-term ROI: 5.60:1)			
Care Cost Savings	$5,784	$19,479	$21,387
Intervention Costs	$2,936	$2,963	$2,963
Net Savings	$2,848	$16,543	$18,451

Short Run: 1 to 2 Yrs. • Medium Run: 5 Yrs. • Long Run: 10 to 20 Yrs.
NOTE: ROI = return on investment.
SOURCE: Reprinted with permission from Trust for America's Health, 2008.

nursing home care, so exclusion of these costs may underestimate the return on investment in reduction of disease.

While the model is still being elaborated to address many of these issues, limitations of the model as reported here include the following:

- The model assumes a sustained reduction in the prevalence of diabetes and hypertension over time. The literature on the duration of the effects of intervention is small, with effects usually reported over no more than 3 to 5 years.
- The model assumes a steady-state population. This model is based on current disease prevalence and does not take into account trends in prevalence. For example, diabetes is increasing while heart disease is declining, but the model estimates savings based on the current prevalence.
- While the model does take into account competing morbidity risks, it does not take into account changes in mortality. However, in the short (1 to 2 years) and medium run (5 years), changes in mortality are likely to be small.
- The model calculates all savings in 2004 dollars. Thus, it does not take into account any rise in medical care expenditures or changes in medical technology.
- The model incorporates only the marginal cost of the interventions and does not reflect the cost of the basic infrastructure required to implement such programs.
- The intervention effects do not account for variations in community demographics such as distribution of race/ethnicity, age, gender, geography, or income. The intervention effect is treated as constant across groups.

Conclusion

These findings have already translated into healthcare policy reform. The stimulus bill invested $650 million to introduce community-based prevention programs and study their impacts. Even so, the paradigm shift is significant. To paraphrase the President, we want to reach people before they set foot in a doctor's office. However, the community prevention programs that make that possible push the understanding of many about what healthcare interventions are. Representatives in both houses of Congress have raised questions about the "amorphous" definitions of these prevention programs. After all, these efforts are not about buying medicine or introducing a new clinical treatment, so how can they be real? How can they make a difference in healthcare spending and in real health outcomes for Americans? But with this report and the growing consensus around evidence-based, targeted investment in prevention, the viewpoints of many

of these policy makers and advocates have started to shift. The evidence is there, and it is growing, but we still face many challenges.

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13

Entrepreneurial Strategies

INTRODUCTION

Stemming from innovation's significant value to the healthcare industry, entrepreneurial strategies to lower costs and improve outcomes, such as telehealth applications and retail clinics have recently emerged, and may have the ability to lower costs and improve outcomes. Technology has facilitated patient self-management at home and remote provider consultations (Cady et al., 2009; Handley et al., 2008; Marziali, 2009). Development of retail clinics and use of community health workers has expanded access to care (AHRQ, 2008; Ballester, 2005). In this final session focusing on strategies that work, the presenters consider entrepreneurial strategies and innovations, offering yet another host of pathways for increasing efficiency, enhancing quality, and containing costs.

Jason Hwang from Innosight applies the concept of disruptive innovation to healthcare delivery, discussing simplifying technologies to enable care by lower-cost providers working in lower-cost settings. Hwang argues that the healthcare system has been moving away from centralized service delivery to a gradually more decentralized system. Increases in outpatient care in ambulatory settings, the rapid expansion of retail clinics staffed by nurse practitioners, and advances in telehealth and home monitoring are some examples of this trend. Hwang offers that opportunity exists for incorporating unlicensed laypeople to assist with care provision. In South America, community health workers, also known as *promotores*, have played an important part in South America's model of care, and Hwang

suggests that there is anecdotal evidence of successful use of community health workers across the United States.

N. Marcus Thygeson from HealthPartners provides another example of promising practices from the business world in the form of retail clinics. Introduced in 2000 to deliver a limited set of simple clinical services in a convenient retail setting, retail clinics are typically staffed by mid-level providers with remote physician oversight. As the average cost per episode in a retail clinic is $55 less than in physician offices or urgent care clinics and $279 less than in emergency departments, Thygeson proposes that, if scaled to a national level, these clinics could yield savings as high as $7.5 billion. However, he simultaneously notes that these savings could be lower than predicted given some of the limitations of retail clinics today, including their congregation in urban areas and their narrow field of offered services. The actual savings may also be lower if established providers maintain their revenue by increasing the number of visits per episode for their remaining patients, or charge more for non-retail clinic-eligible services. Even so, he believes that retail clinics may present a provocative competitive force in the healthcare market to encourage lower operational costs and prices to consumers.

Adam Darkins from the Department of Veterans Affairs (VA) discusses the technological innovation that has dramatically changed health care for thousands of patients served by the VA: home telehealth. While routine outpatient clinic appointments remain the mainstay in managing chronic disease in the United States, he suggests that their effectiveness and cost-effectiveness have not been substantiated by comparative effectiveness studies. Patients with chronic conditions usually deteriorate at variable times before or after a routine clinic visit. Darkins suggests that the "just-in-case approach" is outdated and relatively ineffective. Home telehealth devices have been routinely available to continually monitor patients with chronic conditions and transmit vital signs and other disease management data to clinicians remotely located in the hospital and clinic. The VA, in Darkins' words, has shifted from the just-in-time approach to the just-in-case approach with the implementation of an initiative called care coordination/home telehealth. In addition to better outcomes, such as a 19 percent reduction in hospital admissions and a 25 percent reduction in lengths of stay, the cost savings achieved by the program have been significant. If taken to the national level and assuming that the same level of savings could be achieved in non-VA health systems, Darkins believes that care coordination/home telehealth implementation in targeted areas could translate to cost savings of over $2 billion or between 22 percent and 48 percent of healthcare costs for the target population.

DECENTRALIZING HEALTHCARE DELIVERY

Jason Hwang, M.D., M.B.A.
Innosight Institute

Disruptive innovation has been fundamental to lowering the cost of products and services in nearly every industry, and a similar transformation in health care is long overdue. Put succinctly, disruptive innovation employs simplifying technologies to enable healthcare delivery by lower-cost providers working in lower-cost settings. This process corresponds to a gradual *decentralization* of care delivery, as the provision of care moves away from the legacy system that revolves around centralized institutions of high-cost expertise.

The Centralization of Health Care

In the early twentieth century, several factors led to a consolidation of healthcare delivery in the modern hospital. Advancements in medical technology had made medical care much more complex and expensive, such that only large institutions could afford to own and operate the new diagnostic and life-sustaining equipment. In addition, professional round-the-clock nursing care had demonstrable value and was available to most people only in a hospital setting. At the same time, the practice of medicine was largely dependent upon the intuition of a limited number of well-trained physicians, and most clinical outcomes were the result of their trial-and-error experimentation. Optimizing good outcomes necessitated employing and training many specialists within the same institution, and hospitals became the sole source of solutions to complex medical problems.

In fact, this pattern of consolidated expertise reflects the early stages of many industries, as it represents the optimum way to maximize use of costly and scarce resources when production outcomes remain largely uncertain. However, as hospitals' capabilities and functions have expanded over time, they have been slow to spin off more routine work to new institutions of care, a process that would typically lower per unit costs.

Nevertheless, an increasing amount of clinical care has been offloaded to less costly providers working in decentralized venues. The trend toward outpatient care in ambulatory settings has existed for decades, but a more recent example is the rapid expansion of retail clinics staffed by nurse practitioners, at least in states that allow nurse practitioners to provide care without direct physician supervision. Advances in telehealth and home monitoring have further shifted care into patients' homes, and select patient groups, such as type 1 diabetics, have already assumed much of the routine, day-to-day management of their diseases.

The Role of Community Health Workers

Within this progressive decentralization of care delivery is the possibility of incorporating unlicensed laypeople to assist with care provision. Such peer community health workers would be particularly valuable in addressing healthcare disparities among underrepresented patient populations who are frequently excluded from centralized health services, as they typically share ethnicity, language, socioeconomic status, and life events with the patients they serve. Their added convenience and accessibility also fill the temporal gaps created by the extensive need for chronic illness, preventive, and wellness care that is often unmet by a hospital-centric model attuned to acute, episodic treatment.

Also known as *promotores*, community health workers have played an important part in South America's model of care, and there is anecdotal evidence of successful implementation of community health workers across the United States (AHRQ, 2009). The most common areas of intervention include breast, cervical, and colon cancer screening; childhood and adult vaccinations; HIV, cancer, diabetes, hypertensive, and asthma care; and prenatal care and parenting skills (Health Resources and Services Administration, 2007). Predictably, these implementations of community health workers have almost universally involved information dissemination and targeting of healthcare disparities among underrepresented patient groups.

Impacts of Community Health Worker Programs

A June 2009 Agency for Healthcare Research and Quality (AHRQ) report titled *Outcomes of Community Health Worker Interventions* found mixed evidence of improved health outcomes and low to moderate evidence of increased appropriate healthcare use. The same report found insufficient data to evaluate the cost-effectiveness of community health worker intervention. The limitations in analysis can be attributed to the small patient populations involved with community health worker programs, the difficulty in performing randomized controlled trials, and the involvement of multiple confounding interventions (Swider, 2002).

Despite the lack of data regarding the financial impact of community health workers, it is reasonable to make some generalizations based on the cost trends that have resulted from similar decentralization of care in other areas, namely the shifting of care to nurse practitioners in the retail clinic model. Direct costs are lower when community health workers are used to replace more expensive providers. However, the amount of savings is modest due to the low level of expertise involved, and hence only the

simplest, and already least costly, work of case managers, social workers, and other ancillary staff is offloaded. The emphasis by community health worker programs on prevention and education will result in a mixture of savings and increased costs, due to increased secondary prevention services balanced by downstream savings from increased primary and tertiary prevention. In addition, community health workers can play a critical role in helping patients reduce consumption of unnecessary services and replace costly preference-sensitive services with less expensive ones.

Like the retail clinic experience, however, community health worker programs can be expected to induce second- and third-order effects that can lead to increased consumption of healthcare services by promoting access to traditional health services. Because of these added systemic effects, community health workers could indeed lead to an overall increase in healthcare spending. This would be consistent with recent analyses of the impact of retail clinics on healthcare costs (Thygeson et al., 2008). However, despite the increased global spending and possible increased per capita spending, it appears that the return on investment of any increased spending on community health workers would almost certainly be higher than that for more traditional healthcare interventions. Furthermore, there are unmeasured benefits related to wellness, including effects on housing, poverty, food, and employment that result from community health worker programs and which have not been incorporated into past cost–benefit analyses.

Barriers to Decentralization in Health Care

Health care has been slow to decentralize its services, despite the gains to be made in affordability and convenience. In the face of overwhelming evidence that the centralized hospital business model has ceased to be viable, supported to a large degree by administered pricing schemes, government aid, and philanthropic support, health care remains recalcitrant. State certifications, licensure, formal training programs, and accreditations are among the many barriers to entry that limit the disruptive decentralization of health care.

A primary defense of these barriers to entry is the concern regarding quality when community health worker programs that use new care providers and settings are introduced. Yet Alcoholics Anonymous, which has been around for 70 years and is a well-studied and respected part of alcohol addiction treatment, fits this model of care. The restriction of community health workers to simple, rules-based care delivery (beginning with simple information dissemination) among populations who would otherwise often not receive any care at all provides a case in which the benefits appear to far outweigh any risks. There must certainly be vigilant regulation to ensure

that quality is not sacrificed, but the vigilance should not be so severe that it comes at the cost of denying care to populations in greatest need.

This perspective must be taken into account as calls for greater regulatory oversight of community health workers gains traction, particularly from professional associations. Impending formal training programs, state certifications, and the possibility of reimbursement will all increase the cost of community health worker programs and may exclude participation of some community health workers and patients, especially among undocumented aliens and non-English speaking individuals.

A possible balanced solution would be to incorporate competency-based licensure, rather than credential-based licensure, of community health workers—and perhaps all healthcare workers.[1] Such a system would ensure patients that proficient, high-quality care is always being delivered, while divorcing health care from its more antiquated proxies for ability. Ultimately, everyone should be encouraged to practice up to the limits of their capabilities and licensure, and not so far below them that we continue to price patients out of the healthcare market.

RETAIL CLINICS AND HEALTHCARE COSTS

N. Marcus Thygeson, M.D.
Consumer Health Solutions and HealthPartners

Retail clinics were introduced in 2000 to deliver a limited set of simple clinical services in a convenient, retail setting. They are typically staffed by mid-level providers with remote physician oversight. Additional novel elements of the retail clinic's strategy include a posted menu of services; walk-in access; minimal support staff and overhead; standardized care processes; and lower than usual, transparent prices.

Retail clinics provide care for a small number of common illnesses, but these conditions comprise a large proportion of traditional primary care practice. The top five retail clinic episodes of care are sinusitis, pharyngitis, otitis media, conjunctivitis, and urinary tract infection (Thygeson et al., 2008). Conditions that can be managed at retail clinic visits account for 13 percent of adult primary care provider visits, 30 percent of pediatrics visits, and 12 percent of emergency department visits (Mehrotra et al., 2008). In an insured population, retail clinic users are healthier than average (Thygeson et al., 2008). Other factors associated with retail clinic use

[1] A driver's license is a competency-based license—rather than giving licensure to everyone over the age of 18, or to everyone who has completed a driver's education class, society demands demonstrable competency behind the wheel prior to licensure.

include younger age, absence of an established provider relationship, and lack of health insurance (Mehrotra et al., 2008).

A Growing Trend

The number of retail clinics in the United States grew rapidly through 2008 and then leveled off at the beginning of 2009 (Merchant Medicine, 2009b). There are now approximately 1,100 retail clinics in the United States with almost 90 percent in urban locations (Rudavsky et al., 2009). Thirty-six percent of the U.S. population lives within a 10-minute drive of a clinic (Rudavsky et al., 2009). The use of retail clinics has also increased. In 2006, one chain (Minute Clinic) was treating 6 percent of retail clinic-eligible episodes in the Twin Cities (Thygeson et al., 2008). In 2008, retail clinics provided approximately 15 percent of retail clinic-eligible care for one large Twin Cities employer. In a national survey of parents with a retail clinic in their community, 17 percent had taken their children to a retail clinic, and 27 percent reported being likely to do so in the future (Davis, 2008).

Addressing Concerns About Retail Clinics

Initial concerns about quality of care at retail clinics have been moderated somewhat by emerging evidence. One study found the quality of care in retail clinics for three common conditions was equal to or better than the quality in physician offices, urgent care centers, and emergency departments (Mehrotra et al., 2009). In Minnesota, the largest operator of retail clinics, Minute Clinic, performs well on Healthcare Effectiveness Data and Information Set (HEDIS) acute care quality measures.[2] Patients who visit a retail clinic are less likely to have follow-up visits compared to those who visit a physician for the same reason (Rohrer et al., 2008, 2009; Thygeson et al., 2008). Also, an adverse effect on preventive care has not been observed (Mehrotra et al., 2009).

Concerns remain. Will retail clinics increase fragmentation of care for patients with chronic conditions? Will retail clinics lead to convenience-induced demand (patients who would have self-treated if a retail clinic were not available). In a sample of 61 Californians (a mix of insured and uninsured individuals), Wang and colleagues found that 30 percent would have used self-care if a retail clinic had not been available (Wang et al., in press). On the other hand, convenience-induced demand may be uncommon

[2]In 2008, Minute Clinic received a 99 percent score on the HEDIS measure for sore throat care and a 91 percent score on the HEDIS URI measure. Data accessed on July 22, 2009 at http://www.mnhealthscores.org/?p=home.

in children. In the previously mentioned national survey, only 1 percent of parents reported that they would have used self-care if a retail clinic were not available (Davis, 2008).

Savings Opportunities from Use of Retail Clinics

The care received at retail clinics costs less per episode than care delivered at other sites of service. The average cost per episode for the top five retail clinic episodes is $55 less than in physician offices or urgent care settings, and $279 less than in emergency departments (Thygeson et al., 2008).

To estimate the possible costs savings from retail clinics, we used two approaches. First, if all of the five most common retail clinic-eligible episode types (approximately 250 episodes per 10,000 member-months) were treated in retail clinics, commercially insured population healthcare costs in the Twin Cities might decrease by $1.40 per member per month (PMPM) (0.5 percent of total PMPM, assuming a total PMPM of $300 PMPM). In addition to lower costs per episode, the convenience of retail clinic care might lower costs by leading to earlier treatment, resulting in fewer complications. However, this cost-saving mechanism seems unlikely, given that retail clinics currently treat only minor, acute, often self-limited illnesses.

Another approach to estimating retail clinic cost savings is to apply the per episode retail clinic savings observed in Minnesota to the estimated number of retail clinic-eligible episodes in the United States. These calculations are shown in Table 13-1. Transfer of all retail clinic-eligible visits from physician offices and emergency departments to retail clinics would lead to an estimated savings of $7.5 billion—0.3 percent of the projected

TABLE 13-1 Estimated National Savings—Conversion of All U.S. Retail Clinic-Eligible Visits

	PO	Emergency	Total
Total visits (millions)	483	112	595
Percent RC-eligible	18 percent	12 percent	
RC-eligible visits (millions)	87	13	100
Visits/episode	1.14	1.14	
Estimated episodes (millions)	76	12	88
Savings/episode	$55	$279	
Potential annual savings (billions)	$4.19	$3.29	$7.5

NOTES: PO = physician office visits; RC = retail clinic. Estimated episodes = RC-eligible visits/visits per episode.

$2.5 trillion in 2009 U.S. healthcare spending (CMS, 2009). This represents an upper bound of cost savings.

Savings Estimates: Caveats

However, several factors limit the potential cost savings of retail clinics. First, at least among the insured, patients using retail clinics appear to be switching from physician offices and urgent care centers but not from emergency departments. There was no reduction in the proportion of retail clinic-eligible episodes seen in emergency departments after introduction of retail clinics in the Twin Cities (Thygeson et al., 2008). If we discount emergency department cost savings, estimated potential U.S. savings are $4.2 billion. However, retail clinic use may reduce emergency department visits in underinsured populations (Mehrotra et al., 2008).

Second, over 85 percent of retail clinics are located in the 50 largest U.S. metropolitan statistical areas (MSAs) (Merchant Medicine, 2009a). It is not clear that the retail clinic business model will be successful in less urban communities. About 58 percent of the U.S. population lives in the 50 largest MSAs,[3] but only 35.8 percent of the U.S. population lives within a 10-minute driving distance from a retail clinic (Rudavsky et al., 2009). Limiting the effect of retail clinics to the 50 largest MSAs reduces the potential savings to $4.3 billion (0.17 percent of total 2009 U.S. healthcare expenditures). With the current retail clinic geographic "footprint," the potential savings are even smaller ($2.7 billion).

Third, these savings estimates assume there is no convenience-induced demand (patients who would have self-treated if the retail clinics were not available). Convenience-induced retail clinic visits add cost and offset the savings resulting from episodes shifting to retail clinics from more expensive sites of service. As noted above, in one small study, 30 percent of adult patients stated they would have stayed at home if the retail clinic were not available. If 30 percent of retail clinic visits are convenience induced, the estimated maximum possible retail clinic savings in a commercially insured, urban population is reduced to $0.26 PMPM.[4] Similarly, 30 per-

[3] In the 2000 census, the population of the 50 largest MSAs was approximately 164 million out of a total U.S. population of 281 million (U.S. Census Bureau, 2000).

[4] If 30 percent of retail clinic visits are convenience induced, and all of the five most common episodes retail clinic-eligible episodes convert to retail clinic care, the total number of retail clinic episodes is 1.43 × 250 = 357 episodes per 10,000 member months. Of these 357 episodes, 250 would be converting from physician offices or urgent care (saving $55 per episode), but 107 would be generating $104 in new costs (average HealthPartners retail clinic cost per episode in 2006). Net savings is $2,607 per 10,000 member-months.

cent convenience-induced demand reduces the maximum national potential retail clinic savings to $2 billion (urban communities only).

Finally, these savings estimates ignore the adaptive responses of established healthcare providers. As patients shift to retail clinics, established providers can easily maintain revenue by increasing the number of visits per episode for the remaining patients, and over time by charging more for non-retail clinic-eligible services. Also, established providers are now competing directly with retail clinics for both patients and staff by adopting a convenience care model for the limited set of services provided by retail clinics (Merchant Medicine, 2008; Rudavsky et al., 2009). In the Twin Cities, despite lower retail clinic costs per episode for individuals, population health costs for retail clinic-eligible episodes continued to increase 4.5 percent a year between 2003 and 2006, and the overall commercial cost trend is close to the national average (Thygeson et al., 2008).

Conclusion

Retail clinics are part of a general societal trend toward increasing consumerism and self-service in American health care, but the impact of this trend on healthcare cost and quality is not yet clear. The main benefit of retail clinics appears to be increased, convenient access.

Potential Cost Savings

The potential cost savings from more efficient retail clinic care are limited by a narrow scope of practice and urban location, and is probably not more than $4.3 billion (estimated 0.17 percent of all U.S. healthcare spending). These savings may be totally offset by a combination of convenience-induced demand and the adaptive responses of traditional care delivery systems. The biggest impact of retail clinics in the long run could be the competitive cost structure and pricing changes that they induce, we hope, in existing providers. However, unless the retail clinic model leads to a shift of care from primary care physicians to mid-level practitioners, and from specialists to primary care physicians, it seems unlikely that retail clinics will result in meaningful overall savings.

Facilitating Adoption

The two policy initiatives that facilitated the initial introduction of retail clinics in the Twin Cities included evidence-based clinical guidelines and electronic medical records (EMRs). Integration of well-accepted care guidelines into the retail clinic EMR helped address concerns about quality of care that have been barriers to retail clinic introduction in Massachusetts

and other markets. Expanding the use of care templates in EMRs is likely to support the ability of retail clinics to move "up market."

Additional policy considerations that affect retail clinics include corporate practice of medicine laws that may be barriers to retail clinic adoption in some states because many retail clinics are owned by nonprofessional corporations. Finally, reforming malpractice laws to provide a higher level of evidentiary protection for guideline-compliant care would likely accelerate adoption of the retail clinic care approach.

Potential Long-Term Impact

For retail clinics to have a sustained beneficial impact on healthcare costs, they need to function like a true "disruptive innovation"[5] and expand their services to treat more complex conditions, thereby forcing existing providers to adopt lower operational cost structures for a much broader set of services and patients (Christensen, 2003). This will require substantial redesign of increasingly complex care delivery services. Whether retail clinics will be able to do this is an open question.

CARE COORDINATION AND HOME TELEHEALTH (CCHT)

Adam Darkins,[6] *M.D., M.P.H.M., F.R.C.S.*
Department of Veterans Affairs

In 2007, healthcare expenditure in the United States was 15.2 percent of gross domestic product (GDP). Continuing on this trajectory, U.S. healthcare spending will exceed 31 percent of U.S. GDP by 2035 and reach 46 percent by 2080 (CBO, 2009). Such costs make the U.S. health system, as currently constituted, unsustainable given other competing societal priorities. And the major driver of these costs is care for chronically ill patients; 75 percent of current healthcare resources are expended in caring for people with chronic conditions (Hoffman et al., 1996), such as diabetes mellitus and chronic heart failure. Therefore, any approach aimed at substantively containing U.S. healthcare costs must address the appropriate-

[5] Disruptive innovations are a concept popularized by Professor Clayton Christenson at Harvard Business School. They are products and services that are simpler, cheaper, and less functional than the market standard products and services, and typically have lower margins of return. However, they are good enough for a meaningful portion of the market. Over time they tend to displace established market leaders as they add functionality while maintaining an advantageous cost structure.

[6] Any views expressed are those of the author and do not necessarily represent policy of the Department of Veterans Affairs.

ness, effectiveness, and cost-effectiveness of managing chronic conditions in the U.S. population.

Despite chronic conditions driving so much of the costs, the U.S. healthcare system is not optimally configured to manage people with these conditions, at either the individual patient level or the population level. These patients typically make unscheduled clinic appointments and frequent emergency room (ER) visits that often result in avoidable hospital admissions. Unscheduled clinic appointments, frequent ER visits, and avoidable hospital admissions and readmissions are major contributors to high healthcare costs (Jencks et al., 2009). Furthermore, the disruption of formal and informal care support systems in the home that takes place with hospital admissions and readmissions in this population of patients can often complicate discharge and precipitate transfer to long-term institutional care with its attendant human and economic costs. Managing these consequences of chronic conditions on the supply side by maintaining unnecessary (or possibly redundant) clinic, ER, and hospital bed capacity further exacerbates healthcare costs. This reaction to the needs of chronically ill patients perpetuates an institutional and provider-centric focus in the healthcare system, which may have been appropriate for managing acute conditions in the late nineteenth to mid-twentieth centuries, but it is maladapted to meeting the healthcare needs of patient's with chronic care needs in the twenty-first century. At this time, managing patients with chronic conditions necessitates more patient-centered approaches that are of proven cost-effectiveness.

A More Patient Centered Approach

Routine outpatient clinic appointments remain the mainstay in managing chronic disease in the United States, but their effectiveness and cost-effectiveness have not been substantiated by comparative effectiveness studies. Anecdotally, patients with chronic conditions such as chronic heart failure usually deteriorate at variable times before or after a routine clinic visit. This "just-in-case approach" was the state-of-the-art in the nineteenth century for monitoring patients with chronic conditions with the introduction of new diagnostic devices such as the stethoscope (Laënnec, 1819) and with the advent of therapeutics as we now recognize them (Warner, 1997). However, since the end of the twentieth century, home telehealth devices have been routinely available to continually monitor patients with chronic conditions and transmit vital sign and other disease management data for clinicians to review remotely in the hospital and clinic. In other words, today's technology provides opportunities to move beyond the just-in-case approach to the just-in-time approach.

Instead of having patients "earn" the right to be seen urgently in a clinic by being in extremis and possibly requiring admission to an intensive care unit, this new technology begs a different question. Would it not make more sense to monitor such patients using home telehealth devices and institute treatment "just in time" when symptoms and signs suggest their condition is deteriorating, thereby obviating further deterioration and its associated risks of mortality and morbidity?

In the late 1990s, a randomized-controlled study of chronic care patients (Johnston et al., 2000) by Kaiser Permanente using video home telehealth systems showed that in 102 patients versus 110 controls the technology was effective, well received by patients, maintained quality care, and had the potential for cost savings. Using this research and their own experience as springboards, the U.S. Department of Veterans Affairs (VA) systematically developed a model of care that combined telehealth methods and technologies with care coordination efforts. Care and case management helped clinicians make the complex judgments needed in managing patients with chronic mental health (Mueser et al., 1998; Ziguras and Stuart, 2000) and general medical conditions (Rundall et al., 2002). The model was formalized within the chronic care model (Bodenheimer et al., 2002): it incorporated patient self-management (Lorig et al., 2001) and an algorithm (Ryan et al., 2003) for the use of home telehealth technologies that included video, monitoring, messaging, and digital image capturing devices. Initially piloted between 2000 and 2003 (Cherry et al., 2003; Kobb et al., 2003), in 2003, the VA scaled the pilot for national implementation as Care Coordination/Home Telehealth (CCHT) (Carmona, 2009; IOM, 2004; McDonald et al., 2007). The VA has defined CCHT as "the use of health informatics, disease management, and telehealth technologies to enhance and extend care and case management to facilitate access to care and improve the health of designated individuals and populations with the specific intent of providing the right care in the right place at the right time" (VA, 2009a).

Care Coordination/Home Telehealth (CCHT) Model of Care

The rationale for developing and implementing CCHT was to meet the chronic care needs of an aging veteran patient population with an anticipated preponderance of those aged 85 years and older (see Table 13-2) and enable them to remain living independently in their own homes, when appropriate. Since its 2003 national implementation, CCHT has been deployed in 150 hospitals throughout the VA Health Care System to manage patients with chronic conditions (both general medical and mental health). The census of patients (number of patients managed concurrently) in the

TABLE 13-2 Examples of Crude Estimates of Cost Reductions That May Be Realizable Through Implementation of Care Coordination/Home Telehealth Outside Department of Veterans Affairs

Area of Health Care	Cost Savings	Percentage Cost Savings in Population Subset Managed	Notes
Medicaid non-institutional long-term care expenditure	$1.7 billion per annum from caring for 20% of population using CCHT	22%	2005 figures that assume 20% of estimated $35.2 billion spent on home care-based services (Kaye et al., 2009) can be managed by CCHT at a cost of $1,600 per patient per annum in instead of $13,121.
Hospital readmissions	$2.2 billion per annum from monitoring patients using CCHT	48%	Assumes that hospital admissions (Jencks et al., 2009) could be reduced by 19% and the cost of managing these patients by CCHT is $1.06 billion.
Diabetes care	$3.9 billion per annum from reducing hospital admissions/ readmissions and lengths of stay	Not calculable for lack of patient denominator to attribute costs to	Assumes that hospital in-patient stays for diabetes (ADA, 2008) are reduced by 25%. Figure does not include CCHT costs.
Cardiac disease	$14 billion per annum from reducing hospital admissions/ readmissions and lengths of stay	Not calculable for lack of patient denominator to attribute costs to	Assumes that the costs of hospital in-patient stays for cardiac disease are reduced by 25%. Figure does not include CCHT costs.

program has increased from 2,000 in 2004 to 39,347 in July 2009 (see Figure 13-1).

Care coordinators, typically registered nurses or social workers, provide the CCHT services. Each care coordinator manages a patient panel of between 90 and 150 patients, depending on the complexity of their conditions, and the care is categorized as noninstitutional care, chronic care management, acute care management, or health promotion and disease prevention. Since January 2004, VHA's National CCHT Training Center has been certifying these staff using predominantly virtual modalities to provide these services. And the services are not just provided in metropolitan areas; 37 percent of CCHT patients are in rural/remote locations, indicative of the veteran population (7.6 million total enrollees).

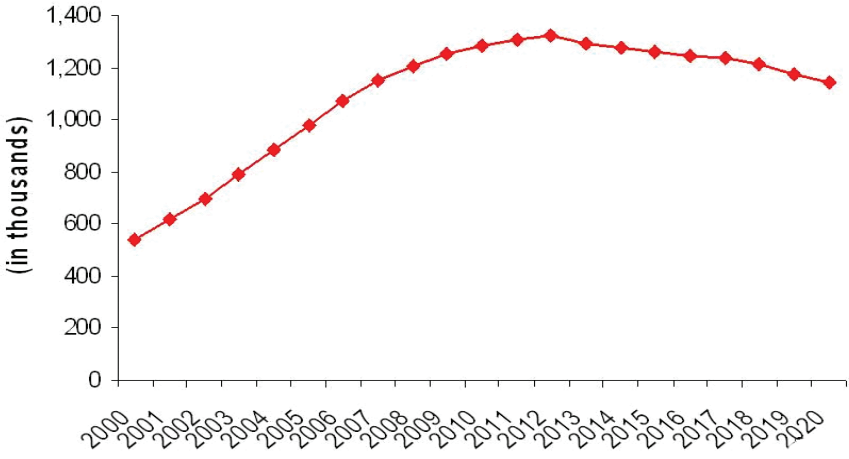

FIGURE 13-1 Number of U.S. veterans in the Veterans Administration aged 85 and older 2001-2020 (projected).
SOURCE: VA, 2005.

CCHT: The Impact

In December 2008, routine management data from the VA's CCHT program were published as a case report (Darkins et al., 2008) and demonstrated impressive outcomes for a cohort of 17,025 patients, such as:

- 19 percent reduction in hospital admissions,
- 25 percent reduction in lengths of stay,
- 86 percent mean patient satisfaction score, and
- No measured diminution of health status.

The annual cost of providing CCHT to these patients (whose overall healthcare costs were in excess of $27,000) was $1,600 per patient. Compared to an annual cost of directly providing care in the homes of such patients via nursing teams ($13,121) and to the annual cost of purchasing nursing home care on the commercial market ($77,745), the savings margins are significant on an individual and institutional level. And this intervention is very relevant and has the capacity for expansion; approximately 20 percent of veterans requiring long-term, noninstitutional care are suitable to manage via CCHT (VA, 2009b).

Cost Implications of Implementing CCHT

If taken to the national level, a CCHT implementation in targeted areas could translate to cost savings of between $1.7 and $2.2 billion or

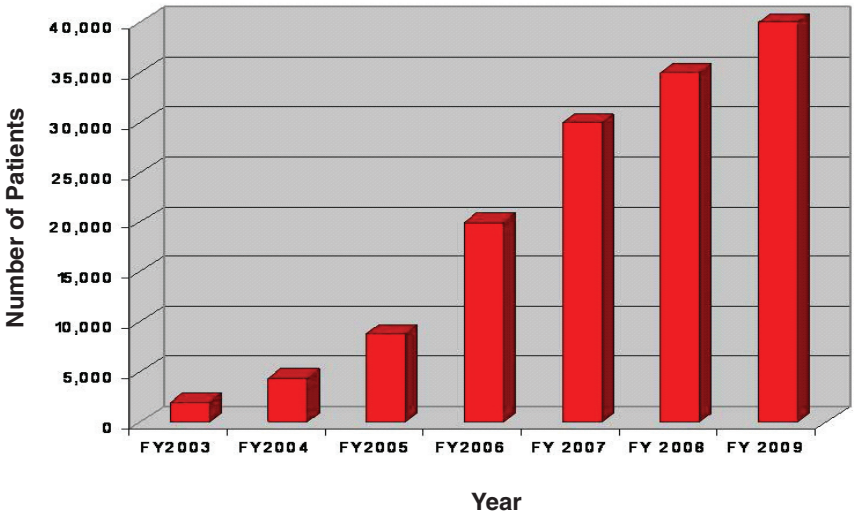

FIGURE 13-2 Department of Veterans Affairs Care Coordination/Home Telehealth Patient census, 2003-2009.
SOURCE: VA, 2009c.

between 22 percent and 48 percent of healthcare costs for the populations of patients so managed (Figure 13-2).

Discussion

In developing and implementing its CCHT program, the VA substantiated the hypothesis that monitoring health-related indices in a population of patients with chronic care needs is a more efficient and cost-effective means of managing veteran patients with complex care needs at risk of needing institutional care. Even though the cost-saving calculations and the possibility of regression to the mean cannot be excluded, the early experiences at the VA are impressive and promising for further national experimentation and expansion.

The VA is an integrated healthcare system that has extensively adopted health information technologies. CCHT is a potentially disruptive technology. Professional, organizational, and reimbursement issues need to be addressed in addition to clinical care considerations.[7]

[7] Robert Roswell and Marlis Meyer introduced the concepts of just-in-case and just-in-time care that underpins the CCHT model of care in VA.

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Section III

The Policy Agenda

14

The Policy Agenda

INTRODUCTION

With large opportunities for cost savings identified in conjunction with multiple strategies in the first two workshops in this series for improving the efficiency of the healthcare system while increasing quality, greater clarity was needed for developing a policy agenda that maximizes the utility and impact of delivery system reforms. The goal of the third workshop was to explore the policy opportunities and potential barriers to implementing possible solutions for improving the delivery of care in this country.

In her keynote address for the third workshop, Karen Davis of the Commonwealth Fund discusses priorities for policy options to achieve cost control and affordable coverage for all. She identifies the goals of health reform as slowing growth in health spending; creating incentives for providers to take broader accountability for patient care, outcomes, and resource use; providing rewards for improved care coordination among providers; and creating an infrastructure to support providers in improving quality and efficiency. She discusses how these goals are driven by the current state of affairs, where 21 percent of adults report going to the emergency room within the past 2 years for a condition that could have been treated in a physician's office and the existing threefold spread between those in the lowest ($947) and highest quartiles ($2,911) for risk-adjusted spending for hospital readmissions after coronary bypass surgeries.

Referencing the recommendations of the Commonwealth Fund's Commission on a High Performance Health System—outlined in the report *A High Performance Health System for the United States: An Ambitious*

Agenda for the Next President (The Commonwealth Fund Commission on a High Performance Health System, 2007)—Davis focuses particular attention on the importance of aligning financial incentives to enhance value. In discussing fundamental payment reform that rewards physicians and other providers for achieving quality, she cites examples of successful experiments such as those at Geisinger Health System. Based on the commission's report, significant savings opportunities could be wrought from implementing these recommendations, with a potential of $123 billion in savings over a decade from instituting bundled payment policies, $83 billion over 10 years from strengthening primary care and care coordination, and $70 billion from promoting health information technology.

Providing additional context in light of broader discussions on the analyses of the Congressional Budget Office (CBO), Joseph R. Antos of the American Enterprise Institute surveyed the analytical framework used by CBO in developing estimates of various dimensions of health expenditures, in which he emphasized that CBO considers exclusively the impact of legislation on the federal budget. He also suggested that because important considerations such as the impacts of legislative proposals on private health spending and access to care are not considered in CBO cost estimates, CBO estimates provide important but incomplete guidance to policy makers on the financial impact of potential legislation.

GETTING TO HIGH-PERFORMANCE

Karen Davis, Ph.D.
The Commonwealth Fund

Despite the fact that the United States pays more than twice as much, per capita, as other nations for health care—over $7,000 for each man, woman, and child—it still has 46 million uninsured, and another 25 million who are underinsured, meaning that they have coverage that provides inadequate protection against financial catastrophe should serious illness occur (Schoen et al., 2009). Healthcare spending is expected to double to $5.2 trillion per year by 2020 if dramatic steps are not taken soon, even as the number of uninsured continues to balloon (Schoen et al., 2009).

Everyday, Americans participate in a healthcare system that is plagued with avoidable, ineffective, and unsafe care that drive ever-higher costs (The Commonwealth Fund Commission on a High Performance Health System, 2008). The following discussion addresses the scope of the challenges and problems now confronting the country. No single strategy or silver bullet can transform the U.S. healthcare system into one of high performance. Rather, several key strategies are necessary to address the problem, some of which are currently under consideration in the health reform pending in Congress.

Goals for Reform

Any healthcare reform bill that is serious about controlling costs needs to have strategies for:

- Slowing growth in health spending;
- Creating incentives for providers to take broader accountability for patient care, outcomes, and resource use;
- Providing rewards for improved care coordination among providers; and
- Putting in place an infrastructure to support providers in improving quality and efficiency.

Spending

The United States is traveling down a fiscally dangerous road. It already has the most expensive healthcare system in the world, consuming 17 percent of the nation's gross domestic product and projected to rise to 21 percent by 2020 (Schoen et al., 2009). Yet, the nation is now in last place behind 18 other high-income countries on mortality amenable to health care before age 75—deaths potentially preventable with timely, effective health care or early efforts to screen and prevent the onset of disease (Nolte and McKee, 2008). Although the United States improved on this measure by 4 percent over 5 years, other countries achieved an average improvement of 16 percent over the same period. The difference between the United States and the countries with the lowest mortality rates amounts to 100,000 premature, potentially preventable deaths each year.

In spite of unparalleled spending, if nothing changes, an estimated 61 million people will be uninsured in 2020, and over 30 million more will be underinsured, at risk of incurring medical bills they cannot afford and accumulating debt for healthcare expenses (U.S. House of Representatives, 2009).

The United States simply cannot continue on its current course. To achieve more affordable coverage and ensure access for everyone in the country, the way health care is delivered and paid for must be changed. It is time to focus on value.

Accountability

Several of the key drivers of unnecessary spending are the lack of emphasis on prevention, fragmented and uncoordinated care, and variation in expenditures within and between states without commensurate value. Many hospital admissions are potentially avoidable if patients received good preventive and chronic disease care (Kottke et al., 2009). But there

is also a twofold to fourfold difference between the admission rates in top performing states and those of bottom performing states (McCarthy et al., 2009).

This failure to focus on prevention—and the variation among states—results in costs beyond the admission itself, as patients end up readmitted to hospitals, undergoing surgery or expensive procedures for complications that could have been prevented, such as amputations or kidney dialysis for diabetics. Indeed, instead of acting early to stop the onset of diabetes or complications associated with diabetes, Medicare covers the costs of treating end-stage renal disease without incentivizing preventive treatment and chronic care management.

A Commonwealth Fund-supported study of Medicare fee-for-service claims data for nearly 12 million Medicare beneficiaries discharged from a hospital in 2003 and 2004 found that one of five patients was readmitted within 30 days, and half of nonsurgical patients were rehospitalized without having seen an outpatient doctor in follow-up (Jencks et al., 2009). The estimated cost of unplanned hospital readmissions in 2004 accounted for $17.4 billion of the $102.6 billion total hospital payments made by Medicare that same year. The Medicare Payment Advisory Commission (MedPAC) estimates that 75 percent of Medicare readmissions are potentially preventable, using well-managed care during transitions and effective handoffs as vulnerable patients leave the hospitals (MedPac, 2007).

Glenn Hackbarth and colleagues have shown that a significant proportion of variation in Medicare spending can be traced to variability in readmissions and post-acute care (Hackbarth et al., 2008). For example, spending on readmissions can vary from hospital to hospital by 54 percent and by as much as 71 percent for post-acute care for coronary artery bypass grafting with cardiac catheterization, a common procedure.

Care Coordination

Another problem that is both a result of lack of insurance as well as overall access problems is an inordinately high emergency room use rate relative to other countries, even for conditions that could be treated by regular, nonurgent care (Schoen et al., 2007). A big contributor to this problem is a collective failure to focus on primary care and prevention and a growing shortage of primary care physicians relative to specialists (Bodenheimer et al., 2009).

Even patients with insurance coverage are at risk, due to a fragmented, poorly coordinated care system that relies on paper medical records. Basic information about allergies, medications, medical history, or recent diagnostic or lab test results does not follow patients through the healthcare system. As a consequence, patients confront duplication and delays when records are not available as needed, wasting time and resources and putting

patients at risk for medical errors. Nearly half of all adults encounter breakdowns in care coordination or instances of flawed information exchange (How et al., 2008).

In the Medicare program, the costs of care are highly concentrated among patients with multiple chronic conditions, and such costs are increasing. In 2005, annual costs of care to Medicare averaged $38,000 for patients who had all three of the following conditions: heart failure, diabetes, and chronic lung disease (The Commonwealth Fund Commission on a High Performance Health System, 2008). This represents a 20 percent increase from 2001. Dartmouth researchers have shown that costs of care vary significantly across the country, with a twofold spread between the lowest and highest 10th percentiles of hospital regions for any combination of these three conditions (Fisher et al., 2009). Focusing on these patients offers opportunities to improve care outcomes and use resources more efficiently.

Administrative Cost

An uncoordinated system is also expensive to administer. The costs of insurance administration in the U.S. healthcare system totaled nearly $156 billion in 2007, and that figure is expected to double—to reach $315 billion—by 2018 (Collins et al., 2009). Indeed, the United States leads all other industrialized countries in the share of national healthcare expenditures devoted to insurance administration (The Commonwealth Fund Commission on a High Performance Health System, 2008). The U.S. share is about 7.5 percent, compared with 5.6 percent in Germany and 2 percent in Finland and Japan. The McKinsey Global Institute estimates that the United States spends $91 billion more a year on health insurance administrative costs than it should, given its size and wealth (Farrell et al., 2008). The majority of administrative costs are attributable to private health insurance. Of the $156 billion spent on healthcare administration in 2007, about 60 percent, or $94.6 billion, was paid for by consumers and employers in the form of premiums to private insurance companies (Collins et al., 2009). The remaining 40 percent included federal, state, and local governments' administrative costs for public health programs such as Medicare, Medicaid, and the Children's Health Insurance Program (CHIP). It also included the administrative costs of private drug plans and private health insurance plans that contracted with the government.

Administrative costs in private health plans are a higher share of insurance expenditures than are administrative costs in public insurance programs like Medicare and Medicaid. Administrative costs represent 12.2 percent of private health insurance expenditures, compared with 6.1 percent of public program expenditures (Collins et al., 2009).

The complex administrative nature of the U.S. system adds costs for providers as well. Physicians, on average, spend nearly 3 weeks per year

interacting with health plans, or 3 hours per week (Casalino et al., 2009). Converted into dollars, practices spent an average of $68,000 per physician per year interacting with health plans; primary care practices spent $65,000 annually per physician, nearly one-third of the net income, plus benefits, of the typical primary care physician. This results in an estimated $31 billion per year spent by physician practices on interactions with health plans.

Eliminating Excessive, Unnecessary, and Wasteful Expenditures

Any discussion of curbing spending must first pose the fundamental question: What do we want out of our health system? What most of us want is a health system that offers the best possible outcomes at an affordable price. But our current fee-for-service system does not, on the whole, do that. It reimburses "inputs"—hospital stays, physician visits, and procedures—rather than the most appropriate care over an episode of illness or over the course of a year. Fee-for-service payments create incentives to provide more and more services, even when there may be better, lower-cost ways to treat a condition.

In its report, *A High-Performance Health System for the United States: An Ambitious Agenda for the Next President*, the Commonwealth Fund's Commission on a High Performance Health System laid out five key strategies for achieving affordable, high-quality health care for all Americans (The Commonwealth Fund Commission on a High Performance Health System, 2007).

The first and most important strategy is affordable coverage for all Americans. The second strategy involves aligning financial incentives to enhance value and achieve savings. Curbing rising costs requires fundamental payment reform that rewards physicians and other providers for achieving quality and moves us away from the current reliance on fee-for-service payment toward incentives for quality, bundled payments for episodes of care, or global rates for per patient care. The third strategy calls for organizing care to ensure accessible, patient-centered, coordinated care. The fourth strategy calls for meeting and raising benchmarks for high-quality, efficient care. The fifth strategy calls for establishing accountable federal leadership and better public–private collaboration in order to foster a focus on setting national goals and coherent policies.

Honing in on Policy Solutions

It is essential to change the way care is paid for to reward high-quality and prudent stewardship of healthcare resources and to encourage reorganization of care so that it is well coordinated and responsive to patients' needs. To move away from the current fee-for-service payment system

toward one that emphasizes value rather than volume, several strategies should be pursued.

First, to strengthen and reinforce patient-centered primary care, policies should be put in place that offer incentives for the adoption of the medical home model to ensure better access, coordination, chronic care management, and disease prevention. Next, the system can facilitate appropriate care and manage chronic conditions through integrated delivery networks that provide a continuum of care or provide funding and technical assistance for statewide and community efforts to support and connect primary care and more specialized resources in informal or virtual networks. Third, leaders must promote more effective, efficient, and integrated healthcare delivery through adoption of more bundled payment approaches to paying for acute care over a period of time, with rewards for quality, outcomes, and patient-centered care, as well as rewards for efficiency tied to high performance. Finally, the country should intensify the focus on preventing and managing chronic conditions, including incentives for more coordinated care and setting goals to improve outcomes for chronic conditions that account for the bulk of healthcare needs and spending.

Some promising reforms are already taking shape. Geisinger Health System of Pennsylvania now charges a flat, or global, fee for surgery, including a "warranty" for 90 days of follow-up treatment—postoperative and rehabilitative services for 90 days postdischarge. Complications have consequently declined by 21 percent, readmissions declined by 44 percent, and the average length of stay declined by half a day (Paulus et al., 2008). In short, this change in delivery and payment was a win-win: it improved patient outcomes and reduced cost. Geisinger has subsequently extended this strategy to other areas, including hip replacement, cataract surgery, obesity surgery, and prenatal care and delivery of newborns.

Moving broadly toward blended payments, in which compensation for physicians includes fee-for-service payments, per-patient payments, and performance bonuses, would encourage physician practices to set up their offices as medical homes, which patients could join to receive coordinated, accessible care (Davis et al., 2009b). Medical homes, in turn, should lead to improved chronic care management, ensure patients receive preventive care, and offer accessible, off-hours care. Medical homes could also reduce the number of emergency room visits.

Offering a bundled acute-care payment (e.g., a global fee covering hospitalization and a specified set of services for 30 days following discharge) would give hospitals and other providers an opportunity to share the savings from their efforts to provide transitional care, reduce complications of treatment, lower numbers of readmissions, and allow them more flexibility in allocating their resources. Over time, spending would slow as efficiency savings were shared between payers and providers. Estimates are that

within the context of comprehensive insurance expansion and other system-wide reforms, a bundled payment approach would reduce national health expenditures by $301 billion and save the federal government $211 billion over the 11-year, 2010-2020, period (The Commonwealth Fund, 2009).

By realigning financial incentives to reward quality and efficiency, policy makers can eliminate the barriers to coordination among hospitals and post-acute providers built by the current fee-for-service payment system. Instead, providers will be encouraged to collaborate and rewarded for providing a continuum of care throughout the entire course of a patient's treatment and follow-up.

Experimentation with different payment reforms is clearly needed, and this can be accomplished through various types of demonstrations. If Medicare and Medicaid provide leadership, more private insurers would be encouraged to follow suit. Once new payment methods are in place, leaders can observe their effects, see what works best, and give providers time to learn how to improve through them. The country must start testing different approaches now to begin to rein in costs—and to make sure it is paying for the best available care, not just more services.

The Commission on a High Performance Health System has pointed out that the more organization in delivery systems, the more feasible payment reforms such as bundled payment become (Shih et al., 2008). The reforms themselves could actually spur organization, since they reward optimal care over the continuum of services.

A June 2009 Commonwealth Fund publication titled *Finding Resources for Health Reform and Bending the Health Care Cost Curve* found that a wide range of policy options exist for achieving health system savings to help finance health reform (Nuzum et al., 2009). Estimates of savings from the Fund's Path report, the Office of Management and Budget, and the CBO indicate that early investments could yield significant reductions in total healthcare spending over time through gains in the quality and efficiency of care. The differences among the estimates reflect primarily the scope of the policies and their particular elements.

It is worth noting that the major reform bills that have passed the House committees and the Senate's Health, Education, Labor and Pensions Committee do include provisions that address many of the issues mentioned here. The House and Senate bills include multiple provisions that would help to move the U.S. health system on the path to high performance (Davis et al., 2009a). The following provisions have the most potential to improve health system performance and control spending:

- Invest in primary care by increasing Medicare and Medicaid payment rates for prevention and primary care services.
- Encourage the development of medical homes by creating a center on Medicare and Medicaid payment innovation charged with

rapid-cycle testing of innovative payment methods with shared savings incentives for physician practices certified as patient-centered medical homes.
- Change provider payment to reward quality and efficiency through such mechanisms as pilots for rapid-cycle testing of accountable care organizations with shared savings incentives to slow expenditure growth.
- Enhance payment for physician services in geographic areas with the lowest utilization rates.
- Reduce Medicare payments for preventable hospital admissions.
- Test bundled payment approaches for hospital acute care episodes and post-acute care.

Reaching Further

These provisions are major constructive actions, yet in the long run they are likely to fall short of what is needed. The U.S. health system is unlikely to reach its potential without more far-reaching measures. The House Ways and Means bill includes a public health insurance plan with payment linked to Medicare, while the House Energy and Commerce bill bases payment under the public plan on negotiations by the secretary and requires a review of plans in the insurance exchange with premium increases in excess of 150 percent of medical inflation. But neither includes other promising provisions such as those that would link insurance benefit design to comparative effectiveness research findings, or assessing taxes on tobacco, alcohol, and sugared soft drinks. The Congressional Budget Office has not provided estimates of the likely effect of these two versions of health reform on the growth in total national health expenditures, employer premiums, or employer and household savings.

To transform the health system and achieve much needed total system savings, Congress should consider bolder actions in five key areas: fundamental payment reform, cost containment, comparative effectiveness, public health, and a system of establishing and monitoring progress on health reform goals.

Fundamental payment reform Perhaps most importantly, Medicare, Medicaid, and private and public plans participating in a health insurance exchange should all incorporate effective innovative payment methods as soon as those have been tested in a rapid-cycle process by a center on payment innovation. The center on payment innovation should be charged with testing systemwide payment reform, including Medicaid and private payers, and granting state waivers for systemwide cost containment initiatives and harmonization of public and private payment.

Cost containment Productivity improvement requirements on increases in provider payment for plans covering those under age 65 should be similar to those on Medicare payment increases.

Comparative effectiveness Evidence from the $1.1 billion allocated to various agencies within the U.S. Department of Health and Human Services by the American Recovery and Reinvestment Act for comparative effectiveness research should be used in designing coverage, payment, and patient incentives.

Public health Policies such as taxing products related to unhealthy behaviors and investing in antismoking and obesity programs should be included in health reform.

Goals and targets Goals for health reform should explicitly be included in the legislation and a system instituted for monitoring progress toward those goals. Goals should include achievable goals by 2020 for share of population covered by health insurance meeting an affordability standard; bending the healthcare cost curve; share of population receiving care from patient-centered medical homes and accountable care organizations; performance on quality, safety, and disparities in care; and health outcomes.

It is time to transform our current system of payment and delivery of health care into a system that not only provides better quality care, but also bends the healthcare cost curve.

Current legislative proposals contain many provisions to develop, rapidly test, and spread new payment models *within* the Medicare/Medicaid programs to replace current payment methods that largely reward volume. But all these vitally important delivery system reform efforts should be coordinated *across* the public and private sectors.

Aligning public- and private-sector payment innovations would amplify the power of effective incentive approaches by sending the same signals about what is valued across different payers. It would also simplify administrative complexity and reduce the burden associated with existing payment methods. Such alignment would also minimize administrative burden for providers faced with responding to these new, innovative methods, as well as reduce the likelihood of payment distortions across payers and/or regions (American Board of Internal Medicine, 2009).

An effort like this would require that the Centers for Medicare & Medicaid Services (CMS), through a delivery and payment system innovation center, have sufficient authority, flexibility, direction, and financing for its payment reform charter to support rapid-cycle testing and then broadly implement payment models that reward outcomes and better value. CMS also should foster Medicare and Medicaid participation in local payment

pilots designed by other payers and providers that are responsive to state/regional community needs.

Conclusion

In summary, health reform needs to go beyond insurance coverage to bending the curve in healthcare spending and reaping greater value for what the United States spends on health care. The essential elements of reform include opening a center on delivery and payment system innovation; rapid-cycle multipayer innovations in Medicare, Medicaid, other state payers, and private payers; and harmonization of public and private payment in Medicare, Medicaid, a public/co-op plan, and private plans.

Fundamental payment reform can be brought about by accountable care organizations, medical homes, bundled hospital acute care, transitional care, and follow-on care. The establishment of a center on medical effectiveness and healthcare decision making will link coverage and payment decisions to evidence-based findings.

Medicare reform will target high-cost areas, high-cost providers, waste, and unsafe or ineffective care through freezing payment updates to hospitals and physicians in high-cost regions (possible exceptions for accountable care/organized care system providers with median or below costs and average or above quality); by offering incentives for reduced hospital readmissions; and by providing pharmaceutical discounts for dual beneficiaries, negotiation of prescription drug prices, and global fees for sole source drugs. Lastly, an independent commission should be charged with developing policy recommendations for increasing value, eliminating waste, and bending the total system cost curve.

Obviously, not all of this can be done at once—despite the desire of many to "fix" the problem today. But a focus on experimenting with, learning about, and thoughtfully restructuring systems for delivering care and for paying for care is a crucial first step. Even if the focus is on Medicare, the short-term savings and reforms are consistent with the trajectory of improvement that we need to institute for the long term. If implemented, these recommendations would facilitate more rapid development and implementation of a rational payment and delivery system.

CBO SCORING: METHODS AND IMPLICATIONS

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The fate of proposed legislation in Congress often depends on assessment by CBO of the proposal's impact on the federal budget. Created by

the Congressional Budget and Impoundment Control Act of 1974, CBO is required to provide a cost estimate for every bill reported by a congressional committee to show how it would affect government spending or revenues[1] (CBO, n.d.). Because of concerns about rising budget deficits, CBO cost estimates for major policy initiatives are often highly influential and controversial.

CBO's Role

CBO is a congressional agency mandated to provide Congress with objective, nonpartisan, and timely analyses to aid in economic and budgetary decisions on the wide array of programs covered by the federal budget. CBO also provides information and estimates required for the congressional budget process. The agency produces reports on the nation's budget and economic outlook, analysis of the President's budget, cost estimates, budget options, the long-term budget outlook, and other analytic studies.

Although CBO is responsible for cost estimates, the Joint Committee on Taxation (JCT) has jurisdiction over tax legislation. CBO reports JCT revenues estimates for such legislation.

Cost Estimates

A cost estimate provides information on the potential impact of legislation on federal spending and revenue. Such estimates show how the budget would be affected by the proposal and are presented in tables that have the appearance of accounting ledgers. Nonetheless, cost estimates are projections of future financial flows (generally over the next 5 or 10 years) and are subject to estimating uncertainty. The estimates are only as good as the underlying data, assumptions, and understanding of complex economic, social, and political systems permit.

Estimates are incremental, showing how a proposal would change federal spending or revenues relative to the "current law baseline"—the projected stream of spending (or revenue) that would occur if there was no new federal legislation. CBO cost estimates assume that only the proposal at hand would be enacted, not other proposals that might be under consideration by Congress at the same time. Since a bill's provisions can change in response to concerns raised during congressional debate, CBO often scores the same basic bill several times—when the bill is considered by a committee, when the (probably) altered bill is considered on the floor of

[1] In addition, CBO must provide a mandate statement indicating whether reported bills contain federal mandates. If the 5-year direct costs of an intergovernmental or private-sector mandate exceed specified thresholds, CBO must provide an estimate of those costs (if feasible) and the basis of the estimate.

the House or Senate, and again when the final bill emerges from conference and is voted on by the full Congress. In addition to numerical estimates, CBO often provides explanations of the proposal and a summary of the reasoning behind the estimate.

To avoid making arbitrary judgments, CBO assumes that existing law will be enforced as written even if Congress has previously taken action to temporarily override the law. For example, the "sustainable growth rate" formula in Medicare imposes reductions in Medicare payments to physicians if spending increases too rapidly, but Congress has overridden those reductions in all but one year. Observers may be justified in believing that Congress will continue to override the fee cuts, but CBO must follow the letter of the law as it stands. Cost estimates assume that all scheduled reductions will be taken in the future unless the proposal includes a specific provision to modify the payment calculation.

Cost estimates are based on a careful analysis of legislative language and generally do not rely on informal sources of information about the proposal, such as committee press releases. However, when time is critical and in the early stages of policy development, CBO's analysis will also incorporate information from the committee or bill sponsor's staff.

In addition to information about the proposal, CBO draws on a wide range of analytical information in developing its estimate. Depending on the specifics of the proposal, CBO may use data from Medicare, Medicaid, and other federal programs; survey data (including surveys of individuals, such as the Medicare Current Beneficiary Survey and the Medical Expenditure Panel Survey, and surveys of providers and insurers); information from clinical and delivery system experiments; and other sources of data on the health system, demographics, and the economy. CBO analysts develop their modeling assumptions (such as the expected response of patients and doctors to a change in the price paid by Medicare for a particular type of service) based on peer-reviewed literature published in health policy, economic, medical, and other journals; unpublished studies from reputable sources; direct observation of trends in the healthcare market; comparisons with previous analyses by CBO and others of similar proposals; and consultation with experts, including staff from CMS, insurance actuaries, medical leaders, academics, and others.

The cost of many proposals can be estimated in a straightforward manner, but some present greater challenges to CBO analysis. The following factors increase that challenge:

- Novelty—limited or no previous experience with the proposal increases uncertainty
- Number of provisions—additional provisions increase the chance of complex interactions
- New market or administrative structures

- Magnitude of intended impact—"big" policies could generate a larger and more unpredictable behavioral response
- Vague or incomplete specifications
- Time pressure

Example: Reduce Payment Updates

One example of a relatively unchallenging estimate is a proposal to reduce the update, or inflation, factor that is used to adjust Medicare payment schedules from year to year. This type of policy is well understood. Similar policies have been proposed and implemented over the past two decades for the program's payments for inpatient hospital services. In addition, such a policy is directly administered by the federal government and does not involve changes in either Medicare's payment structure or the health delivery system. For those reasons, there is little debate on the aggregate financial impact of such a proposal on the budget.

However, the cost estimate is not a simple matter of arithmetic. Potential savings (that is, reduced federal spending) may be offset by changes in admissions, patient mix, the use of services other than inpatient hospital services, and other adjustments that would be induced by the payment reduction. Budget analysts generally assume that healthcare providers faced with a reduction in Medicare fees will take steps to maintain their revenue stream by producing more services. The magnitude of such behavioral offsets is uncertain but must be accounted for in the estimate. In the case of a long-established policy approach, the uncertainty is minimal.

Example: Prevention

An example of a more difficult estimate is a proposal to expand the use of clinical preventive services, including immunizations and other medical interventions to prevent disease ("primary prevention") and screening to detect disease at early stages ("secondary prevention") (CBO, 2008b). In both cases, the preventive service may be clinically effective (in that it improves health) and cost-effective (with costs lower relative to the health benefits) but may not result in aggregate savings to the federal budget or the health system.

A variety of issues must be considered in estimating the budgetary impact of a policy to promote the use of preventive services. They include the following:

- Effectiveness—savings increase if the service is more effective; the effectiveness of screening depends on both the test's ability to detect disease and the availability of treatment that is more effective when the condition is caught early (Russell, 2009).

- Frequency—more frequent use of the service increases spending and may increase net cost if subsequent uses are less effective.
- Targeting—savings increase if the service is narrowly targeted on those most likely to benefit.
- Take-up—spending increases if more people "take-up" or adopt the service, which depends in part on the specific incentives included in the proposal.
- Other costs—other costs may be induced by use of the preventive service, including the cost of treating any adverse reactions to the service, the cost of follow-up testing and treatment for patients with positive screening tests, and the cost of treating other diseases that occur because of the person's extended life span.

A portion of the benefits and costs associated with a prevention proposal accrues to private individuals and insurers (perhaps by helping to lower their health spending), and some may be nonfinancial in nature (such as reduced suffering related to disease). Such considerations may justify enacting the proposal, but they are not a part of the cost estimate.

Because clinical preventive measures often take more than 10 years for the full benefits to be realized, some have suggested that the scoring window should be expanded to 25 years from the current 10-year period (Huang et al., 2009). That argument may be valid but ignores the need for consistent treatment in CBO cost estimates of all legislative proposals and all provisions in a single bill. If a prevention initiative is scored over 25 years, all initiatives should be scored over the same period to allow fair comparisons. In addition, extending the number of years over which a bill is scored increases the uncertainty of the estimate, particularly in the later years.

Conclusion

CBO scoring will continue to play a critical role as Congress debates major reforms in health care and other policy areas. Although cost estimates are presented in very precise numerical terms, they are subject to uncertainty and depend critically on how CBO analysts interpret legislative language and previous studies and data relating to the specific proposal. Different analysts may appropriately make different judgments about the federal budget impact of a proposal, particularly complex legislation, but CBO is the final arbiter of fiscal impact for Congress.

CBO's mission is precisely defined, and its principal objective in producing cost estimates is to project the likely impact of a legislative proposal on the federal budget. Cost estimates also include other information likely to be important in congressional deliberations. For example, in addition to estimating the budgetary flows of outlays and revenues, CBO projects the number of people who would become insured if a major health reform pro-

posal was enacted. Nonetheless, the focus is on the federal budget. Complex proposals are likely to have effects on private health spending, access to care, costs to consumers and employers, and other important considerations not included in a CBO cost estimate. For that reason, such estimates provide important but incomplete guidance to policy makers, who must weigh these other factors in deciding whether or not to support a bill.

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15

Payments for Value Over Volume

INTRODUCTION

The current fee-for-service system has been criticized as one that rewards the delivery of volume of services over the delivery of effective care. Discussions of options to reform the payment system to align payments with value have ranged from bundled payments for acute care episodes to accountable care organizations and gainsharing.[1] Presenters in this session explored current and past experiments with payment reform. While focusing specifically on bundled payments for providers, they revealed that although some practices are promising, there remain significant challenges for implementation.

John M. Bertko of the Brookings Institution and Linda M. Magno of the Centers for Medicare & Medicaid Services (CMS) opened this session by describing bundled payment initiatives and discussing their successes and limitations. Bertko applauds the successes of bundled payments in systems such as the Geisinger Health System but explains that bundled payments may not work in all cases. While this payment structure has succeeded in improving quality and lowering costs in Pennsylvania, the payment bundles pertain to very discrete and easily definable conditions, such as coronary artery bypass graft surgeries. Furthermore, he states that, while bundled payments have worked well in integrated healthcare systems, the issue of replicability within the non-integrated delivery system that currently

[1] Typically refers to an arrangement in which a provider (e.g., hospital) provides its employees (e.g., physicians) a percentage share of any reduction in costs for patient care attributable in part to the employees' efforts.

dominates the national landscape remains. Magno echoes Bertko's thoughts in reviewing the work of CMS in launching demonstration projects on bundled payments. Among the lessons that Magno shared from these experiences are the need to bundle strategically because savings are most likely to be realized from targeting complex, high-cost inpatient procedures that involve significant but standardized services. Furthermore, she describes how bundled payments can realign service and utilization incentives and lead to savings beyond the discounted rates of the bundles.

Shifting the focus to physician engagement, George J. Isham of HealthPartners offers some thoughts on building support among physicians and other practitioners based on his experiences in Minnesota. He indicates that current reform efforts have been layered on top of existing delivery systems where care is fragmented, administration is manual, and fee for service still characterizes the majority of payment. Isham specifically discusses the significant time and resource needs for designing and implementing bundles. He further states that physicians need to be involved in the design of bundles and require support during implementation. Based on these lessons, he offers several concrete policy recommendations that include supporting more pilots of bundled payment systems; providing technical assistance for providers in managing these systems and in improving quality; and developing a national strategy for overall delivery system reform that includes support for bundled payment systems.

Closing this session, Nancy Davenport-Ennis of the National Patient Advocate Foundation addresses the perspectives of patients in the discussion of bundled payments. Stressing the importance of including active patient engagement in decision making even in a new payment system, she raises the importance of educating patients about what these reforms mean for patients' out-of-pocket expenses; where the cost savings are going to go; and how a new payment system would impact patient access to the latest developments in medical treatment.

BUNDLED PAYMENTS: A PRIVATE PAYER PERSPECTIVE

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The Brookings Institution

Bundled payments are proposed as one possible solution for changing the incentives in fee-for-service (FFS) payment systems. Ideally, bundled payments for hospitals and physicians would provide financial incentives to use appropriate levels and types of services and to increase care coordination. The Medicare Payment Advisory Commission (MedPAC), among other bodies, has investigated the potential use of bundled payments for the traditional Medicare program. Private insurers have experimented and used

some forms of bundled payments over the last 20 years, with both successes and failures. Successes include Geisinger Health System's ProvenCare™ program under which hospital and physicians are paid a global fee and the bundled payment transplant programs that most insurers use. Failures include what were called (in the late 1990s) "contact capitation" and a somewhat similar approach by start-up firms. Although bundled payments for acute episodes offer promise of incentives for efficiency, there are still many unresolved questions about the scale of this promise and the practical mechanics of making it work with providers.

Private Payer Successes with Bundled Payments

Geisinger's ProvenCare non-emergent coronary artery bypass graft (CABG) program has successfully introduced bundled payments and reengineered processes for its health insurance enrollees in its Pennsylvania marketplace. Results have been impressive, with increases in quality measure results and decreased costs. Following up on this program, Geisinger reportedly will expand the ProvenCare program to include more procedures, including emergent CABG, knee replacements, and cataract surgeries. The success of this program illustrates both the promise of bundled payments for a limited set of procedures and the work required to create the infrastructure needed for quality and efficiency.

In the ProvenCare model, hospitals and physicians are paid a global fee for pre- and postoperative care as well as for the inpatient procedure, giving the providers an incentive to reengineer their processes. Geisinger's surgeons reviewed the literature and after months of study agreed upon 40 best-practice behaviors, including the following:

- Pre-admission documentation of 12 items;
- Eight items in operative documentation;
- Ten items in postoperative documentation; and
- Discharge and postdischarge processes.

Reports are that all patients received 100 percent of the processes within six months.

Transplant Networks

Most health insurers have transplant networks in place that involve bundled payments to centers of excellence for transplants. Not only are these facilities providing high-quality transplant services, they often do so at greatly reduced costs. The author's experience indicates that cost can be reduced as much as 50 percent from those of transplant facilities that

are not within the network. Yet transplants are very high-cost procedures, frequently costing in excess of $100,000. Thus, the effort to organize and negotiate for these bundled arrangements is clearly worth the potential savings. Even with such a clearly defined procedure as a transplant, there are different phases that may be included in the bundle, including evaluation, pre-transplant, the transplant procedure, and the post-transplant period. The most comprehensive bundle would include all four phases, but not all insurers have all components in bundled payments with every facility in the preferred network.

Past Failures

Some efforts with bundled payments may have been too ambitious. In the 1990s, several consultants and some insurers tried what is sometimes called contact capitation. In this method, a specialist was paid a fixed amount each time a patient came in "contact." Thus, the incidence risk was eliminated for providers while attempting to bundle the procedures associated with a specialty visit. There was not much take-up of this concept because some specialists were leery of accepting any risk, instead choosing to continue receiving FFS payments. A few other physicians were able to "game" the system by providing many low-cost procedures (e.g., hypertensive patient contacts by cardiologists) at the standard contact capitation rate, rather than focusing only on high-cost contacts.

Similarly, a few start-up firms in the 1990s attempted to have consumers purchase "shopping carts" of bundled episodes from likely specialists (such as obstetrics-gynecology deliveries, cardiology procedures) in a quasi-insured market. While this was an interesting concept, neither of the companies attempting to deliver this market of bundled services to consumers succeeded. This experiment occurred in an era of several "consumer-directed" health plan start-ups and was not carefully designed because this concept required partnership with a traditional insurer to hold the majority of the insurance risk. As a result, these entrepreneurs had a "product concept" without a practical foundation.

Are Providers Willing? "Plug and Socket" Metaphor

In constructing a strategy to promote bundling, an analyst must look at both the construction of the bundled payment and the receiver of the payment, much like one needs both a plug and socket to complete an electrical circuit. Many payers have the capability and data to calculate an appropriate payment, even with complex adjustments for severity levels, but will there be some organization ready to receive and use the payment? In most of the nation, hospitals are accustomed to receiving facility-only diagnosis-related group (DRG) payments, but most do not have formal contractual

arrangements with their specialty physicians (although employed primary care physicians are becoming more common). Similarly, if one were to pay a single- or multispecialty physician group a bundled payment for a complex procedure, would it have a contract to pay the hospital "partner" or would it be forced to pay the much higher price from the hospital's retail fee schedule?

More Considerations

Another consideration is the patient. Do there need to be incentives (or penalties) to direct patients to use certain bundled providers, rather than any physician and any hospital? This might be practical for private payers, but there is limited flexibility with FFS Medicare.

Cadence

We are a nation in crisis, needing to find solutions to the immense problem of healthcare costs rising faster than the growth of gross domestic product (GDP). Bundled payments, if used carefully, offer one tactic among many to move toward a solution. In many ways, if there is increasing provider and beneficiary accountability (e.g., accountable care organizations with a budget to manage), bundled payments could be helpful.

A suggestion is that we have rapid development, piloting, and rollout of limited bundling tactics. Following the lead of Geisinger and other systems, it appears that a short list of certain well-defined acute conditions (e.g., emergent and non-emergent CABG, hip and knee replacements, cataract surgery, gastric bypass) could provide experience with some level of immediate savings while bundled payment strategies are developed to provide incentives for systems to get organized to receive these payments. Starting with a small number of Medicare-paid conditions, expansion could occur in two directions: Medicare could explore whether more conditions could be covered, and the private insurer world could be a "fast follower" of Medicare by contracting with organizations that already are able to handle the bundled payments for Medicare. Timewise, this could start with a handful of pilots (e.g., 5 to 10), expanded to 50 as soon as proven to have a successful format, and then to 500 to 1,000 within 5 years. The physicians and hospitals are in place; next, the appropriate contractual arrangements and organization are needed. Medicare would have to lead since both providers and insurers are reluctant to move off the profitable status quo and Medicare has the ability to offer (or even require) these arrangements through administrative pricing (consider the implementation of DRGs in the 1980s).

Virtual bundling is also a possibility—and could be the penalty—that makes the provider community move toward accepting a reasonable range

of bundled procedures. Many observers believe that virtual bundling in the absence of "real" delivery systems would be problematic, though.

Summary

Rapid adoption of a limited set of bundled procedures appears to be both possible and a good idea. Bundled payments for acute care episodes are practical and working today for a small number of procedures. We need to move forward quickly, but only for a narrow range of episodes that will clearly work.

Providers need to be willing to accept bundled payments and the associated risks. The financial and professional incentives from "fixing the system" have to be sufficient to convince these stakeholders that the large effort is worthwhile on a voluntary basis. Consumers may need to have insurance products redesigned to provide a financial incentive to choose a high-quality, efficient, bundled system (which could be called a "center of excellence"), rather than using the nearest hospital system and local surgeon. Individuals, families, and caregivers will need credible information to understand how and when to access these bundled centers of excellence.

MEDICARE AND BUNDLED PAYMENTS

Armen H. Thoumaian, Ph.D., Linda M. Magno, M.P.A., and Cynthia K. Mason, R.N., M.B.A.
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The common perception that "higher expenditures for more services and expensive procedures yield better quality and outcomes" does not necessarily reflect reality. In fact, the opposite is often true. Under the Medicare fee-for-service payment system, inpatient hospital and physician services are paid separately. Hospitals are paid for inpatient care on a per-discharge basis and therefore have an incentive to minimize services furnished to inpatients and to reduce lengths of stay. Conversely, physicians, paid on a fee-for-service basis, face no incentive to control hospital service utilization or to minimize costs of the hospital services they order. However, the incentives of physicians and hospitals are aligned insofar as hospitals are rewarded for increasing inpatient admissions, and there is no incentive for physicians to discourage unnecessary admissions and costly procedures.

The Bundled Payment Strategy

Bundled payment strategies that take advantage of competitive market forces have been considered a potential means for the Medicare program to lower the expense of high-volume, high-cost healthcare episodes. An all-

inclusive bundled payment strategy has the potential to realign payment incentives to improve quality of care and outcomes, reduce unnecessary costs, facilitate more efficient service delivery, and improve patient satisfaction without affecting the Medicare beneficiary's freedom to choose providers.

The following is a description of some of the experiences of the Medicare program in conducting bundled payment demonstrations and what has been learned from the findings. The Medicare experience with bundled payments began early in 1988. Since the mid-1980s, numerous studies have found an inverse relationship between institutional volume and mortality for CABG surgery (Donabedian, 1984; Flood et al., 1984; Hughes et al., 1987; Luft et al., 1987; Showstack et al., 1987). A complementary analysis of Medicare claims data in the late 1980s showed that one-third of CABG surgeries took place at hospitals performing fewer than 50 Medicare cases per year (Health Care Financing Administration, 1992). During this same period there was a well-publicized initiative at the Texas Heart Institute (THI) at St. Luke's Episcopal Hospital in Houston, Texas. THI offered private insurers a negotiated bundled payment price for all physician services connected with an inpatient CABG admission that provided savings to the payer. Putting together the relationship between volume and quality and the cost savings that might be achieved from a bundled payment, an August 1987 Office of the Inspector General (OIG) report recommended the implementation of a Medicare demonstration to attempt to lower costs by arranging for an all-inclusive package price for CABG surgery with selected high-volume hospitals (Office of Inspector General, 1987). This recommendation was the catalyst that led to a number of Medicare bundled payment demonstrations.

The Medicare Participating Heart Bypass Center Demonstration

The Medicare Participating Heart Bypass Center Demonstration was designed and implemented to test the cost effectiveness of a bundled payment for CABG surgery. Despite the considerable financial risk to hospitals of adopting a bundled payment system, numerous hospitals applied to participate and 4 out of 10 finalist hospitals began the demonstration in May 1991 in Georgia, Massachusetts, Michigan, and Ohio. The demonstration was expanded to three more hospitals in 1993 and ended in June 1996. All-inclusive bundled payment packages were negotiated for CABG surgery with discounts from the hospitals ranging from 5 to 30 percent of the estimated Medicare Part A and Part B payments that would otherwise have been made to these hospitals for DRGs 106 and 107. The packages included all hospital and physician services, outliers, and readmissions occurring within a window of 3 days to 6 weeks from discharge.

The bundled payment realigned the payment incentives of both hospitals and physicians around the common goals of improving quality and

reducing cost. The resulting new cooperative relationship between the hospital and physicians led to innovative initiatives to achieve these goals. One such initiative was a provider incentive program later referred to as "gainsharing." Hospital staff and physicians were rewarded with monetary bonuses for their contributions to improve quality and cut costs.

The bundled payment demonstration saved more than $50 million on 10,000 procedures performed at the seven hospitals, approximately $42 million for Medicare from the discounted payment and another $8 million to beneficiaries or Medigap insurers in the form of reduced coinsurance amounts. Findings suggested that the bundled payment methodology was instrumental in creating an incentive for both physicians and hospitals to work together to reduce costs. This led demonstration sites to identify opportunities for savings through changes in clinical management of patients that resulted in shorter lengths of stay, better management of pharmaceuticals, and standardization of equipment. Changes in treatment protocols reduced average costs in operating rooms, intensive care units, and routine nursing services, yielding further savings to hospitals. One of the most interesting findings was that post-acute care costs decreased by about $4.1 million in the demonstration sites owing to improved outcomes at discharge that reduced readmissions, home healthcare episodes, and outpatient visits. This demonstration showed that complex, inpatient procedures with a defined inpatient stay and significant but standardized resource use, may be good candidates for a bundled payment program to achieve substantial cost savings and quality improvement.

The Cataract Alternative Payment Demonstration

Cataract surgery was among the most frequent procedures performed in 1988, and there was reason to believe that costs were not declining commensurate with volume increases and technological advances. The Cataract Alternative Payment Demonstration was conducted from 1993 to 1996 to test the efficacy of a negotiated bundled payment to achieve a savings for Medicare while improving quality of care and outcomes for Medicare beneficiaries. Four participants in three cities began the demonstration: Cleveland, Ohio; Dallas, Texas; and Phoenix, Arizona. The bundled payment included all facility costs and physician fees, the cost of the intraocular lens, and all pre- and postoperative tests and follow-up visits. The discounts achieved ranged from 2 to 5 percent. The demonstration produced only about $500,000 in savings after 4,500 procedures. The limited number of resources involved in an individual case reduced opportunities for increasing efficiencies. Benefits to participating providers were further minimized by the fact that volume increases failed to materialize. The evaluation concluded that outpatient procedures involving few

professional staff, processes, and supplies may not be good candidates for bundled payment programs.

Participating Centers of Excellence Demonstration and Gainsharing

Building on the experiences from the CABG and cataract demonstrations, Medicare began in 1995 to develop another demonstration to test the bundled payment approach, the Participating Centers of Excellence Demonstration for Orthopedic and Cardiovascular Services, which was set to be implemented in 100 sites across 10 states. However, the demonstration was never implemented for a variety of reasons—most significantly, competing resources for implementation of the Balanced Budget Act of 1997 and a moratorium on systems changes related to the year 2000. Subsequent efforts to implement the demonstration faced challenges resulting from changes in the underlying bundle of services for the cardiac DRGs and organized opposition from the American Academy of Orthopedic Surgeons.

The gainsharing initiatives, however, which were based on the concept used successfully in the CABG demonstration, gained increasing interest as a less complex alternative to bundling. Medicare is currently testing this approach in 14 hospitals. Under its gainsharing demonstrations, Medicare continues to pay hospitals and physicians separately under the current fee-for-service methodologies, but hospitals are permitted to provide incentives to physicians to reduce costs and improve quality outcomes.

ACE Demonstration

Recently, another bundled payment demonstration, the Acute Care Episode (ACE) Demonstration, has been designed and implemented modeled on the CABG and centers of excellence demonstration initiatives. The ACE Demonstration is a three-year program that began in the spring of 2009. The demonstration involves a discounted bundled payment for all hospital and physician services for a group of inpatient cardiovascular procedures (CABG, heart valve, defibrillator and pacemaker implant, and angioplasty) and orthopedic procedures (hip and knee joint replacement). Because of the complexity of billing and claims payment under a bundled payment approach, the solicitation for applicants was limited to physician-hospital organizations (PHOs) located in states within the jurisdiction of one Medicare Administrative Contractor (MAC). Applicants were required to provide a competitive bid by Medicare Severity-Adjusted Diagnosis-Related Group (MS-DRG) for either cardiovascular procedures, orthopedic procedures, or both. Sites are permitted to enter into gainsharing with physicians and allied professionals to provide incentives to improve quality and cost efficiency. Unique to this demonstration is that Medicare will share

50 percent of the savings it realizes from the discounted prices with the Medicare beneficiary, up to the amount of the annual Part B premium, currently $1,157. Sites are designated as "Value-Based Care Centers" and are encouraged to market their programs to referring physicians and Medicare beneficiaries. Five PHOs were selected to offer orthopedic or cardiovascular services, or both. Price discounts range from 1 to 6 percent, varying by site and by type of procedure.

Lessons Learned

Prior and current demonstrations have shown that a bundled payment program inclusive of all facility and physician services for an episode of care can effectively realign service and utilization incentives to yield cost efficiencies and quality improvement outcomes for the provider with considerable savings to the patient and insurer. However, the cataract demonstration also showed that the healthcare episode must involve a sufficient number of healthcare resources to provide the potential for increased efficiencies. Complex, high-cost inpatient procedures that involve significant but standardized services offer the best opportunity for cost savings and quality improvement. In addition, a carefully designed gainsharing program can elicit creative initiatives and broad provider involvement in efforts to improve quality outcomes while reducing unnecessary costs.

BUNDLED PAYMENT: PHYSICIAN ENGAGEMENT ISSUES

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HealthPartners

Many policy experts advocate a move to bundled payment approaches to address the perverse incentives associated with fee-for-service payment systems. Despite near consensus among policy makers about the benefits of bundled payments, little practical experience informs the issues that may be encountered in implementing this strategy. In this paper, four experiences in Minnesota with varied bundled payment systems highlight the variation and limitations of bundled payments. However, from these experiences, we can glean key lessons about the implementation of these systems and define some of their policy implications.

Commonly cited policy objectives for bundled payment systems include (1) increased efficiency (lower cost of care), (2) coordination of care, and (3) improved quality of care (when combined with pay for performance). However, while looking at four manifestations of bundled payment systems in Minnesota, it becomes clear that not only are there critical lessons to

learn but not all of these systems do in fact target these objectives. As a result, these systems may be moving in directions that arrive at different places with regard to cost savings potential.

Lessons from Carol.com

Carol.com is a bundled payment initiative in Minnesota that focuses on improving the way consumers interact with the healthcare system, improving cost transparency, and encouraging a market for health care driven by open choice and competition. A "care package" (bundled care) gives a detailed description of a treatment or service so that a patient knows exactly what to expect before going to the doctor and exactly what is being provided for a stated price. Care packages are designed, priced, and placed in the consumer-directed carol.com online marketplace by individual providers. Two markets are currently active, Seattle and Minneapolis. This approach is intriguing and attractive because it is consumer focused and has the potential to be more readily understandable by patients. Unfortunately, there has been limited consumer purchasing volume in the online marketplace so far. Until such time as this approach is a dominant market paradigm for purchasing care, we feel that it has very limited cost savings potential.

Lesson from Minnesota "Baskets of Care" Initiative

The objective of the State of Minnesota Baskets of Care initiative is to encourage providers to cooperate and develop innovative ways to improve healthcare quality and reduce costs through the development of seven "baskets" or bundles of care by January 1, 2010. The steering committee identified asthma in children, diabetes, acute low back pain, obstetric care, preventive care in adults, preventive care in children, and total knee replacement as the seven initial bundles. Working groups drawn from stakeholders and experts and facilitated by the Institute for Clinical Systems Improvement have defined the contents of each of the baskets. Quality measures that describe the quality of care of each of the baskets and administrative and implementation challenges for all of the baskets are in the process of being identified as this is written. The legislation calls for a single price to be established and ultimately posted publicly by each provider for the baskets that must be adhered to by all payers (with some government exceptions). Price and quality information for each basket by provider are to be public by July 1, 2010. In Minnesota, opinions vary on the potential of this initiative for cost savings.

Lessons from Prometheus Payment System

The goals of the Prometheus Payment system are (1) to encourage physicians, hospitals, and other providers to work as a team centered on each patient's needs, irrespective of their administrative integration, and (2) to improve margins as they reduce care defects. A more complete description of Prometheus was provided in the July workshop in this series. At HealthPartners, we have had the opportunity to pilot the Prometheus AMI (acute myocardial infarction) bundle in our commercial populations. We found that we have small numbers of patients with AMI in that population. In Minnesota, we have worked hard with considerable success to encourage adherence to best care clinical guidelines for cardiovascular disease, and our commercial populations have been the target of excellent preventive care and health behavior change interventions targeted at cardiovascular risk factors for more than a decade. As a result, there is limited opportunity to reduce total cost of care when the focus is reducing potentially avoidable procedures and complications for an AMI episode. In addition, HealthPartners evaluated other high-volume procedures as potential candidates for this payment methodology. Similar to AMI, the results of our analysis suggested limited opportunity to reduce total cost of care for procedure-based episodes. We understand from other Prometheus pilot sites and Prometheus staff that chronic conditions may offer better opportunities for reducing potentially avoidable care and therefore reducing cost of care in Minnesota. This raises the issue of variable cost savings opportunity by condition or procedure by region of the country for this and other bundled payment approaches, a situation that should not be unexpected given the work of Wennberg and Fisher on regional variation in care.

Lessons from Use of Episode-of-Care Analytic Tools

At HealthPartners, we have used commercial episode treatment groups to provide analysis of claims experience to the medical groups serving our 850,000-member health plan. This includes our own medical group (HealthPartners Medical Group) of more than 650 physicians in over 30 locations providing both primary and specialty care to approximately 250,000 of those health plan members. Because the medical groups that serve our plan population, including the HealthPartners Medical group, are placed in tiers for many of our insurance products by both cost and quality, there is interest in achieving a high-quality and low-cost position for the most favorable tiered position. Patients selecting care with physicians in medical groups in the most favorable tiered position benefit by having lower copayments for care. Episode treatment group analysis is used to analyze practice patterns and identify unwanted variation in care. As a result of in-

tense focus to achieve consistency in care and coordination of care through the design of reliable systematic care processes, supported by an electronic medical record, we have been able to achieve increases in quality of care, high levels of patient satisfaction with the experience of care, and reduction in the relative cost of care for HealthPartners Medical Group from slightly more than the average cost of care in our market to 8 percent below the average cost in a period of about 4 years (Figure 15-1). In integrated care systems, global incentives to achieve reductions in total cost of care, the use of episode-of-care analytic tools, and many other efforts can result in reductions in total cost of care relative to market averages.

Tying Together the Lessons Learned

These experiences in Minnesota demonstrate that the objectives of these conceptually similar efforts vary and that the cost savings potential of some of these models is controversial.

- *Systems dependent on transparency and consumer choice must have significant market share.* While innovations such as online

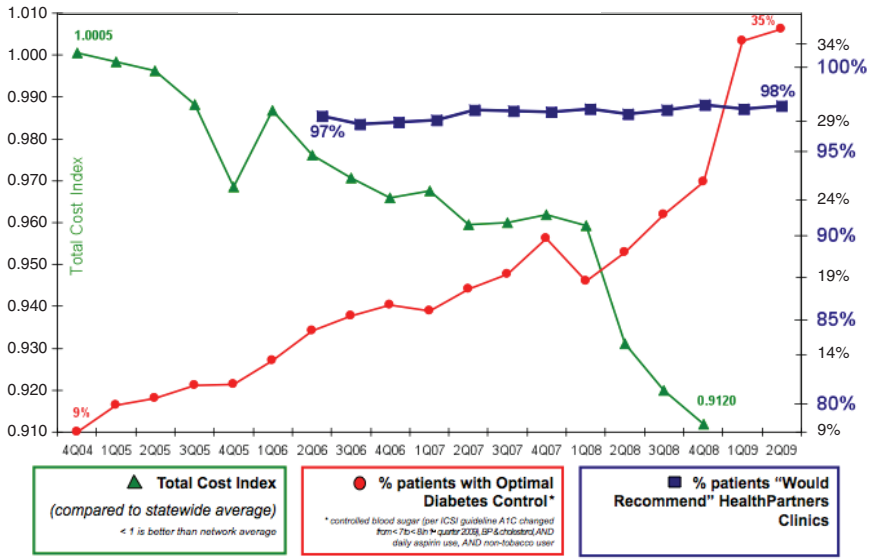

FIGURE 15-1 Triple aim: health-experience-affordability.
SOURCE: Reprinted with permission from HealthPartners, Inc. HealthPartners, 2009.

marketplaces are promising and exciting, until they become the dominant market paradigm for purchasing care, the cost savings potential is limited.

- *Building these systems is difficult and resource intensive.* Design and development is important and resource intensive and must be carefully executed—from the enabling legislation, to expert development of the tools and payment systems, to the testing of feasibility and practicality by practitioners and payers in real markets.
- *Impacts may vary by region and by procedure.* Potentially avoidable care and efficiency of care may vary by procedure and condition by region of the country, presenting differential regional opportunities for cost savings.
- *Formal organizations that support integrated systems are better positioned for success.* Corrigan and McNeill have observed that "clinically integrated systems of care are better positioned to design safe, effective, and efficient longitudinal care processes for patients with chronic conditions. With clinical integration, performance measurement and improvement can extend across each entire patient-focused episode and can help inform and redesign the whole care process" (Corrigan and McNeil, 2009). Kahn observes that "to maximize the chances of success and minimize the possibility of unintended consequences (of payment reform), the appropriate culture and structure of health care institutions first must be in place" (Kahn, 2009).

Figure 15-2 suggests that increasing integration of the care organization enables the feasibility of more bundled payment arrangements and the collection and reporting of more sophisticated outcome measures of quality of care. Review of Howard Miller's presentation to the July workshop in this series, supplemented from experience with bundled payment in Minnesota, indicates that the design of bundled payment is a complex task that must be carefully executed to achieve the desired policy objectives.

Although some would assert that "virtual integration" is a possibility for physicians to work with hospitals and other providers in prospectively managing bundled care across time and organizational boundaries, participants in designing care packages for carol.com or Baskets of Care for the State of Minnesota are reluctant to design bundles with components that are out of their organizational span of control. Some physicians have very little trust or comfort in other organizations' acting as the financial integrator for bundles of care in which they participate. Small or individual practices may require technical help from a payer or a larger, more sophisticated, organizational provider partner to understand how to evaluate and participate in bundled payment arrangements. For payments across

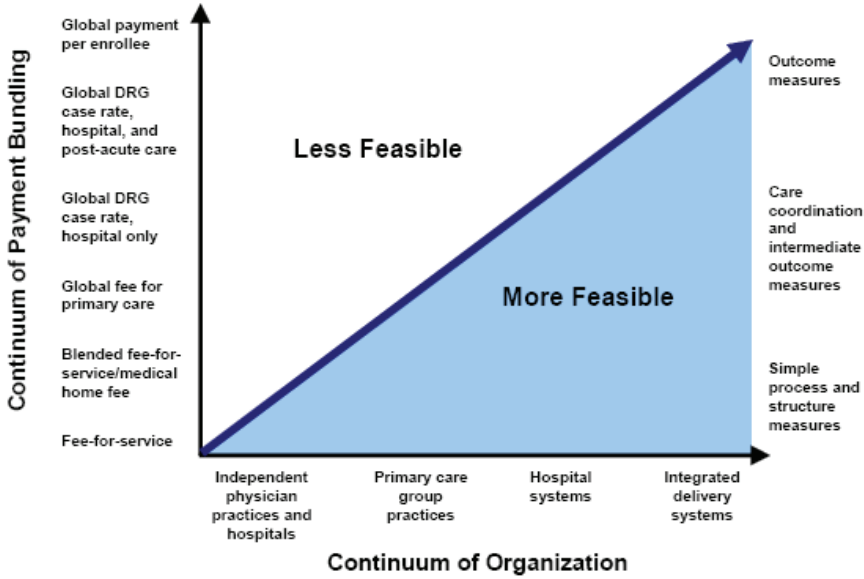

FIGURE 15-2 Organization and payment methods.
SOURCE: Reprinted with permission from The Commonwealth Fund, 2009.

organizational boundaries, a lead "integrator" may be required to accept the bundled payment and manage the distribution of that payment to individual smaller practice entities participating in the arrangement. How that subpayment is arranged, how the coordinating mechanisms are designed and deployed, how the effort is expended to develop a common understanding of the objectives (common culture), and how the redesign of care is executed to achieve better bundle performance will be important elements in determining the success or failure of implementation.

It is less difficult but still not easy to achieve the degree of cooperation required for success even in existing integrated organizations. This will be even more difficult in situations where cooperation is required across formal organizational boundaries. The form of payment and the degree of integration of care are strongly interdependent factors that lead me to the conclusion that planning for implementation of payment reform must proceed in close harmony with planning for reforms in the structure and function of the delivery system itself. The various proposals for the development of accountable care organizations (ACOs), if implemented, may go a long way toward creating the capability in the existing fragmented and disorganized care system to effectively manage bundled payments for care. It is important to note, however, that in any of these systems, bundles them-

selves do not intrinsically address inappropriate indications for services, and the potential exists for bundled procedures to be gamed to increase inappropriate hospitalizations and procedures.

Again, bundles arrive in a very complex and fragmented clinical, payment, and administrative environment, creating challenges for implementation. In 2009, implementing bundled payment pilots is resource intensive, requires sophistication, is complex, is not automated, and layers on an existing FFS payment system. Everyone currently involved in the bundled payment efforts in Minnesota is confused about how "Health Care Homes" (our medical home initiative in Minnesota), bundles of care, and accountable care organizations (being contemplated for development in Minnesota) relate to one another as payment reform initiatives and in practical operational terms as pilots for these initiatives are developed and deployed. Some ask how many times and how many providers will be paid for coordination of care since coordination of care is an outcome for these three payment or structural reform concepts.

Translating to National Implementation and Reform

Some key issues for national implementation of bundled payment include the need for coordination of Medicare and state-funded programs ("harmonized" payment methods) with the private commercial market (as Medicare does with DRGs for hospitals). Regional variation is important; implementation of new payment programs should not add to the problems created by perverse incentives in existing federal payment policies (the Resource-Based Relative Value Scale [RBRVS] and the distortion in relative payments to primary care and specialist physicians, and regional Medicare payment variations).

To achieve the maximum savings potential, bundled payment systems should be designed by experts as a comprehensive payment system with the input of providers and other stakeholders and judged against clearly defined policy objectives. For both federal and state policy makers, an overall model of payment reform that addresses the potential conceptual and operational conflicts between the medical home, accountable care organizations, and bundled payment initiatives is needed. Appropriateness of care needs to be explicitly addressed and incorporated into the design of the bundle. Care should be taken with respect to the special interests undermining the intent in government-designed bundled payment programs through political influence (e.g., comparative effectiveness research and its application to benefit design, etc., under the American Recovery and Reinvestment Act [ARRA]). Engaging providers and other stakeholders is important to the successful implementation of bundled or any other payment reform.

Currently, provider attitudes toward bundled payment vary from en-

thusiastic to hostile. With such a complex reform, technical assistance on management and quality improvement at the local level should be provided to address provider and payer organization concerns about their ability to succeed with implementation. It will be important to provide a way for all to win if performance against cost and quality for patients is to be improved—in both high- and low-performing regions of the country.

PATIENT PERSPECTIVE AND PAYMENT REFORM

Nancy Davenport-Ennis
National Patient Advocate Foundation

As we embark on the national discussion about health care and payment system reform—its policy and politics—it is critical that we attack the issue of bundled payments from the patient perspective. For although we may not be a patient today, we may have been one yesterday, we may become one tomorrow, but we are assured at some point that either we or someone very near and dear to us will be a patient. While the voices of providers, payers, policy makers, researchers, and other stakeholders have been loudest in the debate, it is the patient who is at the center of the system.

Bundling payments in the U.S. healthcare system is an activity that requires us to get it right for patients. Patients need the system to do this well. They need the payment system to be deliberate. They need reform that looks at cost savings through a prism that is going to ultimately afford greater quality of care and greater opportunity for physicians and patients jointly to examine what the cost, benefit, and risk to the consumer are going to be.

Engaging Patients Meaningfully

An important first step is to grapple with patient engagement. Patient engagement includes actions that individuals must take to prevent disease and obtain the greatest benefit from knowledge of both disease prevention and the healthcare services available to them. However, patient engagement needs to be encumbered with the reality of those of us who are patients and are trying to become engaged in this arena of thinking and decision making. What is not considered in this definition is that often patients are under great duress and stress at the time they are trying to be engaged in the healthcare community. Patients are often suffering with pain. They are often suffering with non-descriptive symptoms that may or may not cloud their ability to become active in their own decision making. Just as likely, they may not be able to understand clearly the information provided to them under these circumstances. The need for patient engagement *that accounts*

for these realities becomes that much more important as we move toward a bundled payment system, but today's failures at patient engagement leave us far from the mark of where we need to be.

As an illustration, 4 years ago, one of my family members was diagnosed with a Stage 4 cancer, with a projected remaining life span of 120 days. Furthermore, there was less than a 30 percent chance that any intervention would be favorable. My family represents many well-informed healthcare consumers, and we asked the obvious questions, including "What are the costs for the care?" Yet, after 5 months, we still did not have an answer about the cost, and this was a family that was persistent, well educated, and well informed. So as we begin to talk about bundled payments, we are indeed asking the nation to make a fundamental paradigm shift.

Patients need information that they have never had before. Also, because they have not had it before, they need support in making sense of it and using it to drive decisions. What questions do they need answered? Here are a few: What is the cost of treatment? How much is being saved by reforms? Where do the savings go? What are the effects on me as a patient and consumer? How do we measure success of reform—fewer dollars spent, higher quality and better outcomes, both?

Of course, bundling is not a brand new concept. We have had diagnosis-related groups for a long time in the United States that bundle the costs of inpatient hospital services. However, if a patient were admitted today through the emergency room and asked whether any of the services she was about to receive would be part of DRG, she might or might not get a clear answer. If she asks about the cost share for her and her family for the DRG billing, again there is a significant chance that she will not get an answer today, tomorrow, or next month. She will likely have to wait for her first explanation of benefits (EOB). So even though this "new" reform has been in practice at some level for years, the call for patient engagement has not been answered. Fortunately, there are places that are more successful at patient engagement, and looking at the Geisinger Health System is informative in that regard.

Bundling Clearly and Flexibly

Beyond the issue of patient engagement, looking forward to payment reform and bundling requires attention to creating bundles that make sense. Some treatment protocols can be very neatly packaged. They have clear beginning dates; they have clear end dates; and there are very specific bands of services that occur within a framework. Here, bundling probably works very well. However, bundling works less well when the diagnosis is complex and there is not a single, clear, prescriptive therapeutic intervention. Part of that lack of clarity rests with the underlying comorbidities of the patient.

If bundling is going to be successful for the patient, we must consider weighted outliers and devise a system that, while defining a diagnostic and treatment pathway within a bundle, allows for meeting the patient's need should he fall outside of the standard parameters.

Engaging Patients Through Education

Bundled payment systems are and will continue to be complex, if for no other reason than they need to be flexible and pliable in the face of patient needs. Yet, as complicated as these systems are, patients need simple, straightforward information and ready access to it. We would suggest that with any bundled payment reform, not only does it have to engage patients and meet the needs of all patients, it has to include a public education campaign. Educating patients, doctors and providers, insurers, and other stakeholders about the bundled payment system requires a concerted effort at the national level. Patients need to understand the risks and the benefits of all the services that can be made available to them. Nonprofit patient groups are going to have to wade into this water and help their constituents understand what the bundled packages of standard care mean for patients in specific disease groups. Insurers will have a tremendous responsibility to further educate the employers to whom they are selling policies.

Conclusion

Patients are the centerpiece of the healthcare system. It is they who are served by providers, payers, and policy makers. Yet their voices are often the least considered in the debate. As the direction of healthcare reform moves appropriately to bundled payments and the creation of coherent pathways of diagnosis and treatment, we must remember the needs of patients. Meaningful patient engagement is critical. Bundling healthcare services must allow for all patients to be served, regardless of the complexity of their cases or their comorbidities. In addition, patients and all stakeholders need accessible and robust education about the impact of these reforms on their everyday lives and practices.

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16

Medically Complex Patients

INTRODUCTION

Since 48 percent of Medicare beneficiaries have at least three chronic conditions and 21 percent have five or more conditions, it has been estimated that approximately 60 million Americans have multiple morbidities, a number that is expected to increase to 81 million by 2020 (Anderson and Horvath, 2002). Additionally, projections place levels of obesity at 41 percent by 2015 (Wang and Beydoun, 2007), with consequences for diabetes, heart disease, hypertension, cancer, and osteoarthritis. To explore the solutions needed to face these mounting challenges, presenters in this session discuss policy initiatives to facilitate care of the growing population of medically complex patients, emphasizing patient-centeredness, payment redesign, quality and consistency in treatment, streamlined and harmonized health insurance regulation, and prevention at personal and population levels.

Arnold Milstein of the Pacific Business Group on Health opens this session by reviewing promising initiatives to lower per capita healthcare spending and improve clinical outcomes for medically complex patients. He reports that two areas of reform have yielded the largest impacts: (1) multidisciplinary primary care teams providing ongoing care to patients with particular attention to preventing unplanned inpatient admissions, and (2) standardization of inpatient care to maximize quality and efficiency. In order to scale these practices to a national level, Milstein proposes a focus on substantial payment incentives, technical assistance, and additional research and evaluation.

R. Sean Morrison of Mount Sinai Medical Center agrees that care for patients with serious illness and their families is in much need of improvement. He explains that palliative care provides interdisciplinary care coordination and team-driven continuity of care that best responds to the episodic and long-term nature of chronic, complex disease. While the prevalence of these programs in hospitals grew from 5 percent in 2000 to 50 percent in 2008, palliative care still falls far short of being accessible to all who need it. For palliative care to be accessible to all patients with serious illness and their families, he urges consideration of a number of key policy initiatives, including education of patients, families, and healthcare professionals about the benefits of palliative care; additional resources for workforce development to train sufficient numbers of specialists to effectively provide palliative care to patients and families in need; patient-oriented and health services research; and reimbursement structures that promote team-based care.

Ronald A. Paulus of Geisinger Health System suggests that value-based payment models must move beyond payment for units of work or effort and instead reward demonstrated patient- and population-level clinical impact and outcomes. Paulus explains that care gaps are evidence- or consensus-based patient clinical needs as informed by age, gender, comorbidities, physiological parameters, and other factors. Primary care teams of practitioners, nurses, and specialists at Geisinger Health System work in closing these gaps for their patients. When supplemented by an electronic health record with enhanced decision support, population-level data, and integrated analytics, he explains, this approach can produce marked progress in patient and population outcomes. For example, among diabetic patients, this clinical care-based process has resulted in continuous stepwise improvement in the percentage of patients who have completed all nine care bundle components of evidence-based care, producing a fourfold percentage increase over 24 months for a group of more than 22,000 patients. He suggests that this model could also serve as a point of reference for those seeking to develop value-based payment models structured to encourage innovation, enhance patient experience, improve clinical quality, and contain costs.

Lastly, Anand K. Parekh of the U.S. Department of Health and Human Services identifies several policy areas that could further support tertiary prevention in individuals with multiple concurrent chronic conditions. Since medically complex patients have often been excluded from participation in randomized controlled clinical trials, he suggests that the external validity and generalizability of these studies to this population are limited. While identifying the importance of health professional training in the care of medically complex patients, he explains that many current evidence-based

guidelines focus on individual chronic diseases, thus disregarding the coexistence of other chronic conditions in patients and putting patients at risk of drug-drug or drug-disease adverse interactions. He additionally discusses patient engagement as playing a central role in patients' management of their own care and provider payment reform as essential to incentivizing enhanced care coordination and care management.

PAYMENT POLICIES AND MEDICALLY COMPLEX PATIENTS

Arnold Milstein, M.D., M.P.H.
Pacific Business Group on Health and Mercer Health & Benefits

Public and private sector policy makers seek provider payment reforms that will both improve clinical outcomes and reduce healthcare spending substantially. Such improvement has been demonstrated for medically complex patients in scattered locations throughout the country via comparisons either with local peers or with the provider's own prior year's performance. One or both of two instrumental changes in care delivery were required.

- Multidisciplinary primary care teams judiciously intensified care during and/or between office visits (Milstein and Gilbertson, 2009; Paulus et al., 2008) for patients at highest risk of near-term emergency room (ER) visits and unplanned inpatient admissions.
- Inpatient care teams standardized and then iteratively refined an increasing portion of inpatient care, via either use of systematic process engineering tools such as the Toyota Production System (Bohmer and Ferlins, 2005) or adoption of externally or internally sourced checklists, standing order sets, and/or clinical implementation pathways (Pronovost et al., 2002).

Since current provider payment methods sometimes inadvertently penalize these changes, they were often led by exceptional innovators who persevered nonetheless. In addition to such fundamental redesign of care processes and exceptional provider leadership, what payment policies were required to enable these exceptional results? Intensification of primary care via multidisciplinary teams required either full transfer of health insurance risk from insurers to care providers via global capitation or substantial shared savings payments by insurers. Greater standardization of inpatient care via iterative clinical process reengineering required that a significant share of hospital revenues be paid by Medicare and/or another large source of fixed payment to hospitals for the inpatient portion of an episode of acute care.

Challenge of Replication and Scale

Despite these exemplary pockets of success, the Centers for Medicare & Medicaid Services (CMS) has recently struggled to scale equivalently robust improvements by sharing with providers the savings from various forms of intensified ambulatory care for chronically ill Medicare beneficiaries. When improvements were attained, the effect sizes have been small relative to those reported by innovators (Brown et al., 2007). In addition, Medicare Payment Advisory Commission (MedPAC) analyses have shown that despite Medicare's diagnosis-related group (DRG)-based fixed-price hospital payments, 88 percent of U.S. hospitals have levels of clinical outcomes and total cost per admission that are approximately 15 percent less favorable than the highest-performing 12 percent of hospitals. Many speculate that, like publicly available comparisons of provider performance, provider payment incentives may be a necessary but not sufficient condition for scaling benchmark performance on both quality and cost efficiency nationwide. Other evidence points to the importance of three cofactors: (1) the size of performance-based payment incentives; (2) the intensity of competition faced by providers, especially in the commercially insured market (MedPAC, 2009); and (3) the provision of effective technical assistance to providers by successful care innovators.

The Implied Public Policy Prescription

Success in improving the care of medically complex patients and lowering total per capita healthcare spending is likely to require addressing these three pivotal cofactors. The following prescription illustrates how federal policy could accomplish this.

- *Ensure adequate size of performance-based provider payment incentives:* How large must performance-contingent payment be to motivate provider prioritization of benchmark performance attainment? The Institute of Medicine's (IOM's) review of available evidence on provider payment incentives suggests that they must be much larger than current incentives. The IOM concluded that performance-based payments must equal or exceed 10 percent of annual provider income (IOM, 2007). Current U.S. provider performance-based payments do not come close to this target. Federal policy should require that U.S. health plan beneficiaries be enrolled in plans that make at least 10 percent of provider payments "value contingent."

  Value-contingent payments encompass three principal changes in U.S. provider payment policies, each of which would have to be

conditioned on benchmark or improved quality of care: (1) payments that are bundled for all services delivered during acute care episodes for conditions that commonly require hospitalization, including any post-hospital recovery period; (2) payments that are globally capitated annually for all healthcare services; and/or (3) payments that share with providers the savings they produce for payers and patients. To eliminate the gap between average and benchmark performance, such performance-contingent payment should eventually be calibrated primarily to reward the attainment of benchmark performance rather than to reward performance improvement.

- *Ensure adequate intensity of provider competition:* Federal policy should require that all U.S. health plan beneficiaries who are at high risk for ER use or unplanned hospitalization, whether enrolled in fee-for-service or managed care plans, be strongly incentivized to use providers who are performing above local average levels of measurable quality and low total combined cost of care to payers and patients.

  In view of evidence that the intensity of competition for commercially insured patients motivates providers to deliver more value, and to impact providers who derive little to no income from federally funded health benefits plans, reform in health benefits tax policy or other incentives should be used to motivate private sector plans to adopt parallel policies. In addition, for providers whose market dominance enables them to neutralize such value-contingent payment and patient incentives, all-payer pricing systems or strengthened federal antitrust regulations may be required to prevent provider evasion of accountability for attaining benchmark value.
- *Ensure adequate technical assistance to non-benchmark providers:* Another IOM review found that many U.S. providers lack the skills to rapidly improve clinical performance (Reid et al., 2005). To address this deficiency, new federal policy should require (1) that public and private payers share pro rata in the expense of efficiently providing technical assistance to support both the successful adoption by providers of multidisciplinary primary care teams for the severely ill and the standardization of inpatient care processes using models developed by benchmark providers; and (2) that a substantial portion of federal comparative effectiveness research funds be dedicated to comparison of options for accelerating providers' rate of adoption of innovations demonstrated to deliver better clinical outcomes and lower per capita spending for medically complex patients.

Conclusion

Local exemplars show that it is possible both to reduce total per capita spending and to improve clinical outcomes for medically complex patients. However, replicating and scaling these local innovations to a national level will likely require three policy changes: (1) much larger performance-based provider payment incentives, (2) patient incentives to use higher-value providers, especially when they are severely ill, and (3) coordinated technical assistance funded pro rata by all payers to spread benchmark clinical performance rapidly. Initiating these three policies for medically complex patients will help propel improved outcomes *and* lower real per capita U.S. healthcare spending by more than 10 percent by 2019.

PALLIATIVE CARE, ACCESS, QUALITY, AND COSTS

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Considerable data suggest that care for patients living with serious illness and their families is in need of improvement. Abundant studies document a high prevalence of pain and other symptoms, unmet family needs, poor communication between patients and healthcare providers, and rising costs of health care (Morrison and Meier, 2004). Palliative care provides a solution to the difficult challenges posed by medically complex patients. Palliative care's interdisciplinary care coordination and team-driven continuity of care best respond to the episodic and long-term nature of chronic, multifaceted illnesses (National Quality Forum, 2006). Recent studies have demonstrated that these care programs improve clinical quality and patient and family satisfaction and, at the same time, reduce hospital expenditures (Morrison and Meier, 2004; Morrison et al., 2008). Whereas the number of hospital palliative care programs has grown dramatically over the past decade (Goldsmith et al., 2008), several key initiatives need to be undertaken for palliative care to be accessible to all patients with serious illness. First, there need to be educational initiatives to increase awareness of the benefits of this care in the setting of a serious illness and of the difference between palliative care and end-of-life care. Second, there need to be workforce initiatives to ensure sufficient numbers of specialists to effectively provide high-quality palliative care. Third, there need to be research initiatives to augment the currently inadequate evidence base. Finally, there need to be legislative changes to modify existing reimbursement structures to cover the team-based approach that is necessary to support high-quality palliative care services. This paper outlines a series of policy initiatives that address these issues.

Public and Professional Misperceptions

A major barrier to the continued growth of palliative care is the perception that palliative care is synonymous with hospice, "end-of-life care," care of the dying, or the alternative to curative or life-prolonging treatments (Meier, 2003; Morrison and Meier, 2004). Palliative care differs from hospice in terms of both timing and reimbursement. It is available to patients who continue to benefit from curative or life-prolonging treatment and is not dependent on prognosis. Reimbursement for hospice care under the Medicare Hospice Benefit requires that an individual be certified by two physicians as terminal (defined as a prognosis of 6 months or less) and agree to give up Medicare coverage for potentially life-prolonging therapies. Palliative care's independence from prognosis is especially important in the context of chronic debilitating diseases such as heart disease, stroke, or dementia for which prognostication is particularly difficult. This unfortunate misperception inhibits access to non-hospice palliative care early in the course of illness when patients and families can benefit greatly from the services palliative care provides. Furthermore, focusing on the end of life or care of the dying is politically problematic. Whereas explanations of humans' long-standing fear of death have ranged from evolutionary to societal (Becker, 1973; Darwin, 2003; Hofmann et al., 1997; O'Gorman, 1998), the practical result is that efforts to focus healthcare reform on end-of-life care have met with resistance and have been relatively ineffective (Hanckock, 2009).

A national social marketing campaign to increase public and professional awareness of palliative care is critically needed. Such a campaign would define palliative care as appropriate care for persons with serious and life-limiting illness throughout the course of their disease, encourage patients and families to seek high-quality palliative care early in the course of illness, and educate healthcare professionals about the appropriate role of palliative care in the care of their patients. This campaign, similar to initiatives centered on smoking cessation and childhood obesity, would considerably facilitate the key policy initiatives outlined below. Table 16-1 details ease of policy implementation and potential barriers.

Workforce

A second major barrier facing the expansion of palliative care services is the lack of palliative medicine physicians. Whereas there is one cardiologist for every 71 persons experiencing a myocardial infarction and one oncologist for every 141 newly diagnosed cancer patients, there is only one palliative medicine physician for every 31,000 persons living with a serious and life-threatening illness (Center to Advance Palliative Care and the National Palliative Care Research Center, 2008). Furthermore, despite the

TABLE 16-1 Strategies for Policy Implementation

Policy Area	Recommendation	Ease of Implementation	Potential Barriers
Misperceptions	Public–private social marketing campaign	Straightforward	Financial—securing public or private sector funding to initiate.
Workforce	Redistribute unused and create new GME training slots	Moderate	Resistance to adjusting established training levels, competition for slots from other medical specialties. Requires Congressional action to approve but could integrate into efforts currently under way with respect to primary care.
	Loan forgiveness programs	Moderate	Competition from other specialties. Requires congressional action, but existing models are available.
	Academic career awards	Straightforward	Expansion of HRSA budget for Title VII program beyond geriatrics; perceived failure of geriatrics program to increase the number of new trainees entering geriatrics training programs. Existing legislation exists, and plans to reintroduce legislation are under way.
	Midcareer training awards	Moderate	No current existing program to serve as an example; clinical infrastructure to support training programs would need to be developed. American Association of Medical Colleges is highly supportive and currently within American Academy of Hospice and Palliative Medicine's strategic plan.
	CME training prior to relicensure	Highly complex	Requires new legislation in 50 states and the District of Columbia.
Access and quality	Bonus payments or penalties linked to palliative care delivery	Straightforward	Requires measures of palliative care availability and penetration of services. Could be readily integrated into CMS's current reporting requirements for hospitals.

TABLE 16-1 Continued

Policy Area	Recommendation	Ease of Implementation	Potential Barriers
	Link palliative care to bundled payments	Complex	Effectiveness of bundled payments has yet to be fully evaluated and tested; some difficulty in describing nature and scope of palliative care services; uncertainty whether hospice benefits should be included in bundle and difficulties in redefining hospice benefit.
	Increase M.D. reimbursement	Moderate	Requires development of time-based coding systems for non-ICU physicians; competition from other specialties (e.g., geriatrics, hospital medicine) for similar provisions; requires upfront investment in physician salaries to achieve longer-term cost savings.
	Establish a palliative care Resource Utilization Group (RUG) for nursing home reimbursement	Moderate	Reimbursement level would need to be comparable to restorative focused RUGs; distinction between indications of normal decline (e.g., weight loss, loss of function) and quality lapses for residents receiving palliative care need to be understood.
	Inclusion of palliative care in medical home models	Moderate	Requires existing models to develop partnerships with hospice and non-hospice palliative care programs; access to palliative care may not be uniformly available.
	Include palliative care in accreditation requirements	Moderate	Guidelines for palliative care service components at smaller hospitals and long-term care facilities need to be developed; resistance from Joint Commission given sizable number of hospitals and nursing homes that currently lack programs.
Evidence base	Develop Office of Palliative Care Research	Complex	Requires Congressional act akin to Office of AIDS Research. Existing model in place; does not require the development of new center or institute.

continued

TABLE 16-1 Continued

Policy Area	Recommendation	Ease of Implementation	Potential Barriers
	Redistribute 2% of NIH budget to palliative care priorities	Complex	Requires Congressional act akin to Alzheimer's and AIDS research. Meets stated priorities of NCI to eliminate cancer suffering; likely opposition from disease-specific organizations and basic science researchers.
	Prioritize career development awards to support investigators working in palliative care	Straightforward	Builds on existing infrastructure and models (e.g., NIH Beeson program). Can be done within individual institutes.

NOTE: AIDS = acquired immune deficiency syndrome; GME = graduate medical education; ICU = intensive care unit; M.D. = medical doctor; NCI = National Cancer Institute; NIH = National Institutes of Health.

recognition of palliative medicine as an official American Board of Medical Specialties (ABMS) subspecialty, only 24 states have fellowship training programs approved by the Accreditation Council for Graduate Medical Education (ACGME) (American Academy of Hospice and Palliative Medicine, 2008). Finally, because of the cap on GME residency training slots, the majority of current fellowship slots are supported by tenuous philanthropic dollars and not by Medicare funding.

Several policy initiatives are likely to have a major impact on improving care for persons with serious illness. First, the GME cap should be lifted to allow the expansion of palliative care fellowship training programs, and currently unused GME slots should be redistributed to support ACGME-approved palliative medicine fellowship training. Second, loan forgiveness programs for palliative care physicians similar to those available to researchers through the National Institutes of Health (NIH) (U.S. Department of Health and Human Services, 2009) should be established at the Health Resources and Services Administration (HRSA) in order to promote palliative care as a viable career path for young physicians. Third, HRSA Title VII-supported career development awards (similar to Geriatric Health Professions Training Programs) should be established to support clinician educators who can integrate palliative care into medical school and residency training curricula (Reynolds, 2008). Fourth, HRSA should establish

mid-career training awards to support retraining of the current workforce into this new specialty. Finally, mandatory continuing medical education (CME) training in primary-level palliative care prior to state relicensing, similar to California's provision for training in pain management (Medical Board of California, 2009), would ensure that all physicians were familiar with the core competencies of palliative medicine.

Access and Quality

Despite linear growth in the development of non-hospice palliative care programs, 47 percent of hospitals still lack palliative care programs, and palliative care in nursing homes and ambulatory settings outside of hospice is rare (Goldsmith et al., 2008). One barrier is that the current business model for palliative care is based on cost avoidance rather than on revenue generation. This model is unusual in health care, requires sophisticated analytical methods to employ successfully, and is thus difficult to integrate into hospitals' current operating metrics. Additionally, accreditation requirements for hospitals and nursing homes do not yet include palliative care despite publication of consensus standards for quality palliative care by the National Quality Forum (National Quality Forum, 2006). Furthermore, existing palliative care programs are not mandated to observe these guidelines.

Near-term policy solutions that could address the barriers outlined above are fivefold. First, the reimbursement structure for palliative care should enable hospitals and nursing homes to generate revenue from providing palliative care services. For example, providing hospitals and nursing homes with bonus payments linked to palliative care delivery with a transition over 5 years to penalties for institutions not providing palliative care, requiring palliative care services as a condition of bundled payments, and adjustment of current physician reimbursement pay scales to support time-intensive goals of care discussions and care coordination would lead to a rapid growth in palliative care services and lower costs. Similarly, a new Resource Utilization Group category for palliative care reimbursement to nursing homes through Medicare would help counter the misperception that palliative care is incompatible with the restorative focus of nursing homes and increase access to palliative care for nursing home residents. Third, given the high costs associated with patients with serious and life-threatening illnesses (Dartmouth Atlas, 2008), medical home models should include non-hospice palliative care as a core component. Fourth, accreditation requirements for hospitals and nursing homes (e.g., the Joint Commission) should include published guidelines for palliative care to ensure that quality is consistent across programs (National Quality Forum, 2006).

Evidence Base

Unlike other areas of medicine, the knowledge base to support core elements of palliative care clinical practice (i.e., pain and symptom management, communication skills, care coordination) is inadequate. Reports from the IOM in 1997, 2001, and 2003 (Field and Behrman, 2003; Field and Cassel, 1997; IOM, 2001) and NIH in 2002 and 2004 (NIH, 2002, 2004) have called for major investments in research on palliative care. Yet, as of 2005, less than 0.1 percent of all NIH-awarded grants supported palliative care research. Policy initiatives to address this knowledge gap are straightforward and easily integrated within current biomedical research funding structures. NIH and the Agency for Healthcare Research and Quality (AHRQ) should reallocate 2 percent of their current budgets to focus on symptom relief, communication in the setting of serious illness, and comparative effectiveness research focused on patients with serious and advanced illness. An Office of Palliative Care Research modeled after the Office of AIDS Research should be established to oversee distribution of research funding. Finally, existing NIH career development award mechanisms could be utilized to support junior investigators and midcareer palliative care investigators in order to address the lack of established palliative care researchers.

Conclusion

Research over the past 20 years has conclusively demonstrated that too many seriously ill Americans who experience treatable suffering are impoverished because of uncompensated medical care (Himmelstein et al., 2005). At the same time, rising government healthcare expenditures threaten to bankrupt current Medicare savings (Siska et al., 2009). Palliative care offers an attractive solution to this problem by improving quality while substantially reducing costs for the most expensive and vulnerable patient population. This paper has outlined policy initiatives in four key areas that would rapidly bring palliative care to scale in the United States and help address the quality and costs issues outlined in this report.

PAYMENT AND BETTER CARE OF COMPLEX PATIENTS

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Geisinger Health System

Novel, value-based payment models that will both "bend the cost curve" and improve population health are required to address the macro

trends of aging and chronic disease prevalence (Schoen et al., 2007). New models must move beyond payment for units of work and resource-based productivity measures and instead reward demonstrated patient- and population-level clinical impacts and outcomes. We describe a new approach at Geisinger Health System that seeks to optimize patients' "care gap closure rate" and facilitate effective teamwork among primary care physicians, nurses, and specialists. Until formal, validated outcome measures are widely available, we believe that a revised payment model based, in part, on care gap closure rates would be a significant improvement from our current fee-for-service model.

Care Gaps—An Alternative Approach

Care gaps are defined as evidence- or consensus-based patient clinical needs as informed by age, gender, comorbidities, physiological parameters, and other factors. In general, each care gap is known to be directly associated with improved intermediate or clinical outcomes. Patients who fail to have their evidence-based care needs met have one or more care gaps, a common finding among chronically ill, multiple comorbid patients. Rather than narrowly focusing on disease-specific registries, care gaps exist in the broader context of a relevant population and its associated care needs and goals. Examples include prevention (e.g., screening mammography), chronic disease management (e.g., targeted LDL [low-density lipoprotein] level), unclosed loops (e.g., positive pap smear without intervention), medication safety (e.g., anticonvulsant monitoring), and other end points.

Traditional healthcare financial incentives, practices, and limited analytic functions collectively foster a care delivery system that is both inefficient and unreliable (McGlynn et al., 2003). Geisinger has implemented a primary care-based medical home model that relies on the use of an integrated platform consisting of an electronic health record (EHR), an advanced analytics platform, and a tailored communication process. Aggregated patient data along with associated analytical models are the foundation of the Clinical Decision Intelligence System (CDIS; see Figure 16-1). Care gaps are identified within CDIS and acted upon via the EHR through various effectors including order sets, reminders, flags, care plans, and direct patient communication.

Primary-Specialty Care Collaboration

The act of closing care gaps is a team-based, collaborative process among primary care practitioners, nurses, and specialists (Bach, 2007). To build successful primary-specialty care partnerships, expectations and roles must be clarified to identify accountable providers who are managing specific aspects

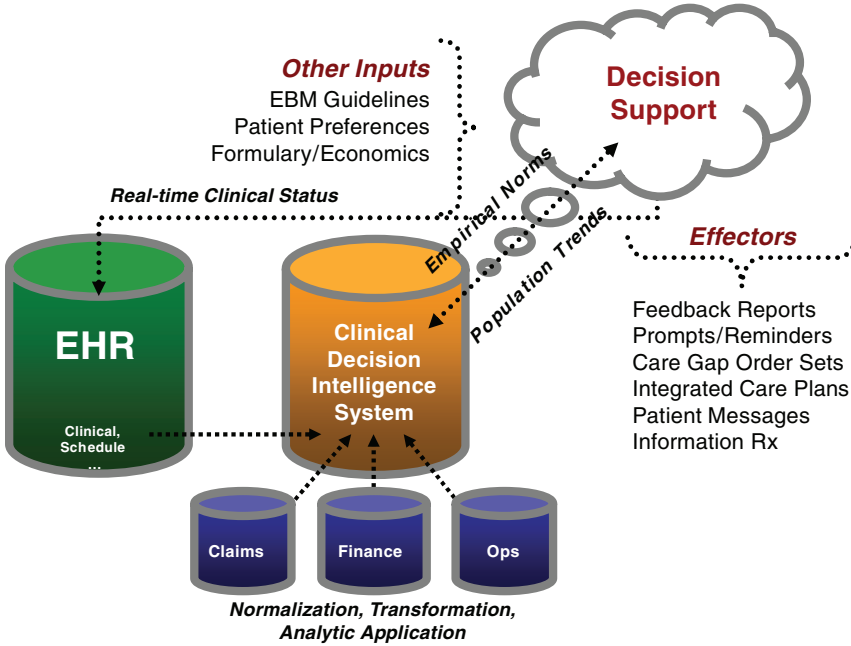

FIGURE 16-1 Geisinger transformation architecture.

of care. Potent collaboration examples include patients with hypertension >140/90 mm Hg on three or more medications, patients with a hemoglobin A_{1c} (HgbA1c) level persistently >9 percent, patients with abdominal aortic aneurysms >4 cm, and patients with Stage D heart failure. Key principles of the heart failure collaborative model are depicted in Figure 16-2 as an example.

The model establishes a defined set of activities that must be accomplished by the healthcare team, with an initial team focus on improving health status. If not possible, the dominant focus shifts to slowing disease progression, and a "primary specialist" is recruited who becomes actively engaged with increasing intensity if the underlying disease progresses despite best efforts. Throughout, the primary care provider and other team members ensure continuity of care and serve as the patient advocate. This commonsense model addresses gaps in the typical fragmented care model experienced by many Americans today.

Geisinger Care Gap Management Example

Geisinger has launched a series of initiatives focused on closing care gaps; here we specifically describe the management of patients with diabetes.

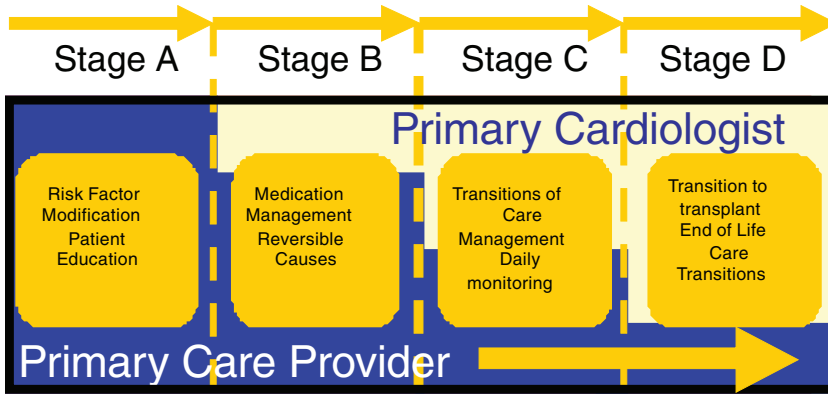

FIGURE 16-2 Primary care-specialist partnership in heart failure.

Clinicians defined a diabetic "care bundle" that includes nine evidence-based components of care (Weber et al., 2008). First, care gaps are identified for each individual patient within CDIS by comparing her electronic information against evidence-based care needs as defined in the bundle. Second, nurses are provided with an automated rooming tool that, among other things, enables the nurse to verify the presence or absence of a given care gap. Post-rooming, an automated, patient-specific, care gap-informed order set is generated at the point of care; the physician can "accept all" with one click or can add, delete, or edit any given order. Importantly, this same care gap information is sent directly to patients via the MyGeisinger consumer Web portal. Patients are encouraged to address needs virtually with their providers, or they can schedule care gap interventions (e.g., a laboratory draw, a foot exam) directly online with a few clicks.

This clinical care-based process has resulted in continuous stepwise improvement in the percentage of patients with all nine care bundle components complete, producing a fourfold percentage increase over 24 months for a group of more than 22,000 persons with diabetes. However, despite this significant progress, approximately 8 percent of all persons with diabetes continued to exhibit a persistently elevated HgbA1c >9 percent. To address the needs of this population with difficult-to-manage diabetes, a semiautomated process was implemented to temporarily transfer care from primary care to endocrinology. This process included (sequentially, as needed) a joint letter from primary care and endocrinology physicians explaining the program and their combined recommendation that the patient should attend, up to three calls from the scheduling office, and a final call from the primary care practice itself. Colleagues at Geisinger

facilitated more than 50 endocrinology and diabetes educator evaluations in a single practice location. While the numbers are small, the average HgbA1c levels declined 1.6 and 1.8 percent, respectively, at 8 and 15 weeks' post-referral. To address concerns about care continuity and satisfaction, pre- and post-intervention satisfaction was measured for both primary care providers and patients; all were either constant or improved from baseline post-intervention.

Looking Forward—Possible Implications?

When we incentivize volume, procedures, and high-cost care, that's exactly what we get. Incentives for true value-based productivity and related measurement are rare or nonexistent. In fact, the very scale used to determine most productivity performance and "value" (the resource-based relative value scale [RBRVS]) was instead created specifically to approximate resource use, not value. This notion of healthcare "productivity" is analogous to rewarding Dell for the resource intensity of its PC production, rather than for the features, performance, and reliability—the value—of its products. Although we are at a nascent stage in our goal to create a true value-based productivity model at Geisinger, we believe that measures incorporating concepts relevant to the rate of care gap closures or care gap closures per RBRVU (resource-based relative value unit) would be a significant step forward in reorienting the incentive system to promote wellness, disease containment, and disease prevention. If combined with a low-value utilization ratio incorporating both regular care "failures" (e.g., heart failure exacerbations) and low-value resource consumption (e.g., low-utility imaging), it could also serve to bend the curve on costs.

Of course, this approach also requires fundamentally reengineered care processes. At Geisinger we seek to reengineer care processes by hard-wiring evidence-based care, eliminating waste, automating care processes as feasible and appropriate, delegating care to the least-cost competent caregiver, and seeking to engage and activate the consumer-patient and her family as team members in the care journey—all supported by our EHR, analytic databases, and intelligent decision support. Taken collectively, we believe that similar realigned financial incentives and large-scale care reengineering can bend the curve on cost and create enhanced value for all Americans.

CARE OF PATIENTS WITH MULTIPLE CHRONIC CONDITIONS

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It remains to be seen whether care coordination and chronic care management can indeed bend the cost curve while improving quality either individually or synergistically with other delivery system reforms. Attention to five specific policy levers could help achieve this for the most high need population: (1) improving the external validity of clinical trials; (2) incorporating the concept of multimorbidity into clinical guidelines; (3) integrating care of patients with multiple chronic conditions (MCCs) into health professions education; (4) designing payment incentives to support care coordination; and (5) integrating self-care management with structured case management.

Who Is the Target Population?

With the aim of reducing uncoordinated care expected to lead to excessive healthcare costs, "medically complex patients" are those exhibiting patterns of use of care demonstrating lack of coordination (Owens, 2009). Such individuals are likely those, for example, who are hospitalized for ambulatory care-sensitive conditions, who are readmitted within 30 days to hospitals for preventable conditions, who access emergency rooms for primary care, or who have inconsistent drug use and adherence patterns along with a host of different prescribers and pharmacies. Ideally, all payers, public and private, need to identify individuals whose patterns of care demonstrate a lack of coordination and analyze their care provision. More commonly, payers have selected specific groups of beneficiaries as proxies for the uncoordinated care population, such as beneficiaries associated with high-cost care, specific chronic diseases, or severe disease.

One broad group increasingly considered to represent the uncoordinated care population includes beneficiaries with multiple concurrent chronic conditions. A robust body of literature has shown that as individuals accrue more chronic conditions, significant health outcomes worsen, including increased mortality, poorer functional status, more unnecessary hospitalizations for ambulatory care-sensitive conditions, additional adverse drug events, increased episodes of conflicting medical advice, and augmented duplicative tests (Johns Hopkins University and Partnership for Solutions, 2008; Lee et al., 2007; Vogeli et al., 2007; Warshaw, 2006;

[1]These views are in Dr. Parekh's personal capacity and should not be construed as official policy of the U.S. Department of Health and Human Services.

Wolff et al., 2002). In addition, total healthcare spending, prescription drug spending, and out-of-pocket spending also rise with the number of chronic conditions.

This paper focuses on the population with multiple chronic conditions as a group at high risk for uncoordinated care. In addition, the MCC population serves the purpose of introducing several policy areas that could be explored to support care coordination and chronic care management.

Provider-Focused Policy Levers

Improving the External Validity of Clinical Trials

Many randomized controlled clinical trials (RCTs) exclude patients with multiple chronic conditions to ensure the internal validity of the findings; in other cases, investigators do not report the comorbidities of patients enrolled in RCTs (Fortin et al., 2006). Unfortunately, once approved, the subject drugs or devices are often prescribed for patients with multiple chronic conditions without safety or efficacy data. Not surprisingly, these MCC patients are at higher risk for adverse events and ineffective treatments. From a public health perspective, although a more robust postmarketing surveillance system would be helpful to better characterize these events, a more proactive and preventive strategy to address safety and efficacy would ensure that RCTs include these patients in the first place. The potential costs of recruiting more participants to take into account individuals with multiple chronic conditions need to be weighed against the potential back end costs of dealing with major adverse events in an increasingly large population with multiple chronic conditions that has not been adequately included in studies.

Incorporating Multimorbidity in Clinical Guidelines

A review of clinical practice guidelines for the treatment of older patients with various chronic conditions has demonstrated that many guidelines do not contain specific recommendations or modifications for patients with multiple comorbid conditions (Boyd et al., 2005). Thus, healthcare providers currently have little guidance on how to apply guidelines when treating patients with multimorbidities. In lieu of this, clinicians taking care of patients with multiple chronic conditions likely follow numerous single-disease guidelines for the specific conditions of their MCC patients. However, the benefits or harms of combining the recommendations in each of several guidelines for an individual are unknown (Tinetti et al., 2004). Theoretically, many drug-drug and drug-disease interactions might occur, particularly in the multiple chronic condition population. Health services

and comparative effectiveness research are needed to prioritize prevention, treatment, and management decisions for this population and to develop best practices to guide providers in quality care.

Integrating Care of Patients with Multiple Chronic Conditions in Health Professions Education

Physicians have deemed their medical training for chronic illness care as inadequate for a variety of competencies such as geriatric syndromes, chronic pain, nutrition, patient education, coordination of services, and interdisciplinary teamwork (Darer et al., 2004). To prepare for an increasingly medically complex population, all health professional students likely to care for patients with MCCs need to learn how to prioritize treatment of chronic conditions in individuals, deal with drug-disease interactions, and consider patient preferences when making care plans. Modification of existing undergraduate and graduate health professional school curriculums should be undertaken to address this point. In addition, use of GME funding as a policy lever to focus training on chronic care management and coordination should be considered. For example, as a condition to receiving full GME funding, teaching hospitals could be required to ensure that their trainees in certain applicable residency programs receive training in chronic care competencies.

Designing Payment Incentives to Support Care Coordination

Initial results from Medicare demonstration projects designed to support payment incentives to providers for care coordination and chronic disease management have been sobering. Lessons learned include the importance of frequent in-person contact with patients, a focus on transitional care, promoting self-care management and adherence to care, and clear communication channels between care coordinators and primary care providers (Bott et al., 2009; Peikes et al., 2009). Many previous disease management efforts focused on individual illnesses and, regrettably, ignored the interplay between multiple chronic conditions. All of these lessons need to be applied to newer models of care coordination currently being considered in health reform legislation, including the medical home, community health teams, accountable care organizations, and transitional care strategies. Selecting a narrow target population, testing competing models of care, overcoming implementation challenges including recruitment of patients and providers, and closely monitoring real-time data are needed for more rapid acceptance of payment models that support care coordination into the Medicare program.

Patient-Focused Policy Levers

Integrating Self-Care Management with Structured Case Management

As chronic conditions increase, the number of prescribed medications, adverse drug events, and episodes of medication noncompliance also rises. Self-care management is essential to ensure medication adherence and overall symptom awareness and management. Providers can reinforce good health behaviors through education, particularly through novel patient encounter strategies such as group visits and secure messaging. Payers should develop pilot programs to confirm that chronic disease self-care management and novel patient encounter strategies reduce health costs by decreasing hospitalizations and utilization of care. In addition, patient incentives to adopt healthy lifestyle choices, such as reduced cost sharing, should be studied to see if they reduce the burden of disease and lower healthcare costs.

Looking Forward

By addressing these policy areas, providers and patients will have better information and incentives to coordinate and manage the care of complex patients, such as those with multiple chronic conditions. Defining the target population for these efforts is critically important to realizing any potential cost savings or quality enhancement.

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17

Delivery System Integration

INTRODUCTION

With effects on costs, quality of care, and patient and provider satisfaction, the current fragmentation and disarray of the healthcare system present significant challenges to efficient and effective care (Stange, 2009; Wiggins, 2008). For example, with fragmented communication between providers, duplicate testing and the absence of vital information compromise both outcome and economic prospects, discontinuities that pose costs to both patients and society (Valenstein and Schifman, 1996). Highlighting the benefits of streamlined and harmonized health insurance regulation, payment redesign, and secure, sharable clinical records, the presentations in this session target delivery system integration and connectivity as methods of lowering costs and improving outcomes.

John Toussaint of the ThedaCare Center for Healthcare Value defines care fragmentation as the lack of the resources necessary for a patient to manage his or her condition in a timely fashion. He explains that the current care delivery system is not designed for consumers, but rather for providers and hospitals, and contends that this was the result of a lack of fundamental understanding of what constitutes value from the patient perspective. Elaborating on current initiatives to improve care coordination, he cites multiple examples of success. Group Health of Puget Sound reduced emergency room visits by 29 percent by redesigning its clinical services. ThedaCare's Collaborative Care Unit lowered inpatient care costs 25 percent. Gunderson Lutheran's care coordination process included a focus on end-of-life care, resulting in costs per Medicare enrollee that were

50 percent lower than the national average. Toussaint posits that a system redesign process grounded in continuous improvement methodology could enhance the value of care delivered to patients and be a complementary or additional tool to the realigned incentives of the bundled payment reforms previously discussed.

Drawing on the work of the Medicare Payment Advisory Commission (MedPAC), Mark E. Miller describes Medicare's fee-for-service (FFS) as creating separate payment "silos" (e.g., inpatient hospitals, physicians, post-acute care providers) and failing to encourage coordination among providers within a silo or across silos. When discussing evidence demonstrating that care coordination can improve quality, he suggests that Medicare must develop new payment methods that will reward efficient use of its limited resources and encourage the effective integration of care, such as reducing preventable hospital readmissions, increasing the use of bundled payments, and holding accountable care organizations (ACOs) responsible for the cost and quality of the care that their patients receive. Building on these ideas, Harold S. Luft of the Palo Alto Medical Foundation Research Institute outlines alternatives to the current system that could facilitate coordination of inpatient and similar interventional care and both coordination and effective management of ongoing chronic care. Focusing on proposals for medical homes, bundling, and evidence-based practice, he explains that these initiatives align incentives for value-enhancing care and facilitate the development and spread of the information needed by clinicians to deliver that care. Unlike global capitation, however, they retain aspects of fee-for-service where that payment approach is not problematic, thus reducing opposition from those resistant to change, avoiding the productivity problems faced in large organizations, allowing their application in communities in which highly integrated systems either may be infeasible or are an antitrust concern, and engendering flexibility as medical technology and knowledge change.

Andrew M. Wiesenthal explores the potential for increased use of electronic health records (EHRs), coupled with effective, standards-based health information exchanges (HIEs), surmising that together they could counteract the powerful forces contributing to poor integration. Promoting EHR deployment and meaningful use is an appropriate first step for the country to take followed closely by targeting improved outcomes in chronic diseases, he elaborates. He estimates that improving system integration at an appropriate regional level will likely require 5 to 10 years once the work has started. National integration would be much more difficult and lengthier, and largely unneeded by most patients. He identifies the business and public health communities as crucial cofactors for this effort. At the same time, if integration is to be achieved, he asserts that regulatory and competitive barriers, along with patient fears of data misuse, must be addressed.

PROFILE OF SYSTEM FRAGMENTATION

John Toussaint, M.D.
ThedaCare Center for Healthcare Value

Patient care is significantly fragmented in the United States. The results of this fragmentation are evidenced by patients waiting weeks for routine appointments, using emergency rooms for primary care, driving miles between doctors' offices for a single condition, and having little understanding of their disease condition or their plan of care.

The outcomes of this fragmented system include major defects in care. These include 100 million medication errors per year (Kohn et al., 2000), 100,000 or more unnecessary deaths per year (IOM, 2001), high costs compared to other Western countries, and poor population health outcomes (WHO, 2006).

Why is care so fragmented? Over time, the delivery of care has been designed around doctors and institutions, not around the patient. Furthermore, doctors have splintered into specialties and subspecialties, and with the increase in technical skills, those doctors become more siloed and more highly compensated. While the level of technical skill has been rewarded, integration and team-based practice have not been valued. At the heart of this kind of system is the assumption that higher specialization leads to better health outcomes.

Yet this assumption is false. Elliot Fisher along with others has shown that more specialists and more hospital capacity lead to worse quality, higher utilization, higher mortality, and much higher costs (Baicker et al., 2004; Fischer et al., 2003; Fowler et al., 2008; Sirovich et al., 2006). For example, the difference between the hospital referral region costs for Appleton, Wisconsin, and Miami, Florida, is more than 250 percent. Yet patients stay in the hospital much longer and see more physicians in Miami than in Appleton (Dartmouth Atlas).

Again, while in most markets the care is designed to create value for the provider or hospital rather than the patient, in Appleton, we have been developing the care system around delivery of better value to the patient. A group of 16 forward-thinking organizations in North America has committed to this principle and formed the Health Care Value Leaders Network. They have been redesigning care processes by looking at every step in the process of care and determining if it really adds any value to the patient.

What the Network has found is staggering: in many cases 80 to 90 percent of all steps in the care process do not provide any value from the patient's perspective. By removing the non-value added steps, the Network has been able improve quality and reduce costs and waste. The end result is much less fragmentation and better flow of services to the patient.

As impressive as the findings of waste have been, the results have been far more dramatic. Group Health of Puget Sound has reduced emergency room (ER) visits by 29 percent and reduced hospital admissions by 11 percent, resulting in significant cost savings and improved quality (Reid et al., 2009). The University of Michigan has saved $23 million dollars over 3 years in the Physician Group Demonstration project administered by the Centers for Medicare & Medicaid Services (CMS) (2009). In Robert Wood Johnson (RWJ) funded pilot called "Transforming Care at the Bedside," ThedaCare's Collaborative Care Unit achieved zero medication reconciliation errors for 2 years, and the cost of inpatient care dropped by 30 percent (Toussaint, 2009b). Gundersen Lutheran's end-of-life care coordination process makes it 50 percent less expensive than the national average per Medicare enrollee. If this level of improvement was achieved by the industry as a whole, it would result in trillions of dollars of savings over the next 10 years (Toussaint, 2009a).

These results are achievable by all healthcare organizations, and implementation can begin tomorrow. Healthcare providers should be trained in the tools of continuous improvement using the methodology of "lean" applied to health care. We have established a way for them to learn through the Health Care Values Leadership Network, a nonprofit partnership between the ThedaCare Center for Healthcare Value and the Lean Enterprise Institute. At www.healthcarevalueleaders.org, providers can find resources to help organizations transform through education, assessment, facilitating accelerated learning, and measuring results.

There is an imperative to change the system now. We have clear evidence of what works to remove waste, improve efficiency, and create better outcomes for patients. Now we need the will at the leadership level to actually do it.

PAYMENTS TO PROMOTE DELIVERY SYSTEM INTEGRATION

Mark E. Miller, Ph.D.
Medicare Payment Advisory Commission (MedPAC)

The healthcare delivery system we see today is not a true system: care coordination is rare, specialist care is favored over primary care, quality of care is often poor, and costs are high and increasing at an unsustainable rate. Part of the problem is that Medicare's FFS payment system rewards more care, without regard to the value of that care. In addition, Medicare's payment system creates separate payment silos (e.g., inpatient hospitals, physicians, post-acute care providers) and does not encourage coordination among providers within a silo or across silos. Yet evidence shows that care coordination can improve quality. Medicare must develop new payment

methods that will reward efficient use of our limited resources and encourage the effective integration of care.

In the Medicare Payment Advisory Commission's recent *Reports to Congress* (MedPAC, 2008, 2009a, 2009b), the commission examined the issues affecting the Medicare program and made specific recommendations to Congress. Those reports explained that the Medicare program is fiscally unsustainable over the long term and is not designed to produce high-quality care. However, it found that fundamental payment and delivery system reforms could improve quality, coordinate care, and reduce cost growth. MedPAC has made numerous recommendations to accomplish these objectives, but the discussion here focuses on a few approaches to payment that would encourage greater coordination of care, resulting in higher quality and lower Medicare spending:

- Reducing preventable hospital readmissions;
- Increasing the use of bundled payments; and
- Holding ACOs responsible for the cost and quality of the care their patients receive.

Reducing Preventable Hospital Readmissions

Currently, Medicare pays for all admissions based on the patient's diagnosis regardless of whether it is an initial stay or a readmission for the same or a related condition. This is a concern because we know that some readmissions are avoidable and in fact are a sign of poor care or a missed opportunity to better coordinate care (Bernard and Encinosa, 2004). MedPAC recommends reducing payments to hospitals with relatively high readmission rates for select conditions.

Penalizing high rates of readmissions encourages providers to do the kinds of things that lead to good care, but are not reliably done now. For example, the kinds of strategies that appear to reduce avoidable readmissions include preventing adverse events during the admission, reviewing each patient's medications at discharge for appropriateness, and communicating more clearly with beneficiaries about their self-care at discharge (Coleman et al., 2006). In addition, hospitals, working with physicians, can better communicate with providers caring for patients after discharge and help facilitate patients' follow-up care.

Spending on readmissions is considerable. MedPAC has found that Medicare spends $15 billion on all-cause readmissions and $12 billion if we adjust for preventable admissions and exclude certain readmissions (for example, those that were planned or for situations such as unrelated traumatic events occurring after discharge) (MedPAC, 2007). Of this $12 billion, some is spent on readmissions that were avoidable and some

on readmissions that were not. To target policy to avoidable readmissions, Medicare could compare hospitals' rates of potentially preventable readmissions and penalize those with high rates. The savings from this policy would be determined by where the benchmark that defines a high rate is set, the size of the penalty, the number and type of conditions selected, and the responsiveness of providers.

MedPAC recognizes that hospitals need physician cooperation in making practice changes that lead to a lower readmission rate. Therefore, hospitals should be permitted to financially reward physicians for helping to reduce readmission rates. Sharing in the financial rewards or cost savings associated with reengineering clinical care in the hospital is called gainsharing or shared accountability. Allowing hospitals this flexibility in aligning incentives could help them make the goal of reducing unnecessary readmissions a joint one between hospitals and physicians. As discussed in a 2005 MedPAC report to Congress, shared accountability arrangements should be subject to safeguards to minimize the undesirable incentives potentially associated with them. For example, physicians who participate should not be rewarded for increasing referrals, stinting on care, or reducing quality.

Increasing Use of Bundled Payments

Under bundled payment, Medicare's payment would be set to cover the costs of providing the full range of care needed over the hospitalization episode. Because we are concerned about care transitions and creating incentives for coordination at this juncture, the hospitalization episode should include time post-discharge (e.g., 30 days). With the bundle extending across providers, providers would not only be motivated to contain their own costs, but also have a financial incentive to better collaborate with their partners to improve their collective performance. Ideally, this flexibility gives providers a greater incentive to work together and to be mindful of the impact their service use has on the overall quality of care, the volume of services provided, and the cost of providing each service. In the early 1990s, Medicare conducted a successful demonstration of a combined physician-hospital payment for coronary artery bypass graft admissions, showing that costs per admission could be reduced without lowering quality.

MedPAC recommends that CMS conduct a voluntary pilot program to test bundled payment for all services around a hospitalization for select conditions. Candidate conditions might be those with high costs and high volumes. This pilot program would be concurrent with information dissemination and a change in payment for high rates of readmissions.

Bundled payment raises a wide set of implementation issues. It requires not only that Medicare create a new payment rate for a bundle of services, but also that providers decide how they will share the payment and what behavior they will reward. A pilot allows CMS to resolve the attendant

design and implementation issues, while giving providers who are ready the chance to start receiving a bundled payment. The objective of the pilot should be to determine whether bundled payment for all covered services under Medicare Part A and Part B associated with a hospitalization episode (e.g., the stay plus 30 days) improves coordination of care, reduces the incentive for providers to furnish services of low value, improves providers' efficiency, and reduces Medicare spending while not otherwise adversely affecting the quality of care. The pilot should begin applying payment changes to only a selected set of medical conditions, but could be expanded over time. Additionally, if the pilot program met its objectives, the Secretary of Health and Human Services could expand the program nationally without the need for further legislation. In contrast, a demonstration program, such as the current CMS Acute Care Episode demonstration, would require statutory authority to be expanded.

Accountable Care Organizations

As part of a broader discussion of options for reforming Medicare's healthcare delivery system, MedPAC and others have introduced the concept of holding a set of providers responsible for the health care of a population of Medicare beneficiaries (CBO, 2008; Fisher et al., 2009; MedPAC, 2008).

In this model, an accountable care organization (ACO) would consist of primary care physicians, specialists, and at least one hospital. It could be formed from an integrated delivery system, a physician-hospital organization, or an academic medical center. The defining characteristic of ACOs is that a set of physicians and a hospital or hospitals accepts joint responsibility for the quality of care and the cost of care received by the ACO's panel of patients. The goal is to create an incentive for providers in the ACO to constrain volume growth while improving the quality of care. If the ACO achieves both quality and cost targets, its members receive a bonus. If it fails to meet both quality and cost targets, its members would face lower Medicare payments. These financial incentives may lead to slower growth of Medicare spending.

The ACO model can take two forms—one in which providers volunteer to form an ACO and one in which participation is mandatory. To induce physicians and hospitals to volunteer to form an ACO, Medicare would have to provide the physicians with a significant upside reward and very little (if any) downside penalty. For that reason, the voluntary ACO model is a bonus-only design. The current Physician Group Practice (PGP) demonstration provides an example of how a bonus-only voluntary ACO design might work. The demonstration has achieved quality objectives, but whether it has actually generated savings for the Medicare program is

debatable. Generating savings may require larger incentives to constrain capacity and volume growth.

Implementation of a voluntary, bonus-only model would require bonuses large enough to offset the current incentive in the fee-for-service payment system to increase volume. To fund bonuses of this magnitude, FFS rate increases would have to be constrained. By constraining FFS Medicare payment rates to fund larger ACO bonuses, Medicare would create an environment in which providers would want to form ACOs and would be rewarded when they constrained volume growth and improved the quality of care. A mandatory model could have both bonuses for good performance and penalties for poor performance. In this model, shared savings and penalties could fund the bonuses. In developing an ACO model, the commission concluded that ACOs would have to be fairly large (at least 5,000 patients) to make it possible to distinguish actual improvement from random variation on a reasonably consistent basis.

Each ACO should have a spending target set in advance. One approach is to set the ACO's spending target based on its past experience plus a national allowance for spending growth per capita (e.g., a fixed dollar amount of $500). This proposal differs from some others in that the growth allowance is not affected by the ACO's historical level of spending. Over time, using a single national growth allowance could compress regional variations in spending per capita. An alternative approach is to set a lower allowance in high-service-use areas and a higher allowance in low-service-use areas. This alternative would place greater pressure to constrain volume on areas with historically high utilization.

Savings would result primarily from ACOs' incentives to change overall practice patterns and eventually constrain capacity. Therefore, successful ACOs would need to have a formal organization and structure that allows them to make joint decisions on capacity.

To overcome incentives in FFS payment systems to expand capacity and volume, a large share of the patients in a physician's practice would need to be in an ACO. To achieve this critical mass, private insurers may have to join Medicare in providing ACO-type incentives to constrain capacity.

Under a mandatory, bonus-and-penalty model, the bonuses could be funded by the combination of true shared savings and a penalty assessed on poor performers. Under this model, ACOs with high cost and low quality scores would in effect receive lower Medicare payment rates.

ACOs should be viewed as just one tool that can be used to induce change in the healthcare delivery system. The ACO's role is to create a set of incentives strong enough to overcome the incentives in the FFS system to drive up volume without improving quality. The degree to which ACOs will succeed in counterbalancing the current incentive for volume growth is uncertain. However, there is no uncertainty in the need to create a new

set of incentives. The current unrestrained FFS payment system has created a rate of volume growth that is unsustainable.

Conclusion

The process of reform should begin as soon as possible; reform will take many years and Medicare's financial sustainability is deteriorating. This deterioration can be traced in part to the dysfunctional delivery system that the current payment systems have helped to create. Those payment systems must be fundamentally reformed, and the recommendations MedPAC has made are a first step on that path. They are, however, only a first step; they fall far short of being a "solution" for Medicare's long-term challenges. MedPAC has begun to consider other options and will continue its evaluation of accountable care organizations. In addition, MedPAC will consider steps to alter the process by which payment reforms are developed and implemented, with the goal of accelerating that process. MedPAC believes that reform of Medicare's payment systems is essential to help bring the healthcare delivery system into the twenty-first century.

PAYMENT REFORM TO PROMOTE INTEGRATION AND VALUE

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Healthcare services consumed in the United States do not yield as much value as they could. Precisely how much lower healthcare expenditures could be without adversely affecting quality is unclear, but much greater efficiency is possible. Whether a 10 percent reduction in expenditure can be achieved in a decade is questionable. That any significant reduction will require a restructuring of the care delivery system, however, is certain.

Integrated delivery systems achieve high quality of care at costs no greater than average and often lower (Davis, 2009). Systems such as Kaiser Permanente offer excellent "platforms" for health information technology, the right mix of clinical expertise to meet the needs of their population, and appropriate internal payment and performance incentives. Kaiser and other highly integrated systems, however, have found it challenging to "spread" their approach. Bending the expenditure curve means changes in settings not ready to be fully integrated and, ideally, minimizing the needed changes in the way clinicians deliver and patients access care. We must develop new payment policies promoting clinical integration and value without requiring total organizational change.

The classic payment model for "integrating care" is capitation—the fixed annual payment (preferably risk-adjusted) to a group of providers

accepting responsibility for delivering all the care needed by their enrollees. Capitation gives the organization (1) the incentives to focus on those interventions yielding the highest value, and (2) the ability to provide those services regardless of whether they are compensated by fee-for-service payment structures. To accept capitation, one requires sophisticated management, yet most physicians practice in groups of six or fewer.

Fee-for-service is criticized for its incentives to simply provide more services, but few clinicians provide care they know to be of *no* value. With insurance that lowers the patient's cost for services at the margin, the stage is set for increased use of relatively low-value services. Our current fee schedules markedly undercompensate time spent with patients relative to physician compensation for tests, procedures, and imaging that also involve additional costs for staff, supplies, equipment, and facilities. A rebalancing of the payment for clinician thinking versus doing is an important first step.

Integration of services, however, requires more than just neutrality—it needs incentives for clinicians to better coordinate care among themselves. In the real world of clinical care there is always uncertainty. If an extra test or specialist referral can reduce that uncertainty without too many adverse outcomes (e.g., radiation exposure), why live with the uncertainty? People typically accept risk in exchange for some reward; payment incentives can provide that reward. The challenge is to make the risk commensurate with the ability to manage it. Outside of large, fully integrated systems, such risk needs to be segmented—hence a strategy for partial integration.

Integration is most readily achievable in inpatient episodes; these are high intensity and time-limited, usually requiring careful coordination among clinicians and staff. The "inpatient episode" should be broadly defined to minimize gaming; a procedure requiring a facility, anesthesia, and several hours of monitoring is hardly an "office visit." Likewise, preadmission tests and a certain amount of post-discharge follow-up should also be considered to be part of the episode.

"Bundled payment" is the term now used to describe the compensation for such episodes. This should cover not just the facility, but also all the clinical services involved. Given the sometimes tense relationships between hospitals and their medical staff, payment should go to new entities that may be referred to as care delivery teams or CDTs. These would include the facility and those clinicians whose efforts are focused in that setting (i.e., not just the radiologists, anesthesiologists, and pathologists, but also the surgeons, hospitalists, and interventional cardiologists). Not all physicians practicing in the hospital need participate in the CDT, just enough to take responsibility for patients in the types of episodes for which it will receive bundled payments.

Bundling payment is only one part of the transition to integration;

information is the other. Health information technology has to be more than just a substitute for pneumatic tubes sending paper orders throughout a hospital. The bundled payment should reward both better information and higher quality. It should foster a "learning system" with incentives for providing data and converting it to useful information.

Instead of setting bundled payments at average cost, they should reflect the average costs incurred by CDTs *with better than average outcomes*, and those CDTs should be recognized for superior performance. CDTs will challenge the available outcome measures. Those claiming better outcomes—for example, with respect to quality of life for elective procedures—and those claiming they care for patients who are sicker than average will begin to collect and submit detailed clinical data to buttress their case. If such data are pooled across all providers and made available for analysis by independent researchers, we will be able to see what interventions, techniques, and workflows lead to the highest-value care. Episode-based payments incentivizing quality and cost plus freely available data will generate provider demand for constantly better information.

Bundled payment for inpatient episodes can be expanded to include responsibility for readmissions. CDTs could choose to accept a "super DRG" (diagnosis-related group) with responsibility for not just all readmissions within 30 to 90 days, but also costs associated with exceptionally long and expensive stays. Hospitals or CDTs accepting such payments would take on significant risk associated with rare, but costly events, and will therefore demand reinsurance. The reinsurer, however, can both reduce its own risk and lower the premiums it charges by learning and spreading best-practice approaches to reducing complications and readmissions. Medicare could perform this function, but it is unlikely to have the necessary administrative resources and credibility with providers.

Even more savings are likely from better management of chronic illnesses to keep patients from needing hospitalization. For ambulatory care, however, a formal CDT is impossible outside of a large group practice, but virtual, nonexclusive provider networks can be formed around each primary care physician. Paying separately for inpatient episodes markedly reduces the variability in chronic illness costs (Luft, 2008). A payment intermediary can further smooth costs at the primary care physician (PCP) level. After such smoothing, net premiums reflect the fees charged and practice patterns of the clinicians involved. Monthly chronic illness management costs will be widely spread across the population, but the marginal costs associated with differential treatment patterns of providers used by the patients of each PCP can be passed on to the patient. Income-based subsidies offset the burden on the poor. Patient-based incentives will switch from overly strong deductibles or overly weak coinsurance targeting individual services to the annual premium savings from a more

cost-effective primary care provider. PCPs, in turn, will have incentives to choose wisely among the treatment options and specialists. Additional time spent with the patient can be rewarded; additional time and uncertainty associated with more selective recommendations and referrals will be even more highly rewarded.

The primary care medical home (PCMH) model offers important counseling, coordinating, facilitating, and tracking functions. Electronic health records (EHRs) make these functions possible, yet require centralized support. EHRs will yield the most benefit if data on best practices are shared across otherwise independent clinicians. Data can be linked across practitioners and patients, de-identified, and made available to multiple analysts to tentatively identify what appear to be best practices. "Stars" can be offered to those with "superior outcomes" who come forward to share the ways they achieved those outcomes. This will quickly expose those whose apparently good results arise from low-risk cases (or unnecessary care); more importantly, it helps spread best practice.

Medicare can begin to implement such changes with demonstration and pilot projects offering various levels of bundled payments for selected sets of admissions and procedures. Preference should be given to organizations that can eventually take on a broader range of cases. Medicare can also bundle payment for readmissions and outlier costs—such bundles could focus on all services or just Part A (inpatient care). For such transformational projects, CMS should recognize the substantial organizational costs involved. Those stepping forward are likely to be relatively efficient; Medicare should not condition their rewards on *further* savings. Offering initial payments closer to the average is warranted given the information to be gained on transforming the system.

Most legislative proposals involve a choice of plans through an exchange, but this requires a probably impossible level of risk adjustment. That burden can be reduced through a major risk pool (MRP) to spread the risk of inpatient episodes and chronic illness across all participating health plans that buy a new form of reinsurance at simple demographic rates (Luft, 2009). In turn, the MRP preferentially offers to pay CDTs directly for inpatient episodes on a bundled basis; physicians and hospitals not joining CDTs would eventually be paid Medicare rates. The MRP will pass back to health plans monthly amounts for the chronic illness management of their enrollees with such conditions. This form of reinsurance spreads the risk occurrence broadly (easing the exchange's task) but leaves incentives to manage ambulatory care with the plans. The MRP also pools claims data from plans reinsuring with it and claims from Medicare and Medicaid. By making available for analysis such anonymized and Health Insurance Portability and Accountability Act (HIPAA)-protected data, the MRP allows both the creation of independently produced best-practice guidelines and

the ability of health plans to woo clinicians with high-value practice patterns with better-structured fees.

Integration can bring greater value—higher quality at lower cost. Much of what integration yields, however, is better coordination of care and more effective use of resources. Improved payment incentives, coupled with accessible data and extracting information from the data can also increase efficiency and value. This can be achieved through new payment policies that better engage clinicians in managing the technical aspects of care and premium-based patient incentives that reflect the resource intensity of the care typically delivered by their clinicians.

HEALTH INFORMATION TECHNOLOGY TO PROMOTE INTEGRATION

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In the recent and ongoing discussion of healthcare reform, there is a recurrent assumption that the implementation of health information technology (HIT) will fundamentally change our care delivery systems into integrated, collaborative networks. Furthermore, the assumption is that integrated systems are in fact better for all involved, from patient to provider. Indeed, models of integration such as Kaiser Permanente and the Geisinger Health System, to name two, seem to support this assumption. Patients often feel better cared for in these systems, because their doctors know more about them and work more closely together, and their clinical outcomes are often better. Quality rises, outcomes improve, waste declines, efficiency grows, and cost of care decreases. An integrated system is one that focuses on the needs of the individual patient and on the needs of the population, which is exactly what doctors have to do.

If integrated systems are such a commonly accepted movement in the right direction, then why are we not creating them everywhere? What is in our way? The answer lies in the barriers presented by our current healthcare system, which hinders integration. The history, politics, and culture of our prevailing system—discussed at length by other presenters in this series—presents a formidable obstacle to reform that integrates systems.

Is HIT the Gateway to Integration?

Some look to HIT as the answer to creating integration and therefore all of the outcomes mentioned here. As policy makers and practitioners alike look to organizations such as Kaiser Permanente as examples of the power of integrated systems, they simultaneously acknowledge the benefits

of the model and deny the capacity of their own systems to fundamentally transform in this way. It is said that most doctors simply will not organize in this way or that this kind of change is much too difficult and much too expensive.

Instead, what has emerged is the notion that HIT will act as a disruptive force in existing healthcare systems. In this view, implementing HIT in any given system in the country will somehow force, enable, promote, or otherwise encourage integration. The Indianapolis health data exchange is cited as an example or model for how this could work. Because of HIT, doctors will begin to work and discuss patients together. Furthermore, the narrative has patients looking at their own health information and, in that transparent market, making choices about where to go for care based on outcomes data. The patient demand then becomes another force for driving integration and enhancing outcomes.

So, does this narrative reflect reality? Does this really work? No. Unlike the assumption that integration builds and supports better systems and outcomes, which has been borne out in several places throughout the country, the development of integrated systems is not a natural by-product of introducing HIT. Again, the change process is much more complex.

HIT is absolutely necessary to supporting the growth of integrated healthcare systems, but it is not sufficient. The key lever of reform is a commitment to change. A system can convert all of its old paper processes to automated information systems, but the result is not an integrated system. Instead, the result is that existing processes have been made more complex, more expensive, and less coordinated. To achieve the outcomes we see with systems such as ThedaCare, which dramatically improved and simplified care management for diabetics, healthcare systems—from practitioners to administrators—must commit to integration, commit to change management, and commit to (re)education. At Kaiser Permanente, we did not introduce HIT in order to integrate; we introduced HIT to take advantage of our integrated systems.

Promote Electronic Health Records

So, if HIT is not the magic bullet, then what is the strategy that will get our healthcare systems to become more like the integrated systems that produce better outcomes for patients? Even though it is not sufficient for reform, promoting HIT by deploying electronic health records is a wise course suggested by the American Recovery and Reinvestment Act (ARRA). To deploy these systems and to support the meaningful use of these systems to enable better patient outcomes is critical to making those connections within and across systems. These systems are not perfect, and they are very difficult to implement. They are better than the paper-based and disconnected systems we have today.

Target Outcome Improvements

Whether by payment incentives or other government action, the health conditions best managed by integrated systems should be encouraged and supported. Targeting outcome improvements in the management of chronic diseases, where integration has the greatest impact, is critical to shifting the paradigm away from integration as an unattainable level of service to something well within reach of our system. In a real integrated system, working with the chronically ill in particular, primary care, specialty care, mental health, behavioral management, community outreach programs, social work, et cetera, are all critical components to be engaged collaboratively in the care of a patient.

The ARRA directs the Office of the National Coordinator of HIT to establish "extension centers." These centers present a great opportunity to support integrated systems and meaningful use of HIT to drive outcomes. Agricultural extension centers exist today, which serve as resource centers for farmers to learn about what crops to plant, how to rotate crops, when to fertilize or not, and what to do if other problems should arise. This model is an ideal one for the proposed HIT extension centers. These centers should provide methodological and analytical support for practices, hospitals, and others who want to introduce HIT and who want to take those steps toward integration. Research is important, but it should be handled by academic medical centers. Extension centers should fill the critical niche of providing practical, on-the-ground assistance to help practitioners implement EHRs to promote targeted outcomes.

Payment Reform to Incentivize Integration

If nothing else, it looks as though healthcare reform this year will yield some form of payment reform. To support integration, payment reform must target the kind of commitment necessary for this change process—commitment such as that demonstrated in systems such as Geisinger. Payment systems should reward those doctors, practices, hospitals, and systems who make a commitment to transform—using technology or not—and penalize those that do not. Mark E. Miller and others have already discussed at length what those kinds of structures might look like.

Strategically Target EHR Deployment

Electronic health information databases or exchanges are not necessary at a national level. Citizens are wary of nationally integrated health information systems, where the notion is one of a single repository of health information that could be violated, putting everyone's data at risk. Instead, health information exchanges should focus on natural regional referral pat-

terns, where they can be most useful. It does not often add value to have the capability of accessing information from California in Delaware, but it is likely to be helpful to integrate the records within a large metropolitan area. Even with a more targeted approach that looks at standard metropolitan statistical areas (SMSAs), for instance, the process is complex and likely to last a decade in implementation. Yet the potential benefits are important. In the face of public health threats such as H1N1 today, for example, we generally do not have systematic and real-time ways of collecting and relaying information about all of the cases of this disease in a logical geographic area. So, in addition to natural partners within health care, we can look to involving allies in the public health community and the private business community, to name two.

Remove the Regulatory Barriers

This area is another that has been discussed at length in this series. To underscore the point, part of reform must be to remove those regulatory barriers that reduce or eliminate coordination and cooperation and those that may even increase antagonism in the healthcare industry. In addition to removing those barriers, we should establish local independent entities, rather than asking local hospitals and clinicians, to maintain the infrastructure for these information systems. Ownership of and/or access to the data cannot become an issue of competitive advantage or political connection.

Perhaps the most crucial barriers to address are those that stem from citizens' core fears about the misuse of clinical data. One such fear is that they will lose their jobs or be unable to find work if their health data are known. They may then be concerned that they will lose their health insurance coverage. If we can address these fears directly, through federal law or regulation (to avoid inconsistencies between states), then we remove a huge obstacle. In the absence of these concerns, patients actually want and like their doctors to have their health information and to know their history.

Conclusion

Health information technology is a powerful and necessary tool for reform in the healthcare sector. It can be used to support more cooperation among physicians, drive better care management and patient outcomes, and reduce waste and inefficiency that is costly in dollars and lives. Even so, it is not sufficient to drive the reform called for in today's national debate. Integrated healthcare delivery systems are not born from HIT; they are developed from difficult, challenging, and long institutional change processes. By realigning incentives and technical assistance and support, we can start the movement down that road. We can shift from looking at

Kaiser Permanente, Geisinger, Intermountain, and similar systems as impossible to replicate and instead regard them as viable targets as we commit to change.

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18

Delivery System Efficiency

INTRODUCTION

While fragmentation of the delivery system has been identified as a driver of inefficient and ineffective care (Stange, 2009; Wiggins, 2008), inefficiencies in the delivery of care have also been highlighted as a source of wasted opportunity. Efficiencies could be maximized through the elimination of non-value added activities (Klein and McCarthy, 2009; Toussaint, 2009) or through the expanded use of non-physician caregivers (Eibner et al., 2009; Roblin et al., 2004). From using market forces to effect change by empowering consumers to make informed choices to redefining who provides health care, the presenters in this session discuss innovations to improve delivery system efficiency.

Mary D. Naylor from the University of Pennsylvania asserts that enhancing the effectiveness and efficiency of the U.S. healthcare system is dependent upon maximizing the contributions of non-physician healthcare professionals. Naylor relates that licensed independent practitioners (LIPs) can be used more robustly to deliver health care at lower cost. Furthermore, not only can LIPs deliver existing services more cost efficiently, they can also enhance current services by providing more thorough follow-up and case management. Greater use of LIPs, which include advance practice registered nurses, allied health professionals such as physical therapists and occupational therapists, pharmacists, and clinical social workers, can translate into significant efficiencies. Naylor also provides insight into existing barriers to expanding the use of LIPs and offers several policy recommendations to

facilitate their contributions, including revising state "scope-of-practice" laws and payment reform that emphasizes the team as the payment unit.

Steven J. Spear of the Massachusetts Institute of Technology suggests that large opportunities currently exist to advance quality, access, and cost simultaneously by focusing on care delivery. Despite significant disparities between the quality of providers, patients and payers cannot distinguish which providers provide the highest-quality care at affordable cost. By focusing on empowering patients and payers with this information, he explains, transparency has the ability to promote efficiency within the healthcare system.

BETTER USE OF HEALTHCARE PROFESSIONALS

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Over the last decade, there has been a growing awareness of the lags in healthcare quality in the United States. Today's system is plagued by suboptimal, uneven, and error-prone care. While early reports published by the Institute of Medicine (IOM) (IOM, 2001; Kohn et al., 2000) placed a spotlight on healthcare quality, more recent reports (AHRQ, 2007, 2008; The Commonwealth Fund Commission on a High Performance Health System, 2008; Joint Commission, 2008) have generated new knowledge in this area and confirmed what we have suspected for years—that tremendous dysfunction, chaos, and underperformance exist in every setting of health care and for all patients.

These quality lags are particularly alarming when taking our nation's healthcare investment into account. This year, the United States will spend more than $2.5 trillion on health care, an estimated 17 percent of the gross domestic product (GDP). By 2017, U.S. healthcare spending is expected to nearly double from 2007's projected level, reaching $4.3 trillion and consuming 19.5 percent of the nation's GDP (Anonymous, 2008). While U.S. spending surpasses that of other developed countries, outcomes lag for key indicators such as preterm births, infant mortality, and life expectancy.

To interrupt these trends, national leaders are exploring solutions that both improve outcomes and lower costs. This paper is based on the underlying assumption that "the needs and preferences of every patient should be met by the healthcare professional with the most appropriate skills and training to provide the necessary care" (American College of Physicians, 2009). It summarizes the evidence base that demonstrates cost savings and performance improvements by maximizing the existing healthcare workforce, including licensed independent practitioners and physician assistants (PAs). Four key questions have been addressed:

- What is known about the contributions of healthcare professionals (other than physicians) in achieving high-value health care?
- What evidence-based models serve as exemplars?
- What barriers to optimizing the contributions of licensed independent practitioners have been identified?
- What policy options will maximize their contributions?

Licensed Independent Practitioners

A licensed independent practitioner is "any individual permitted by law and *by the organization* to provide care and services, without direction or supervision, within the scope of the individual's license and consistent with individually granted clinical privileges" (Joint Commission, 2009). These practitioners operate under their own licenses and their respective scopes of practice in the delivery of healthcare services. The population of LIPs is diverse and encompasses advance practice registered nurses (APRNs)—including nurse practitioners (NPs), clinical nurse specialists, nurse midwives, and nurse anesthetists—and allied health professionals such as physical and occupational therapists, pharmacists, and clinical social workers. LIPs practice in a variety of settings, including health centers and clinics, primary care practices, hospitals, and community-based services. It should be noted that APRNs are licensed in many states as LIPs, while physician assistants operate under the physician's license.

Contribution of LIPs and PAs to High-Value Health Care

A substantial, consistent, and mature evidence base reveals that LIPs and PAs deliver high-value health care. This evidence base is richest and strongest in demonstrating the NP- and PA-value equation. A number of rigorous studies dating back to 1981 and including randomized controlled clinical trials (RCTs), systematic reviews, and meta-analyses demonstrate the equivalence and cost effectiveness of NPs and PAs. Among the first to report this phenomenon was the Office of Technology Assessment (OTA), which described the value of NPs in its 1981 report *The Cost and Effectiveness of Nurse Practitioners*. More recently, these findings have been confirmed. A systematic review and meta analysis conducted by Horrocks and colleauges, for example, found that when compared to physician practices, NP practices produce equivalent or better patient outcomes (e.g., health status, adherence, symptom relief), care processes (e.g., care management), and patient satisfaction (Horrocks et al., 2002). Multiple studies that have compared NP or physician-NP teams to physician-only practices find that NP or physician-NP teams decrease both utilization and healthcare costs (American Academy of Nurse Practitioners, 2007). A review of more than

27,000 individual titles and 30 outcomes by Newhouse and colleagues is expected to provide further evidence supporting the contribution of NPs to value (Tri-Council of Nursing, 2008).

The potential policy impacts of these findings are not inconsequential. On behalf of the Commonwealth of Massachusetts, for example, the RAND Corporation assessed cost containment strategies and options under the state's Chapter 58 of the Acts of 2006, which was aimed at expanding healthcare coverage. In its evaluation of various strategies, RAND found that over a 10-year period (2010-2020), the cost savings associated with increased use of NPs and PAs would be between $4 billion and $8 billion. This strategy was among a handful that both produced cost savings at the lower-range estimates and produced savings in the first year.

The literature beyond NPs and PAs is less extensive but consistent. Studies examining the value equation among nurse midwives, for example, have found similar achievements in both cost and quality. As one example, a 2008 *Cochrane Review* (Hatem et al., 2008) found that compared to obstetricians, nurse midwives are less likely to use some interventions (e.g., regional anesthesia, episiotomies, and instrumental deliveries). This review also confirmed improved outcomes among those served by nurse midwives (e.g., increased spontaneous vaginal births, reduced lengths of stay for infants, and lower costs). Taken together, the evidence portrays a workforce that is well positioned to deliver high-value health care. Specific examples of evidence-based models that achieve high value are summarized in Table 18-1.

Barriers Limiting Appropriate Use of All Professionals

Despite the evidence base and the existence of real-world models, there are barriers that prevent LIPs and PAs from practicing to their full capacities. These can be characterized as both internal and external.

Internal Barriers

Despite the size and capabilities of this workforce, the roles of LIPs and PAs are typically misunderstood and have not been conveyed to the public in terms that enables patients and family caregivers to understand defined roles and responsibilities. Without an appreciation of the potential of this workforce, there is little public stimulus to invest in or facilitate LIP and PA practice.

Additionally, performance measures of clinical and economic outcomes that relate to LIP and PA care generally do not exist, and those that do exist are not routinely collected or reported. This results in a lack of transparency regarding the value of these practitioners among stakeholders and underlying questions regarding their relative contributions. In the absence

TABLE 18-1 High-Value Models

Characteristic	High-Value Model		
	Transitional Care Model (TCM)	Advancing Better Living for Elders (ABLE)	Pharmacist Intervention (unnamed)
Aim	Interrupt cycles of repeated, unnecessary hospitalizations among chronically ill elders	Reduce functional difficulties, fear of falling, and home hazards and enhance self-efficacy and adaptive coping in older adults with chronic conditions	Improve adherence to prescription medication therapy among patients with heart failure
Model description	Comprehensive in-hospital planning and home follow-up and ongoing telephone support for an average of 2 months post-discharge; TCM emphasizes continuity of medical care between hospital and primary care physicians, comprehensive, holistic focus on each patient's needs, active engagement of patients and their family and informal caregivers, emphasis on early identification and response to healthcare risks and symptoms to achieve *longer-term* positive outcomes and avoid adverse and untoward events that lead to readmissions	A 6-month multicomponent home-based intervention consisting of five occupational therapy contacts (four 90-minute visits and one 20-minute telephone contact) and one physical therapy visit (90 minutes) and involving home modifications and training in their use; instruction in strategies of problem-solving, energy conservation, safe performance, and fall recovery techniques; and balance and muscle strength training	Protocol-based intervention including a baseline medication history of all prescription and over-the-counter drugs and dietary supplements taken by patients, an assessment of patient medication knowledge and skills, patient-centered verbal instructions and written materials about the medications; and pharmacist-monitored patient medication use, healthcare encounters, body weight, and other relevant data
Reference(s)	Naylor et al. (1994) Naylor (1999) Naylor et al. (2004)	Gitlin et al. (2006) Jutkowitz et al. (2009)	Murray et al. (2007)
Setting	Hospital to home	Urban community-based	University-affiliated, inner-city ambulatory care practice

continued

TABLE 18-1 Continued

Characteristic	High-Value Model		
	Transitional Care Model (TCM)	Advancing Better Living for Elders (ABLE)	Pharmacist Intervention (unnamed)
Population served	Cognitively intact older adults with two or more risk factors, including history of recent hospitalizations, multiple chronic conditions or medications, and poor self-health ratings	Community-dwelling persons aged 70 and older by modifying behavioral and environmental contributors to functional decline	Low-income patients 50 years of age or older with heart failure
Primary provider of care or service	Advanced practice registered nurse	Physical and occupational therapists	Registered pharmacist
Clinical outcomes	Reduction in all-cause readmission rates through 1 year post-discharge[a] Improvements in physical health, functional status, and quality of life Enhancement of patient and family caregiver satisfaction	Reduced mortality rates among the older adults with functional difficulties Decreased deficits in activities of daily living and instrumental activities of daily living Improved self-sufficiency and use of adaptive strategies	Significant improvements in medication adherence, although effects dissipated in post-intervention 3-month follow-up period Fewer emergency department visits and hospitalizations
Economic outcomes	Reductions of nearly $5,000 per patient in total (i.e., physician, hospital, home health) healthcare costs[a]	Decreased costs—incremental cost-effectiveness ratio of $16,000 per quality-adjusted life-year (QALY)	Reduced annual direct healthcare costs by nearly $3,000

[a] From most recent RCT only: Naylor et al. (2004).

of public performance reports, there is little to stimulate quality improvement or professional accountability.

External Barriers

The most significant external barriers are the restrictions placed on LIPs and PAs by state and federal laws and regulations, reimbursement and

other payment policies, and opposition from healthcare systems, professional medical groups, and managed care organizations that fear competition. For example, scope-of-practice laws, which define each healthcare professional's lawful sphere of activity, are established on a state-by-state basis. This leads to a lack of uniformity across state lines. Some states (e.g., Alaska), for example, extend NPs full prescription authority and allow practice without physician supervision. Other states (e.g., Alabama) are unnecessarily restrictive and require physician oversight of almost every aspect of NP practice.

Even if scope-of-practice laws were uniform and unrestrictive, current reimbursement practices serve as barriers to capitalizing on the contributions of *all* healthcare professionals. Medicare, for example, limits NP reimbursement levels. Additionally, among most private insurers, LIPs and PAs cannot bill independently for services. Practice is seriously curtailed by these practitioners' inability to equitably bill for the same services provided by physicians.

Policy Options

To overcome these barriers, healthcare stakeholders should consider the full range of policy options available. First, state scope-of-practice laws should be revised where they are unnecessarily restrictive and prevent the full use of LIPs and PAs. Federal initiatives that include and appropriately utilize these practitioners should be supported and advanced. Demonstrations and pilots that test specific innovations in system redesign and payment reform should always include the full range of professionals who can deliver the necessary services. As an example, in considering bundled payments to reduce hospital readmission, any demonstration initiated by the Centers for Medicare & Medicaid Services should enable nurse-managed health centers to receive and distribute such payments.

Additionally, payment reform that emphasizes the team as the payment unit and reinforces the team's accountability for individual and population health should be supported. Equitable payment for the same services should be the expectation reflected in payment policy, and reimbursement should incentivize replication rather than prohibition of the spread of evidence-based models of care, such as the Transitional Care Model and other interventions profiled in Table 18-1.

To address the lack of transparency and accountability that call into question the reliability of this workforce and the public's understanding of it, performance measurement and reporting systems should be designed and implemented to address the contributions of teams and all professionals that comprise those teams. Strengthened accountability will spur ongoing quality improvements and cost savings among LIPs and PAs. Beyond measurement and reporting, however, a public education campaign with

elegantly crafted messages about the roles of various healthcare professionals would result in better-informed consumers who would likely be more supportive of the full range of practitioners and their respective areas of expertise.

Finally, research aimed at assessing the value and comparative effectiveness of innovative care and payment models that rely on LIPs and PAs should be vigorously pursued. While researchers should be engaged in studying these questions, government (e.g., National Institutes of Health, Agency for Healthcare Research and Quality), private philanthropies (e.g., Robert Wood Johnson Foundation, The Commonwealth Fund) should be supportive of these directions in their funding decisions.

Conclusion

Based on the underlying assumption that patients deserve access to healthcare professions with the most appropriate skills and training to provide the necessary care, this paper provides the evidentiary rationale, real-life examples, and policy solutions to maximize the existing LIP and PA workforce and achieve higher-value health care.

TRANSPARENCY AND INFORMED CHOICE

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Health care's well-documented failings include poor access, poor quality, and crippling costs. Yet, for all the debate about reform, little has been proposed that will simultaneously improve quality, affordability, and access. Why? Because most proposals focus on insurer competition and coverage subsidization, whereas the area on which we need to focus is the provision of care, the place where resources get put to use well or not. Therefore, unless reform rewards the most effective and efficient providers at the expense of the worst, we will not make progress across the board. Making provider performance transparent so patients and payers can make informed choices when accessing care is necessary to accomplish this. In contrast, reforms that expand coverage without providing mechanisms for distinguishing the best providers from the pack, such as those seen in Massachusetts, increase spending to improve access but do not solve the quality and cost problems.

Why is this? The root causes of the access, quality, and affordability problems we have lie with the providers—hospitals, clinics, and practices. Whether great value gets created or destroyed depends on how the delivery of care is managed. There is huge variation between regions, within regions,

and even within institutions, with mediocre providers compromising the impact of truly great ones.

Given these discrepancies, patients and payers should swarm to the good and spurn the bad, but they do not—because we do not have sufficient information to know better. Without informed choice, far too much traffic goes to those who burn a lot of resources while providing too little and too little traffic goes to those who are most effective and most efficient. (Imagine such blindness going into a purchase by considering buying a car, and not knowing in advance whether you will get a Lexus or a Yugo for your hard-earned money, or buying a plane ticket not knowing at which airport you will arrive.) Because those who receive care and pay for care cannot effectively determine where to get care, the overall level of care is tragically lower than it needs to be and its costs are astronomically high.

How then do we move in a direction of patients making informed choices that are to their own immediate benefit and, because they bolster the best providers and diminish the worst, have societal benefit as well?

First of all, there are certain events that should never happen (just as the wheels of your car or the wings of your plane should never fall off). Patients on ventilators should not get pneumonia, patients with catheters should not get urinary tract or bloodstream infections, patients should not suffer surgical site infections, patients should not fall and injure themselves, and patients should never get the wrong medication or the right medication in the wrong dose. When these things do happen, it is not because "health care is complicated" or because "every patient is different." It is because there is a breakdown in the delivery of care. The management of care was broken.

Progress is possible and attainable. Hospitals working with the Pittsburgh Regional Healthcare Initiative (PRHI) cut the rate of bloodstream infections associated with intravenous catheters by 70 percent. Some hospitals cut their rates to zero. Savings were in the hundreds of lives not lost and the thousands not harmed, with extraordinary financial benefits since the cost of trying to clean up these complications runs into the tens of thousands of dollars each.

The Veterans Administration (VA) eliminated a pernicious type of surgical site infection—again, many lives saved, even more pain and suffering avoided, and the financial impact markedly reduced. Other hospitals have eliminated other events that should never happen—patient falls, pneumonias while ventilated, medication errors, and the like.

These hospitals have not been alone in their success. The Institute for Healthcare Improvement (IHI) sponsored a One Hundred Thousand Lives Campaign, championing practices to prevent complications such as those listed above. As a result, an estimated 122,300 patient deaths were avoided, based on 2004 levels of care.

These examples are in the acute care setting, but the possibilities are not just with in-patients. Places such as ThedaCare, Virginia Mason, and the Mayo Clinic have demonstrated remarkable success in preventive and primary care, chronic illness management, and specialty care, to name a few.

Therefore real, measurable change is possible, but again providers and patients need to have information about the healthcare services they are going to receive. Let us know how often the system fails. Require all organizations to post how well they are doing against a standard of "zero" on these never events. Next, build other measures of efficacy and efficiency from preventive and primary care to chronic, acute, intensive, and extended care. Our largest payers, both public and private, such as the Blue Cross/Blue Shield organizations, the VA, Medicare, and Medicaid, record countless interactions of patients with providers across a huge variety of conditions. They have the data to determine which therapies are most effective under which circumstances and which providers are most effective at delivering them. The data are there, but we have to apply quality standards to them. Then people can make informed choices as to whom to trust with their wealth and well-being and whom to fear.

Without doubt, a caring society will ensure that the least fortunate receive health care just as we try now to make sure no one goes hungry or homeless. Also, yes, it is undoubtedly important that there be competition among insurance providers.

However, if we want bona fide reform that successfully increases quality and affordability (and hence access), we have to start rewarding great providers at the expense of the low performers so that the money we put into the system gets well spent, not squandered. Only then can we get health care for all in a way that is not bankrupting.

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19

Administrative Simplification

INTRODUCTION

Physicians spend a reported 43 minutes per day on average—the equivalent of three hours per week and nearly three weeks per year—on interactions with health plans and not on patient care (Casalino et al., 2009). Information needed for provider credentialing is requested repeatedly by differing institutions, consuming time and resources that would otherwise be spent on patient care (Healthcare Administration Simplification Coalition, 2009b). Unnecessary administrative complexity has compounded the inefficiencies in our healthcare delivery system. The presenters in this session discuss promising policy solutions to facilitate administrative simplification, ranging from leveraging technology to standardizing reporting requirements.

Lewis G. Sandy of UnitedHealth Group begins by stating the problem resulting from administrative complexity in stark terms—approximately $332 billion in administrative costs could be saved over 10 years from simplification efforts (UnitedHealth Center for Health Reform and Modernization, 2009). To realize these opportunities, he discusses the following policy actions: policies that promote the "spread" of existing standards and capabilities; policies that promote electronic connectivity and transaction automation; and polices that support multipayer capability development. He additionally emphasizes the importance of interoperability and progressive maturation of system capability, as opposed to emphasizing standardization alone, and the role of public–private sector coordination and harmonization in accelerating these advancements.

Linda L. Kloss of the American Health Informatics Management Association states that past efforts at healthcare administrative simplification have often not only failed to reduce costs, but actually increased complexity and cost. Real improvements and cost reductions require an end-to-end view of the business processes, not only within but across sectors and entities, and a commitment to uniform and standard processes and continuous improvement. Drawing on the work of the Healthcare Administrative Simplification Coalition, she focuses on four processes with the potential to reduce costs for providers and payers and improve service to purchasers and consumers: practitioner credentialing, insurance eligibility, standard insurance identification (ID) cards, and prior authorization. She also identifies governance of policy, uniform standards, process and conformance education, and continuous improvement as four common elements among recommendations relating to claims and payment, quality reporting, terminologies and classifications, and other critical healthcare business processes.

Harry Reynolds of Blue Cross and Blue Shield of North Carolina builds on these suggestions, stating that through the tracking and reporting of actual operational changes, industry-driven efforts to bring lasting change to the administrative aspects of health care are currently demonstrating their ability to reduce costs and increase efficiencies. However, he posits that although many in the industry are working to gain greater industry adoption of these efforts, significant challenges exist with regard to integrating these efforts across the healthcare system so that all-payer administrative simplification, public and private alike, could be achieved. Discussing the specific challenges and potential opportunities demonstrated through two initiatives—the Universal Provider Datasource and the Committee on Operating Rules for Information Exchange—he emphasizes the critical need to ensure that these efforts continue to be aligned with federal health information technology policies, the necessity of multistakeholder support, and the barriers posed by the inevitable changes to current business practices.

ADMINISTRATIVE SIMPLIFICATION AND PAYER HARMONIZATION

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As policy makers grapple with how to reform the U.S. healthcare system, one area of considerable agreement is the opportunity to streamline and simplify administrative processes. Significant differences exist regarding the overall magnitude of the costs of administration in the U.S. healthcare system. Some of these differences relate to varying definitions of "adminis-

tration" and the lack of a standard framework for analysis of administrative costs.[1] Nonetheless, most actors in the United States believe that the fragmented, intensely manual, complex, and error-prone administrative processes that exist have ample opportunity for improvement.

UnitedHealth Group, a diversified health and well-being company, has recently created a Center for Health Reform & Modernization that has analyzed administrative processes throughout the U.S. healthcare system and found that $332 billion in savings over 10 years may be possible through the application and greater use of existing capabilities in technology, electronic connectivity, and claims processing (UnitedHealth Center for Health Reform & Modernization, 2009). This paper describes a policy framework that would promote realization of these opportunities and outlines three areas for policy development: first, policies that promote "spread" of existing standards and capabilities; second, policies promoting electronic connectivity and transaction automation; and third, policies promoting multipayer capability development.

Policies that promote the spread of existing capabilities and standards represent the "low-hanging fruit" for short-term realization of administrative simplification. For example, the Workgroup on Electronic Data Interchange (WEDI) Strategic National Implementation Process (SNIP) has already developed standards for health ID cards, and UnitedHealthcare has implemented these standards, producing more than 30 million ID cards that conform to these requirements. Not only do these standards improve and simplify ID cards for consumers, they also have magnetic strip capacity that supports electronic eligibility determination and provides accurate copayment information at the point of care. Nonetheless, when this author receives medical care at a highly regarded group practice in Minneapolis (which also has advanced EMR [electronic medical record] and practice management infrastructure), the front desk staff—rather than taking advantage of this capability—photocopies the card! Thus, policies that promote spread must extend through the full healthcare delivery "supply chain," from employer or plan sponsor, to health plan or plan administrator, to EMR or practice management systems vendor, to medical practice. In addition, policies promoting such spread should encourage fidelity of adoption in order to maximize harmonization across payers and care providers. There are many instances in which "common standards" suffer "variable implementation," requiring "companion guides," which add administrative complexity. The Council for Affordable Quality Healthcare (CAQH) has been a leader in this area, and the current CORE (Committee on Operat-

[1] For one such framework, see http://www.randcompare.org/current/dimension/waste.

[2] See International Health Terminology Standards Development Organization at www.ihtsdo.org.

ing Rules for Information Exchange) standards represent additional opportunities to promote the spread of existing standards using a common approach.

Second, policies that promote transaction automation and electronic connectivity are vital in order to move away from current intensely manual and error-prone processes. America's Health Insurance Plans (AHIP), the trade association for U.S. health insurers, has advocated for comprehensive overhaul of administrative processes to standardize and automate five key functions: claims submissions, eligibility, claims status, payment, and remittance. Full automation and standardization of these administrative transactions will allow physicians, hospitals, and other healthcare providers to reduce their administrative costs substantially (U.S. House of Representatives, 2009). Similarly, the American Medical Association has noted the significant opportunity from greater deployment of existing Health Insurance Portability and Accountability Act (HIPAA) standards in these domains (American Medical Association Practice Management Center, 2008). The Healthcare Administrative Simplification Coalition (HASC), a multistakeholder coalition (of which UnitedHealth Group was an early member), has also advocated for full deployment of existing capabilities in this area (Healthcare Administration Simplification Coalition, 2009a).

Third, policies that promote multipayer capability development would advance administrative simplification significantly. The claims "clearinghouse" industry itself developed as a response to the complexity of dealing with multiple payer requirements, yet no single clearinghouse provides full "all-payer" connectivity, necessitating connectivity "trading" that creates its own complexity and risks of error. Policies that promote national standards and specifications for regional gateways and practice management information systems (PMIS) are greatly needed. In the interim, AHIP is piloting a multipayer "portal" strategy to advance this agenda in the short term. In addition, developing and adopting system-wide analytics (such as quality or cost performance measures and fraud detection) that can be more efficiently deployed on a national level (or at least using a national framework of standards) would be a major advance that would support medical cost savings initiatives and make the entire system "smarter."

In developing policy to promote administrative simplification, it is important to distinguish between "utility" functions, such as credentialing and eligibility verification, and "innovation" functions, such as benefit design, medical management, and consumer engagement. The former are essentially part of the transaction infrastructure in the U.S. healthcare system, and uniqueness offers no particular advantage in a dynamic, competitive marketplace. These utility functions should be standardized and policy should promote rapid and full adoption, with a structured process for revision over time. On the other hand, given the magnitude of the

quality and affordability challenges in our system, there is significant need and opportunity to innovate in areas such as "value-based" benefit design, advanced medical management approaches, and consumer engagement and activation. Although some advocate for standardization of benefit structures and medical management processes at this time, it is premature to forestall innovation in these critical areas. Rather, the administrative simplification agenda can be advanced in these domains through emphasis on interoperability. For example, advanced notification requirements for coverage verification and/or medical management may vary across payers as a result of differences in covered populations or other factors, but the notification process itself could be "engineered" into PMIS and health plan clinical management platforms using current and emerging standards for clinical data exchange, rather than the manual processes used by both practices and payers at present.

In implementing policy, careful attention to phasing, sequencing, and prioritizing change initiatives is critical. Incremental efforts that do not fundamentally change workflows will have limited impact, while large-scale change initiatives require significant time and human or financial resources to plan and execute. As one report from the Washington State Office of the Insurance Commissioner (2008) articulated:

> In order to review and simplify healthcare administrative functions, a decision-making and implementation framework is needed—an organized structure to promote collaboration and well-informed discussions and decisions, and to bring about broad adoption of the common standards and processes necessary for administrative simplification and cost reduction.
>
> By formalizing a public/private approach between all affected entities, administrative simplification is more likely to occur with greater acceleration if attempted on an ad hoc or piecemeal basis. This framework should include clearly defined roles for both the public and private sectors.

Lastly, since Medicare constitutes such a large proportion of national health expenditures and the patient population of most physician practices, Medicare's approach to administrative simplification will play a key role in advancing this agenda. Medicare's approaches to physician and hospital payment are already widely used by private payers, and efforts that would advance public–private harmonization of administrative simplification efforts would likely have synergistic effects in improving the healthcare delivery system. Given that Medicare as currently organized and financed is unsustainable over time, it is likely that Medicare will have to incorporate new approaches on a variety of fronts, including its administrative operations, and public–private harmonization efforts could lead to a more robust "signal" to the delivery system that would accelerate change and facilitate

the path toward a modernized U.S. healthcare system (New America Foundation, 2009).

PAYER HARMONIZATION ON THE PROVIDER PERSPECTIVE

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American Health Informatics Management Association

The processes associated with billing and payment for healthcare services in the United States consumes 15 percent or more of each dollar, compared to 2 percent for billing and payment transactions in the retail sector (LeCuyer and Singhal, 2007). The cost to providers is actually closer to 20 to 22 percent, while the cost to private payers is 8 percent (Kahn et al., 2005). To address the significant duplication and resource uses in our healthcare industry, the American Health Information Management Association (AHIMA)—which is made up of some 54,000 health information management professionals sharing the vision that quality information will create quality health—joined with the American Academy of Family Physicians and the Medical Group Management Association in 2005 to form the Healthcare Administrative Simplification Coalition (HASC) to spotlight and advance opportunities to reduce administrative complexity, including but not limited to the complexity of payment systems.

Targeted Short-Term Solutions

Today HASC has 14 member organizations committed to advancing administrative simplification strategies that reduce unnecessary costs. Over the years, HASC has focused on three payment-related processes for which short-term solutions were available: practitioner credentialing, insurance eligibility, and health identification cards. Through grassroots communication and advocacy, it has advanced uniform practices in these three areas.

A HASC-sponsored summit in November 2008 produced a set of action recommendations that have the support of the organizations that participated, including government agencies, health plans, physician and hospital organizations, and associations for providers, health plans, and health information specialists. The report of the summit presents the challenges and describes the action agenda (Healthcare Administration Simplification Coalition, 2009b).

Simplify Practitioner Credentialing

Except for minor differences, health insurance companies, Medicare, Medicaid, and hospitals require the same information from physicians

and other healthcare providers to support the credentialing process. For this reason, the Council for Affordable Quality Healthcare developed a uniform credentialing solution, the Universal Provider Datasource (UPD). UPD is available online and currently includes nearly 750,000 physicians and other providers whose credentialing information is accessed by more than 500 health plans, networks, and other organizations. It is a system that is rapidly becoming the industry standard and would benefit from a clear policy directive that it become the standard solution. CAQH estimates that the current level of adoption has already produced savings of more than $92 million per year of more than 3.2 million hours of provider and staff time and estimates an additional $150 million to $200 million savings per year if UPD is the standard application used by all entities, including Medicare and Medicaid (Healthcare Administration Simplification Coalition, 2009b).

Action: Require public and private health plans, payers, providers, and regulatory bodies to adopt the UPD. Its benefit has been demonstrated, and the barriers, such as modifications required to meet the unique needs of Medicare and Medicaid, have been identified. A reasonable but aggressive date should be set for adoption of UPD.

Health Insurance Eligibility Process

The Health Insurance Portability and Accountability Act of 1996 called for adoption and use of standardized electronic transactions associated with payment processes, including those for eligibility verification and notification of processed claims. A decade later, the standards have yet to be widely implemented, and these processes remain highly manual, contentious, and costly.

As with UPD, there is a solution that is gaining acceptance and would benefit from a national policy push. The CAQH Committee on Operating Rules for Information Exchange currently consist of operating rules for eligibility verification, benefits information, and claims status. Additional transactions are under development. CAQH offers certification to confirm conformance to CORE standards.

Phase I and II rules are being adopted by health plans, clearinghouses, and application technology vendors. However, the pace of adoption could be increased by a clear directive that this will be the standard.

Action: Call for adoption of the CAQH CORE Phase I and II operating rules and certification as the industry standard for insurance and payment-related transactions. A roadmap for additional development of these operating standards should be included in the rule so vendors, plans, and providers can anticipate phased enhancements and improvements. The vehicle for adoption should be the Health Information Technology (HIT)

Standards Panel and HIT Standards Committee, which are managed by the Department of Health and Human Services (HHS) Office of the National Coordinator. The standard should be reflected in conformance criteria used by HIT certifying bodies.

Health Identification Cards

Insurance identification cards provided by health plans are non-standard so providers generally can leverage technology and instead photocopy and re-enter information. Not only does this increase costs, but it also introduces data errors. The Workgroup for Electronic Data Interchange approved a health Identification Card Implementation Guide in 2007 (WEDI, 2007) that includes specifications for machine-readable ID cards and the required data elements to be included on those cards. While several large health plans have adopted the WEDI guide, most plans continue to offer their own design.

Action: Call for adoption of standard health identification cards conforming to the WEDI specifications. Electronic health record and practice management software vendors should develop machine-readable applications to read and populate patient demographic and insurance information to eliminate manual processing. The vehicle for adoption should be the Health Information Technology Standards Panel and HIT Standards Committee, which are managed by the HHS Office of the National Coordinator. The standard should be reflected in conformance criteria used by HIT certifying bodies.

Other Targets for Simplification Efforts

In addition to the three target areas identified by HASC, standardizing prior authorization processes and data protocols for payers are critical reforms to which some attention has been paid in recent years. However, much work remains to be done.

Prior Authorization Processes

Prior authorization for services is a costly but necessary process for payers and providers. It is also a source of anxiety for patients. HASC urges greater transparency of medical necessity guidelines and standardization of prior authorization processes, but as a practical matter, it recommends initial focus on radiology, advanced imaging, and pharmacy benefits. These are high-volume areas that, if streamlined, could have big payback for providers and payers. The current process requires a patient to contact the physician, who then fills out the forms required by a particular plan. Sometimes the patient must follow up with the physician, and the pharmacy

may even need to provide additional information. The National Council for Prescription Drug Plans (NCPDP) has worked with Health Level 7 (HL7), a standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information, to advance a standard for a simplified prior authorization process using normalized datasets for certain therapeutic data.

Action: Create incentives as part of e-prescribing to urge adoption of HL7 prior authorization attachments as developed by the NCPDP. Projects based on the NCPDP model should be developed for radiology and advanced imaging leading to standards development and incentives for adoption.

Health Data Practices and Policies

Clinical terminologies such as SNOMED-CT and classifications such as the International Classification of Diseases (ICD) are the foundation for standardizing and summarizing the data content in the electronic health record (EHR). Reference terminologies can improve the value of data captured in EHRs and support interoperability. Classifications are the basis upon which services are billed and paid, but coded data are used for many purposes beyond billing. The implementation of ICD-10-CM and ICD-10-PCS on October 1, 2013, will improve the granularity of billing codes, thus improving the descriptive value of coded data to substantiate claims. New technology applications can be expected to automate some of the current manual processes associated with coding and increase the value of data for analysis.

Progress is being made in modernizing classifications and testing terminologies in electronic records. However, policy, governance, standards, technology, and education resources related to terminologies and classifications in the United States remain inadequate to support an interoperable health information system.

In 2007, the American Health Information Management Association and the American Medical Informatics Association (AMIA) formed a joint task force to develop recommendations for improving the development, maintenance, and deployment of healthcare terminologies and classification systems in the United States. The task force outlined a vision and guiding principles for how the United States should manage this essential component of the information infrastructure and evaluated the current processes against the vision and principles. The task force also described the terminology and classification practices of other countries (American Health Information Management Association, 2006).

Action: Fund research to design a governance mechanism for the de-

velopment, maintenance, and deployment of terminologies and classifications in the United States. This project should be funded and supported by the Office of the National Coordinator in conjunction with the National Library of Medicine, the National Center for Health Statistics, and the Centers for Medicare & Medicaid Services (CMS) because these agencies play a part in the current process. The research, design, and planning should be accomplished by 2011 so that a new or revised organizational entity as well as development, maintenance, and deployment strategies can be implemented in 2012 in advance of the transition to ICD-10.

Conclusion

Real improvements and cost reductions require a more robust strategy for ensuring that there are good data. They require an end-to-end view of the business processes, not only within but across sectors and entities, and a commitment to uniform and standard processes and continuous improvement. Even as EHRs have become a panacea, administrative simplification has been insufficiently addressed. We have not necessarily been addressing how to standardize processes around e-discovery or fraud management, for instance—a costly oversight.

Payer administrative processes are highly manual and fragmented and, as suggested here, a major opportunity for improvements and savings. To support this work, processes for adopting and revising data guidelines need to be updated and streamlined. More research in the best practices around administrative simplification is needed, since there is still much we do not know about this area. Also, even where there are requirements for healthcare data and administration, they have not been enforced and vary greatly from state to state. So, beyond standardization, there must be consequences for noncompliance. If we are to reduce costs, we need to simplify our processes. Just as significant, if we are to glean meaningful information across regions and states or nationally, our data and processes cannot continue to be uncoordinated and fragmented.

POLICIES TARGETING PAYER HARMONIZATION

Harry Reynolds
Blue Cross and Blue Shield of North Carolina

Total current U.S. healthcare spending is estimated to be $2.3 trillion per year (Center for Health Transformation, 2009) with about 25 percent attributed to administrative functions (Healthcare Administration Simplification Coalition, 2009b). There is opportunity to reduce these costs by integrating existing solutions into and across the entire healthcare system.

Specifically, some of these solutions are industry-driven efforts that are currently bringing enduring change to the administrative aspects of health care by successfully guiding administrative change. If fully adopted and integrated, these solutions can make achieving all-payer administrative simplification—public and private—a near-term national goal. CAQH, a nonprofit healthcare industry alliance that is helping drive payer collaboration through national, multistakeholder efforts, has spearheaded two initiatives that are producing real results in the marketplace today: CORE and UPD. These initiatives have been widely adopted regionally and nationally, but have yet to realize their full potential for savings and interoperability in the healthcare industry. Increasing the focus that policy makers place on such initiatives will be critical to fully integrating these industry-driven efforts into the national healthcare system and tracking their benefit.

This paper reviews the challenges in integrating industry-driven administrative simplification efforts into the healthcare system, outlines the policy-related approaches to help address these challenges, describes the potential impact of taking such actions using the CAQH initiatives as examples, and concludes with suggestions for how these policy approaches could be applied today.

Challenges to Integration and Approaches to Resolution

Healthcare industry-driven initiatives centered on administrative interoperability are faced with many challenges in integrating their efforts into the ecosystem. The industry is confronted with conflicting objectives, priorities, and approaches. As a result, many of the challenges being targeted for change by the government, private sector, and consumers are fraught with a range of barriers: fragmented markets, lack of coordination, insufficient leadership, undefined milestones, and unproven concepts.

Overcoming these barriers can be accomplished through concerted efforts and by focusing on a handful of key areas that address administrative interoperability. These areas of focus should not affect or influence competitive advantage in the marketplace, but rather should target noncompetitive processes that can have meaningful and measurable impact on a wide group of stakeholders. By employing an inclusive approach that requires public–private coordination as well as multistakeholder support, including states and government groups, challenges can be confronted, managed, and eventually overcome.

Industry-Driven Efforts

CAQH currently has two industry-driven initiatives that are addressing specific challenges identified by a broad range of industry stakeholders.

CORE: Overview, Adoption, and Impact

CORE, a collaboration of more than 100 industry stakeholders, is developing operating rules to enable providers' access to healthcare administrative information before or at the time of service using the electronic system of their choice for any patient or health plan. The CORE rules are being developed in multiple phases and address data and infrastructure critical to the healthcare revenue cycle. CORE has gained national recognition as an important HIT solution that can help enable electronic health records and transparency. A recent study concluded that industry-wide implementation of CORE Phase I could save the industry an estimated $3 billion over 3 years (see Table 12-9). With industry-wide adoption of CORE Phase I, Phase II, and Phase III rules, the potential savings in the industry increases to $14 billion in 3 years (IBM Global Business Services, 2009).

UPD: Overview, Adoption, and Impact

UPD is the industry standard for collecting provider data used in credentialing, claims processing, quality assurance, emergency response, member services such as directories and referrals, and more. CAQH launched the UPD service in 2002 to enable providers and other health professionals in all 50 states and the District of Columbia to submit required information for credentialing and other purposes. Providers enter their information once through a secure, centralized, online database to meet the data collection needs of participating organizations. Once authorized by the physician, these organizations have instant access to information in the UPD system. More than 760,000 providers and 500 participating organizations are utilizing UPD.

Policy-Related Approaches

While industry-driven initiatives are delivering results and driving change, to fully recognize the vision of these efforts support is needed in the policy arena. Policy can play an essential role once consensus is reached by the general marketplace that (1) change is needed, and (2) an avenue with prioritized, shared public–private goals is available to address such change. Recent efforts have shown that policy-related approaches focused on these goals have assisted and should further assist in integrating well-vetted, broadly supported, return on investment (ROI)-based, industry-driven efforts into the national healthcare system. These approaches can serve as models, applicable to a range of healthcare initiatives, to create long-standing benefits. For example, CAQH has utilized several successful policy-related approaches, including the following:

- Phase in efforts with existing priorities,
- Align efforts with federal health information technology policies,
- Gain multistakeholder support through state, federal, and industry leaders and policy makers, and
- Surmount the barrier posed by the inevitable changes to current business practices (Table 19-1).

Phase In Efforts with Existing Priorities

One example of phasing in efforts with existing priorities is demonstrated by CAQH through its CORE initiative. CORE rules are developed based on existing national standards, while keeping in mind expected changes in regulations. For instance, the CORE Phase I and Phase II rules were built based on HIPAA version 4010, but also complement HIPAA version 5010, the latest version. There was no deadline set for compliance with 5010 when the CORE Phase I and Phase II rules were being developed; however, the CORE rule writing included participation from ASC (Accredited Standards Committee) X12, which was driving the draft 5010 requirements. Upon finalization in April 2006, the CORE Phase I rules required health plans responding to an eligibility request from a provider to include patient financial responsibility. This requirement was made well ahead of the HIPAA 5010 recommendation (see Table 19-1) and its corresponding deadline. Moreover, CORE is going beyond what 5010 requires for patient financials. This approach ensures that entities operating in accordance with the CORE rules will be assisted in meeting existing and upcoming priorities established by HIPAA, enabling industry coordination.

Given its efforts to use the nonmandated aspects of 5010 and provide online testing, CMS approached CAQH to implement a 5010 testing

TABLE 19-1 CORE-5010 Crossover: Eligibility Inquiry—Patient Financials

Patient Financial	Required by CORE Phase I Since 4/06 or CORE Phase II Since 7/08 (either 6 or 4 years prior to 5010)	Recommended by 5010 (not mandated)
Copay	X	X
Coinsurance	X	X
Deductible (static)	X	X
YTD deductible (remaining)	X (Phase II)	No
In-out of network variances	X	No

NOTE: YTD = year to date.
SOURCE: Reprinted with permission from CAQH, 2009a.

project that would highlight real-time testing of the new ASC X12 HIPAA 5010 eligibility transaction. CMS looked to CORE for this demonstration because CORE is delivering a forum for encouraging uniform implementation of existing standards, ensuring industry efforts are complementary (not duplicative), and directing stakeholders toward standards-based real-world implementations. To conduct the testing demonstration, CAQH collaborated with the Healthcare Information and Management Systems Society (HIMSS), the Integrating the Healthcare Enterprise (IHE) Initiative, and the Blue Cross and Blue Shield Association (BCBSA). In early 2009, the groups demonstrated ways to implement the 5010 HIPAA eligibility transaction standard through existing testing tools, best practices, and public–private collaborations that are already broadly recognized within the healthcare industry, including CORE Phase I and II rules certification testing scripts. This effort embraces existing priorities and, because of the multiphase approach of CORE, enables updates to the CORE rules as new priorities are established.

Align Efforts with Federal Health Information Technology Policies

One of CORE's guiding principles is to complement federal efforts that contribute to a national solution. By aligning its efforts with federal HIT policies, CORE is supporting interoperability through a single set of standards. For example, even before the recent stimulus incentives created focused direction for health information technology, CORE worked closely with the Healthcare Information Technology Standards Panel (HITSP). HITSP, a public–private cooperative partnership created in October 2005 by the Office of the National Coordinator for Health Information Technology (ONC), promotes interoperable technology in health care. CAQH CORE representatives actively participate in various HITSP committees, including those concerning security, privacy, and infrastructure; administration and finance; technical; provider perspective; consumer perspective; and care management and health records. This active involvement has contributed to the recognition that administrative efforts are essential to healthcare improvements and must align with clinical efforts before interoperability can be achieved. Since the CORE rules closely complement the data exchange efforts of HITSP, numerous CORE rules are incorporated into HITSP specifications. For example, the CORE Phase I rules on eligibility data content are a final component of HITSP's first set of interoperability standards. Those standards were formally recognized by Health and Human Services Secretary Michael Leavitt in late January 2008. The full set of CORE Phase I rules is required by the medications management specification of HITSP's second set of interoperability specifications. The entire set of CORE Phase I rules, plus three Phase II rules specific to eligibility, is

incorporated into the HITSP Patient Generic Health Plan Eligibility Verification Transaction. Finally, the CORE Phase II connectivity rule is built into the HITSP Administrative Transport to Health Plan Transaction.

Most recently, the American Reinvestment and Recovery Act (ARRA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act set a distinct direction for health information technology efforts and policies. While details for this direction are still being shaped, activities are being implemented that move the industry toward this new vision. For example, the ONC is drafting definitions of "meaningful use," a term employed in the stimulus package in regards to receiving money for the use of EHRs. When the ONC released its draft definition of meaningful use in June 2009, CAQH reviewed and commented on the draft to urge the inclusion of simplified administrative health care in the final meaningful use definition (CAQH, 2009b). In July, a revised draft of meaningful use was issued. This latest version included the use of administrative data in two instances under the policy priority to "improve quality, safety, efficiency, and reduce health disparities":

- Check insurance eligibility electronically from public and private payers, where possible, and
- Submit claims electronically to public and private payers.

The final definition of meaningful use, a description that will shape upcoming healthcare policy, is expected to be released in early 2010 by CMS. CAQH is continuing its efforts to ensure that both administrative and clinical concerns are included in the final definition. Aligning with these meaningful-use efforts included in federal policies is important to ensuring streamlined administrative information flow, a priority that is critical to improving administrative and clinical interoperability and achieving sustainable cost savings. Connecting meaningful use to previous federal HIT efforts has been a focus of ONC, especially regarding detailed specifications. As a result, the underlying specifications to support meaningful use will be created by HITSP. The draft specifications that HITSP's "Tiger Teams" have issued to support meaningful use include previously recognized specifications, including the CORE rules.

Gaining Multistakeholder Support

Generating multistakeholder support, including those that affect policy outcomes, is essential to industry coordination and adoption of the CAQH initiatives. There is regular government participation in both the UPD and the CORE initiatives. For example, a representative from the CMS Office of E-Health Standards and Services and a representative of ASC X12—a

group that develops the standards used under HIPAA—both serve on the CORE Steering Committee. Other CORE participants include the U.S. Department of Veterans Affairs, CMS's Medicare Business Office, and multiple state groups, such as Louisiana Medicaid and the Michigan Department of Community Health. Additionally, a number of states, including Colorado, Ohio, Texas, and Virginia, have recommended the CORE rules for state initiatives. These recommendations are the result of ongoing educational outreach by CAQH and numerous meetings with state groups that were interested in exploring the CORE approach for state activities.

Thirteen states have also designated or required the UPD form as their standard credentialing application. As a result of many CAQH discussions with state policy makers, these states are recognizing the value of offering a uniform provider data collection service through the standard UPD form. Recently, the first state Medicaid agency, Kentucky Medicaid, selected the UPD form to assist with provider data collection for credentialing. This development is encouraging discussions between other state Medicaid agencies and CAQH. Public–private collaboration and the use of shared tools will help make administrative cost savings a reality.

Market interest in the CAQH initiatives has occurred as a result of individuals who have shown strong leadership and commitment as they help to drive real market change. These individuals represent CAQH member plans and state, federal, and industry organizations—and all have prioritized industry change, resulting in their ability to gain organizational support for CAQH activities. The best example of leadership is actual implementation. Early adopters of both CORE and UPD were CAQH member health plans that showed support for administrative simplification and challenged other stakeholders to learn more about the changes being delivered by these streamlined administrative data exchange solutions. As adoption of CORE and UPD has grown, broad multistakeholder support is resulting. Furthermore, participants are working to present CORE and UPD as solutions for state administrative simplification efforts. Others such as Aetna are driving change even further downstream by having all their trading partners become CORE certified.

Surmounting the Barriers

A final example of a policy-related approach being applied by CAQH is exhibited through its UPD initiative. Surmounting the barrier posed by the inevitable changes to current business practices is being demonstrated through consideration of improvements in primary source verification (PSV) by UPD. PSV requires healthcare organizations to confirm the validity of provider information through a direct contact with the sources of credentials (e.g., medical schools). The current PSV process differs among

organizations and is costly, inefficient, labor intensive, and redundant. With concerted efforts, seemingly ingrained inefficient business practices are being eliminated in favor of uniform approaches.

CAQH conducted interviews and research with the goal of understanding the strategic drivers and cost structures of current PSV practices in order to identify areas in which improvements can be made. The results have been summarized in a white paper (CAQH, 2009c) that, based on its findings, recommends a centralized PSV process for the industry through a continuous verification process. If widely adopted, a continuous verification process will lower costs by eliminating redundancy and improve quality by providing more timely and consistent information. Continuous verification and monitoring will involve significant changes to existing methods of PSV and will require collaboration by stakeholders who individually may be impacted by a change in current processes. To successfully effect change, all stakeholders will have to support this opportunity (Table 19-2).

Suggestions for Applying Policy Approaches Today

Administrative simplification is a critical and often overlooked factor in the successful transformation of the healthcare industry. To bring true and lasting change to the industry, industry-driven efforts must continue to educate policy makers on administrative simplification; work with federal, state, and industry leaders to identify methods to accelerate adoption; and implement policies that directly support the public–private objectives surrounding administrative simplification as well as the publicly driven tactical approaches.

Although industry-driven efforts are demonstrating improved processes and delivering positive ROI to adopters, many stakeholders have not yet adopted these efforts. A lack of awareness of the importance of administrative simplification and current initiatives requires that policy makers broaden awareness of the changes needed and where industry consensus is moving. To promote such action at the regional and national levels, CAQH will continue working with government and industry leaders to build awareness of the potential of the initiatives. Further, by providing recommendations for policy-directed approaches, the industry can consider setting very specific goals such as deadlines for adoption of existing solutions that have been shown to enhance marketplace operations.

For example, the multistakeholder committee led by the State of Colorado recently issued recommendations to create policy requirements for the use of CORE rules, as well as deadlines for adopting the rules (State of Colorado Department of Regulatory Agencies, 2009). By legislating policies to move the state to an electronic system that integrates national standards, Colorado will benefit from streamlined processes that are adopted by all

TABLE 19-2 Policy-Related Approaches—CAQH Examples

Policy-Related Approach and Example	Approach	Tactics	Benefit
Phase in efforts with existing priorities Example: CORE and 5010	CORE builds on existing standards (e.g., HIPAA, HTTP) and encourages a uniform and more extensive adoption of the standards based on *business priorities*	CORE Phase I and II rules related to eligibility data content (YTD deductibles, copays, service-level financials) were developed with the 5010 regulation in mind; although at the time, the deadline for 5010 compliance was not yet established. Moreover, CORE certification required attestations from entities that they were HIPAA compliant, and tested them that they were using aspects of 5010 that were needed by providers but would not be required under HIPAA	Entities becoming CORE Phase I and II certified are assured CORE certification testing aligns well with the now established 5010 compliance date of January 2012, and thus CORE assists these entities in reaching an existing priority. CMS, along with CAQH, BCBSA, and HIMSS, supported a demonstration of this at HIMSS 2009. This demonstration communicated to the industry that the established deadline for 5010 was reachable and certain entities were already deciding to go further than the minimum requirements

TABLE 19-2 Continued

Policy-Related Approach and Example	Approach	Tactics	Benefit
Align efforts with federal HIT policies Example: CORE and HITECH	A key CORE guiding principle is alignment with federal HIT policies	CORE was launched a few months after the ONC was established. As the federal HIT clinically focused landscape evolved, CORE alignment evolved • Prior to HITECH, CORE rules were recognized by HITSP, and the CMS Medicaid Information Technology Architecture (MITA) effort had a goal to collaborate with CORE • As HITECH unfolded, CAQH communicated regarding the need for providers to use HITECH dollars for administrative simplification efforts and clinical or administrative interoperability. CAQH also participated in HITSP Tiger Team efforts; CORE rules—data content and connectivity—are incorporated into draft meaningful-use technical requirements	HITECH sends a message that administrative and clinical interoperability is a goal; furthermore, data show that providers can use administrative simplification savings to further clinical efforts
Gain multistakeholder support through state, federal, and industry leaders and policy makers Example: Leaders Guide UPD and CORE	Both CORE and UPD were designed and continue to evolve based on the essential involvement of federal, state, and industry leaders	Direct leadership involvement (e.g., UPD scope) was driven based on feedback from national provider associations; director of CMS E-Health Office serves on CORE Steering Committee Early adopters (e.g., UPD, CORE) were driven by top-down commitments from health plan CEOs State outreach (e.g., range of CORE and UPD participants are presenting to state-sponsored committees regarding ways to achieve their regional goals using existing national efforts rather than creating state-specific administrative simplification efforts; *HIEs are critical to this*) Federal outreach (e.g., CORE chair met with Senate Finance Committee and Congressional Budget Office)	Through collaboration and sharing ideas on what drives change, leaders are actively encouraging a more streamlined and effective U.S. system that does not promote duplication or add unnecessary cost

continued

TABLE 19-2 Continued

Policy-Related Approach and Example	Approach	Tactics	Benefit
Surmount barrier posed by inevitable changes to current business practices Example: UPD and PSV	State government, providers, and health plans have asked CAQH to consider if the next stage for UPD is to offer PSV	CAQH met in-person with key entities that currently conduct PSV. The purpose of these meetings was to understand their strategic drivers and cost structures and gain their opinions on potential industry approaches to remove costs and reduce administrative burden. As a result of these meetings, CAQH developed a white paper outlining the opportunities and challenges in centralizing PSV for the industry. In September 2009, a meeting will be held with key stakeholders to discuss the opportunity as well as the challenges	Stakeholders currently conducting PSV are openly discussing the benefits and challenges of creating a uniform approach, including impact on their internal strategies and financials. Without such openness, a lasting industry change could not be identified as a potential short-term industry goal

NOTE: BCBSA = Blue Cross and Blue Shield Association; CAQH = Council for Affordable Quality Healthcare; CEO = Chief Executive Officer; CMS = Centers for Medicare & Medicaid Services; CORE = Committee on Operative Rules for Information Exchange; HIE = health information exchange; HIMMS = Healthcare Information and Management Systems Society; HIPAA = Health Insurance Portability and Accountability Act; HIT = health information technology; HITECH = Health Information Technology for Economic and Clinical Health; HITSP = Healthcare Information Technology Standards Panel; HTTP = hypertext transfer protocol; PSV = primary source verification; UPD = Universal Provider Datasource; YTD = year-to-date.

relevant stakeholders, including those entities in the state healthcare system that might not otherwise implement such proven approaches. Imposing deadlines on well-vetted initiatives not only ensures that requirements are adopted across all sectors in a timely manner, but also enables future policies to build on the established foundation. Without the ability to impact all healthcare sectors and build in phases, the likelihood of true and lasting industry change cannot be achieved.

Final Note

The potential for the industry to significantly reduce administrative healthcare costs is being widely recognized. Industry-driven efforts, federal funding opportunities, and increased awareness of potential industry savings are creating momentum for changing administrative processes. Healthcare reform is a high priority for many, but the means to reach an improved healthcare system must be accomplished with coordinated, targeted efforts that have strong support. Policy has played and will play an important role in making these changes a reality for the industry—it is one of the necessary means to have administrative interoperability help drive reduced costs and improved quality of care.

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20

Consumers-Directed Policies

INTRODUCTION

Healthcare consumers are the key stakeholders in patient-centered and patient-driven care. Consumers play a critical role in the medical decision-making process, making choices that ultimately impact the value of care delivered on both individual and societal levels. As a result, healthcare consumerism has been identified as a powerful tool to accelerate changes in the delivery of care (Binder, 2008). To further explore the variety of policies and perspectives central to effectively engage consumers in choosing higher-value services, panelists in this session discuss such tools as value-based purchasing and transparency.

Jennifer Sweeney of the National Partnership for Women & Families reviews research revealing that consumers are seeking partnerships with their healthcare providers; information and guidance about conditions and treatments; tools and support to care for themselves; and open communication that encourages questions, dialogue, and treatment preferences and respects cultural differences. She suggests that meeting consumers' needs and recognizing their place on the activation continuum must drive any engagement strategy. However, she proposes that the healthcare system has not yet provided the tools or incentives to enable patients to fully engage in their own care. Stakeholders must recognize that the majority of consumers are unaware of quality deficiencies in our healthcare system and are insulated from healthcare costs. As tools to create delivery system changes that address the needs and desires of consumers, she highlights possible policy options, including implementation of patient-centered care models, use of

patient experience surveys, changes in benefit design, and consumer-friendly performance reporting.

With the theoretical impact of moving all care to top-tier providers in cost, efficiency, and quality ranging from 0.5 to 5.0 percent of total medical cost, Dick Salmon of CIGNA Healthcare suggests that achieving these theoretical potentials requires providing patients with credible information that is easy to obtain and integrate into the healthcare experience. Additionally, individuals must have reasonable access to preferred providers and benefit incentives. He stresses that barriers to progress include assisting the transition from the customary method of selecting a healthcare professional based on reputation to a model based, in part, on comparison of reliable information on quality and cost. Enabling and rewarding individuals to choose the existing highest-value provider of care offers an immediate impact on the quality and affordability of health care for individuals today and would stimulate all healthcare providers to improve in the future. Because the stimulus for future improvement based on consumer choice is limited by access issues and provider loyalty, he asserts that payment reform remains essential.

Building on these concepts, Dolores L. Mitchell of the Group Insurance Commission describes increasing pressures faced by purchasers to engage their employees in the business of wellness and prudent healthcare choices. By demonstrating how one public employer engages both employees and providers by analyzing provider performance and giving employees financial incentives to use the results—ranging from premium increases to high-deductible plans—she suggests that transparency without consequences is necessary but not sufficient to affect the delivery system. She states that the road to meaningful patient engagement is steep but should be engaged with particular attention to shared sacrifice in the short term and shared responsibility in the long term.

CONSUMER VIEWS OF HIGHER-VALUE CARE

Jennifer Sweeney, M.A.
National Partnership for Women & Families

Many consumer advocates recognize that quality, cost, and coverage are inextricably linked and that all must be addressed to achieve a healthcare system that delivers quality, affordable health care for all. Currently, Americans pay too much for a healthcare system that delivers too little. To bend the cost curve and improve the quality of care, we must address the root cause: a payment system that incentivizes quantity of care over quality of care. However, a key component of any strategy to address this must include shifting the paradigm of consumers—the patients—to examining health care through that very lens of quality. Consequently, the National

Partnership—which leads the Americans for Quality Health Care project, funded by the Robert Wood Johnson Foundation and comprised of consumer advocates working to improve the quality and safety of health care in this country—is advocating for changes that realign incentives to drive quality improvement and foster better use of our healthcare resources.

Many of the proposals for healthcare reform are based on the flawed premise that providing transparency in information about healthcare provider quality will shift consumer decisions and drive the market to higher quality and lower cost. However, the limitations of this premise are significant: (1) consumers do not necessarily look at health care through a value lens, and (2) the information communicated to patients in these efforts is not necessarily accessible and understandable by consumers or amenable to decision making.

Drawing on its work in approximately 20 communities around the country, the National Partnership has gathered significant anecdotal evidence of consumers' perspectives on value in a healthcare context. With two exceptions, premiums and drug costs, consumers are generally insulated from the bulk of costs associated with health care through their insurance coverage and therefore do not conflate health care and value. In fact, in recent consumer focus groups convened by the National Partnership, participants exhibited significant gaps in their understanding of how doctors are currently paid for services, and discussion of finances in the context of the care they receive elicited skepticism and fear (Lake Research Group, 2009). All stakeholders must do a better job of engaging consumers in discussions of healthcare quality improvement so that they, too, see the importance of changing our system to provide higher-value care.

Consumer Engagement Strategies

There are multiple strategies to sharpen consumer awareness about quality health care and in turn drive them to make better-informed healthcare decisions.

Patient-Centered Primary Care

Primary care has the potential to keep people healthier, improve patients' experiences with the healthcare system, and reduce overall spending. To maximize its possible benefits, the primary care system must be redesigned to facilitate care coordination, communication, access, cultural competency, and other qualities most highly valued by patients.

One way to do this is to implement innovative delivery and payment models, such as the patient-centered medical home. Minnesota saw success in this area in 2008 when consumer advocates participating in the rule-making process to implement healthcare homes legislation used the

National Partnership's "Principles for Patient- and Family-Centered Care" as a guide to ensure that the standards and criteria drafted were truly patient-centered. Another option is to create and leverage tools that help patients and providers get care that meets the needs of both. Such tools can come in various forms:

- The Americans for Quality Health Care project has created a Patient Empowerment Training module aimed at engaging patients in their care. This train-the-trainer module teaches patients to seek information about their conditions, the appropriate care for their conditions, and how well their healthcare providers deliver care for those conditions.
- Physicians have received training in and used motivational interviewing as a strategy for leveraging people's own goals and values to increase their intrinsic motivation to change their behavior.
- Shared decision-making strategies have given patients information and opportunities to make decisions in partnership with their healthcare providers. Research shows that when patients have accurate and unbiased information about their treatment options, they tend to make more conservative and less invasive decisions that often result in better outcomes and thus greater value.

The most significant barrier to achieving patient-centered primary care is increased cost. The attributes that patients value in primary care such as care coordination, communication, and access often require that physicians redesign their practices, hire additional staff, and increase the amount of time they spend with patients. These costs are a burden for many primary care physicians, particularly in our current fee-for-service system, which typically does not reimburse these costs. Separate payments for the services associated with care coordination and access and increasing payments to primary care physicians relative to specialists might diminish these financial barriers. Even if the financial costs are overcome, there will be considerable work left to communicate with consumers the importance of primary care and to encourage their use of primary care over specialty care.

Meaningful Information

Health care is increasingly recognized as a shared responsibility among individuals, employers, providers, insurers, and the government. Consumers are expected to view health care with a "value lens" when making decisions, but little has been done to supply them with meaningful, easy-to-understand information about the performance of healthcare providers.

One of the best ways to engage consumers to seek out value is to provide them with information about how well their healthcare provid-

ers deliver care. Until patients understand that quality is not a given and until they see the variation among providers, they will not seek out quality and value in the way they are expected to. It is important to clearly define quality care; provide cost and quality information together; ensure true differentiation among providers so that they are not all grouped into a middle category; rank providers by performance; and avoid using medical jargon, statistics, and so forth. For examples of consumer-friendly public reporting, look to the Puget Sound Health Alliance Community Checkup (http://www.wacommunitycheckup.org/) and the Maine Health Management Coalition (http://www.mhmc.info/).

Historically, many public performance reports have not been consumer friendly. To be more accessible to consumers, performance reports must include meaningful measures that patients care about, such as patient experience, and patients must appreciate the importance of actively participating in patient experience surveys. Such information should be collected not just in hospitals via the H-CAHPS (Hospital-Consumer Assessment of Healthcare Providers and Systems) tool, but in nursing home, hospice, and ambulatory care settings as well.

Patient experience surveys have been used effectively in the field, including in Minnesota, Memphis, and Kansas City. Survey sponsors include physicians, consumer groups, and health plans. High survey response rates—54 percent in Memphis and 41 percent in Kansas City—indicate that patients are eager to share their experiences and are interested in learning about other patients' experiences with care. If used broadly in all settings of care, patient experience surveys will go a long way toward getting consumers to think about their health care from a value perspective.

The greatest obstacle hindering the proliferation of patient experience surveys is the postage associated with disseminating and returning the surveys by mail. More research is required to see whether an electronic survey could replace the traditional hard-copy format, thereby driving down costs. It is important, however, to ensure that whatever survey format is used takes into account ease of use by consumers.

Healthcare providers, too, in some cases impede the broader use of patient experience surveys. Many healthcare providers remain unsupportive of public performance reporting, particularly performance in "soft-skills" areas such as communication. Non-physician stakeholders who sponsor reports should make every effort to engage healthcare providers in the process and to respond to any concerns they might have about particular measures or survey methodology.

Benefit Design

Designing benefits to give consumers incentives to make truly value-based decisions is an additional strategy to sharpen consumer awareness

about quality health care. It is important to ensure that consumers have access to information about cost and quality when redesigning benefits and that incentives are not designed simply to encourage consumers to choose the cheapest care. Benefit design should also encourage consumers to seek out the primary and preventive care that will keep them well and support their efforts to effectively manage their chronic conditions. This can dramatically achieve both better health outcomes and lower costs. For example, in 2001, Pitney Bowes lowered copayments for asthma and diabetes medications for its employees and subsequently reported a $1 million savings from reduced complications (Chernew et al., 2007).

Efforts to generate consumer-friendly public performance reports and offer benefits that encourage value-based decisions are often thwarted by various stakeholders. In some cases, physicians oppose performance measurement in general, do not approve of the measures or methodologies used, or question the reliability of the data. In other instances, consumers are angered that they must pay a higher fee to visit a doctor they have been seeing for decades. Engaging healthcare providers in these efforts may minimize their concerns. With consumers, it is crucial that changes in benefits be explained prior to roll-out to help them understand that the changes are based on value and are not punitive.

Conclusion

The National Partnership's work with consumers and advocates across the country has shown that consumers cannot be expected to play a greater role in driving the healthcare system to deliver higher-quality care while lowering costs without being given the incentives, tools, and meaningful, comprehensible information necessary to understand health care from a value perspective. The strategies detailed above should be employed by consumer advocates and other stakeholders to help achieve this goal.

INSURERS, CONSUMERS, AND HIGHER-VALUE CARE

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People naturally want to be in the best health and have the lowest out-of-pocket healthcare costs. Having good health includes making optimal lifestyle choices, focusing on prevention, managing acute illnesses, and optimizing chronic illness management. Individuals also face several layers of choice in striving to achieve or maintain their health: the choice of health plan; the choice of physician, hospital, or other provider of care; the choice of treatment; and the choice of lifestyle. With respect to choice of physician, hospital, or other provider, significant variation occurs in

price, efficiency, and/or quality. Understanding where the variation exists and providing the best information available at the point of choice with appropriate incentives are critical to achieving better quality and making health care more affordable.

Variation for some types of care occurs principally in the cost domain (price for the item or service), with less variation for the majority of clinical circumstances in the quality domain. Examples in this category include laboratory, high-tech imaging, ambulatory surgery, and pharmaceuticals. In each of these areas there will be a subset of clinical circumstances in which there are quality differences among providers. However, for the majority of clinical circumstances, the quality of care is both very high and equivalent among providers. Variation for other types of care, such as that provided by hospitals and physicians, occurs in both the total cost for the episode of treatment (efficiency, a combination of the unit cost and utilization of service rate) and quality domains over a broad spectrum of clinical circumstances as shown in the Table 20-1.

TABLE 20-1 Potential Savings from Optimization of Cost and Quality

	Domain			Potential	
Area	Price	Efficiency	Quality	Cost (% of TMC)	Quality
Laboratory	X			0.75-1.25	Neutral
Hi-tech imaging—CT, MRI, PET *Lowest-cost facility within 15 miles*	X			0.5-1.5	Neutral
Ambulatory surgery—16 procedures *Lowest-cost facility within 15 miles*	X			0.5-1	Neutral
Pharmacy *Optimal use of therapeutically equivalent generics*	X			3.0-5	Neutral
Hospital—9 procedures *Top 33% of facilities*		X	X	0.5-1	>30% reduced mortality and complication rate
Specialty physicians *21 specialties, top 33%*		X	X	8-12	5% improved EBM adherence; >20% reduction in readmission rates

NOTE: CT = computer-assisted tomography; EBM = evidence-based medicine; MRI = magnetic resonance imaging; PET = positron emission tomography; TMC = total medical cost.

An estimate of the potential for improvement can be developed by first identifying the top-tier provider group and then calculating the theoretical improvement that would occur if everyone achieved the same results as those in the top tier. When significant variation occurs in both quality and efficiency, the top tier must consist of those providers who demonstrate both superior quality and superior efficiency.

For services such as laboratory, high-tech imaging, ambulatory surgery, and pharmacy, the primary variation occurs in price, and the potential impact of optimization is 0.5 to 1.5 percent of total medical cost (TMC) for each area. For pharmacy, the optimal substitution of therapeutically equivalent generics for brand drugs would have an impact of 3 to 5 percent TMC.

For hospitalizations, we evaluated 29 different procedures (such as coronary artery bypass graft [CABG]) and medical conditions (such as admission for pneumonia). We then selected the hospitals that performed in the top third in terms of quality (complication rate, mortality rate, Centers for Medicare & Medicaid Services [CMS] quality measures) and the top third in terms of efficiency (cost per admission), resulting in a selection of about 15 percent of the evaluated facilities for each of the 29 admission types. The theoretical movement of all care to these facilities would reduce mortality and complication rate by more than 30 percent and cost per admission by 40 percent, resulting in a 0.5 to 1 percent impact on total medical cost.

For physicians, we initially focused on the care provided by 19 different specialty types, such as cardiology, endocrinology, and so forth. We focused on specialists because they control the largest portion of the healthcare dollar. In addition, the patient-specialist relationship is often episodic, and therefore a greater opportunity exists to influence future choice. Again, the top tier was selected based on both quality parameters, such as adherence to evidence-based measurement standards, and cost efficiency as assessed by episode treatment groups. In this case, selecting about the top third of physicians based on both criteria and theoretically moving all care in a marketplace to those physicians improves cost by about 8 to 12 percent of TMC. Likewise, adherence to evidence-based medicine (EBM) standards would improve quality by about 5 percent, and the readmission rate would be lowered by about 20 percent.

Achieving these theoretical potentials requires giving patients credible information that is easy to obtain and integrate into the healthcare experience. CIGNA has found that when we provide information to people on the cost of high-tech imaging at the time the study is ordered by their physician, in 80 percent of cases the individual will choose the most affordable imaging center. Also, individuals must have reasonable access to preferred providers. Finally, benefit incentives are critical to encouraging people to consider quantitative quality and cost information in their decision making. Small incentives—for example, a $10 co-pay difference for seeking

care from preferred specialists—increase awareness without significantly influencing choice. Larger incentives, such as a 20 percent coinsurance difference between in-network and out-of-network providers, influence choice. CIGNA has found that with carefully designed consumer-directed health plan benefits, individuals engage in reducing their total medical expenditures substantially—for example, by choosing generics more often—while maintaining or improving quality of care—for example, medication adherence, receipt of preventive health visits, and receipt of care in accordance with chronic disease guidelines (Healthcare Effectiveness Data and Information Set [HEDIS] measures).

Barriers to progress include assisting individuals to transition from their customary reputation-based method of selecting a healthcare professional to one based at least in part on comparison of quality and cost information. Increasing the credibility of the information is critical. Physician ambivalence or reluctance to assist patients in these decisions must be overcome by full disclosure of conflicts and by payment reform with a transition to financial incentives to improve outcomes in both cost and quality for patients.

Enabling and rewarding individuals to choose the existing highest-value providers of care offers an immediate impact on the quality and affordability of health care for individuals today and stimulates all healthcare providers to improve in the future.

The stimulus for future improvement based on consumer choice is limited by access issues and physician or hospital loyalty; thus, payment reform remains essential—paying for quality and efficiency (total cost) and not quantity—to improve future performance.

POLICIES SHAPING CONSUMER PREFERENCES ON VALUE

Dolores L. Mitchell, Group Insurance Commission (GIC), Commonwealth of Massachusetts

Eliciting informed consumer preferences among treatment options, encouraging consumers' participation with their clinicians in a healthcare team effort, and keeping costs under control present purchasers with a knot of Gordian dimensions. Reweaving the strands into a valuable fabric rather than cutting the entire knot is beyond the job description of most purchasers. Hoping to contain costs and ensure employees' satisfaction with their health benefits, purchasers have, in recent years, been bombarded with suggestions for getting their employees to contribute, not just dollars, but their hearts and minds as well, to the business of reducing their health risks and making prudent healthcare choices. Some employers focus on long-term gain via wellness programs, or on short-term gains, raising employee contributions and out-of-pocket costs. Others encourage expression of consumer preferences, sometimes at the risk of increasing already overused services.

Many purchasers have tried but few have been successful, year in and year out, in containing costs, advancing quality, and involving consumers. A limited number of successes have occurred, but with unknown potential for replication outside of the culture that fostered them. Kaiser, Geisinger, HealthPartners, Caterpillar, Pitney Bowes, and a few others come to mind; they are much admired, often cited, and rarely copied.

The Group Insurance Commission of Massachusetts

The Group Insurance Commission (GIC), Massachusetts' largest employer-sponsored health benefits purchaser, has attempted to engage both employees and providers in improving the value of their health care. Employees are provided with comparative data about individual physicians and hospital performance and then given financial incentives to use providers who are more highly rated. The basic premise is that transparency is necessary, but not sufficient, without consequences. Also, although we have found the path to meaningful patient engagement on the comparative value of provider selection to be a steep one, we have also determined that it is a path well worth taking, for purchaser and enrollee alike.

The GIC is the state agency that manages life, health, long-term disability, and other benefits (excluding pensions) for state employees, dependents, retirees, survivors, a small but growing number of municipalities, and most public authorities. The GIC, unlike many state purchasing pools, also covers the entire state public higher education system. As such, the GIC is the largest purchaser of commercial health insurance in New England. The agency is statutorily semiautonomous, but given its current annual spending of more than $1.5 billion in public funds, its legal independence is more fiction than fact.

The GIC is self-insured for three-quarters of its enrollees and also offers three fully insured health maintenance organizations (HMOs). Only two of its six plans are for-profit (Health New England and Unicare, a Wellpoint subsidiary), and the GIC does not currently offer Blue Cross Blue Shield of Massachusetts or any major national plan.

The GIC does not negotiate benefits with employee unions; premium contribution splits between employees and the state are determined by the annual appropriation act. However, premium levels and the benefit programs are determined by the commission itself.

The GIC was an early adopter of mail order drugs, tiered pharmaceutical co-pays, mental health parity (before it became law), intensive—and expensive—cardiac rehabilitation programs, and disease management programs. Its cost trends have consistently been below national or state trends. Nevertheless, the trends are upward bound, except for the few years of HMO dominance before the backlash annihilated much of the management aspects of managed care.

The Challenge of Unsustainable Growth in Costs

By 2002, the GIC had tested all the conventional solutions, but still faced unsustainable increases in per capita health spending. Working with its consultants from Mercer Health and Benefits, the GIC decided to focus on pressing for faster improvement in overall physician performance. Mercer consultant, Dr. Arnold Milstein, pointed out to GIC staff and its commissioners that since physician decisions are estimated to govern more than 80 percent of health spending and are associated with significant physician variation, motivating physicians to emulate peers who attain high-quality scores and use healthcare resources judiciously represented an opportunity to affect both. In drafting its Request for Proposal for a new contracting cycle, the GIC required that health plans send their patient-anonymized book of business claims data to Mercer to enable comparisons of physicians on measures of quality and use of healthcare resources. Symmetry's widely used Episode of Treatment Grouping software was selected as the basic analytic tool to compare physician use of healthcare resources. All bidders agreed to participate, and the agency initiated a series of meetings with the Massachusetts Medical Society to explain the program's goals and methodologies. Dr. Milstein attended a number of these meetings to explain to physicians the value for performance improvement of such comparisons linked to consumer involvement through the use of copayment differentials based on physician tiering.

At the same time, a quality-of-care comparison, not dependent on medical record review, was sought, since the GIC was committed to tiering decisions based on quality, not just cost. Resolution Health, led by Earl Steinberg, M.D., a Massachusetts General Hospital-trained internist and former professor of medicine at Johns Hopkins University, was selected to provide the analysis. Using the aggregated database, Resolution Health looked for claims-based documentation that physicians performed the tests, prescribed the medications, and performed the examinations called for by major national standard-setting organizations such as HEDIS, the Agency for Healthcare Research and Quality, and specialist societies. Adherence to guidelines and standards that could not reliably be determined via claims data was excluded. For example, annual flu shots cannot reliably be demonstrated by examining claims since they are often administered without generating a claim. Dr. Steinberg also made several visits to the Massachusetts Medical Society and attended multiple meetings to describe the measurement methodology and to gather suggested refinements.

The Clinical Performance Improvement Initiative

The program went live in 2005 and is now in its fifth year of operation. The Clinical Performance Improvement (CPI) initiative, sponsored by the

GIC in Massachusetts, again compares physicians on two dimensions of value and offers consumers lower co-pays when they seek care from higher-scoring physicians. Several national insurance companies have mounted similar programs, but the CPI initiative is purchaser-driven rather than insurer-driven, aggregating claims data for six unrelated health plans.

In Massachusetts, the passage of time since 2005 has brought more standardization and refinement of the CPI. Physicians' unexpected objections to finding themselves in different tiers in different plans motivated GIC's move toward greater standardization of the plans' tiering decisions. The health plans, also unexpectedly, supported greater standardization of specialties to be tiered, quality measures to be used, and the elimination of supplementary plan-based measures. All plans now tier a core group of medical specialties, and only a few tier primary care physicians (PCPs). The CPI concentrated on specialists because "that's where the money is," and it is also the way most Massachusetts physicians are credentialed.

The program is challenging to implement, requiring linking physicians across six plans, accurate identification of practice specialties, and appropriate attribution of accountability to physicians. Each of these issues has proved complex and occasionally contentious. Response to physician complaints about incorrect tier placement proved challenging but was addressed by a probability analysis devised by a nationally distinguished biostatistician. It attempts to factor in patient behavior and measure difficulty. Its statistical elegance is not easily appreciated by many physicians, but it does attempt to deal with some of their concerns.

However, the communication with and buy-in from patients have been positive. The agency has attempted to communicate the program's rationale and procedures to its members in conformance with the principle of keeping the message as simple as possible. A "Select and Save" slogan was chosen, with a subtitle of "Quality and Cost." The three physician performance tiers are identified by one, two, and three stars and accompanying descriptors of "Excellent," "Good," and "Standard," in an attempt to avoid pejorative language. The GIC used simple vignettes to explain how enrollees can use the program to select new providers or as an informational resource for discussion with their PCPs when they are being referred to hospitals or specialists. This year, performance-based hospital tiering was added, linked to more significant copayment differentials. Complaints from hospitals or patients have been rare.

Objections to CPI Reform

Nonetheless, the response of physicians, as represented by the official position of the Massachusetts Medical Society, has been in strong opposition to tiering of individual doctors. Although it is not clear that they would have embraced tiering of physician groups, they prefer that to tier-

ing individual doctors. Those physicians who have complained are often very angry, but the number of complainants has not been overwhelming. The Massachusetts Medical Society filed suit against the GIC's director, the agency itself, and two of the six participating plans. Several of the claims in the lawsuit have been dismissed, but the lawsuit is still pending. The response of enrollees, on the other hand, has been de minimis. Complaints about co-pay tiers have been rare. That may be because the co-pay differentials have been kept low, largely $10 to $15. The commission has authorized researchers from the Harvard School of Public Health to evaluate the program, including patient surveys. These results will be forthcoming in 2010.

Conclusion

Despite its implementation challenges and the discomfort of the ensuing conflict, the CPI initiative has proved an exhilarating endeavor. The CPI initiative addresses the roots of how physicians actually use healthcare resources: how they adopt—or do not adopt—nationally endorsed quality guidelines and their mind set about their responsibility for conservation of healthcare resources, not just in their own offices, but in all services they order for their patients. It is a much preferred alternative to asking state employees to forgo wage increases in order to pay for inefficiently delivered health care.

It would be presumptuous to say that the CPI has been transformative, but when all is said and done, we believe that it has already contributed to raising physicians' attention to consumer dependence on the need for physicians to lead efforts to improve the value of their services to society and particularly to lower-income citizens who don't have the wherewithal to buy up. Much of the literature about performance incentives and public reporting of quality and cost has focused on the necessity of getting physician buy-in. Physician buy-in is desirable, and listening to physician input is essential. However, purchasers must prioritize employee well-being and employers' ability to meet medical needs at costs that employers and employees can jointly sustain. This is a conscientious purchaser's primary responsibility. It will increasingly require innovations such as the CPI to boost U.S. physicians' stewardship for the value of health care.

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Section IV

Getting to 10 Percent

21

Taking Stock: Numbers and Policies

OPPORTUNITIES TO GET TO 10 PERCENT

The final session of the third workshop was devoted to taking stock of the estimates presented in the series, the opportunities to make gains in reducing costs and improving outcomes, and the policy prospects. It was designed to set the stage for specific insights on reaching the target of the series: finding ways to reduce health costs by 10 percent within 10 years without compromising health status, quality of care, or valued innovation.

A LOOK AT THE NUMBERS

J. Michael McGinnis, M.D., M.P.P.
Institute of Medicine

J. Michael McGinnis, in comments in the "look back" session summarizing the issues and estimates from the first two meetings and in the wrap-up concluding session, offered a broad preliminary overview of the implications of just examining totals of various estimates from the workshop presentations and the background literature review developed to inform the discussions. After cautioning that many of the authors' estimates were themselves still works in progress—with uncorrected gaps, overlaps, and areas of uncertainty—he noted that by taking, as a constrained first approximation, the lower bounds of the estimates from the source material, some interesting observations could be made.

First, at the very highest level, he noted that estimates of excessive expenditures made from four analytically distinct approaches came to roughly similar approximations of the total amount of excess costs for health care in the United States. Specifically, looking at regional variations in Medicare costs, the Dartmouth group estimated overall excess expenditures to be about 30 percent of national health expenditures (Wennberg et al., 2002), or about $750 billion in 2009; the analysis by McKinsey Global Institute suggested that the excess U.S. expenditure relative to Organisation for Economic Co-operation and Development (OECD) countries would be approximately $760 billion (adjusted to 2009 total expenditure levels) (Farrell et al., 2008); the lower-bound totals of estimates of excess expenditures identified in the workshop materials amounted to about $785 billion in 2009; and the estimated possible savings (lower bound, corrected for obvious overlaps) from full implementation of effective strategies in 2009 would be in the range of $550 billion. He also emphasized that such estimates are virtually all unvalidated extrapolations, based on assumptions from limited observations.

Moving to estimates for the next level of granularity—the component domains of excess costs—and again underscoring the various issues, differences, and analytic fragilities, McGinnis used the "lower bound of estimates" approach to summarize in broad terms the aggregate excess expenditures discussed at the workshop, both by the six categories that make up the broad domains of excess and by the component elements discussed for each of the domains. Approximations using this approach would amount in 2009 to about $210 billion in excess health costs from unnecessary services, $130 billion from inefficiently delivered services, $210 billion from excess administrative costs, $105 billion from prices that are too high, $55 billion from missed prevention opportunities, and $75 billion from fraud. These lower-bound domain estimates, and those for the contributing components, are noted in the commissioned background paper that placed the workshop analytics in the context of additional national estimates found in the literature (Box 21-1 below, and see "Summing the Lower Bound Estimates" in Appendix A).

McGinnis also drew on the background paper to highlight and emphasize the methodologic constraints in the analyses and estimates:

- *Varying sources of presentation estimates*. The estimates presented throughout the workshop series were calculated by varying methods, including original peer-reviewed research by the presenter and the presenter's synthesis of the published literature. In the case of the latter, few additional national estimates were found that were not referenced by the presenter.

BOX 21-1
Excess Cost Domain Estimates:
Lower bound totals from workshop discussions*

UNNECESSARY SERVICES **Total excess = $210 B***
- Overuse: services beyond evidence-established levels
- Discretionary use beyond benchmarks
  - – Defensive medicine
- Unnecessary choice of higher cost services

INEFFICIENTLY DELIVERED SERVICES **Total excess = $130 B***
- Mistakes—medical errors, preventable complications
- Care fragmentation
- Unnecessary use of higher cost providers
- Operational inefficiencies at care delivery sites
  - – Physician offices
  - – Hospitals

EXCESS ADMINISTRATIVE COSTS **Total excess = $190 B***
- Insurance-related administrative costs beyond benchmarks
  - – Insurers
  - – Physician offices
  - – Hospitals
  - – Other providers
- Insurer administrative inefficiencies
- Care documentation requirement inefficiencies

PRICES THAT ARE TOO HIGH **Total excess = $105 B***
- Service prices beyond competitive benchmarks
  - – Physician services
    - i. Specialists
    - ii. Generalists
  - – Hospital services
- Product prices beyond competitive benchmarks
  - – Pharmaceuticals
  - – Medical devices
  - – Durable medical equipment

MISSED PREVENTION OPPORTUNITIES **Total excess = $55 B***
- Primary prevention
- Secondary prevention
- Tertiary prevention

FRAUD **Total excess = $75 B***
- All sources—payer, clinician, patient

*Lower bound totals of various estimates, adjusted to 2009 total expenditure level.

- *Variations in number of available comparison estimates*. The number of national estimates identified within each category varied significantly, with several well-studied categories containing multiple estimates while others contained few or zero comparisons. For estimates in which multiple comparisons existed, some, such as those for tort reform and telehealth, grouped closely with those in the literature, whereas others lay amid a large range of estimates, such as those for tertiary prevention and health information technology.
- *Differences in underlying methodologies*. Variation in the estimates within each category often stemmed from differing methodologies, sources of data, study time periods, and scope of work, making direct comparisons between estimates extremely difficult.
- *Need for additional research*. Because the number of national estimates identified within each category varied significantly, those categories with few identified national estimates, such as transparency and retail clinics, indicate areas in need of additional research to calculate national impacts and could build on studies of smaller scope noted throughout the report. In addition, in areas with large ranges in estimates, further rigorous research would be beneficial in resolving the differences.

He noted that although many of the workshop calculations were similar to those published elsewhere and summarized in background materials developed for the series, others were quite different—both from each other and from other published material—with respect to variations in methodology and scope of analyses (e.g., federal savings locus compared to societal locus; focus on public and/or private insurance beneficiaries; annual vs. multiyear time frames). For example, Mary Kay Owens' estimate that a program designed to reduce the incidence of uncoordinated care could result in $271 billion in annual national savings by 2013 exceeded that of Berenson and colleagues (2009), who developed a 10-year estimate of $201 billion in savings from a national effort to improve care coordination targeted at dually eligible Medicare and Medicaid beneficiaries.

With respect to the returns from investments in preventive services and community-oriented chronic disease management, McGinnis referenced the ongoing field debate about how best to assess those returns (CBO, 2004; DeVol et al., 2007; Russell, 2009; UnitedHealth Group, 2009). He pointed out that most observe that shortfalls in identified dollar savings do not necessarily signify that prevention lacks either cost effectiveness or value.

In turning to a review of the presentations on reducing excess expenditures by broader application of strategies showing early promise in limited studies, McGinnis underscored the difference between the level of unnecessary expenditures and the ability to capture the returns. For

example, it was noted that while an independent estimate from outside the scientific literature calculated the costs of defensive medicine at $210 billion (PriceWaterhouseCoopers, 2008), Randall R. Bovbjerg's review of the econometric literature led him to suggest that tort reform would reduce personal health spending by approximately 0.9 percent, or almost $20 billion in 2010. Similarly, several studies highlighted by Rainu Kaushal and Ashish Jha projected significant savings from nationwide implementation of health information technology (HIT), but CBO cautioned that although many policy makers believe that HIT will be a necessary tool in improving the efficiency and quality of health care in the United States, over-optimistic assumptions may temper the magnitude of those estimates (CBO, 2008).

On the other hand, several presentations suggested the potential for considerable savings. Amita Rastogi, for example, offered a savings estimate of $355 billion for the commercially insured from implementation of bundled payments, which is similar to a published estimate of $301 billion in savings from the utilization of bundled payments for acute care episodes (The Commonwealth Fund, 2009). However, it was noted that both require validation with structured studies and experiments. It was also suggested that many potential sources of savings needed more consideration than had been given at the workshops. Additional areas suggested for consideration in terms of both targets and strategies included issues such as fraud and abuse, which have been estimated to cost 3 to 10 percent of total health spending (FBI, 2007) and the implications of the current patent system for the prices of new and emerging technologies.

OPPORTUNITIES TO GET TO 10 PERCENT

Considering the presentations that occurred throughout the workshop series and the literature review presented in the commissioned paper, three thought leaders in healthcare economics—Elizabeth A. McGlynn of RAND, David O. Meltzer of the University of Chicago, and Peter J. Neumann of Tufts University—participated in a panel discussion, offering their views of the most important issues and strategies to engage to reach the goal of reducing health expenditures by 10 percent over 10 years. The following ideas arose from the conversation that offered important insights into the analytics and the broader discussion for lowering healthcare expenditures:

- *Payment reform* is clearly one important focus given the clear incentives in the current service-based reimbursement system that distorts the emphasis to volume over outcomes or value.
- *Multimodality* should characterize health reform plans because while payment reform appears to be the most likely to yield near- to midterm savings, infrastructure elements such as health in-

formation technology and comparative effectiveness research are necessary to facilitate and amplify the effectiveness of payment reforms.

- *Incrementalism*—the need for multiple small savings decisions over a single large decision—will be necessary to achieve 10 percent savings. Apart from large savings likely to be possible from streamlining and harmonizing the administrative claims forms and reporting requirements, success from the broad reform approaches required will likely depend on smaller gains in each of the many strategic loci.
- *Analytic advancement* of the estimates requires additional accounting for overlaps, cross-integration, and the wave of emerging medical technologies. Simultaneously, estimates extrapolated from "thought experiments" must be interpreted with caution as they may not be as informed from real-life experiences and observations.
- *Value* of any particular strategy should not be judged exclusively by the current evidence base as the evidence may be incomplete or imperfect.

Considering the Options

Drawing on her experience studying the Massachusetts healthcare system as a lens for her review of the workshops' estimates to date, McGlynn described a continuum for considering the reform strategies largely discussed during the second workshop in the series, Strategies That Work. One axis represented the strength of the theory underlying the reform strategy, and the other depicted the level of real-world experience and experimentation with that strategy. With the example of market-based strategies, McGlynn elaborated that this group of reforms has a strong, underlying economic theory, yet they have largely gone untested. A contrasting example focuses on regulatory strategies, which fall on strong supporting economic theory along with significant experience with prior successes and failures. McGlynn indicates that this framework for examining the evidence supporting any single strategy highlights that we may not have enough information to identify a single "silver bullet." Instead, the panelists all agreed that a multiplicity of reforms will be required to significantly reduce healthcare costs.

Meltzer and Neumann both discussed in detail the cost-saving estimates provided throughout the series and echoed earlier reflections that examining them in the aggregate is both challenging and complex as they reflect a wide range of assumptions and time horizons. McGlynn added that some of the estimates come from experience piloting reform strategies or implementing them in a defined area (albeit at different levels, from municipal to regional

to statewide) yet others come from "thought experiments" that will require real-world testing. The panelists additionally identified that analytics based on pilot tests or single institution experiments must consider the demands required to implement and scale reform nationally. Despite the limitations of the research, all three panelists agreed that large opportunities for minimizing waste and inefficiency exist within the current delivery system.

Reaching the Goal

As the panel considered the reforms needed to meet the goal of a 10 percent reduction in healthcare spending over the next decade, Meltzer defined what this challenge means in real dollars. U.S. healthcare costs are currently about $2.5 trillion and rising about 3 percent in real terms each year. Given the projected cost growth, he explained that within 10 years we should expect healthcare costs to rise to at least $3.2 trillion in today's dollars. If national expenditures could be reduced by 10 percent, there would be a savings of about $250 billion today and approximately $300 billion in 2020, the equivalent of a cumulative 25 percent reduction in real healthcare spending by 2020 relative to what would have been expected.

While it is important that health status, quality of care, and valued innovation not be sacrificed when attempting to reach these goals, Meltzer encouraged a paradigm shift in light of international health spending comparisons. He suggested that the issue may not be that we spend too much but rather that we get too little. Meltzer explained that, given the nation's wealth, it would be possible and reasonable for the United States to continue such high and growing levels of healthcare spending if it were obtaining high value from that spending. However, as many participants have asserted throughout the workshop series, the United States is not obtaining that value at the margin.

McGlynn offered more specific direction, based on her work in Massachusetts. She first presented the targets and strategies within the framework of basic economic theory. The strategies for healthcare reform essentially addressed the two dimensions of an economy—price and quantity. Target areas for reform under price included excessive administrative costs and excessively high prices. On the quantity side, inefficiently-delivered services, unnecessary services, and missed prevention opportunities represented major targets for reform. As Massachusetts was preparing to embark on the second stage of its healthcare reform agenda, the range of targets and strategies along the price and quantity dimensions were considered. The strategy found to have the most likely significant impact on lowering costs was payment reform, McGlynn explained, as compared to infrastructure improvements and delivery system interventions (Figure 21-1). Both Meltzer and Peter J. Neumann also came to similar conclusions about the importance of payment reform.

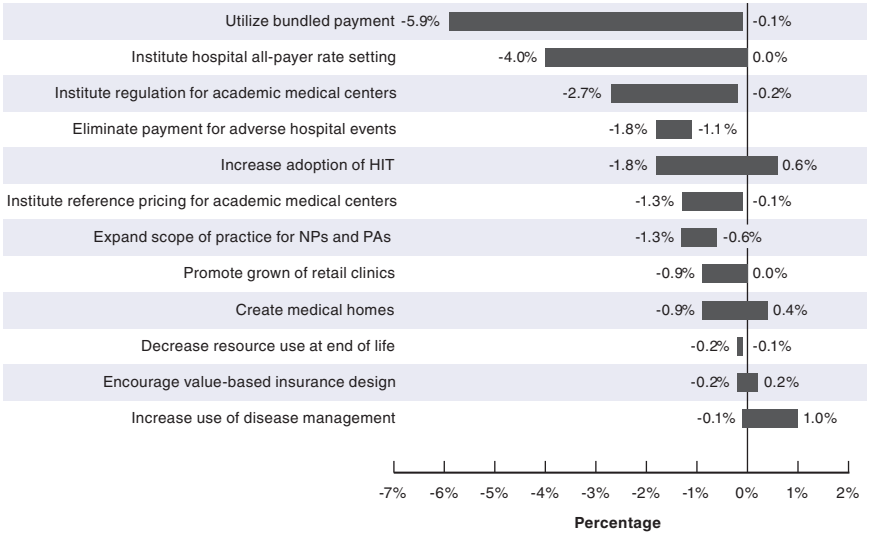

FIGURE 21-1 Estimated cumulative savings from selected policy options in Massachusetts, 2010-2020.
NOTES: HIT = health information technology; NP-PA = nurse practitioner and physician's assistant.
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The discussion additionally highlighted that many major examples of bundling success, such as those of Geisinger and Kaiser Permanente, occur within the context of vertical integration of providers. Therefore, the discussants underscored that it remains unclear how bundled payments could be operationalized outside this formal organizational structure. Yet payment reform was thought to be so critical to delivery system reform that the panelists and many other attendees advocated expanding ongoing pilots to test its viability within non-vertical organizational structures.

Neumann explained that payment reform that changes the incentives facing providers (and patients) will likely have the largest effect on cost. Reforms such as bundling arrangements and episode-based payments transform the perverse incentives of the current system from encouraging more services to better services. As lower priorities, Neumann would consider implementation of knowledge-based strategies, preventive care, comparative effectiveness research, and health information technology. Even though they are vitally important to the healthcare reform agenda, he asserted that

adding them to a health system characterized by perverse incentives mutes any positive impact they may have. McGlynn additionally articulated the importance of a rapid learning cycle. Echoing the promise of innovation under a different payment system, she called for structures that allow government and private industry to conceive new ideas, experiment and document evidence, and scale innovation far more quickly than would be possible under a traditional model.

The panelists also discussed the need for incrementalism. Meltzer illustrated this point with the analogy of buying or renovating a home. A 10 percent reduction in costs is rarely the result of a few large decisions but of many small decisions about choice of trim, tile, carpet, hardware, light and plumbing fixtures, etc.—far more small decisions than can ever be characterized by even the most sophisticated imaginative teams of comparative effectiveness researchers or health policy makers. Similarly, Meltzer continued, the myriad of real efficiencies needed to control healthcare costs will be realized only when the payment system is fundamentally reformed and realigned as this policy lever will create the multitude of inducements to facilitate adoption of the necessary infrastructure tools to increase efficiency and quality.

Because the healthcare system is so heterogeneous and precisely because a range of reforms, rather than a single solution, will likely bear the most fruit in cost reduction and growth in quality, the panelists suggested that payment reform may be the most strategic choice. If the payment incentives are realigned and point coherently in the direction of quality improvements at lower cost, the innovations that will emerge from healthcare stakeholders could go beyond what has been imagined in the abstract.

POLICY PRIORITIES AND STRATEGIES

Reflecting on the themes and challenges raised by the discussions and agendas throughout the workshop series, a concluding panel of speakers—Mark B. McClellan from the Brookings Institution, Joseph Onek from the Office of the Speaker of the House of Representatives, and Dean Rosen from Mehlman Vogel Castagnetti—drew from their backgrounds and experiences in federal government in discussing the priorities for effectively advancing healthcare reform policies to lower cost growth and improve outcomes. The far-ranging discussion on the politics of and priorities for currently ongoing health reform discussions centered particularly on four interrelated pillars of the Brookings Institution *Bending the Curve* report, described by McClellan (Antos et al., 2009):

- First, better information and more effective tools are needed by all stakeholders, as a foundational element for improving value;

- Second, provider payments should be redirected toward rewarding improvements in quality and reductions in cost growth, providing support for healthcare delivery reforms that save money while emphasizing disease prevention and better coordination of care;
- Third, health insurance markets should be reformed and government subsidies restructured to create competition and improve incentives around value improvement rather than risk selection; and
- Fourth, individual patients should be given greater support for improving their health and lowering overall healthcare costs, including incentives for achieving measurable health goals.

The Benefits of Bundling Reforms

McClellan described the parallels between the workshops and a recent report from the Brookings Institution, *Bending the Curve: Effective Steps to Address Long-Term Health Care Spending and Growth*. As he explained, that report serves well to provide a sound framework for the discussion of this workshop series by identifying some of the key reforms necessary to have a significant impact on cutting costs and improving quality of health care. McClellan shared a major insight from the work he and his colleagues engaged in: reform must be about taking a varied and differentiated approach to address multiple aspects of the healthcare system at the same time rather than focusing on one area. Because the challenges in the healthcare system are complex, they require a systemic approach in which multiple "pillars," in turn, can have mutually reinforcing effects. Notably, he explained that the current plans from the President and from the Senate already include critical components of these recommendations.

Onek agreed that there are political advantages as well to bundling reforms in the way McClellan described. His analogy of legislation focused on closing military bases illustrates the point: compartmentalizing reform makes it easier politically to overturn or block reform, but strategically packaging reform initiatives not only makes sense for the reasons McClellan highlighted but also because it allows a broader coalition to support a bill. Just as having Congress determine whether military bases should be closed on an individual basis is doomed because lawmakers will block actions that adversely affect their own districts even if certain base closures are sound from a policy standpoint, so too is a narrow view of reform legislation. He also spoke of the problem created by the false impression that Medicare was being cut in order to finance expansions in coverage for non-seniors. In fact, he stated that Medicare cost savings are required to strengthen that program, regardless of whether we expand coverage overall.

Advancing Current Discussions

McClellan shared that the first pillar of reform identified in *Bending the Curve* built the necessary foundation for cost containment and value-based care. This foundation depended on significant investment in HIT and on supporting the best use of comparative effectiveness research, building on recent federal legislation. Furthermore, he spoke of the importance of improving the healthcare workforce by incentivizing team-based, integrated approaches to care and the use of HIT as a tool therein. Rosen expanded on that point, raising this area of workforce development, especially in public health, as one that requires a great deal more attention in the national discussion.

The second pillar McClellan discussed is the reform of provider payment systems to create accountability for lower-cost, high-quality care. Rather than focusing on price comparisons between the United States and other countries and price controls as a strategy—which, by itself, he suggested does not change the manner in which health care is delivered—McClellan explained that payment system reform can begin with Medicare and Medicaid by broadening bundled payments, expanding the use of pay for performance, and increasing the payment rates for primary care. Furthermore, supporting additional piloting and replication of innovations such as enhanced episode-based payments will be critical to lasting and meaningful improvements in the U.S. provider payment system. One such innovation identified in the discussion with the potential to improve quality and control costs was accountable care organizations (ACOs), which represent combinations of primary care physicians, hospitals, and other healthcare providers including specialists, who together would be held accountable for the healthcare costs and quality of care for an identified group of patients. McClellan also underscored the importance of expanding and streamlining the authority of the Centers for Medicare & Medicaid Services (CMS) to rapidly test, evaluate, and expand or eliminate new payment models in Medicare and Medicaid.

Rosen amplified McClellan's call for expansion of CMS's authority in piloting and extending innovations beyond its currently "timid" boundaries. He stated that the challenge before the country is an enormous one, and as a consequence, the commitment must be similarly enormous to achieve significant change. While Rosen understood that Congress must be involved in reporting the impact of these pilots, expansion of the 5-year authority for demonstration projects and allowing for the rapid replication of proven innovations such as those found at Geisinger and Intermountain are certainly worth the investment.

McClellan described a third pillar of reform that echoes many of President Obama's principles for improving health insurance markets. Focusing

on eliminating preexisting condition requirements, introducing risk adjustments, and having reasonable rate bands for patients of different ages, he summarized the core reforms necessary to restructure non-group and small-group markets around an exchange model that promotes competition on cost reduction and quality improvement. Furthermore, he included the promotion of competitive bidding in Medicare Advantage as a strategy to support better health insurance markets. Lastly, improvement of health insurance markets depends on the reduction of inefficient subsidies for employer-provided health insurance. This reform creates an opportunity to redirect those funds to areas in which they can be more cost-effective and far less regressive. Several discussants echoed the emphasis on health insurance market reform, also underscoring the importance of stronger, more streamlined, and more consistent regulation of insurers than is currently possible with a state-based system.

Onek spoke of the thorny problems in redirecting funds or in resource reallocation. Drawing from his experiences in the Carter administration, he emphasized the need to look at spending that is truly excess spending in areas such as Medicaid and Medicare, so that those programs do not become crippled by cuts, spurring unintended consequences in other areas of health care. Additionally, generating savings in both the public and the private markets should be part of every discussion about reducing costs or using existing funds more efficiently.

The fourth and final pillar McClellan discussed supports better individual choices by consumers of the healthcare system. Here, he highlighted that the current proposals before Congress do not speak strongly to these kinds of reforms. Rosen elaborated by sharing his own disappointment that so little attention has been extended to individual responsibility. The role of individual choice and a personal investment in improving one's own health outcomes are critical points of partnership between consumers and providers, but these issues have been eclipsed by the discussion of other reforms. Here, the panelists stated that reforms could begin with promoting Medicare benefit design that provides better protection to seniors against high out-of-pocket expenses. Introducing a global deductible and a catastrophic out-of-pocket maximum, tiered copayments, and elimination of first-dollar coverage could all be part of this effort. Promoting prevention and wellness that reduced costs was also noted as critical, but McClellan emphasized the need for expanding the evidence base of practical reforms to make progress in this area. Finally, supporting patient preferences for palliative care was another critical area that the Brookings report suggested should be part of broader reform.

McClellan also noted that so much of the discussion in the national debate has been focused on a public insurance plan—and whether and how it should be offered—that other areas of reform, such as liability reform and individual responsibility reforms, have been pushed to the periphery.

While the issue of a public option is important, it has also inhibited discussion of other issues where progress can be made soon and with a greater overall impact. All three presenters also spoke to the issue of medical liability reform, which Rosen identified as an area of untapped opportunity in the national debate. McClellan echoed this sentiment and explained that even though the President raised liability reform briefly in his September speech on health care, there were no details about what shape those reforms might take. Onek highlighted some of the difficulties in this area of reform, because it is not clear, for example, that all defensive medicine is "bad medicine."

Looking Ahead

Using the framework defined in *Bending the Curve*, McClellan and colleagues described a national discussion focused on payment reform and, by extension, health insurance reform. However, all agreed that major opportunities for deeper reform, particularly in the area of supporting individual responsibility in health care, remain untapped. Nonetheless, they suggested that some type of reform will occur this year. Keeping an eye on innovations in both the private and the public payer sectors, they suggested that integrating reform initiatives to capitalize on their reinforcing impacts and increasing the capacity for experimentation with new and promising models for care delivery and/or healthcare payment will all be critical in the next chapters of the healthcare system in the United States. They additionally proposed that regardless of what reform legislation passes this year or early next year, we will continue to confront complex issues regarding access, cost, and quality in future efforts and discussions.

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22

Getting to 10 Percent: Opportunities and Requirements

INTRODUCTION

Building on the discussions of the preceding workshops, a knowledgeable group of authorities from different stakeholder sectors convened to explore in greater detail the high-priority elements and strategies key to achieving 10 percent savings in healthcare expenditures within 10 years without compromising Americans' health status, quality of care, or valued innovation. Participants, who drew from their experience as providers, payers, purchasers, health economists, researchers, quality analysts, and regulators, included Michael Bailit of Bailit Health Purchasing, Maureen Bisognano of the Institute for Healthcare Improvement, David M. Cutler of Harvard University, Wendy Everett of New England Healthcare Institute, Richard J. Gilfillan of Geisinger Health System, Dolores L. Mitchell of the Massachusetts Group Insurance Commission, Meredith B. Rosenthal of Harvard University, Jonathan S. Skinner of Dartmouth College, John Toussaint of ThedaCare Center for Healthcare Value, and Reed V. Tuckson of UnitedHealth Group. This chapter summarizes the discussions, insights, and perspectives offered by the individual attendees at the meeting, and it should not be construed as consensus or recommendations on specific numbers or actions.

As the participants considered the opportunities present within the current delivery system to lower costs and improve outcomes, the substantial scale of the current inefficiencies was underscored. While the attendees discussed published literature and earlier workshop presentations indicating that 20 to 30 percent of current expenditures could be eliminated without

consequences for quality or outcomes (Fisher et al., 2003), certain attendees offered the view that, based on their experiences with ongoing improvement initiatives, the amount of waste present in the healthcare system may be even greater, perhaps in some circumstances and settings as much as 50 percent. As an example, the findings of the Health Care Value Leaders Network were discussed. Two of these findings were that: (1) 80 to 90 percent of steps in the care process were not value-additive, and (2) with the application of the Toyota Production System to streamline clinical services within an institution, systematic waste reduction could possibly trim as much as 50 percent of costs, while simultaneously improving quality.

The attendees discussed priority areas of opportunity, such as avoidable hospitalizations and readmissions and the provision of unnecessary services, focusing on high-yield strategies, ranging from decreasing the costs of episodes of care to medical liability reform and shared decision making, as well as on care-related costs, administrative costs, and related reforms. Several common insights were offered by multiple individual attendees as to the common elements of successful strategies:

- *Reorientation to patient-centered value* among all stakeholders (patients, providers, payers, manufacturers, and regulators) is necessary, and eliminating the inefficiencies and waste replete in the costs of care and healthcare administration begins with the basics: better attention to patient needs and perspectives and payment mechanisms that drive the delivery of value over volume. However, it was also emphasized that the rewards involved must be quite large in comparison with the income at stake for providers if the effort is to both cover the implementation costs and justify the resources involved in maintaining a coordinated effort to minimize costs and improve outcomes.
- *Payment reform* provides a critical tool to realign economic incentives within the delivery system. Additionally, targeting both utilization and pricing of clinical services is needed to ensure the full savings potential of any bundle of strategies to lower costs and improve outcomes.
- *Multimodality* should characterize health reform plans because while payment reform appears to be the most likely to yield near- to midterm savings, infrastructure elements such as health information technology and comparative effectiveness research are necessary to facilitate and amplify the effectiveness of payment reforms. In particular, nonmedical industries provide many instructive lessons regarding successful cost-lowering practices, including use of data to inform quality improvements, incentive structures that reward value creation, and worker-driven processes and culture.

- *Specificity* with regard to policies, responsible actors, and assumptions enables focus of initiatives, not just in legislation but also through institutional leadership and public–private partnerships at both state and regional levels.
- *Incrementalism*—the need for multiple small savings decisions related to realigned incentives and improved system efficiency—rather than a single large decision—will be necessary to achieve 10 percent savings. Apart from large savings likely to be possible from streamlining and harmonizing administrative claims forms and reporting requirements, success of the broad reform approaches required will likely depend on smaller gains—targeting utilization, pricing, and delivery—in each of the many strategic loci.
- *Transparency and accountability* across public and private sectors can foster efficiency and quality improvement initiatives by providers, informed provider selection by patients, and value-based payments by payers.
- *Collaboration* among all those affected by healthcare reforms, including subspecialty provider societies, payers and patients, is required to overcome inertia and fear of change.

CONSIDERING THE OPPORTUNITIES

Participants reviewed the range of strategies explored throughout the workshop series and, working in small groups followed by open discussion, considered opportunities for strategies aimed at providers, patients, and payers. Their discussion centered on care-related costs, administrative costs, and related reforms. Within each of these broad categories, they considered an array of specific initiatives, as well as the requirements and assumptions inherent to each. In addition, the participants discussed their views on the approximate range of savings that might be achieved through implementation of these strategies, drawing on workshop presentations and their own experiences.

Payment reform was discussed throughout the meeting as a necessary and potent component of a value-driven agenda to lower costs and improve outcomes. Many of the participants observed that payment reform may be implemented in a variety of forms, ranging from bundled payments to global payments and salaries for providers, but they emphasized payment reform as a tool and an underlying requirement for achieving many of the goals discussed at the meeting. For example, to stimulate initiatives to reduce medical errors, several attendees suggested that creation of bundled payments for hospitalizations include the costs of readmissions due to any cause within 30 days. Another form of payment reform akin to pay-for-performance included linking a portion of provider payments

to documented use of decision aids to encourage shared decision making. Regardless of the form, payment reform was noted throughout the meeting by various individuals as fundamental to aligning provider incentives with quality and efficiency.

In the discussions, the participants individually identified high-yield savings opportunities based on their own experiences. The 10 cost-reduction opportunities explored in greater detail during the meeting focused primarily on care-related costs, but also included administrative costs and related reforms (Box 22-1).

While acknowledging that substantial work is needed to refine and strengthen the analytics, based on estimates provided in previous workshops on excess costs, the sum of the individual opinions of the various participants, speaking not for all in the group but to their own areas of expertise and informed by their own individual knowledge bases, resulted in first approximations of approximately $360 billion to $460 billion in annual savings, which might be achieved by 2018 (in 2009 dollars) (Table 22-1). To account for the increased primary care practice costs necessary to achieve implementation of several of the strategies discussed, several participants suggested that a one-third offset be employed, yielding a total

BOX 22-1
Estimated Health Cost Savings
Selected approaches: individual perspectives

	Estimated Savings in Year 10	
	Low	High
CARE-RELATED COSTS		
• Prevent medical errors	$8 B	$12 B
• Prevent avoidable hospital admissions	$44 B	$48 B
• Prevent avoidable hospital readmissions	$16 B	$20 B
• Improve hospital efficiency	$38 B	$80 B
• Decrease costs of episodes of care	$32 B	$53 B
• Improve targeting of costly services	$9 B	$20 B
• Increase shared decision making	$6 B	$9 B
ADMINISTRATIVE COSTS		
• Use common billing and claims forms	$181 B	
RELATED REFORMS		
• Medical liability reform	$20 B	$30 B
• Prevent fraud and abuse	$5 B	$10 B

TABLE 22-1 Opportunities and Strategies Discussed to Lower Costs and Improve Outcomes by 2018[a]

Opportunities	Annual Savings (Billions, 2009 dollars) (Range of Participant Estimates)	Assumptions	Requirements
Care-related costs			
Reduce medical errors	$8-$12 B	• Overall inpatient error cost = $16 B • 50 to 75% avoided by 2018 • Savings substantially higher if outpatient errors also reduced	• Metrics and transparent national reporting system • Leadership/stakeholder engagement • Technical assistance capacity • Bundled payments for hospitalizations
Prevent avoidable admissions	$44-$48B	• Primary admissions cost for Medicare = $159 B and for commercial payers = $130 B • 27% avoided among Medicare beneficiaries by 2018 • 4% avoided among commercial beneficiaries by 2018 • Savings could be augmented by expanded use of palliative care services	• Enhanced care coordination and disease management • Primary care payment reform within a value-focused medical home model • Leadership/stakeholder engagement • Palliative care and hospice integral to facilitating patient-centered care among the severely chronically ill
Prevent avoidable readmissions	$16-$20 B	• Avoidable readmissions cost for Medicare = $28 B and for commercial payers = $12 B • 50% avoided among Medicare beneficiaries by 2018 • 50% avoided among commercial beneficiaries by 2018	• Bundled payments to cover all-cause readmissions within 30 days of index hospitalization • Shared savings among providers • Data base sharing among all providers • Community services to support enhanced post-discharge care

continued

TABLE 22-1 Continued

Opportunities	Annual Savings (Billions, 2009 dollars) (Range of Participant Estimates)	Assumptions	Requirements
Improve hospital efficiency	$38-$80 B	• 2018 hospital expenditure level for Medicare = $420 B and for commercial payers = $477 B • Payment reductions will create financial incentives to increase efficiency • Use of Toyota Production System model can substantially improve efficiency—some demonstrate 30% to 50% reduction in costs • 1% per year efficiency across the system is achievable, yielding $38B if Medicare only, $80B if also commercial	• Reengineering of clinical services must occur institution-wide to maximize quality improvements • System-wide application would diminish cost-shifting • Technical assistance capacity to implement continuous improvement
Decrease costs of episodes of care	$32-$53 B	• Total spending for Medicare = $476 B, Medicaid = $356 B and for commercial payers = $749 B • Reducing the costs of episodes of care by 3% for Medicare, Medicaid and commercial payers = $47 B, 5% = $79 B. • Potential savings within the commercial sector > Medicare; • Reduce savings estimate by a third to allow for overlap with savings from prevention of avoidable admissions	• Provider value measures based on resource utilization and episode treatment groups • National reporting of value metrics for individual providers • Payments based on measurement results • Patient choice incentives through value-based benefits design • Cap on out-of-network charges

TABLE 22-1 Continued

Opportunities	Annual Savings (Billions, 2009 dollars) (Range of Participant Estimates)	Assumptions	Requirements
Improve targeting of costly services	$9-$20 B	• 20% savings by reducing excessive and unnecessary use of imaging studies—$9 B of $43 B overall—and 50% reduction in costs from non-urgent use of emergency departments—$11 B of $21 B overall • Savings would be greater if other costly services, such as orthopedic services and radiation oncology, were also /better targeted	• Limited physician-owned self-referral • Reset RBRVS • Transparency on cost and comparative effectiveness • Evidence-based guidelines addressing appropriate use of expensive technology • Value-based insurance to provide further incentives
Increase shared decision making	$6-$9 B	• Patient decision aids available systemwide for 11 conditions currently addressed • Average savings of $2,700 per case achieved by increasing access to palliative care services to 90% of U.S. hospitals and 7.5% of all discharges • Savings would be greater if patient decision aids were widely available beyond the specified conditions	• Readily accessible information on the comparative value, risks, and benefits of interventions • Tailored decision tools and aids available systemwide • Palliative care capacity expanded to all hospitals and communities • Payments based on documented use of available tools

continued

TABLE 22-1 Continued

Opportunities	Annual Savings (Billions, 2009 dollars) (Range of Participant Estimates)	Assumptions	Requirements
Administrative costs			
Use common billing and claims forms	$181 B	• Total 2009 BIR costs = $361 B • Approximately 50% of BIR costs saved through administrative simplification	• NAIC successfully develops streamlining • If voluntary development and use of common forms is not achieved by 2018, the Secretary of HHS will develop and require for participation in insurance exchanges established by health reform legislation
Additional related reforms			
Medical liability reform	$20-$30 B	• Total estimated costs in 2009 = $60 B • About 33% to 50% can be saved by capping noneconomic damages and lowering premiums • Additional savings could be gained by reducing defensive medicine	• State-based reform initiatives • Legislative action to institute national reform of the medical liability system
Prevention of fraud and abuse	$5-$10 B	• Total estimated costs in 2009 = $75 B • Between 7% and 13% of costs preventable through increased detection, prevention and recoupment of fraudulently paid claims in commercial and public sectors	• Significant potential savings exist in Medicare and Medicaid; creation of a central national health insurance claims clearinghouse facilitated by use of common billing and claims forms to expedite fraud prevention initiatives • Enhanced resources for detection require ongoing investment from public and private payers

TABLE 22-1 Continued

Opportunities	Annual Savings (Billions, 2009 dollars) (Range of Participant Estimates)	Assumptions	Requirements
Total savings	$359-$463 B		

[a] As this table summarizes the discussions and ideas offered by the individual attendees at this meeting, it should not be construed as consensus or recommendations on specific numbers or actions.

[b] Savings accounted for within delivery system reforms.

NOTE: B = billion; BIR = billing and insurance-related; HHS = Department of Health and Human Services; NAIC = National Association of Insurance Commissioners; RBRVS = resource-based relative value scale.

savings of approximately $240 billion to $310 billion annually. In addition, participants pointed out that the estimates discussed had not accounted for implementation and overhead costs.

Care-Related Costs

Discussions on care-related costs considered several key strategies focusing on improving hospital-based care, provider efficiencies, and use of evidence-based standards, each thought to have high prospects for yielding significant savings. Several attendees pointed to the need for additional collaborative work among stakeholders to facilitate the development of new tools, including valid metrics and implementation plans.

Reduce Medical Errors

Given prior workshop estimates that the costs of medical errors accounted for over $16 billion in annual healthcare expenditures (Jha et al., 2009), several participants highlighted medical errors as an obvious opportunity to lower costs and improve outcomes through systematic removal of errors in hospital care, such as adverse drug events, hospital-acquired infections, falls, and pressure ulcers. Two attendees, Bisognano and Toussaint, suggested that by engaging providers, regulators, and payers, between 50 and 75 percent of the costs due to medical errors could be eliminated by 2018; that is, between $8 billion and $12 billion annually (2009 dollars) could be saved through application of best practices and adoption of an improvement methodology that builds upon actionable, transparent performance data. Participants were not aware of any estimates encompassing

the costs of medical errors in the outpatient setting; all previously discussed estimates during the workshop series were of the costs incurred in a hospital setting. However, several believed that if the occurrence of medical errors could be prevented in ambulatory settings, the savings achieved could be even more significant. In addressing data requirements, attendees discussed the need for reliable, valid metrics and the development of a transparent national reporting system that could be based at the state or regional level. Engagement of leadership and stakeholders, including hospital trustees, would facilitate implementation, suggested Bisognano. Technical assistance would also assist integration of best practices and clinical improvement protocols and methods into current care processes. Finally, Rosenthal pointed out that bundled payments for hospitalizations, which also cover readmissions, provide financial incentives to achieve benchmark goals. Several attendees identified implementation of measurement and reporting within 4 years as a feasible interim goal.

Reduce Avoidable Hospital Admissions

Reduction of avoidable and unnecessary hospital admissions, such as those resulting from ambulatory care-sensitive conditions, including short-term complications of diabetes (e.g., diabetic ketoacidosis), asthma, and urinary tract infections, was discussed as another priority with substantial potential. Assuming that the cost of an inpatient admission averaged $12,850 on average for Medicare in 2009 (MedPAC, 2009) and $13,300 on average for commercial payers, based on an estimate of approximately 20 percent greater hospital costs for the private sector and subsequent downward adjustment for a typical commercial population case-mix (estimated inpatient spending totals of $159 billion and $130 billion, respectively, for primary admissions), Gilfillan suggested that a reduction in the number of Medicare admissions from 275 admissions per 1,000 beneficiaries to a best-practice level of approximately 200 admissions per 1,000 beneficiaries (a 27 percent reduction) (MedPAC, 2009) would yield a savings of approximately $42 billion annually (assuming coverage of approximately 45 million lives [Kaiser Family Foundation, 2009]). Similarly, a reduction in the 55 commercial admissions per 1,000 covered lives to a best-practice level of 53 admissions per 1,000 lives (a 4 percent reduction) (National Committee for Quality Assurance, 2009) would save about $6 billion annually (assuming coverage of about 178 million lives [Davis, 2009]). Thus a reduction in avoidable admissions to best-practice levels could yield savings in the range of $44 billion to $48 billion annually, suggested Rosenthal, assuming that public payers could reduce avoidable admission rates to the levels described, and commercial payers could reduce

costs by at least one-third of the $6 billion goal initially. She added that collaborative work between providers, payers, and regulators, enhanced care coordination and disease management, such as through primary care payment reform with a value-focused medical home model, is needed to achieve these savings. Bisognano discussed palliative care and hospice as integral to facilitating patient-centered care among the severely chronically ill. Mitchell underscored the important need for investments in workforce development, especially in the education of primary care-focused mid-level practitioners (e.g., nurse practitioners and physician assistants).

Reduce Avoidable Hospital Readmissions

With 18 percent of Medicare hospital admissions and 10 percent of commercial hospital admissions resulting in readmissions within 30 days, many of which are avoidable (Klein, 2008; MedPAC, 2008), reducing preventable readmission rates was deemed a priority. Again, assuming the cost of an inpatient admission totaled $12,850 and $13,300 on average for Medicare and commercial payers, respectively, Rosenthal and Gilfillan noted that reducing avoidable hospital readmissions by 50 percent among Medicare (from 50 readmissions to 25 readmissions per 1,000 beneficiaries among 45 million total covered lives [MedPAC, 2008]), would yield savings of $14 billion annually from the estimated $28 billion in total costs of readmissions, while similarly reducing such readmissions among commercial payers (from 5 readmissions to 3 readmissions per 1,000 lives covered among 178 million total covered lives [Davis, 2009; Klein, 2008]) would yield savings of $6 billion annually from the $12 billion in total costs of readmissions. They said addressing care defects during initial hospitalizations and post-discharge care could lower costs significantly. If Medicare were able to reduce readmission rates by 50 percent and commercial payers could reduce their costs by at least one-third initially, then Cutler and Gilfillan surmised the total savings could be $16 billion to $20 billion annually.

Rosenthal cited the application of bundled payments for hospital admissions to cover all-cause readmissions within 30 days of an index hospitalization and shared savings among providers as central to this strategy. To allow efficient information exchange, Bisognano suggested that an infrastructure to permit secure data sharing among all providers is needed. In addition, Bailit and Mitchell identified community services and improved patient capacity to self-manage chronic conditions through enhanced education, management tools, and peer support as necessary to support enhanced post-discharge care. A stronger linkage between hospitals and primary care was also identified as integral to improving disease management. Through engagement of providers, payers, and regulators, several participants priori-

tized the supportive elements of data infrastructure (including examination of episode groupers[1]) and community services as early goals.

Improved Hospital Efficiency

With non-value added activities adding unneeded costs to the healthcare system (Mecklenburg and Kaplan, 2009; Pittenger, 2009; Toussaint, 2009), increasing the efficiency of hospital-based clinical care through reengineering of clinical services by applying the Toyota Production System (TPS) model was identified as a potent strategy to lower costs and improve outcomes. The assumption underlying the estimate discussed by Bisognano and colleagues was that straightforward hospital efficiency and continuous improvement initiatives prompted by lowering Medicare hospital costs by 1 percent annually would result in savings of $38 billion annually by 2018 (2009 dollars), assuming $420 billion in Medicare spending for hospital care in 2018 (CMS, 2007). If commercial costs were included as a method to prevent shifting cost to this sector, they suggested about $80 billion could be saved in the same time period, assuming $477 billion in private sector spending for hospital care in 2018 (CMS, 2007). More efficient hospital performance and lower payments would mean savings for providers and payers, and thus, ultimately, for consumers. Toussaint also noted that the application of TPS and similar methodologies (e.g., lean, Virginia Mason Production System) to hospitals must occur institution-wide (i.e., in both ambulatory care and inpatient settings) to maximize quality improvements and cost savings.

Decrease the Costs of Care Episodes

Focusing on the tremendous variation in resource utilization and costs, none of which yielded any significant gains in quality (Baicker and Chandra, 2004; Fisher et al., 2003), participants identified increasing utilization of high-efficiency (low cost, high quality) providers as a method of decreasing the high costs of care episodes. If this strategy could lower the costs in the public and private sectors by 3 to 5 percent, Gilfillan suggested, then the Medicare program (assuming healthcare spending of $476 billion) could save between $14 billion and $24 billion annually, the Medicaid program (assuming spending of $356 billion) could save between $11 billion and $18 billion annually, and commercial payers (assuming spending of $749 billion) could save between $22 billion and $37 billion annually (CMS, 2007), yielding prospective total savings of $47 billion to $79 billion

[1]Episode groupers are proprietary software programs that organize claims data into a set of clinically coherent episodes, usually linked by diagnosis.

annually. If these estimates were reduced by one-third to allow for overlap with savings from the prevention of avoidable admissions, Rosenthal noted, the annual savings would then total between $32 billion and $53 billion. Tuckson noted that per-episode savings opportunities within the commercial sector could exceed those within Medicare because of the higher (and greater variation in) prices paid. Toussaint outlined several requirements for achieving the savings, including development of provider value measures based on resource utilization and episode treatment groups through multi-stakeholder payment reform initiatives involving providers, regulators, purchasers, and patients. This would allow national reporting on the basis of individual providers, which would presumably induce changes in provider behavior. Several attendees also suggested that progress could also be facilitated by development of an all-payer database of provider value, which could be used for reporting as well as quality improvement purposes. Rosenthal elaborated that further reinforcement through incentives for use of high efficiency providers could also be achieved through payments based on measurement results and value-based benefits design. She and Gilfillan added that collaboration between payers and employers to cap out-of-network charges would provide additional incentives to use efficient providers. Bailit also suggested that there existed significant opportunity to apply known evidence on the comparative value of treatments and interventions to public and private payer coverage policies, while other participants considered taxation of overly generous health insurance coverage—i.e., "Cadillac" plans—as methods of lowering costs. Some participants suggested that implementation of measurement and reporting could potentially occur within 4 years.

Improve Targeting of Costly Services

Participants also considered measures aimed at application of best evidence on appropriate use of diagnostic testing and therapeutic interventions to reduce overuse of inappropriate and unnecessary services. As the Medicare program and commercial payers each cover approximately 45 million and 178 million lives (Davis, 2009; Kaiser Family Foundation, 2009), respectively, Gilfillan suggested that a reduction in excessive and unnecessary use of imaging services by 20 percent in Medicare (from an estimated baseline spending of $20 per member per month on high-tech radiology services, based on his experience) and in the commercial sector (from baseline spending of $15 per member per month, based on his experience) could yield a total of $9 billion in annual savings. If overuse of nonurgent emergency department (ED) services—which costs $21 billion annually (Delaune and Everett, 2008)—were also reduced by 50 percent, Everett suggested, an additional $11 billion could be saved, increasing the

total annual savings estimate from $9 billion to $20 billion. Tuckson suggested that the savings could be even greater if other costly services, such as orthopedics and radiation oncology, were also more carefully targeted. Several attendees cited transparency on cost and comparative effectiveness as required to facilitate utilization and coverage determinations; they also called for initiatives targeting self-referral to physician-owned facilities. Evidence-based guidelines, which are expected within 2 years to address appropriate use of expensive technologies developed and supported by medical subspecialties, would also facilitate initiatives to address variations in provider practice patterns and consumer demand, surmised Tuckson. Value-based insurance design was also discussed as a method of providing incentives for patients to increase appropriate use of diagnostics and therapies. In addition, increased access to primary care services through expanded employment of mid-level practitioners could help decrease nonurgent use of EDs, according to Everett and Mitchell.

Increase Shared Decision Making

Considering strategies to engender patient-centered care that fully informs patients of the risks and benefits of treatment options, the attendees discussed evidence that shared decision making (SDM) utilizing decision aids could facilitate patient understanding and participation in the decision-making process, which often reveals preferences for lower-cost, less-invasive treatments. Assuming that patient decision aids tailored to the clinical circumstance were available systemwide for 11 conditions (coronary revascularization for angina, mastectomy for early breast cancer, lumbar spine surgery for low-back pain, prostatectomy for benign prostatic hypertrophy, medical stroke prevention therapy, treatment of hypertension, tube feeding in dementia patients, routine colorectal cancer screening, routine prostate cancer screening, treatment of menorhaggia [excessive menstrual bleeding], and use of mechanical ventilation for chronic obstructive pulmonary disease), based on published estimates in the literature, Skinner surmised that SDM could yield savings of approximately $1 billion annually (Schoen et al., 2007). Drawing on work presented during the workshop series, SDM (involving caregivers and family) was also considered in the context of palliative care for very sick patients as likely to yield better targeting of necessary interventions and additional savings, amounting to an additional $5 billion annually (assuming increasing access to palliative care services so that they were available at over 90 percent of American hospitals, were able to reach 7.5 percent of all hospital discharges, and achieve average savings of $2,700 per admission) (Meier, 2009). If the use of SDM could be expanded beyond the 11 conditions listed above, several participants suggested, an additional 50 percent could be saved, increasing the total

savings estimate from $6 billion to $9 billion annually. However, Bailit suggested that these savings could only be achieved if information on the comparative value, risk, and benefits of various interventions were readily accessible and comprehensible to providers and patients in the form of decision tools and aids. Payments based on documented use of available tools were suggested as another method of providing further incentives to engage in the shared decision-making process. Mitchell proposed that the development of infrastructure to support enhanced use of shared decision making, including workforce training and decision aid development, are critical needs that should be addressed immediately.

Administrative Costs

With increasing administrative complexity placing significant burdens on providers and payers, attendees considered administrative simplification a high-yield, high-priority strategy for lowering costs over the next decade. Predicated on industry commitment to lowering unnecessary administrative costs, use of common administrative processes, such as the development of common billing and claims forms for use by providers interacting with both public and commercial payers and common processing protocols, was emphasized as a key to easing the administrative burden for all stakeholders involved.

Use Common Billing and Claims Form

Given the significant resource costs of billing and insurance-related (BIR) activities, participants identified utilization of common administrative processes, such as a common system-wide form for all billing and claim submissions to public and commercial payers and use of a centralized common processing center, as critical to reducing administrative complexity for providers and payers. If approximately 50 percent of the total estimated $361 billion costs of BIR activities among payers and providers could be saved through administrative simplification (Kahn, 2009), a participant suggested that $181 billion could be saved annually. Toward these savings, Toussaint noted that voluntary public–private cooperation among payers and providers could result in development and implementation of common billing and claims forms within 5 years. One approach discussed to increase the incentives was that if implementation is not achieved by 2018, mandatory standards could be issued by the Secretary of the Department of Health and Human Services as an alternative. Participants also discussed the possibility of requiring use of common forms as a prerequisite for participation in insurance exchanges established by health reform legislation as another method of stimulating adoption.

Additional Related Reforms

Noting the $60 billion spent annually on defensive medicine (Chandra, 2009) and the $75 billion lost due to fraud (FBI, 2007), participants discussed the prevention of fraud and abuse and defensive medicine as opportunities for eliminating waste within the delivery system.

Medical Liability Reform

Addressing defensive medicine as a driver of unnecessary services, some participants pointed to tort reform as having the potential to save $20 billion to $30 billion annually by lowering court awards and reducing malpractice premiums (Bovbjerg, 2009). Options discussed included disclosure-and-offer programs, in which providers disclose adverse outcomes to patients and offer prompt compensation in appropriate cases; adjudication of medical malpractice claims in specialized tribunals by neutral experts overseen by judges with medical expertise; and, "safe harbors," which insulate providers from liability if they followed evidence-based best practices in their care. To achieve these savings within the next decade, Toussaint suggested that legislative action at the state or federal levels, or both, must occur with the input of providers.

Prevention of Fraud and Abuse

Several participants suggested reduction of ongoing fraudulent billing, including unjustified upcoding of claims and billing for services never provided, could lower unnecessary and unindicated payments to providers by $5 billion to $10 billion annually. This assumes a 7 to 13 percent reduction in the estimated $75 billion annual costs due to fraud (FBI, 2007) could be achieved through increased detection, prevention, and recoupment of fraudulent payments in the public and private sectors. Tuckson said that the potential savings in Medicare and Medicaid are significant. Creation by legislators and regulators of a central national health insurance claims clearinghouse, facilitated by use of common administrative billing and claims forms, would expedite fraud prevention initiatives. However, Tuckson also noted that enhanced resources devoted to detecting fraud and abuse would require ongoing investment from public and private payers.

ADDITIONAL CONSIDERATIONS

The rising epidemic of obesity, an aging population with an increasing burden of chronic illness, and the influence of current health behaviors on future health status were also cited as considerations during the conversa-

tions. With levels of obesity projected to exceed 40 percent by 2015 (Wang and Beydoun, 2007) and over 80 million Americans expected to have multiple comorbidities by 2020 (Anderson and Horvath, 2002), Cutler and Tuckson underscored the importance of considering how health demographic trends would impact future healthcare expenditures and thus the priority strategies to address them. Given the connection between health behaviors and these health trends, including the rising levels of multiple co-occurring chronic illnesses and the low rate of recommended preventive care, Everett and Mitchell drew attention to the issue of prevention, including community health programs that encourage healthy eating habits in schools, antitobacco legislation, and primary-through-tertiary prevention. Acknowledging that uncertainty exists about the cost effectiveness of many prevention initiatives, Tuckson noted that, regardless of its cost effectiveness, prevention is of critical importance to making gains in public and population health.

While the participants highlighted a selection of particularly high-yield, cost-lowering strategies during the meeting, Mitchell and several others noted that many promising strategies, such as increased use of mid-level practitioners, additional ancillary providers (such as health coaches and nutritionists), salaried physicians, and a reassessment of the link between funding for medical education and hospital reimbursement, deserve further exploration and study as potential methods of lowering healthcare costs.

Attendees also explored the underlying notion of accountability as critical to improving the health of the nation and to creating a culture in health care that values efficiency and quality. They emphasized that all stakeholders in health must bear responsibility if the delivery system is to be reformed. For example, while Gilfillan and Toussaint suggested that providers bear responsibility for ensuring that care is delivered in the most efficient, safe, patient-centered manner possible, Mitchell added that patients are responsible for improving their engagement in the decision-making process. Without a mission and common understanding of collaborative engagement and accountability, Cutler noted that successful development and implementation of policies that address stakeholder concerns would fall short of their full potential.

PARTICIPANT LEADERSHIP RESPONSIBILITIES

Building on the idea of accountability, several attendees cited the need to identify specific entities that would assume primarily responsibility for oversight of implementation and evaluation to ensure that the maximum savings potential were realized. Within the context of ongoing efforts to enact healthcare reform legislation, participants pointed to the public sector, including government at the local, state, and federal levels, as critical to

providing oversight and ongoing support to the overall healthcare system infrastructure. Gilfillan stated that the role for government extended beyond the legislative branch to the executive branch as well. The Department of Health and Human Services and the Centers for Medicare & Medicaid Services (CMS) were specifically viewed as setting important examples in payment reform and coverage, inasmuch as spending on the Medicare and Medicaid programs account for almost 40 percent of national health expenditures (CMS, 2007). Mitchell suggested that the increased provision of Medicare claims data as a public good to purchasers, plans, researchers, and the public would be a vital aid in analyses of cost and quality. Bailit termed the government, especially at the state and local levels, as critical to efforts at organizing providers and payers to affect changes in concert with the ongoing national initiatives and in improving public and population health, including the physical and social determinants of health, such as education and community safety. In addition, several participants observed that state governments play a critical role in overcoming problems in commercial insurance markets through insurance regulation. For example, Rosenthal suggested that states could adopt all-payer regulations that could align the basic structure of pay for performance or risk-sharing methods in a marketplace.

Several participants highlighted the responsibilities that healthcare providers—ranging from nurses and physicians to acute, intermediate, and long-term care facilities—and commercial payers must bear to successfully reform the delivery system. For example, Tuckson cited the Healthcare Administrative Simplification Coalition, a collaboration between providers and payers to streamline administration by simplifying the credentialing process, standardizing data exchange, and leveraging health information technology. Providers, payers, and purchasers were also seen as playing important roles in improving patient health behaviors by encouraging preventive care and educating consumers on both the value of receiving care and the impact of individual health decisions on personal and population health.

Patients and consumers were also said to bear significant responsibilities for their care. Opportunities to participate in a shared decision-making process that stimulates patients to fully understand the risks and benefits of the diagnostic and therapeutic options specific to their clinical condition could increase consumer awareness of the value of alternative treatments, suggested Bailit and colleagues. In addition, consumers need to gain better understanding of the evidence indicating that more is not always better, suggested another participant.

Regardless of the specific stakeholder engaged, several attendees emphasized that none of these stakeholder groups should act in isolation without consideration of the other groups. It was suggested that effective

policies that result in short- and long-term beneficial changes will require that all affected sectors of the healthcare system share leadership responsibilities grounded in accountability and motivated by the goals of improving quality and value.

CONCLUSION

In their conversations, multiple participants emphasized that: (1) the amount of waste and inefficiency in the current delivery system is substantial, and (2) a multitude of strategies exist to lower expenditures over the short- and long-term. The discussions focused on three specific areas—care-related costs, administrative costs, and related reforms—which were identified by individual discussants as presenting significant opportunities to realize cost savings while improving quality. The estimates and savings goals offered by individual attendees were based both on published evidence and the practical, on-the-ground experiences of the individual participants with healthcare improvement initiatives, and thus preliminary in nature. While a select number of particularly high-yield, cost-lowering strategies were discussed, several attendees suggested that many strategies, such as increased use of mid-level practitioners, have the potential to lower costs and improve outcomes, but the evidence base for cost savings requires additional exploration. Finally, many discussants emphasized the importance of accountability and leadership responsibilities among all stakeholders as critical components in the drive to successfully reform the nation's healthcare delivery system.

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23

Common Themes and Next Steps

INTRODUCTION

Although the findings, observations, and perspectives offered throughout these chapters reflect only the presentations, discussions, and suggestions that coursed throughout the workshops—and should not be construed as consensus or recommendations on specific numbers or actions—they provide informative insights into the opportunities within the current healthcare delivery system to lower costs and improve outcomes, and represent areas needing further consideration. Oft-repeated common themes are listed in Box 23-1 and discussed below.

COMMON THEMES

The Challenges

Health Cost Excesses with Personal, Institutional, and National Consequences

Discussions underscored the expense of our country's healthcare spending both quantitatively and qualitatively (Box 23-1). Peter R. Orszag, in his keynote address in *Understanding the Targets*, explained that federal spending on just Medicare and Medicaid would grow to unprecedented levels over the coming decades if cost growth continued at uncontrolled levels. He highlighted that Medicare spending per capita by hospital referral region varied more than threefold—from $5,000 to over $16,000—and

BOX 23-1
Common Themes

Cost and outcome challenges

- Health cost excesses with personal, institutional, and national consequences
- Health outcomes far short of expectations
- Fragmented decision points, inconsistent principles, political distortions

Drivers of the shortfalls

- Scientific uncertainty
- Perverse economic and practice incentives
- System fragmentation
- Opacity as to cost, quality, outcomes
- Changes in the population's health status
- Lack of patient engagement in decisions
- Underinvestment in population health

Levers to address the drivers

- Streamlined and harmonized health insurance regulation
- Administrative simplification and consistency
- Payment redesign to focus incentives on results and value
- Quality and consistency in treatment, with a focus on the medically complex
- Evidence that is timely, independent, and understandable
- Transparency requirements as to cost, quality, and outcomes
- Clinical records that are reliable, sharable, and secure
- Data that are protected but accessible for continuous learning
- Culture and activities framed by patient perspective
- Medical liability reform
- Prevention at the personal and population levels

that this very substantial variation in cost per beneficiary in Medicare is not correlated with overall health outcomes—and, in fact, that the opposite may be the case. Describing the relationship between growing healthcare costs and other sectors of the economy, he also discussed how increasing demands placed on states by Medicaid costs have crowded out other state priorities and limited growth in state appropriations for public education, putting, for example, public universities at risk and at clear competitive disadvantage with their private counterparts in faculty recruitment.

Health Outcomes Far Short of Expectations

Several participants also identified and underscored that not only do our high expenditure levels have a negative impact on families' household

budgets and personal health, but the significant variation in care intensity (and expenditures) occurring across the country does not yield notably different outcomes. Indeed, some of the facilities with the best outcomes have lower costs. Often noted was that despite our spending patterns, clinical outcomes, such as life expectancy at birth and care for chronic disease, fall behind in comparison to other countries. Racial disparities in access lead to poorer outcomes, lost productivity, and lower quality of life, which, when compared to groups with the best health outcomes, cost the United States an estimated $229 billion between 2003 and 2006 in direct and indirect medical costs and in the costs of premature death (Laveist et al., 2009). While portions of the population are able to navigate and obtain care almost on demand, others need to rely on the safety net of emergency rooms for the entirety of their care. Even for the insured, the costs of care, geographical impracticalities, and cultural barriers hinder access to care (Devoe et al., 2007; Ngo-Metzger et al., 2003).

Fragmented Decision Points, Inconsistent Principles, Political Distortions

Clear from the discussions was the multifaceted nature of the problem, ranging from poor care coordination, lack of consistent evidence-based guidelines, and medical errors resulting from multiple handoffs, to inconsistencies in the policies of health insurance regulators, payment systems that encourage volume over value, and political influences that sometimes overturn scientific determinations. The clearest common denominator is the level of fragmentation in key system decision points, which challenges both the timely marshalling of evidence for decisions and consistency of its application. While almost two-thirds of consumers believe that their care is already evidence-based (Brownlee, 2009), many participants identified the lack of consistency which with evidence-based medicine is truly practiced. Individual attendees cited inconsistent guideline application as leading to variations in clinical decisions and practice patterns. To address the interests of the various stakeholders in health care, who frequently fail to harmonize in the best interests of patients, attendees asserted the need for multipronged solutions. Suggestions to effectively address the root causes of spending growth in the nation ranged from regulatory policy reform to provider and consumer-based initiatives.

The Drivers

Discussions identified a number of factors driving the growth of expenditures, noting several in particular.

Scientific Uncertainty

Many participants remarked that the development of clinical evidence needed significant investments, given the continuous emergence of new therapies, pharmaceuticals, and technologies. Despite the work of various medical and scientific organizations, the gap between practice needs and available guidance was described as growing. An additional level of near-term complexity was introduced by emerging insights from the field of genomics (Farnham, 2009; U.S. Department of Energy Biological and Environmental Research Program, 2009). Discoveries about genetic variation clearly increase the amount of information needed to properly target diagnostic and therapeutic interventions. When tools are available to appropriately triage insights from research into application for targeting, care should eventually become much more specific and effective (Pollack, 2008).

Perverse Economic and Practice Incentives

Various attendees cited the current, predominantly fee-for-service reimbursement system as providing perverse incentives, rewarding volume of services over the delivery of high-value services. Citing the variable rates of back surgeries, invasive cardiac interventions, and rates of specialist consultations between hospitals, states, and regions that yielded no discernible quality differences (Delaune and Everett, 2008), many participants discussed the need to shift the focus to patient-centered value. Compounding the problem of economic incentives promoting volume over value, the implicit pressures of the medical liability environment and defensive medicine were noted as contributing substantially to the delivery of unnecessary services. Much higher reimbursement levels for specialty over primary care further distort the incentives for certain services.

System Fragmentation

Discussions highlighted the pervasive fragmentation of the healthcare system on virtually every dimension—providers, payers, regulators, consumers—as a fundamental challenge to efficient and effective care. With fragmented communication between providers, duplicate testing and the absence of vital information compromise both outcomes and economic prospects—discontinuities that pose costs to both patients and society (Valenstein and Schifman, 1996). While patients were described as having to complete paperwork requesting the same information again and again, providers were also identified as suffering from a lack of harmonization around administrative policies and reporting requirements from payers

and quality monitors. Information needed for provider credentialing was requested repeatedly by differing institutions, consuming time and resources that could otherwise be spent on patient care (Healthcare Administration Simplification Coalition, 2009).

Opacity as to Cost, Quality, and Outcomes

Without meaningful and trustworthy sources of information on healthcare costs, quality, outcomes, and value, patients were described as becoming disempowered in the decision-making process. One participant likened being a patient in the healthcare system to being a tourist in a foreign country without knowledge of the language, geography, or customs (Rein, 2007). Similarly, without reliable, publicly available information on resource use and quality, providers were identified in several discussions as lacking either an understanding of their performance relative to their peers or an impetus to improve the value of the care they deliver. Many proposed that current approaches to improving health care in the United States are grounded in market forces, but those forces cannot work properly until consumers have better information about the nature and value of the elements.

Changes in the Population's Health Status

Since 48 percent of Medicare beneficiaries have at least three chronic conditions and 21 percent have five or more conditions, it has been estimated that approximately 60 million Americans have multiple morbidities, a number that is expected to increase to 81 million by 2020 (Anderson and Horvath, 2002). Additionally, projections place levels of obesity at 41 percent by 2015 (Wang and Beydoun, 2007), with consequences for diabetes, heart disease, hypertension, cancer, and osteoarthritis. In conjunction with an aging population, several attendees suggested that the changing demography of the nation's health precipitated the need to increase prevention efforts, lower the prevalence of obesity, and facilitate management of multiple co-occurring and increasingly complex chronic conditions.

Lack of Patient Engagement in Decisions

Several conversations identified patient engagement as a critical element of treatment success but emphasized that consumers may be the least informed on issues related to costs, outcomes, or value. Almost 40 percent of Americans possess only "basic" or "below-basic" health literacy skills (Kutner et al., 2006). With patients' already limited understanding of health information, their ability to engage in informed decision making becomes increasingly insufficient as the volume and complexity of data available to

them increases (Greene et al., 2008). In addition, the amount of information available to patients on the Internet holds the prospect of equipping patients to be active partners with clinicians in their care, but it was suggested by some that professional culture lags behind the potential in this respect.

Underinvestment in Population Health

Given the significant dependence of health status on the dynamics of physical, behavioral, and social determinants (WHO, 2009), full attainment of each individual's health potential requires strong commitments, investment, and progress in population-wide health programs (e.g., public health and health promotion-related activities), suggested many discussants. Estimates suggest that the potential to improve the health of a group is far less a matter of the health care received than of members' experience in these other domains of health determinants. Yet the dialogue called attention to the fact that only about 6 percent of national health expenditures is spent on public and population health (CMS, 2009). Several participants identified the critical role that prevention and population health—which broadly encompasses health outcomes and their biomedical and social determinants (Kindig and Stoddart, 2003)—could play in lowering the burden of chronic illness and improving productivity and quality of life.

The Levers

Attendees spoke broadly of the key levers for catalyzing transformation of the delivery system, including the following:

Streamlined and Harmonized Health Insurance Regulation

Many participants posited that addressing system fragmentation required effective streamlining of the diverse protocols and requirements arising from interactions between insurance companies, myriad employers and provider organizations, 51 state insurance commissions, and public payers. Streamlining approaches intended to foster simplification through regional approaches and national guidelines and standards have had burgeoning success with public–private partnerships but still have underrealized potential (Healthcare Administration Simplification Coalition, 2009; IBM Global Business Services, 2009).

Administrative Simplification and Consistency

Physicians spend a reported 43 minutes per day on average—the equivalent of 3 hours per week and nearly 3 weeks per year—on administrative

interactions with health plans and not on patient care (Casalino et al., 2009). It was also noted that one assessment found surgical nurses spending about a third of their time on documentation needs rather than clinical care (Smith, 2009). Many participants characterized efforts to streamline and harmonize payment and reporting requirements as basic, straightforward, and practical prerequisites to eliminating substantial systemic administrative costs.

Payment Redesign to Focus Incentives on Results and Value

Based on encouraging signs from demonstrations and theoretical models, many attendees suggested that much may be gained (lower costs, better outcomes) from broad changes to focus payments on episodes, outcomes, and value and to better target resources to those patients at highest risk of poor outcomes. Consideration of a proposed Independent Medicare Advisory Council to issue recommendations for Medicare payment updates and broader reforms that would not increase the aggregate level of net Medicare expenditures (Orszag, 2009) was discussed as a possibility, as were incentives for team care, provider integration, and patient involvement.

Quality and Consistency in Treatment, with a Focus on the Medically Complex

With more than 3,000 guidelines from more than 280 organizations registered with the National Guideline Clearinghouse (National Guideline Clearinghouse, 2009), consistency in guideline recommendations was raised as a concern. Also discussed was the need for a trusted means to broker differences in recommendations and channel them into effective use. It was also noted by many that with a dedicated commitment to comparative effectiveness studies embedded in the notion of a *learning health system* and additional measures that allowed capture of effectiveness data directly from the care process, significant insights could emerge to provide greater consistency in guideline development.

Evidence That Is Timely, Independent, and Understandable

To improve and reinforce evidence on effective care, several exchanges highlighted the need for a dedicated, unified program to fill the substantial gaps in reliable guidance, keep up with innovation and the changing science, and improve practice reliability, consistency, and impact. Mandated by the American Recovery and Reinvestment Act (ARRA) of 2009, the Institute of Medicine (IOM) recently recommended a priority list of the 100 top investigative topics for comparative effectiveness research (CER). Simulta-

neously, the newly formed Federal Coordinating Council for Comparative Effectiveness Research provided recommendations on infrastructure and organizational expenditures for CER within the federal government. In concert with the $1.1 billion appropriated to the Department of Health and Human Services for CER, various attendees voiced hope that action on these recommendations and the resulting CER research findings would guide future treatment decisions, reimbursement structures, and benefits designs by placing greater emphasis on value.

Transparency Requirement as to Cost, Quality, and Outcomes

With price and quality transparency viewed as critical elements of a consumerism strategy (Tynan et al., 2008), many participants identified pairing the development of information in accessible formats regarding cost, outcomes, and value with governance and administrative streamlining as having the potential to accelerate focus on value's key ingredients. Increasing access to practical, usable transparency information could marshal patient and consumer involvement in improving the value of care. Some participants noted a 38 percent increase in information-seeking behaviors related to health in 6 years. In 2007, for example, 56 percent of American adults—more than 122 million people—sought information about a personal health concern, with particularly notable increases in use of the Internet as a source of health information (Hu and Cohen, 2008).

Clinical Records That Are Reliable, Sharable, and Secure

Use of electronic health records was noted throughout the discussions, not as a panacea, but as a tool to enhance the effectiveness and efficiency of medical care, facilitate patient handoffs, provide decision prompts at the point of choice, and strengthen patient involvement in the care process. The attention and resources dedicated to health information technology in recent legislation reflect the significant potential for electronic health records (EHRs) to facilitate care coordination and minimize medical errors (CBO, 2008). Discussions underscored the need to facilitate the technical aspects of adoption and utilization while simultaneously expanding the research capacity of EHRs.

Data That Are Protected but Accessible for Continuous Learning

With more than 30 billion healthcare transactions occurring verbally, on paper, and electronically each year (Menduno, 1999), participants discussed the concept of harnessing the power of information generated from current clinical care. Many suggested that not only might electronic records

improve clinical decision making and handoffs, but clinical data should be considered a knowledge utility. As a resource for real-time monitoring of the results of treatment and ongoing generation of new evidence for effective care, several individuals suggested that electronic health records have the ability to facilitate continuous improvement in the quality of care delivered.

Culture and Activities Framed by Patient Perspective

With 25 percent of Medicare expenditures attributed to unwanted variation in preference-sensitive care (Wennberg, 2008), it was noted by many participants that much of healthcare delivery has been shaped over the past generation with the primary convenience and interests of the clinician, not of the patient, in mind. Yet, not only for patient satisfaction, but for better patient outcomes, the lens has to focus on patient perspectives and needs. Several participants suggested that shared decision making utilizes patient-centric decision aids that have been demonstrated not only to facilitate patient engagement and understanding in an informed decision-making process, but additionally to ensure that the personal preferences of patients are reflected in the ultimate treatment choice.

Medical Liability Reform

While the number of medical malpractice payments reached almost 16,000 in 2006 with mean payments to plaintiffs of approximately $312,000 (National Practitioner Data Bank, 2006), malpractice premiums have continued to increase relentlessly, in some states by up to 73 percent in 2002 (Thorpe, 2004). Because defensive medicine appears to be a significant driver of unnecessary services, many participants referenced reforms—such as the notion of a "safe harbor" for best evidence practices, caps on noneconomic damages, and specialized tribunals—as important to reducing costs.

Prevention at the Personal and Population Levels

Many discussants often referred to the cost, now and in the future, of obesity among Americans, which if unchecked might lead to Medicare expenditures that are a third higher for obese patients than for those of normal weight (Lakdawalla et al., 2005). They also spoke of the burdens of chronic conditions, whose treatment consumes 96 cents per dollar for Medicare and 83 cents per dollar for Medicaid (Partnership to Fight Chronic Disease, 2009). While discussing possible solutions ranging from clinical preventive services to community health, several participants sug-

gested that the distinctions between wellness, prevention, and treatment of chronic diseases were artificial because all were essential and required strong community initiative.

Next Steps for the Roundtable

Many of the ideas coursing through the conversations from the workshops fall within the scope of the Roundtable's mission and were suggested as initial possibilities for further Roundtable and field consideration, including the following:

- *Developing a strategic roadmap*. To apply the impressive and extensive information gathered throughout the workshop series, many discussed the need for a national strategic roadmap that identified the areas most likely to yield significant savings, the highest-priority strategies to realize those savings, and the specific steps needed to translate the potential into actionable recommendations that will result in true lowered costs.
- *Improving the analytics*. While the estimates presented during the workshops represent initial steps in providing a sense of the relative amounts of inefficiency in the delivery system and the potential impact of key strategies, participants suggested that additional work will be required to refine and strengthen the accuracy of the numbers and their cross-cutting nature. Several additional facets suggested for consideration included specific delineation of estimates across the public and private sectors as well as the uninsured; consideration of areas of overlap between estimates, and of implementation and maintenance costs; and identification of the barriers to effective "spread" of successful strategies. In addition, the workshop presenters focused on the direct costs of health care, but the indirect costs of health care—ranging, for example, from those of absenteeism for unnecessary services to decreased investments in education—also warranted consideration.
- *Engaging multiple stakeholders*. Given the reality of abundant challenges and resistance to change, attendees suggested that efforts to successfully control cost growth and lower spending while preserving innovation and outcomes could be achieved only with the cooperative efforts of the myriad stakeholders in health care—including patients, providers, manufacturers, payers, regulators, researchers, and policy makers, in both the private and the public sectors—aligning to improve insights, accelerate progress, and create a system grounded in delivering value to its constituents.
- *Informing health reform initiatives*. As efforts to reform the deliv-

ery system continue on both the federal and the local levels, specific attention was drawn to identifying inefficiencies in the healthcare system and the politically actionable policies to minimize them, because they carry paramount weight and clearly intersect with the goals of creating a value-based learning health system.

- *Enhancing transparency.* Building on the observations expressed by many about the lack of information as to the costs, outcomes, and value from health care, additional exploration was urged as a means to enhance the transparency of system performance.
- *Focusing on strategies for more direct public engagement.* As heard throughout the workshops, the desire for information and engagement among health consumers has grown over the past few decades, yet the range of information exchange between the public and policy makers needs further development. Effective and efficient tools for translating technical language and information into accessible information for consumer use are required, as are methods of incorporating patient concerns and feedback into the policy decision-making process. Participants spoke of the role of education in clarifying the relationship between out-of-pocket costs and total medical spending, illustrating the impact of costs on all levels of society, and further motivating partnerships between consumers, providers, payers, and policy makers.

As these conversations about value, cost, quality, and outcomes continue, additional observations and suggestions are welcomed and encouraged while the Roundtable continues to consider and explore these challenges and possibilities.

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Appendixes

Appendix A

Workshop Discussion Background Paper
Presentations and Related Literature Summary of the Estimates

Prepared for

The Healthcare Imperative:
Lowering Costs and Improving Outcomes
Workshop Series
May, July, September 2009
Institute of Medicine
Washington, DC

This paper was prepared by Pierre Yong with the assistance of Michael Punzalan and Erin Taylor.

INTRODUCTION

The presentations throughout the first two workshops in the Institute of Medicine (IOM) Roundtable on Value & Science-Driven Health Care's series The Healthcare Imperative: Lowering Costs and Improving Outcomes, provided a vast survey of the impact of waste and inefficiency on national healthcare expenditures and the potential cost-saving strategies available for implementation now. To supplement this information, a working paper was commissioned, which placed the presenters' estimates in the context of similar national estimates published in the peer-reviewed literature and by think tanks and government agencies.

Health reform in the United States has long focused on the means to expand health insurance coverage to the growing numbers of uninsured. In the current debates, significant attention has also been drawn to the necessity to simultaneously address our rapidly escalating national health expenditures, which fully consume one-sixth of our economy.

To more fully explore the drivers and solutions to controlling our healthcare spending, the IOM Roundtable on Value & Science-Driven Health Care, with the support of the Peter G. Peterson Foundation, engaged in a three-part workshop series titled The Healthcare Imperative: Lowering Costs and Improving Outcomes.

The goals of the series were threefold: (1) to identify, characterize, and discuss the major causes of excess healthcare spending, waste, and inefficiency in the United States; (2) to consider strategies that might reduce per capita health spending in the United States while improving health outcomes; and (3) to explore policy options relevant to those strategies.

The presentations at the first two workshops in the series offered many estimates on the costs of inefficiency and the potential savings that could be realized through application of much discussed cost-control strategies. This working paper aims to provide brief summaries of estimates provided during those two workshops, including the methods of calculation and any limitations as noted by the presenters. In addition, these estimates are placed in the context of similar national estimates published in the peer-reviewed literature and by think tanks and government agencies. By doing so, a broader sense of the range of costs and savings available throughout the healthcare system will emerge.

Several observations noted in the course of completing this work are discussed in the following sections.

Varying sources of presentation estimates The estimates presented throughout the workshop series were calculated by varying methods, including original peer-reviewed research by the presenter and the presenter's

synthesis of the published literature. In the case of the latter, few additional national estimates were found that were not referenced by the presenter.

Differences in underlying methodologies Variation in the estimates within each category often stemmed from differing methodologies, sources of data, study time periods, and scope of work, often making direct comparisons between estimates extremely difficult.

Variations in number of available comparison estimates The number of national estimates identified within each category varied significantly, with several well-studied categories containing multiple estimates while other topics containing few or zero comparisons.

Limited focus to national estimates While estimates existed for several topics detailing potential costs and/or savings at an institutional or statewide level, this paper focused on national estimates (if they could be identified).

As this paper focused on the estimates provided throughout the IOM workshops, our preliminary literature survey focused primarily on comparable national estimates on waste, inefficiency, and cost-savings strategies as applied to the healthcare delivery system. In the course of the work, two notable observations arose and are discussed in the following sections.

Range of estimates varied For those estimates in which multiple comparisons existed, some estimates, such as those for tort reform and telehealth, grouped closely with those in the literature while others lay amidst a large range of estimates, such as those for tertiary prevention and health information technology. These variations often stemmed from differing methodologies, study time periods, sources of data, and scope of work, and made direct comparisons between estimates extremely difficult.

Need for additional research As the number of national estimates identified within each category varied significantly, with several well-studied categories containing multiple estimates while other topics containing few or zero comparisons, those with few comparisons, such as transparency and retail clinics, indicate areas in need of additional research to calculate national impacts and could build on the studies of smaller scope noted throughout the report. In addition, in areas with large ranges in estimates, further rigorous research would be beneficial in resolving the differences.

The next sections contain brief summaries highlighting the workshop estimates as well as identified literature estimates. A table summarizing the estimates discussed throughout the paper is included as an appendix. Also

included in the appendixes is a summary of the lower-bound estimates developed by the staff of the IOM Roundtable on Value & Science-Driven Health Care based on the information cited throughout the background paper.

OVERVIEW OF THE WORKSHOP SERIES

In 2009, the IOM Roundtable on Value & Science-Driven Health Care, with the support of the Peter G. Peterson Foundation, engaged in a three-part workshop series titled The Healthcare Imperative: Lowering Costs and Improving Outcomes.

The goal of the series was three-fold:

- Identify, characterize, and discuss the major *causes* of excess healthcare spending, waste, and inefficiency in the United States.
- Consider *strategies* that might reduce health spending in the United States while improving health outcomes.
- Explore *policy options* relevant to those strategies.

Through the efforts of a planning committee consisting of leaders representing the various stakeholders throughout the healthcare sector, a series of three workshops were defined:

- The first workshop, titled Understanding the Targets and convened May 21-22, explored the major drivers of healthcare spending growth, focusing on five broad categories: unnecessary services; inefficiently delivered services; excess administrative costs; prices that are too high; and missed prevention opportunities.
- The second workshop, titled Strategies That Work and held July 16-17, focused on the potential of various strategies to lower healthcare spending while improving outcomes, including knowledge enhancement-based strategies; care culture and system redesign-based strategies; transparency of cost and performance; payment- and payer-based strategies; community-based and transitional care strategies; and entrepreneurial strategies and potential changes in the state of play.
- The final workshop in the series, titled The Policy Agenda and held September 9-10, delved into the policy options relevant to implementation and adoption of the strategies discussed in July in ways that maximize their impact on controlling the drivers of healthcare spending.

UNDERSTANDING THE TARGETS

The initial workshop focused on the identification of categories of waste and inefficiency in the healthcare system and their respective order of magnitude as a percentage of U.S. care spending, including:

- Unnecessary services;
- Inefficiently delivered services;
- Excess administrative costs;
- Prices that are too high; and
- Missed prevention opportunities.

Session 1: Unnecessary Services

In a climate of growing concerns about how much the United States spends on health care, it has been estimated that as much as 30 percent of spending could be saved without compromising outcomes (Fisher et al., 2003a, 2003b). Indeed, existing studies find no relationship between higher levels of spending and the quality of care received by patients (Baicker and Chandra, 2004; Yasaitis et al., 2009).

The presenters in this session on the provision of unnecessary services focused on

- Overuse of services beyond evidence-established benchmarks;
- Use of services beyond benchmarks where evidence is not established; and
- Choice of higher-cost services over evidence-established equivalents.

Overuse of Services Beyond Evidence-Established Benchmarks

Several studies examining the drivers of excess spending have focused on overuse of services and testing that may not bring clinical benefits to patients, highlighting excessive use of antibiotics, imaging and diagnostic tests, avoidable emergency department (ED) use, and surgical procedures (Bentley et al., 2008; Chassin et al., 1987; Merenstein et al., 2006; Winslow et al., 1988).

This section presents analyses presented by Amitabh Chandra that examined the degree to which costs and mortality could be *simultaneously* reduced. Subsequently, comparable estimates are presented, and the authors' findings are placed in the context of the existing empirical literature.

Savings from reducing overuse of services Chandra (2009) made the argument that healthcare reform could save both money *and* lives. Chandra

estimated that improving hospital performance to the level of the highest-performing hospitals (based on mortality and cost data) could result in 8 percent reductions in both cost and mortality for three high-mortality conditions (acute myocardial infarction, hip fraction, and colon cancer), saving over $1 billion annually and enabling more than 11,500 patients to live at least 1 more year. Chandra also found evidence suggesting that greater use of bundled payments within Medicare is a viable option for restraining cost growth.

In this analysis, the authors extended their prior work demonstrating a lack of association between spending and quality (Yasaitis et al., 2009). Using mortality as a quality measure and actual Medicare spending per beneficiary as the expenditure measure, they failed to find an association between spending and outcomes but rather found high-quality providers at each level of spending. To quantify the savings that might be achieved by improving performance, they first assigned each hospital to one of five categories, ranging from highest to lowest performance, based on spending and quality. Those in the highest performance category had both low mortality and costs; those in the lowest performance category had both high mortality and costs. The authors then simulated what would happen if lower-rated hospitals could perform like those in the higher-rated groups to arrive at the reductions noted above.

The authors also found that half of the variation in spending could be explained by the use of Part B services. Given that Part A payments are bundled and Part B payments are not, this finding suggested that combining reimbursements for inpatient, outpatient, and home health into a single payment might achieve savings.

The authors noted two main limitations to their study. First, the validity of the authors' findings relies on the accuracy of their risk adjustment measure (the International Statistical Classification of Diseases and Related Health Problems [ICD]-9 diagnoses codes from Part A claims records), as survival is substantially more sensitive to risk adjustment than quality measures such as those used in Yasaitis and colleagues (2009). Second, as with all other work that relies on benchmarking methods, their study cannot speak about what policy levers could be used to achieve their estimated cost and mortality improvements. Hence, it is not certain how their estimated savings could be realized.

Additional estimates Chandra and colleagues' analysis was one of the first to examine the relationship between hospital-level mortality and spending. A subsequent literature review found that Yasaitis and colleagues (2009), as referenced above, was the study closest to Chandra (2009). There is a sizeable empirical literature that uses more technical methods (and makes more restrictive assumptions) to estimate hospital inefficiency *holding quality constant*, including stochastic frontier analyses and data envelopment

analysis. Studies analyzing national hospital data using stochastic frontier analyses estimate uniformly higher cost inefficiencies, in the range of 10.8 to 25.5 percent.

As mentioned above, Bentley and colleagues (2008) estimated that spending on eight selected wasteful services—excessive antibiotic use, avoidable ED use, and overuse of noninvasive diagnostic imaging, among others—might be as much as $65.1 billion, the equivalent of 3.4 percent of U.S. healthcare spending. Merenstein and colleagues (2006) found that urinalyses, electrocardiograms, and X-rays were frequently performed despite evidence and guidelines recommending against their use in asymptomatic patients at an estimated annual direct medical cost of up to $194 million. It has been estimated that the cost of excess medical and surgical services, including coronary artery bypass surgery and percutaneous coronary interventions is $600 billion (Delaune and Everett, 2008). Avoidable ED use has been estimated to cost $21.4 billion nationally, and the overuse of antibiotics has been estimated to cost $1.1 billion annually (Delaune and Everett, 2008). Kaplan (2009) discussed analyses indicating that $5.1 billion annually could be saved from a 50 percent decline in unnecessary visits for common conditions—headaches, back pain, and benign breast conditions. Additionally, the same author estimated $6.5 billion in annual savings from reducing unnecessary MRI testing for back pain and headaches, extrapolating from their institution's experience after implementation of an evidence-based protocol. Others have calculated $300 million in annual spending on unnecessary MRI scans for back pain (Delaune and Everett, 2008). While focusing on duplicative and redundant testing, Jha (2009) found that costs amounted to $8.2 billion in 2004.

Estimates comparison As above, the finding by Chandra (2009) that hospital-level mortality and spending are uncorrelated in their data is consistent with the findings in Yasaitis and colleagues (2009). That being said, Chandra and colleagues' (2009) percentage cost savings estimate appears to fall within a reasonable range. The dozens of data envelopment analysis studies of U.S. hospitals cited by Bruce Hollingsworth (2003) have not yet been surveyed. However, Chirikos and Sear (2000) compared the inefficiency estimates generated by these different empirical strategies using data from hospitals in Florida from 1982 to 1983 and found that the data yielded convergent evidence about hospital efficiency at the industry level. This is suggestive, if weak, evidence for the notion that the data envelopment analysis and stochastic frontier analyses estimates for national savings would roughly be of the same magnitude.

Although the costs of overuse of clinical services cannot be directly compared given the inclusion of different services in each estimate, it is worth noting that the estimates of Bentley and colleagues (2008) cover the

broadest range of services in their analyses, including excessive antibiotic use for viral upper respiratory infections and otitis media, avoidable ED use, avoidable hospitalizations of nursing home patients, overuse of cytology for cervical cancer screening, inappropriate hysterectomies, unnecessary hospital admissions in ED triage of patients with chest pain, overuse of noninvasive radiologic imaging, and inappropriate spinal fusion surgeries. Although the estimates of Bentley and colleagues (2008) of $18.2 million to $33.3 million in 2004 dollars (1 to 1.8 percent of U.S. healthcare spending) for overuse of noninvasive radiologic imaging far exceeded that of Mecklenburg and Kaplan (2009), the latter included only MRIs while the former included use of other imaging modalities in their calculations.

Use of Services Beyond Benchmarks Where Evidence Is Not Established

A number of studies have found that the amount of spending across regions of the United States can vary twofold or greater (CBO, 2008; Fisher et al., 2003a); yet low-spending regions arguably deliver equal or higher quality care than high-spending regions (Baicker et al., 2004; Fisher et al., 2003a). The variation in spending appears to be driven by the use of discretionary medical services (Fisher et al., 2003b; Sirovich et al., 2008). This suggests that interregional comparisons might provide insights into the savings that could be achieved from coaxing better performance out of existing medical institutions.

This section reviews estimates presented by Elliot S. Fisher that calculated the potential annual savings that could be achieved within Medicare by eliminating excess use of discretionary services. Comparable estimates are presented and compared.

Savings from reducing use of services beyond benchmarks Exploiting this interregional variation in spending, Fisher and Bronner (2009) estimated that annual savings in the area of $50 billion (an 18 to 20 percent reduction) could be achieved within Medicare.

By ranking U.S. hospital referral regions according to the intensity of care provided, estimates of potential savings could be calculated by shifting use rates in high-use regions to patterns seen in low-use regions. In particular, they compared regions against benchmarks defined by hospital referral regions ranked in the best decile and quintile.

Drawing from sources such as the Dartmouth Atlas of Health Care, Fisher and Bronner found the potential reductions in use rates for a number of services could be substantial. For example, inpatient days could be reduced by up to 21.3 percent and medical specialist visits could be reduced by up to 44.1 percent. In fact, they find large potential reductions across all five services they considered (see Table A-1 below), and the decrease in

TABLE A-1 Percentage Reduction in Discretionary Services by Benchmark

	Care Intensity Benchmark	
	Best Quintile (%)	Best Decile (%)
Medical discharges	17.8	21.3
Inpatient days	23.4	28.4
Physician visits (overall)	21.9	27.4
Primary care visits	11.7	16.1
Medical specialist visits	37.2	44.1

these use rates would result in an expenditure reduction of $47.8 billion to $53.9 billion, when moving to the top quintile and top decile benchmarks, respectively.

There are two main limitations to Fisher and Bronner's approach. First, benchmarking by hospital referral region unavoidably ignores the substantial variation in cost and quality within each region. For example, the gains from improving administrative efficiency or reducing defensive medicine practices through tort reform do not enter into the authors' calculations. Along the same lines, possible expenditure reductions from reforming the payment system or implementing greater integration and coordination of care are also excluded. Therefore, the authors may actually be *underestimating* the potential gains to healthcare reform. Second, benchmarking methods in general are silent on how the predicted benefits might actually be achieved.

Even if the authors' analysis suggests that savings of $50 billion or more in Medicare are achievable in principle, it does not say by what mechanism these savings can be manifested nor does it account for the costs of improving performance to the benchmarked regions.

Additional estimates Based on a similar type of benchmarking analysis, Wennberg and colleagues (Wennberg et al., 2002) estimated that $40 billion, or 28.9 percent of spending, could have been saved in 1996 if Medicare spending levels were reduced to the lowest spending decile nationally. Reviews in recent reports from the Council of Economic Advisers (Romer, 2009) and the Congressional Budget Office (CBO) (2008) relied very heavily on this paper's findings, and subsequent searches identified few other estimates in the literature.

Estimates comparison Although the absolute savings of approximately $50 billion presented by Fisher and Bronner (2009) is larger than the

literature estimate of $40 billion by Wennberg and colleagues (2002), the latter estimate represents a 10 percentage point difference in total spending. While the reasons underlying the difference remain unclear, perhaps factors other than discretionary services, such as the burden of chronic illness or the efficiency of delivery of clinical services, may have become relatively more significant drivers of Medicare spending over time. Also, as Fisher and Bronner (2009) analyzed disaggregated data from a more recent time period, their estimate may be more relevant to the current policy debate than prior estimates.

Choice of Higher-Cost Services Over Evidence-Established Benchmarks

Roughly one-third of all medical decisions require choosing between or among two or more treatment options (Center for the Evaluative Clinical Sciences, 2005). These "preference-sensitive" care decisions drive approximately one-fourth of all Medicare expenditures (Wennberg et al., 2009). Treatment options often range from conservative to aggressive and range in costs as well, but recent studies have found that patients exposed to decision aids were more likely to choose conservative treatment (O'Connor et al., 1999, 2003). These findings suggest that preference-sensitive care may present a significant opportunity to reduce costs without affecting outcomes.

In this section, analyses by David Wennberg are presented. The author estimated the potential savings from increased use of shared decision making (SDM). A comparison to other estimates is also presented.

Savings from reduced choice of higher-cost services Shared decision-making programs are designed to assist patients confronted with two or more treatment options in making informed decisions. Often facilitated with decision aids, SDM aims to provide unbiased estimates of the risks and benefits for each treatment option available to the patient. By fostering communication and collaboration between patients and their providers, patients become empowered to make informed choices. Patients using SDM often choose more conservative (and less expensive) treatment after carefully weighing the trade-offs. After reviewing the literature, the author concluded that a 1 to 1.5 percent reduction in net health spending could be achieved with systematic use of SDM, while the combination of SDM with changes in provider incentives and benefit design could lead to a greater than 5 percent reduction in net health costs.

The author expressed three caveats. First, no other healthcare system could provide a counterfactual system on which he could base his estimate as SDM has not been systematically applied in any other healthcare sys-

tem. Second, existing provider interventions have not occurred on a large enough scale for analysts to produce credible estimates of the effect of provider-based SDM on total expenditures. Finally, the hypothesized effects of provider reimbursement and benefit design have not yet been subjected to any test.

Additional estimates As Wennberg discussed in his presentation, evidence from semiquantitative studies presented in the Dartmouth Atlas suggested a 10 to 20 percent reduction in costs might be possible (O'Connor et al., 2004), while another investigation found that health coaching combined with decision aids reduced total population costs by 3.6 percent (Wennberg, 2007). However, a recently published systematic literature review by Leatherman and Warrick (2008) on SDM found that "few studies provide assessment of impact on health outcomes, quality of care, utilization, or costs" (p. 79S). Further searches did not identify any comparable national estimates of savings. Recent events across the United States also suggested that there might not even be a *state*-level estimate against which to judge the findings in Wennberg (2009). Legislation passed in Washington State in 2007 officially recognized SDM "as a high standard of informed consent" (Kuehn, 2009), and required a demonstration project to assess the cost-effectiveness of SDM (currently under way). Four other states (as well as the federal government) are currently considering legislation mandating similar pilot programs (Kuehn, 2009).

Estimates comparison The estimate offered by Wennberg (2009) appears to be unique in its national scope. However, results from published literature indicate the significant potential for SDM to improve the quality of patient decision making while simultaneously lowering expenditures.

Session 2: Inefficiently Delivered Services

Concerns about waste in U.S. healthcare spending have not just focused on the provision of unnecessary services, but also on operational waste (Bentley et al., 2008). Operational waste is concerned with the resources necessary to provide those services and the efficiency (or inefficiency) with which they are used.

The presenters in this session on inefficiently delivered services addressed:

- Costs from mistakes and duplicative tests;
- Costs from care fragmentation;
- Costs from inefficient use of higher-cost providers; and
- Costs from inefficiencies in physician offices and hospitals.

Costs from Mistakes (Medical Errors, Preventable Complications) and Duplicative Tests

The landmark IOM report *To Err Is Human: Building a Safer Health System* estimated that between 44,000 and 98,000 deaths are caused by medical errors every year (IOM, 2000). When placed among the leading causes of death in the United States, medical errors rank above deaths from motor vehicle accidents, AIDS, and breast cancer (IOM, 2000). Such adverse events, which are defined as "medical errors resulting in injury" (IOM, 2000), not only increase direct costs to the healthcare system, but also represent dollars spent on additional care and increased insurance premiums that could have been better spent elsewhere (IOM, 2000).

This section summarizes the results presented by Ashish Jha that examined the costs of the top 10 preventable adverse events and duplicative testing in U.S. hospitals. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Savings from preventable medical errors Jha (2009) estimated the annual direct medical costs associated with preventable adverse events to be $16.6 billion (2004 dollars) in U.S. hospitals; when including redundant tests, the estimate increased to $24.8 billion.

The costs of medical errors were limited to 10 adverse events chosen via an intensive literature review. The analysis used data from the National Inpatient Sample to calculate the proportion of the population that was at risk for a particular adverse event. To determine the number of adverse events that occurred, the author multiplied the at-risk population by the incidence rate for the adverse event, taking into account variation by using a range of incidences from the literature. Finally, the number of adverse events was multiplied by the percent that were considered preventable. Both the number of adverse events and the proportion that were preventable were then multiplied by the direct medical costs associated with each event to determine the overall national annual cost of each event. To account for variation in the data available, Jha used a Monte Carlo statistical simulation. A similar approach was used to determine the costs associated with redundant tests.

Results show that there were an estimated 5.7 million adverse events in 2004, of which 2.2 million were adverse drug events (589,000 of which were preventable) and 1.7 million were hospital-acquired infections (1.4 million preventable). For all adverse events and redundant tests that were considered preventable with currently available approaches, Jha estimated an avoidable cost of $16.6 billion and $8.2 billion, respectively (Table A-2). This represents 8.2 percent of all inpatient costs in the United States.

TABLE A-2 Total and Avoidable Costs Due to Adverse Events and Redundant Tests

	Avoidable Costs (millions)[a] (95% confidence interval)	Percent of Inpatient Costs (%)	Total Costs (millions)[a] (95% confidence interval)	Percent of Inpatient Costs (%)
Thromboembolic disease	3,090 (1,979-4,466)	1.0	5,041 (3,444-6966)	1.7
Hospital-acquired infections	5,797 (3,773-8,198)	1.9	8,912 ($5,833-$12,515)	3.0
Adverse drug events	3,823 (3,067-4,626)	1.3	8,840 (7,442-10,181)	2.9
Decubitus ulcers	748 (256-1,332)	0.3	913 (343-1,595)	0.3
Other adverse events	3,165 (526-7,884)	1.1	8,569 (1,905-18,192)	2.7
Redundant labs and radiology tests	8,229 (5,015-11,829)	2.7	8,229 (5,015-11,829)	2.7
Total potential savings	24,858 (20,386-30,673)	8.2	40,503 (31,929-50,464)	13.5

[a] Costs in 2004 dollars.

As this analysis depended on estimates from the literature that are several years old, it may therefore not accurately represent the incidence of medical errors today (Jha, 2009). There were also important patient populations—such as women admitted for labor and delivery—for whom no reliable estimates could be incorporated into the analysis. The omission of these hospitalizations likely led to an undercount of the number of adverse events and their associated costs. Also, the analyses only addresses direct medical costs resulting from medical errors and redundant testing. Finally, the costs associated with implementing strategies to reduce the incidence of preventable adverse events were not taken into account in the study; thus, the net savings may be lower (Jha et al., 2009).

Additional estimates Few studies have been conducted that provide national estimates of the costs associated with adverse events, and only one cost estimate was found related to the reduction of redundant radiology tests. The IOM report estimated that total costs (direct and indirect medical costs, such as lost wages and disability, among others) associated with preventable adverse events range between $17 billion and $29 billion (IOM, 2000). According to the study by Thomas and colleagues (1999), on which the IOM cost estimates are based, more than half of these costs are attributable to direct medical costs. The study by Thomas and colleagues

(1999) examined nearly 15,000 medical records from hospitals in Utah and Colorado to determine the incidence of adverse events.

The IOM report also cited a more targeted study by Bates and colleagues (1997), which involved a case-control study using self-reported hospital data and chart reviews to determine the incidence of adverse drug events in two hospitals. The authors used regression analysis to compare differences in resource use and length of stay between the cases and the controls in the study. By extrapolating from the results, the authors estimated annual costs for adverse drug events to be $4 billion; for preventable adverse drug events they estimated annual costs of $2 billion. However, the ability to extrapolate these results may be very limited as there were only two hospitals in the study. A second study by Classen and colleagues (1997), conducted over a 4-year period starting in 1990 at a single hospital in Utah, estimated nationwide hospital costs for adverse drug events to be $1.6 billion annually. This result is lower than that achieved by Bates and colleagues (1997) and is likely due to a lower assumed rate of adverse drug events.

More recently, Zhan and Miller (2003) conducted a study using the Nationwide Inpatient Sample to identify medical errors and calculate excess hospital costs due to injuries. The authors used the Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators to determine incidence of medical errors, and conducted a case-control analysis to determine the differences in lengths of stay and charges. By extrapolating from the results using a 0.5 cost-to-charge ratio, the authors estimated total national healthcare costs for the 18 medical injuries included in the study to be $4.6 billion (2000 dollars) (Zhan and Miller, 2003). The primary limitation of this study lies in its reliance on adequate and accurate coding in administrative data to determine the incidence of medical errors; the validity of the results varies to the extent that the codes do not accurately reflect the diagnosis, to the extent that different hospitals code differently, and to the extent that errors are under- or overcoded in administrative claims records (Zhan and Miller, 2003).

Estimates comparison The estimates of the costs associated with medical errors appear to vary due to specific differences in study design. These differences include whether or not both direct and indirect costs were included, the incidence rate of adverse events found in each study, the year in which the study was completed, and the number of adverse events included in the study. Differences in the incidence rate of adverse events may be attributable to differences in the methods used to define an adverse event. As a result of these factors, it can be difficult to directly compare the estimates.

However, it can be noted that the overall estimates of the potential savings associated with adverse events are relatively comparable. The estimate

by Jha and colleagues (2009) of $16.6 billion (in 2004 dollars) in direct medical expenses is comparable to the range of costs presented by the IOM ($17 billion to $29 billion) when taking into account that less than half of the costs estimated by the IOM are due to direct medical costs and the fact that the cost estimates are for a time period approximately a decade earlier. The estimate by Zhan and Miller (2003) of $4.6 billion in healthcare costs appears to be low not only compared to the IOM report, but also when taking into account the fact that Jha and colleagues (2009) studied fewer adverse events. As Zhan and Miller (2003) based their estimates on coding for medical errors in administrative data, which likely underestimated the incidence of errors, and Jha and colleagues (2009) used incidence rates and costs from studies generally relying on comprehensive chart review-based data, the latter's estimates may be more accurate. It is also worth noting that while Thomas and colleagues (1999) found that over half of adverse events occur outside the hospital setting, the estimates discussed here focused only on the inpatient setting.

Costs from Care Fragmentation (Including Duplicate Services and Treatment Delays)

Uncoordinated or fragmented health care can lead to a number of adverse consequences for patients. Patients with chronic illnesses may see many different physicians, and these physicians may unknowingly prescribe contraindicated or conflicting medications, advice, or treatments (Peikes et al., 2009). In addition, patients may not have received sufficient advice on how to care for their condition, and may not be able to adequately adhere to prescribed treatment regimens (Peikes et al., 2009). At least partly as a result of uncoordinated care, chronically ill patients treated for a number of different conditions represent a disproportionate share of Medicare expenditures (Thorpe and Howard, 2006). These expenditures are largely driven by spending on hospital stays and readmissions to the hospital (MedPAC, 2008).

This section presents estimates from Mary Kay Owens that examined the costs of uncoordinated care in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The cost of uncoordinated care Owens (2009) estimated that a program designed to identify patients with the most extreme uncoordinated care and reduce their uncoordinated care could result in an average of $240.1 billion (8.8 percent) in annual national savings.

This estimate was derived from an analysis of claims data from more than 9 million Medicaid and Medicaid/Medicare dually eligible patients

in five states determining the extent to which uncoordinated care contributed to higher than expected costs. Specific claim-level events were identified, such as excessive numbers of prescriptions; therapeutically duplicative drugs; frequently changing drug therapies; using multiple treating providers, multiple prescribers, and multiple pharmacies concurrently and in random patterns; accessing the ED frequently for nonemergent or preventable care; and numerous other care patterns indicative of uncoordinated care. These events were then evaluated using various statistical methods, and then criteria-driven algorithms defining combinations of markers standardized across the study populations were used to determine the incidence and magnitude of uncoordinated care in each state's study population. Matched comparison groups were also created in order to estimate potential savings that could be achieved via adoption of care coordination for the most extreme group of uncoordinated care patients. Statistical analysis of variables indicated that those variables that predicted higher than expected costs were also correlated with episodes of uncoordinated care.

Results showed that the small percentage of patients (10 percent) considered to have experienced "extreme uncoordinated care" were associated with an average of 36 percent of total costs. Extending the work, Owens (2009) estimated that interventions designed to reduce episodes of care fragmentation, including coordination of care between providers, can, on average, save 35 percent of costs for the most extreme group of uncoordinated care patients. Extrapolating these findings nationally, overall estimated national savings from a program with enabled care coordination, assuming 3 years to phase in, were an average of $240.1 billion per year, or 8.8 percent of annual national projected costs.

Although a standard definition of uncoordinated care was applied across all the state populations, some limitations of the analysis may include the lack of uniform marker values applied across all the state populations to identify those with extreme uncoordinated care. However, the values of the markers were allowed to vary based on statistical definitions specific to each state's population and subpopulation (Medicaid vs. Medicaid/Medicare duals) to adjust for differences in demographic and disease characteristics. While markers may be a plausible proxy for the measurement of uncoordinated care, the sensitivity and specificity of these markers for identifying those patients lacking care coordination is limited to the populations studied. In addition, the analysis is based on patients enrolled in public healthcare plans, and as a result the magnitude of savings attributed to extreme uncoordinated care may be less in employer-sponsored plans. Finally, it is important to note that the estimate does not reflect net savings and that those people identified as receiving uncoordinated care may vary over time as individual insurance status, medical, and social circumstances change.

Additional estimates A review of the literature related to coordination of care and fragmented care found few studies that addressed the costs of uncoordinated care. Berenson and colleagues (2009) estimated that chronic care management and care coordination for dually eligible Medicare and Medicaid beneficiaries could result in 10-year (2010-2019) savings of $200 billion, assuming that care coordination could yield 5 percent savings per year. Berenson and colleagues (2009) suggested that the estimate might be conservative as it only applies to a very small percentage of the population at risk.

The Medicare Coordinated Care demonstration explored the potential cost, hospitalization, and quality impacts of a care coordination program at 15 sites across the United States (Peikes et al., 2009). The authors measured outcomes using Medicare claims data and patient surveys of volunteer participants who were randomly assigned to the care coordination program or usual care. Results from the April 2002 to June 2005 study indicated that none of the programs generated net savings, although three program sites had monthly expenditures lower than the usual care group. The study was primarily constrained by having limited power to detect whether reductions in standard Medicare expenditures would be sufficient to offset any program fees.

Another study examined outcomes associated with a care coordination program for four conditions at Permanente Medical Group in northern California (Fireman et al., 2004). Annual cost measures were obtained from the health plan's cost management system and were compared to the average costs for adult patients without these conditions. Results indicated that costs substantially increased and that the predicted savings (mainly from reduced days in the hospital) were not observed. However, while costs did not decrease, the trends in quality indicators were favorable. Limitations included the fact that a randomized controlled trial comparing the effect of treatment for those with the same condition was not possible (Fireman et al., 2004).

As failure to coordinate care in the transition from inpatient to outpatient care has been identified as a significant factor contributing to the 17.6 percent of hospital Medicare admissions resulting in readmissions within 30 days of discharge (accounting for $15 billion in spending), care coordination has been suggested as a method of reducing the incidence of avoidable readmissions (MedPAC, 2007).

Estimates comparisons It is extremely difficult to compare the various cost estimates for coordinated care from the literature. Owens (2009) presented the only extrapolated national cost estimate that included both the publically and privately insured. Even were the estimates to be compared on a study group level, the different array of patient groups studied (rang-

ing from patients enrolled in public programs to those in a private health maintenance organization [HMO]) make the estimates difficult to compare. However, with that being said, it can be noted that the estimate by Berenson and colleagues (2009) of $200.5 billion savings over 10 years for dually eligible beneficiaries is considered an underestimate by the authors of the potential total savings that could be achieved by a national effort to improve care coordination because of their focus on dually eligibles.

Also of note, two of the studies in the literature, one of which was based on a randomized controlled trial, found no net savings from the implementation of care coordination programs. This is a very different outcome from the other estimates suggesting that significant savings are possible. It may be that the particular application of the care coordination program was unsuccessful, such that a change in the design of the program might improve the likelihood of realizing savings, or that savings from care coordination may require a significant time to realize.

Costs from Inefficient Use of Higher-Cost Providers

A significant amount of the cost of producing health care is due to the cost of labor. As a result, ensuring that the labor inputs to health care are used in an efficient manner has the potential to reduce healthcare use and thereby healthcare costs as a whole. Systems changes that encourage shifts to more efficient care provision have applied business models of operation, such as the Toyota Production System and Six Sigma, to the healthcare market. These models seek to remove the waste present in the system and help improve quality through process standardization (Klein and McCarthy, 2009).

This section presents a discussion by Gary S. Kaplan of the results he gained from examining the potential costs from inefficient use of higher-cost providers in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Savings from the efficient use of caregivers Based on results from a targeted intervention designed to reduce unnecessary caregiver visits at Virginia Mason Medical Center (VMMC), Mecklenburg and Kaplan (2009) estimated that national cost savings from the reduction of unnecessary outpatient visits to be $5.1 billion annually and savings from eliminating unnecessary visits for imaging procedures to be $6.5 billion annually. In addition, they estimated savings of $8.3 billion when factoring in increased use of lower-cost providers, such as advanced registered nurse practitioners (ARNPs) and physician assistants (PAs). A further $2.3 billion could be saved by substituting low-cost telephone or computer-based visits for con-

ventional visits for chronic conditions. Savings from these four independent categories were estimated to total $22.2 billion annually.

In 2002, VMMC implemented methods used by Toyota to improve safety and remove waste in the system. In 2004, the health system established a collaborative with employers and implemented a model designed to lower costs while providing quick access to care (Mecklenburg and Kaplan, 2009). The primary outcome measured was service use, which was matched with 2009 data on reimbursements and cost in order to determine the savings achieved as a result of the new model.

Results indicated that unnecessary visits for common conditions—including headaches, back pain, and benign breast conditions—declined by 50 percent after the model was implemented. Assuming that outpatient visits for these three common conditions comprise 8.8 percent (based on data from VMMC) of all such visits nationally, the authors estimated that a 50 percent reduction suggests that 48.4 million outpatient visits per year could be eliminated via adoption of this care model. National cost savings are estimated to be $5.1 billion annually. The study hospital also experienced a 30 percent reduction in imaging visits, which, when extrapolated to the national level, yielded an estimated $6.5 billion in annual savings. Assuming that, on a national level, half of visits for uncomplicated conditions could be handled capably by an ARNP or PA rather than by a physician, additional savings could equal $8.3 billion. Use of telephone or computer-based visits would save an estimated $2.3 billion per year (Mecklenburg and Kaplan, 2009).

Some limitations of this study include potential questions related to the generalizability of the findings at VMMC to the general U.S. healthcare system. Variations in labor and supply costs may influence the amount of savings achievable at individual institutions. However, it is important to note that over 75 percent of the savings detailed are from simple categories of improvements that are commonly (yet not consistently) used in general practice.

Additional estimates Multiple studies have concluded that use of physician extenders is a cost-effective practice, but none offer national estimates of potential savings. Adjusted for patient case mix, it has been found that practices that more extensively used PAs and ARNPs in care delivery had lower average practitioner labor costs and total labor costs per visit (Roblin et al., 2004). However, this same study found that, because pediatric visits were more costly than internal medicine visits on average, the savings in pediatric visits was smaller. A systematic review of the literature on nurse midwives concluded that, compared to other models of care for pregnant women, use of nurse midwives led to lower use of multiple interventions (e.g., antenatal hospitalization and episiotomy) and improved outcomes, with evidence

supporting lower costs as well (Hatem et al., 2008). Another study found that the total cost per episode seen by a PA was less than a similar episode managed by a physician, regardless of the patient's age, gender, and health status (Hooker, 2002). Few differences emerged between physicians and PAs in the use of resources and the rate of return visits in the same study. A recent study concluded that expanded use of ARNPs and PAs in the delivery of primary care could save $4.2 billion to $8.4 billion over the next decade in the Commonwealth of Massachusetts (Eibner et al., 2009).

A related body of literature examines the volume of visits across the various physician specialties. Farrell and colleagues (2008) reported that, between 2003 and 2006, while total physician office visits remained stable at approximately 900 million annually, visits to primary care doctors decreased by 0.5 percent per year while specialist visits increased by 1.6 percent annually. Fisher and colleagues (2009) also discussed evidence suggesting that the volume of specialist visits could decrease by approximately 40 percent without harming the quality of care.

Estimates comparison As no other national estimates for use of nonphysician providers were found, no comparison was undertaken. As described above, physician extenders have not been shown to harm clinical outcomes—and, in fact, may improve outcomes—and physician extenders may lower costs if used for appropriate medical conditions. A recent analysis concluded significant cost savings from increased use of PAs and ARNPs in the delivery of primary care services in Massachusetts. However, it has been suggested that extrapolations of savings must be done cautiously as the degree of savings depends on the magnitude of salary differential between physicians and nurses, and may be offset by potential lower productivity of nurses compared to doctors and lack of changes in physician workloads if the additional labor allows expansion of care to meet previously unmet needs (Laurant et al., 2005). Additionally, with a trend toward decreasing primary care visits and increasing visits to specialists and simultaneous evidence that the number of discretionary visits to specialists could decrease by approximately 40 percent without harming quality of care, a substantial opportunity potentially exists for cost savings from redistribution of visits between primary care and specialists.

Costs from Inefficiencies in Physician Offices and Hospitals

Operational waste can be seen in both inpatient and outpatient settings. Ensuring that hospitals and physician offices operate in the most efficient manner possible may serve to reduce excess healthcare costs (Bentley et al., 2008).

This section presents the results from two presentations: (1) William

F. Jessee, who examined the potential savings associated with increasing efficiency in physician offices; and (2) Arnold Milstein, who summarized analyses conducted by the Medicare Payment Advisory Commission (MedPAC) examining the potential savings offered by high-performing hospitals. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The cost of delivery inefficiencies in physician offices Jessee (2009) estimated that about $6.4 billion to $25.5 billion (2007 dollars) could be saved annually by reducing costs in physician offices. The estimate was based on an effort to estimate the clinical and administrative waste in physician office practices via an annual survey of practice costs and revenues. The survey was sent to 10,586 physician offices, and the response rate was 14 percent. The author calculated the distribution of costs by relative value unit (RVU), both including and excluding physician compensation, as a measure of the cost of production. The distribution of costs was skewed in a similar manner both when including and excluding physician compensation, indicating that differences in practice efficiency could be attributable at least in part to the higher costs of production. The author obtained an estimate of the waste in physician practices by normalizing the total cost by RVU distribution curve and comparing it to the observed curve.

Assuming the differences between the two curves are a measure of waste, $25.5 billion (2007 dollars) may be saved via reducing costs in physician practices. Jessee noted, however, that most differences between the curves are attributable to physician compensation, which implies that the majority of the difference is not directly attributable to efficiency differences across practices. When excluding physician compensation, an (arbitrary) estimate of the potential savings attributable to increased efficiency is about $6.4 billion annually (25 percent of the total estimated cost savings), or approximately 0.2 percent of total U.S. healthcare costs.

Some limitations of the study include potential bias in the survey results owing to the low response rate from invited participants. In addition, the cost estimates may understate total physician practice costs, as the costs for inpatient care provided are not included in the analysis (Jessee, 2009). Finally, it is unclear whether inclusion of physician compensation in the RVU provides a good measure of inefficiency.

Savings from paying for high performance Milstein (2009) presented results from a MedPAC analysis that estimated that overall U.S. healthcare spending would decrease by almost 2 percent if all hospitals were to achieve the same performance as the top 12 percent of hospitals (MedPAC, 2009). MedPAC's March 2009 report to Congress used Medicare data to estimate the potential reduction in Medicare spending if all hospitals provided care at the same cost as hospitals that provide low-cost, high-quality care.

MedPAC selected the 12 percent of hospitals considered to be "relatively efficient" based on risk-adjusted cost and quality measures. Costs per case were then standardized, and a composite mortality rate was calculated for eight common conditions. Each mortality rate was then weighted by the share of discharges in that hospital.

Results indicated that, if all hospitals were to achieve the same performance as the top 12 percent, mortality, readmission rates, and the cost of inpatient care would all decline. In terms of cost, hospital inpatient spending would decrease by approximately 10 percent. If these savings were passed on to consumers, overall U.S. healthcare spending would decrease by almost 2 percent. In addition, results from other data indicate that lower hospital costs are also associated with payers other than Medicare being able to negotiate lower average prices per case (Milstein, 2009).

Some limitations of the analysis include the fact that the savings may not be generalizable to other types of providers, such as physician practices. In addition, the lack of more specific data on hospital structures, processes, and outcomes precludes a more complete understanding of the factors that contribute to hospital performance, and as a result the potential changes that could be implemented to improve performance. In addition, because the analysis used diagnosis-related groups (DRGs), which are only a measure of payment, as the unit of cost measurement, the actual resource costs of the hospitals are not taken into account. As a result, it may be that hospitals that exhibit high quality with low cost also simply have lower resource costs and thus are able to deliver lower-cost care in addition to charging lower-cost DRGs.

Additional estimates A literature search for studies examining the potential savings from increased efficiency and performance in physician offices resulted in no additional studies estimating the cost savings associated with such improvements in efficiency. However, one study was found that supported these general findings. An analysis by Andes and colleagues (2002) measured the efficiency of physician practices using a linear programming technique called data envelopment analysis. This technique combined a number of different measures in order to compute one measure of efficiency. Results indicated that there was a range of efficiency levels across the 115 physician practices included in the analysis. Of these practices, only 7 were considered to be relatively efficient (Andes et al., 2002). In addition, the authors found that the practices found to be most efficient were those that did not have the highest charges, but instead were able to achieve their high efficiency through more efficient use of resources (Andes et al., 2002).

A review of the literature associated with the Toyota model, Six Sigma, and "lean" health care yielded a number of analyses related to the effects of such models on quality, cost, and outcomes. A potential Medicare savings of $400 billion over 10 years could be realized if U.S. hospitals reduced

their inpatient costs to the level of ThedaCare, a hospital and clinic system in Wisconsin that has implemented efficiency improvements based on manufacturing methods (Toussaint, 2009). By extension, private payers (non-Medicare) could save an estimated $1.3 trillion over 10 years. Based on an annualized average hospital savings of $3.4 million, application of lean production systems to all U.S. hospitals could save an estimated $19.4 billion annually from elimination of non-value-added activities (Hafer, 2009). In addition, a case study (Klein and McCarthy, 2009) of the Gundersen Lutheran Health System in Wisconsin, Iowa, and Minnesota examined the care coordination techniques employed by the health system as an attempt to become a more efficient provider of health care. Results from the health system indicated that after a year in the coordinated care program, charges per patient fell an average of $7,300, and there was a reduction in the number of hospitalizations for patients in the program (Klein and McCarthy, 2009).

Estimates comparison The literature suggests that opportunities to increase the efficiencies within physician practices exist, however, as no other national estimates were found, a comparison was not undertaken. While the estimates of potential savings from increasing hospital efficiency from Milstein (2009) and Hafer (2009) differ in magnitude, these differences might reflect the various methodologies undertaken in calculating each estimate. While the former focused on savings achieved from an analysis benchmarked to the top 12 percent of hospitals in terms of cost and quality, the latter considered the average annual savings achieved from application of lean production methods. Also, the Milstein (2009) estimates focused on Medicare spending, while those of Hafer (2009) included all hospital spending. The estimates offered by Toussaint (2009) are difficult to compare directly to those previously discussed given their varying time frames; however, even a rough annual savings estimate (which may either under- or overestimate savings achieved in any single year during the 10-year time frame) far exceeds the estimates of Milstein (2009) and Hafer (2009).

Session 3: Excess Administrative Costs

Administrative costs in the U.S. healthcare system are significant, and reflect the complexity of a multipayer system and the costs of safety and quality assessments. Given the concern regarding the costs of health care, interest in estimating the amount of expenditures consumed by administrative activity has been long-standing. Henry J. Aaron (2003) wrote an overview of papers dating back to 1986 estimating this potential source of waste. More recently, economists such as Paul Krugman (2009) and Greg Mankiw (2009) have taken up the issue. As the issue is still not settled,

hopes remain that reducing excess administrative costs could generate tremendous cost savings in the U.S. healthcare system.

In this section, we present analyses on administrative costs discussed by James G. Kahn, Lawrence P. Casalino, James L. Heffernan, Andrew L. Naugle, and Peter K. Smith. Additional estimates are also presented and compared.

Estimates of excess administrative costs Kahn (2009), Casalino and colleagues (2009b), and Heffernan and colleagues (2009) provided estimates of excess administrative costs at the provider level, as well as for the entire U.S. healthcare system.

Kahn used the results of studies on billing and insurance-related (BIR) costs and applied them to U.S. national health expenditures to determine total and excess administrative costs. Casalino and colleagues (2009b) applied the results of a U.S. survey of providers to national health expenditures to estimate the administrative costs for physician offices. Meanwhile, Heffernan and colleagues described using data from the Massachusetts General Physicians Organization to estimate excess administrative complexity attributable to billing and payment activities and the time costs of physicians and staff associated with paperwork needed to file for reimbursements.

Results are presented in Table A-3. Excess spending is defined as the amount spent above a given benchmark comparison. Based on the analyses, provider-specific excess spending ranges anywhere from $26 billion (Blanchfield et al., 2009) to $75 billion (Kahn, 2009). For physician offices, estimated excess administrative costs for BIR ranged from $26 billion (Blanchfield et al., 2009) to $32 billion (Casalino et al., 2009b) annually. A synthesis of the estimates conducted by all these authors identified a total spending excess, based on a ratio of U.S. to Canada administrative costs, of between $168 billion and $183 billion per year (Kahn, 2009).

Some limitations of these analyses include the focus of Heffernan and colleagues (2009) on a single physician group office. The fact that there is some evidence indicating that the studied office is more efficient than other offices indicates that the excess costs may be underestimated (Blanchfield et al., 2009). In addition, there are varying levels of uncertainty in the estimates of BIR, with the most complete knowledge being about physician offices and the less certain estimates relating to hospitals and other providers (Kahn, 2009). The benchmarks used for the comparisons were also not definitive; as a result, the estimates of excess BIR costs may be lower than if other benchmarks were used. Finally, excess BIR costs may be associated with excessive clinical services, which, if independently reduced, would reduce the associated BIR costs by some amount (Kahn, 2009).

TABLE A-3 Synthesis of Estimates from Presentations on Excess[a] Administrative Costs

		Billing and Insurance-Related Administrative Costs		Method		
Setting	Roundtable Presenter	Total	Excess*	Data Source(s)	Types of Costs Included	Basis for Estimating Excess
Private Insurers	Jensen	n/a	$63 billion	OECD	All administration & profits	Comparison U.S. vs. other OECD, adjusted for wealth
	Kahn	$105 billion	$75 billion	U.S. national health expenditures	All administration & profits	Difference in overhead for private vs. public payers
	Synthesis	$105 billion	$63-75 billion	See above	All administration & profits	Range from above
Physicians	Casalino	$65 billion	$32 billion	U.S. representative survey, applied to NHE	6 major activities. No service coding.	Ration based on Canadian survey (preliminary, potentially conservative)
	Kahn	$70 billion	n.s.	Two California studies, applied to NHE	All BIR tasks (with half of service coding), all payers & cost	None available
	Heffernan	n.s.	$26 billion	Mass. General Phys. Org, applied to NHE	All BIR tasks, for private payers only, for 2009	Micro-costing of current private payers vs. Medicare
	Synthesis	$6-70 billion	$32-35 billion	As above	Similar to Kahn: all payers and BIR tasks	Use of Casalino preliminary ratio for physician practices

TABLE A-3 Continued

		Billing and Insurance-Related Administrative Costs		Method		
Setting	Roundtable Presenter	Total	Excess*	Data Source(s)	Types of Costs Included	Basis for Estimating Excess
Hospitals	Kahn	$67 billion	n.s.	One California study, applied to NHE	All BIR activities	None available
	Synthesis	$67 billion	$34 billion	As above	As above	Use of Casalino preliminary ratio for physician practices
Other providers	Kahn	$77 billion	n.s.	NHE, with assumed BIR	Assumed 10% BIR, based on physicians and hospital data	None available
	Synthesis	$77 billion	$39 billion	As above	As above	Use of Casalino preliminary ratio for physician practices
TOTAL[b]			$168-183 billion			

NOTE: BIR = billing-and-insurance related; n/a = not applicable; NHE = national health expenditures; n.s. = not significant; OECD = Organisation for Economic Co-operation and Development.

[a] By "excess" we mean spending above the indicated benchmark comparison. We make no judgement on whether that excess spending brings value.

[b] Estimates of provider BIR excess rely on the preliminary United States:Canada ratio used by Casalino for physicians. As this ratio is finalized, the estimates will evolve.

Enhancing clinical data as a knowledge utility Smith (2009) estimated that by reducing documentation requirements of nurses, $87.9 billion could be saved annually. Medical documentation requirements currently result in a vast data set that is not relevant to patient-specific needs. In addition, current documentation considers important clinical elements relevant to a patient's specific problem to be secondary to the necessity of supporting payment requirements and ensuring the ability to defend against medical liability claims (Smith, 2009). In particular, payment requirements result in additional data elements that are not valuable to the patient experience.

Currently, a three-level patient evaluation requires a total of 90 minutes of physician time, with significant amounts of clinical data produced. Nurses are also required to document additional data elements, requiring further documentation designed to support payment and legal defenses. An analysis indicated that surgical nurses spend the greatest proportion of their time (36 percent) on documentation, compared to 19 percent on patient care activities and 21 percent on care coordination. Applying this proportion to the national health expenditure estimates, Smith estimated that nursing documentation costs an estimated $146.5 billion per year; reducing this documentation by 60 percent could yield $87.9 billion in savings, representing 4 percent of total national expenditures (Smith, 2009).

Potential reduction in administrative expenses Naugle (2009) quantified the total savings opportunity in administrative costs potentially available to commercial payers. Employing a benchmarking method, the author found that if administrative expenses for fully insured (the insurance company takes the financial risk on the claims cost) commercial products were reduced to the best-practice administrative expense of 7.5 percent of premiums, total savings of approximately $13.9 billion could be achieved. Furthermore, he found that additional savings of $6.2 billion to $9.1 billion could be realized for payers in the self-insured (purchaser takes the financial risk on the claims cost) market.

To calculate potential savings associated with fully insured commercial products, the author estimated the total savings that could be generated if the best-practice level of administrative expenses were adopted by all commercial payers. These estimates were based on data from a variety of sources such as the Milliman Healthcare Reform Database, the Medical Expenditure Panel Survey, and privately held data on commercial premiums. Naugle then calculated the potential savings for the self-insured market as a percentage of the savings for the fully insured commercial products.

There are a number of limitations to this study. First, the savings estimates apply only to payers. Though secondary savings may also come to providers, purchasers, and patients, these quantities are not included in the analysis. Second, only commercial products are considered. It is possible

that additional savings might be achieved in other settings (e.g., Medicare and Medicaid), but this quantity is also excluded from the analysis. These two factors suggest that the author may have underestimated the potential savings from reducing administrative expenses. Third, as is common to all benchmarking analyses, the method is silent on what interventions could allow administrative payments to approach the best-practice level. In particular, benchmarking cannot address what is possible for a specific plan or group of plans, and it may not be possible for all payers to achieve the best-practice benchmark. This analysis also does not account for the costs of changing current practice, suggesting that the net savings realized may be lower than the estimate provided.

Additional estimates Most studies providing estimates comparable to the national savings estimates provided in the papers above rely on cross-national comparisons. The work of Woolhandler and colleagues (2003) is an often-cited example of work comparing administrative costs in the United States to those in Canada. The authors estimated excess annual administrative costs to be $209 billion in 1999 dollars ($415 billion in 2009 dollars, if growing as fast as health expenditures).

Existing studies using microlevel data have also focused on BIR activities spending. They have estimated spending as percent of physician, hospital, and private insurer revenue. In fact, the findings from these studies, such as Casalino and colleagues (2009b) and Sakowski and colleagues (2009), were used as inputs in the workshop synthesis calculation. Hence, we do not compare the estimates from these existing studies to workshop synthesis estimates. Relevant to the estimate of Naugle (2009), published analyses claim that the administrative expenses of commercial products, excluding profits, are 9.2 percent of premiums (Sherlock, 2009). Also, Russo (2009) found that requiring health insurers to spend a set amount (85 percent) of premium revenues on medical care would increase insurer efficiency and could save roughly $100 billion over 10 years (as a rough estimate). Finally, comparable national estimates for the potential savings in Smith (2009) were not found.

In terms of the administrative costs of health services regulation, it has been estimated that the total costs exceed $339.2 billion, which include regulation of health facilities, health professionals, health insurance, drugs and medical devices, and the medical tort system, including the costs of defensive medicine. After subtracting $170.1 billion in benefits, the net burden of health services regulation still amounts to $169.1 billion annually (Conover, 2004).

Estimates comparison There have been conceptual and methodological objections to the research based on single-country comparisons, as sum-

marized by Aaron (2003). Thus, the research presented in this workshop provides a useful check on their macroapproach. The workshop synthesis (Kahn, 2009) estimate of excess annual spending of $188 billion to $203 billion is lower than the Woolhandler and colleagues (2003) estimate of $209 billion, if adjusted for the different time frame. The synthesis estimate is highly sensitive to a preliminary estimate for the United States: Canada BIR ratio for physicians, and will change to the extent this ratio deviates from 2:1 (Casalino et al., 2009a). Although the strength of the synthesis estimate stems from its inclusion of multiple analyses, the determination of administrative costs as a percentage of revenue and the chosen benchmark of a single-payer system may represent an upper bound that is difficult to attain given current reform directions, if nonetheless a valuable point of reference. In particular, the comparison to a single-payer system may indicate an unrealizable amount of savings given that a national U.S. single-payer system appears politically untenable.

The workshop synthesis estimate of $63 billion to $75 billion in potential savings to insurers is three times higher than the $20.1 billion to $23.0 billion estimate in Naugle (2009). The difference is explained mainly by the definition of administrative costs used by each analysis: Naugle (2009) compared current administrative levels to a best-practice benchmark in the current system. Jensen (2009) compared entire countries, in a regression model, finding that the U.S. private insurers contribute $63 billion more to costs than if the United States had (mostly nonprofit) private insurance as is the situation in member countries of the Organisation of Economic Co-operation and Development (OECD) countries. Kahn (2009) obtained an estimate similar to Jensen by comparing current private overhead from the national health expenditures to public program overhead rates.

Session 4: Prices That Are Too High

The prices of medical services and products also have been identified as an area of potential waste in the U.S. healthcare system. The presentations in this session focused on:

- Hospital service prices;
- Prices of medications;
- Prices of durable medical equipment; and
- Prices of medical devices.

Hospital Service Prices

Hospital consolidations may help reduce operating costs by increasing efficiency; however, consolidations may also result in increased prices. Be-

cause public programs such as Medicare and Medicaid reimburse hospitals based on set fee schedules, private payers are affected by increases in prices caused by consolidation (Capps, 2009). These price increases, in turn, can drive up the cost of insurance for those with private coverage (Capps and Dranove, 2004). A review of 87 papers on hospital consolidation and its impact on costs, quality, and pricing indicated there were small cost savings brought about by most mergers and acquisitions, nil or negative effects on quality, and the potential for substantial price increases, particularly when hospital mergers occur in a geographically narrow area (Vogt and Town, 2006).

This section reviews the results presented by Cory S. Capps from his examination of the magnitude by which hospital consolidations have increased prices, and by extension national health expenditures. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Price increases attributable to hospital consolidation Capps (2009) estimated, based on conservative assumptions, that hospital consolidations have caused an increase of approximately $10 billion to $12 billion in annual national healthcare expenditures. To reach this conclusion, Capps identified the 94 metropolitan statistical areas (MSAs) that satisfied two conditions: (1) each had a population large enough to support multiple independent hospitals, and (2) each was concentrated. The author calculated the predicted price change in these MSAs if the market concentration were reduced from the actual level to the "relatively unconcentrated" level.

A comprehensive survey of the literature on concentration and hospital pricing conducted by Vogt and Town (2006) concluded that hospital prices increased by 1 percent on average for every 160-point increase in the Herfindahl-Hirschman Index (HHI) of concentration (the HHI is a widely used measure of concentration in antitrust analysis).

Results from Capps' analysis indicated that private payers' payments to hospitals are about 3 percent higher nationwide than they would have been without the market consolidation. By extension, this means that national healthcare expenditures are an estimated 0.4 percent to 0.5 percent higher (a total of $10 billion to $12 billion) on an annual basis than they would have been absent the extensive consolidation of hospital ownership that began in the mid-1990s.

Some limitations of the analysis include the assumption that inpatient and outpatient prices move in the same manner; this may be inaccurate as outpatient competitive conditions may be different from those in the inpatient market. The analysis also only identified the direct price effect when there may also be other types of effects attributable to consolidation. For example, larger hospital systems with market power may be able to

resist payer attempts to control use; reduced hospital competition may also increase hospitals' incentive to operate efficiently. Both could increase costs of hospital care to public as well as private payers. Finally, the analysis only provides general trends and averages, and may not reflect a specific market's price experience due to consolidation.

Additional estimates A review of the literature on hospital consolidations indicated that, in general, studies found evidence of price increases after hospital mergers (Capps and Dranove, 2004; Krishnan, 2001; Krishnan and Krishnan, 2003; Vogt and Town, 2006). However, no studies extrapolated their results to the national level.

A review by Vogt and Town (2006) of different types of hospital consolidation studies found that most studies found evidence of large merger-induced price increases. For example, a review of event studies found that hospital prices typically increased by at least 10 percent after a merger. More specifically, out of 13 studies, 10 found increases of at least 2 percent (Vogt and Town, 2006).

Capps and Dranove (2004) examined the effect of hospital consolidations on negotiated prices with preferred provider organizations based on data from hospital contracts. They conducted a multivariate regression analysis designed to estimate the effect of mergers on the negotiated price. For 9 of the 12 hospitals that experienced an increase in market power sufficient to potentially trigger antitrust scrutiny, prices increased by significantly more than the median price increase. A cross-sectional analysis of four markets in which consolidations occurred also found that prices increased for hospitals that merged in three of the four markets.

Finally, studies by Krishnan and Krishnan (2003) and Krishnan (2001) found that prices increased more for hospitals that experienced a merger compared to those that did not. Krishnan and Krishnan (2003) analyzed data from 113 hospitals in California, of which 20 experienced an acquisition between 1995 and 1996. The authors found that acquired hospitals had increased revenue per patient but did not have lower operating costs attributable to the merger. One limitation of the study was that it examined prices for only 1 year after the merger, thus it cannot be determined whether the higher prices remained beyond that time horizon (Krishnan and Krishnan, 2003).

Estimates comparison Estimates from other papers support the analysis presented by Capps (2009), which relies on studies showing that hospital consolidations lead to price increases. In addition, the magnitude of the price increases used by Capps to calculate his estimate (3 percent) is similar to the price increases found in other peer-reviewed literature. However, a comparison of the impact of higher prices on the nation as a whole cannot

be made, as other papers did not extrapolate their findings to the national level.

Although not directly relevant to hospital service pricing, a related literature survey examines the income and salaries of physicians. Farrell and colleagues (2008) compared physician incomes in the United States to those in other OECD countries, concluding that U.S. generalists make 4.1 times per capita gross domestic product (GDP), compared with 2.8 times per capita GDP in other OECD countries, while specialists make 6.5 times per capita GDP, compared with an OECD average of 3.9 times. Farrell and colleagues additionally found that, across all U.S. physicians, higher earnings add $64 billion in costs to the U.S. system, the sum of $49 billion more for specialists and $15 billion more for generalists. Although physician salaries may not be growing after adjustment for inflation, recent analyses indicated that primary care physicians in the United States have seen more significant negative impacts than specialists (Litzau, 2009; Tu and Ginsburg, 2006). In their review, the CBO (2008) additionally reported that physicians typically increase the volume of their services in response to reductions in payment rates so as to offset between 20 percent and 40 percent of the rate cut's impact on their total payments.

Prices of Medications

A number of factors affect prescription drug prices in the United States. These factors include whether the drug is a brand-name or generic drug, and who pays for the drug. Government purchasers have access to price ceilings and mandated rebates, among other mechanisms, and as a result generally pay lower prices than private purchasers (CBO, 2005). Further complicating the question of whether prescription drug prices are too high is the fact that the supply and payment chains move differently from each other. Purchasers generally do not take possession of the prescription drug, and as a result pay the supplier (pharmacies) and negotiate rebates separately with the manufacturer (Hoadley, 2009).

Recent trends in drug spending and pricing show some changes over prior years. Drug spending growth hit a 45-year low of 4.9 percent in 2007 (Hartman et al., 2009; Sisko et al., 2009). This was likely attributable to lower price growth generally, safety concerns, and the recession. The average growth rate, however, hides significant differences in price trends for brand-name, generic, and specialty drugs; for example, brand-name drug prices increased much faster than overall drug prices (8.7 percent vs. 4.5 percent) in 2008 (Purvis, 2009). Another factor affecting trends is the increasing use of generic drugs as opposed to brand-name drugs. Because generics are much less expensive than brand names, substituting a generic for a brand name is generally less costly for both the purchaser and the pa-

tient (Hoadley, 2009). Looking internationally, studies have found that U.S. prices for brand-name drugs are about twice those of four other developed countries, but generic drug prices are much lower in the United States than in those other countries (Paris and Docteur, 2006).

This section presents a review by Jack Hoadley of prescription drug-pricing trends and savings estimates in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Prescription drug prices Hoadley (2009) reviewed a variety of estimates that have been released indicating that reductions in prescription drug prices could save significant amounts. One estimate by the CBO found that the government could save $10 billion annually (between 2010 and 2019) by requiring manufacturers to pay a 15 percent rebate on Medicare Part D drug purchases (CBO, 2005). In general, a broad estimate looking at the effect of a 5 percent across-the-board price reduction (excluding government purchasers that already receive significant discounts) found that total savings for the health system could be about $9 billion annually (Hoadley, 2009).

A study comparing drug prices across different countries found that, while brand-name drug prices in the United States are roughly twice those in Australia, Canada, France, and the United Kingdom, generic drug prices in the United States are between 10 and 65 percent below prices in those countries (Paris and Docteur, 2006). By taking advantage of the low generic drug prices, an industry estimate indicated that increasing the generic dispensing rate by 3 percent annually could save $10.5 billion (Genetic Pharmaceutical Association, 2009). Finally, the CBO (2008) estimated that allowing manufacturers to create follow-on biologics (generic versions of biologic medications) could save $13 billion over 10 years.

Some limitations to discussions about prescription drug pricing include a lack of standards for establishing the "optimal" price, and the fact that lowering prices in one commercial market may increase prices in another, thereby reducing or eliminating the potential savings. In addition, lower drug prices may potentially reduce funds available for investment in research and development. Finally, studies assessing the potential share of drug use amenable to switching to generics are lacking; as a result the above estimate of a 3 percent shift is solely an example.

Additional estimates A review of the literature related to prescription drug pricing and the potential savings associated with different policies yielded one national estimate and two other papers related to the comparison of U.S. prices with those of other countries. Gellad and colleagues (2008) used Medical Expenditure Panel Survey drug use and spending data from 2003-

2004 to estimate the savings for Medicare Part D beneficiaries if Medicare drug prices in Part D were reduced to Federal Supply Schedule (FSS) prices. The authors estimated annual savings to the Medicare program of $21.9 billion for the top 200 drugs used by beneficiaries after inflating the drug costs to 2006 dollars (Gellad et al., 2008). Of note, this estimate may overstate the true potential savings; the lower-end sensitivity estimate of $11 billion may be more reasonable. In addition, the comparison of FSS prices to retail transaction prices may be inappropriate, as retail prices do not take into account manufacturer rebates. As this study used data prior to the initiation of Part D, it does not reflect any changes in use associated with the start of the program.

Schoen and colleagues (2007) estimated the potential savings from allowing the Secretary of the Department of Health and Human Services to negotiate prices for Medicare Part D. The estimate is based on a three-tiered policy approach, by which Part D would pay Medicaid prices for dual eligibles, prices would be set for unique drugs, and the Secretary would establish a purchasing collaborative comprising all government payers (with voluntary private-sector participation). Schoen and colleagues (2007) estimate that this policy change would yield net savings of $15.8 billion over 5 years ($43.4 billion over 10 years).

Two analyses compared pharmaceutical prices in the United States to those of other countries, using index measures related to wealth. Farrell and colleagues (2008) found that prices in the United States were 50 percent higher compared to other countries; however, the prices varied depending on the type of drug. Brand-name drug prices were 77 percent higher in the United States while generic drugs were 11 percent lower in the United States (Farrell et al., 2008). Danzon and Furukawa (2008) compared drug prices in the United States to those in 11 other countries. When taking income into account, the authors found that most countries' price indices were relatively close (within 10 percent) to the United States except for the three Latin American countries examined and Japan. Danzon and Furukawa (2008) also found that generic drugs are less expensive in the United States, with other countries price indices being anywhere from 8 percent to 111 percent higher. CBO analyses also found that importation of medications from a broad set of industrialized countries could reduce drug spending by approximately $40 billion over 10 years (CBO, 2004b).

Additionally, a recent analysis found that Medicare Part D pays on average 30 percent more for drugs than does Medicaid (U.S. House of Representatives Committee on Oversight and Government Reform, 2008). Prior to the implementation of Medicare Part D, those dually eligible for Medicare and Medicaid received their prescription drug coverage through Medicaid, which is legally allowed to negotiate drug discounts with manufacturers. However, now all dually eligible beneficiaries receive their pre-

scription drug coverage through Medicare Part D, which is offered through private insurers who do not have the ability to negotiate drug prices with manufacturers. Since the medications the dually eligibles receive through Medicare Part D are, on average, 30 percent more expensive than those previously received through Medicaid, it was estimated that drug spending for this population increased by over $3.7 billion in the first 2 years of the Medicare Part D program. It was also estimated that if Medicare Part D paid the same price as Medicaid for all drug purchases, the total savings over the next 10 years could be as much as $156 billion.

Estimates comparison Among the multiple analyses of pharmaceutical pricing, it can be noted that all international comparisons found similar trends in pricing across countries. More specifically, various sources found that while brand-name drug prices were higher in the United States than in other countries, generic drug prices are lower in the United States. It is more difficult to compare estimated savings attributable to the various proposals, given that the estimates focus on different policy options to lower medication expenditures. For example, the CBO estimate (2008) of the potential savings created by requiring a 15 percent rebate for Medicare Part D targets pharmaceutical manufacturers, while Gellad and colleagues (2008) estimate of the savings from requiring FSS pricing would likely require mandating changes in the current supply and payment systems in order to achieve such a price (Hoadley, 2009). In addition, both the estimates provided by Hoadley and CBO will vary depending on the magnitude of the price reduction used in the respective calculations.

Prices of Durable Medical Equipment

Durable medical equipment (DME) prices may be too high as a result of two factors. First, patients often have insurance coverage for such equipment, and second, patients often have no choice as to whether they need to purchase the equipment (Hoerger, 2009). In 2007, the United States spent a total of $24.5 billion for DME (CMS, 2009). Currently, Medicare DME payments are based on a set fee schedule as opposed to bids.

This section presents a review by Thomas J. Hoerger (2009) and Mark E. Wynn (2009) of DME pricing and savings estimates for the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Prices for durable medical equipment Hoerger (2009) estimated that a reduction in Medicare reimbursements, fraud, and waste for DME could save the program $2.8 billion annually (0.1 percent of total national health expenditures in 2007). There is a significant body of evidence indicating

that Medicare pays too much for DME, including an Office of the Inspector General (OIG) report that found that Medicare fees in 2003 exceeded Web site prices by 37 percent (Department of Health and Human Services, 2004). The OIG also found that Medicare payments for oxygen concentrators were almost $7,000 higher than the supplier purchase cost (Department of Health and Human Services, 2006). As a result, reducing spending on DME may result in savings to the Medicare program.

Hoerger (2009) and Wynn (2009) examined the results of Medicare demonstration projects designed to determine whether Medicare could achieve a lower price via alternative methods of determining payment levels. Two demonstration projects found that by implementing a program of competitive bidding, Medicare could save between 19 and 20 percent off the fee schedule. In addition, the costs of operating the bidding program were lower than the savings achieved, indicating a potential net savings to the government overall. In 2003, Congress established a program of competitive bidding for DME, and initial bids were 26 percent lower than the fee schedules. The program has not yet gone into effect, however, as Congress has delayed it for 18 months and required that bids be submitted again (Wynn, 2009).

In addition to competitive bidding, Hoerger (2009) suggested that fraud and waste contributes to some of the excessive payments for DME in the Medicare program. By using estimated Medicare overpayments of 10 percent (2006) as a proxy for fraud and waste, and combining that estimate with the demonstration findings of a possible 20 percent reduction in prices, Hoerger (2009) estimated that Medicare could save $2.8 billion (annually) on DME. This represents 11.5 percent of the total national spending on DME.

Some limitations to the above estimates include the fact that the 20 percent reduction in fees may no longer be possible owing to subsequent changes in the fee schedule and in the market. However, even though reductions in the fee schedule occurred prior to the demonstrations, they still yielded bids that were 20 percent lower (Hoerger, 2009). Another consideration is that the estimated savings would only accrue to the Medicare program, and the fee reduction may not have much effect on DME use. Given that use is the primary factor in expenditures for DME, this may reduce the potential savings available (Hoerger, 2009).

Additional estimates A review of the literature found no other published studies related to the potential savings achievable by Medicare besides those already discussed. However, one analysis by Farrell and colleagues (2008) found that DME spending in the United States is actually $19 billion less than expected, relative to wealth. Farrell and colleagues (2008) attribute this finding to the general lack of health insurance coverage in the United

States for DME and because of the slow growth rate of DME spending over 4 years (2003-2006).

Estimates comparison The estimates presented by Hoerger (2009) and Wynn (2009) are not comparable to the findings by Farrell and colleagues (2008) for a variety of reasons. First, Hoerger (2009) and Wynn (2009) were examining the potential savings attributable to changes in the reimbursement structure for the Medicare program, while Farrell and colleagues (2008) examined overall expected spending relative to the wealth of the entire United States. Thus, Farrell and colleagues were including data from all payers in the country, not just the Medicare program. As Hoerger and Wynn focused on Medicare spending for DME, there may be potential for additional savings in the private health insurance market for DME.

Prices of Medical Devices

The medical device market in the United States is characterized by differentiated products and strong influence by medical staff on the purchasing decisions for these products. In addition, the prices of such devices are often confidential, reducing the ability of hospitals to bargain effectively with the device manufacturer (Pauly and Burns, 2008).

This section presents an analysis by Jeffrey C. Lerner of the potential savings possible by negotiating lower medical device prices in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Prices for medical devices Lerner (2009) estimated that hospitals could have saved approximately $4.7 billion (2008 dollars) if they had negotiated to the average price paid for medical devices.

To calculate the estimate, the author evaluated data from 123 hospitals, which incorporated information on supplies purchased over a 4-month period, as well as data from 1,500 hospitals and health systems on the prices offered for 5 types of capital equipment over a 12-month period. Results from the 123 hospitals indicate that, for medical supplies, if hospitals were to negotiate to the average price paid for each device, hospitals could have saved approximately 3.1 percent ($4.7 billion in 2008) off their costs. For capital equipment purchases, wide variation in the prices offered to hospitals was seen; the average discount achieved across all technologies was 29.6 percent. Of note, smaller hospitals sometimes received lower price offers than large teaching hospitals.

Some limitations of the analysis include the fact that the price information was for supplies and not for all medical devices; this could bias the results depending on the variation in prices for devices not included in the data. In addition, the analysis focused on hospital spending; other

providers also purchase devices, and their potential savings could not be disambiguated for the analysis. Also, it may be that some buyers are unable to negotiate prices effectively. In this case, the estimated savings would not be plausible. Finally, the savings indicated represent simply a transfer of resources and do not represent a reduction in unnecessary use. This, however, could lead to restraining payment increases in some DRGs if Medicare feels less pressure to increase payment levels because the technology costs less (Lerner, 2009).

Additional estimates A review of the literature related to medical devices found no other studies estimating the potential savings from lower medical device prices. However, Pauly and Burns (2008) suggest that increased transparency of medical device prices, allowing for a range of prices to be made publicly available, should increase the ability of hospitals to work with physicians to negotiate with manufacturers. In turn, this increased bargaining power could result in lower prices for medical devices.

Estimates comparison A review of the literature related to medical device pricing found no other studies estimating either national or local cost savings from negotiating lower medical device purchase prices. As a result, a comparison of the cost estimates cannot be conducted for this section.

Session 5: Missed Prevention Opportunities

Almost 40 percent of deaths every year are attributable to modifiable behavioral risk factors, including tobacco, poor diet, physical inactivity, and alcohol consumption (Mokdad et al., 2004). Recently, preventive services have received increased attention from policy makers. In January 2000, the Department of Health and Human Services launched *Healthy People 2010*, with the aim of promoting health and encouraging disease prevention across the United States (National Center for Health Statistics, 2009). More recently, Michigan appointed a surgeon general to address health promotion and disease prevention, while Vermont integrated prevention into health reform, including community workshops on healthy lifestyles (Wilson, 2009). Although the health benefits of increased prevention seem clear, the possibility that it might also lower spending by preventing the occurrence of future disease is an enticing one. During the presidential campaign, it was claimed that "[g]uaranteeing access to preventive services will improve health and, in many cases, save money" (Cutler and DeLong, 2008).

In this section, two estimates of the potential impact of increasing the delivery of preventive services on healthcare costs in the United States are discussed. Thomas J. Flottemesch considered the role increased primary and secondary preventive services could play, while Michael P. Pignone performed a similar investigation for tertiary preventive services. Other

comparable studies—when they exist—are also presented, and the estimates from these studies are compared.

Treatment Costs from Missed Prevention Opportunities

Savings from increased primary and secondary prevention Flottemesch (2009) estimated the effect of increasing primary and secondary preventive clinical services on national healthcare expenditures. In particular, they modeled the impact of increasing the use rate of preventive services to 90 percent on 2006 national expenditures. The author found that increasing the target use rate to 90 percent for *all* recommended preventive services would have led to a decrease in net expenditures of $3.7 billion (0.2 percent of U.S. personal healthcare spending in 2006), with primary preventive services *alone* yielding an estimated net savings of $7.0 billion (0.4 percent of 2006 U.S. healthcare spending).

Flottemesch examined preventive services recommended for the general population by the U.S. Preventive Services Task Force and the Advisory Committee on Immunization Practices. Each service is classified as a primary (meant to prevent the occurrence of a medical condition) or secondary (meant to identify medical conditions in an asymptomatic state) or, in some cases, both. The data for the calculations were culled from literature reviews, and the estimates were generated using models developed in support of the work of the National Commission on Prevention Priorities, which are carefully designed so as to allow consistent comparison among and between clinical preventive services.

Table A-4 shows how the projected impact on medical expenditures varies by preventive service. For example, increasing the 2006 delivery level of tobacco screening from 28 percent to 90 percent would have decreased net expenditures by $5.6 billion, and increasing the delivery of discussing daily aspirin use from 33 percent to 90 percent would have decreased net expenditures by $3.3 billion. On the other hand, increasing delivery of cholesterol screening from 79 percent to 90 percent would have increased net expenditures by $1.5 billion. Therefore, Flottemesch's calculations suggested that lumping prevention into one large undifferentiated group may be counterproductive, and that investing in an evidence-based package of preventive services could produce net cost savings.

The authors noted a number of limitations to their study. First, measurement error is a serious concern given that the analyses drew from a wide variety of sources. Second, costs may have been omitted or counted twice. Furthermore, properly modeling the effect of multiple risk factors is a priori unclear and perhaps leads to overstatement or understatement of the effect on net expenditures. Importantly, costs needed to achieve increased use, such as outreach to patients and delivery system changes to improve

TABLE A-4 Projected Impact on Medical Expenditures by Preventive Service

Clinical Preventive Service	Target Population Size*	Current Delivery Rate (%)	Net Cost Impact of a 90% Delivery Rate ($ billions)
Tetanus-diphtheria booster	217,319,378	50	$0.3
Folic acid chemoprophylaxis	48,446,619	25	$0.2
Chlamydia screening	9,703,067	30	$0.034
Pneumococcal immunization	2,248,747	54	($0.054)
Osteoporosis screening	37,260,352	50	$1.1
Influenza immunization	89,327,640	37	$0.74
Obesity screening	225,662,922	20	($0.48)
Cholesterol screening	133,975,491	79	$1.5
Alcohol screening	225,662,922	25	($1.7)
Tobacco screening	225,662,922	28	($5.6)
Hypertension screening	225,662,922	87	$0.23
Childhood immunizations	20,417,636	> 90	—
Discuss daily aspirin use	138,172,243	33	($3.3)
Total for primary prevention			($1.5)
Depression screening	11,283,146	25	$0.31
Hearing screening	37,260,352	50	$0.34
Breast cancer screening	71,235,621	67	$1.0
Total for secondary prevention			$1.6
Vision screening—children	4,021,602	75	$0.008
Vision screening—adults	37,260,352	50	$0.3
Cervical cancer screening	115,885,477	80	$0.47
Colorectal cancer screening	225,662,922	48	$1.4
Total for cross-classified services			$2.2

clinicians' ability to offer these services, were not included in this analysis. Finally, since indirect and transitional expenditures—such as productivity gains and losses—are excluded from the analysis, it is possible that costs and savings are understated across the board. The author concluded that it was most prudent to interpret their findings as, at best, net expenditure neutral.

Savings from increased tertiary prevention In a complementary analysis, Pignone (2009) attempted to estimate the effect of increasing the use of tertiary prevention. This type of prevention focuses on patients with established health conditions, particularly chronic conditions, with the goals of preventing additional morbidity, improving quality of life, and reducing disability. The author estimated that annual savings of $45 billion could be achieved through enhanced tertiary prevention.

Pignone examined examples of effective interventions in areas such as disease management, discharge coaching aimed at reducing rehospitalization, and palliative care. With respect to discharge coaching, for instance, Coleman and colleagues (2006) examined one such program and found that mean costs in the noncoached group were $2,546; costs were $2,058 for the coached group, a 19 percent reduction. Based on his survey, Pignone suggested that currently available interventions could, conservatively speaking, produce 10 percent spending reductions on average. If 30 percent of the $1.5 trillion currently spent on patients with chronic conditions could be affected by enhanced tertiary prevention, this 10 percent change on the spending base would yield an estimate of $45 billion in savings.

Three main limitations to this savings estimate were noted. First, because the proportion of real-world spending amenable to tertiary prevention is difficult to estimate, this estimate is far from certain. Second, external validity may not hold: the effectiveness of a successful intervention may not be replicable elsewhere, especially when that intervention is implemented on a wide scale. Consider that the original programs in which the interventions were implemented often have highly experienced and specially trained staff with high levels of enthusiasm. Limitations in skills or training and lower degrees of enthusiasm may produce more modest results. Current administrative arrangements may also preclude the establishment and maintenance of multidisciplinary, patient-centered teams. Finally, it is not clear that the proper incentives are in place for successful tertiary preventive measures to be widely implemented. In the current fee-for-service payment system, many payers have no means of compensating providers for more efficient, nontraditional means of service delivery.

Additional estimates The CBO reported that "although different types of preventive care have different effects on spending, the evidence suggests that for most preventive services, expanded utilization leads to higher, not lower, medical spending overall" at the federal level (Elmendorf, 2009). Russell (2009) reviewed nearly 600 cost-effectiveness studies from 2000 to 2005 and found that less than 20 percent of the preventive services were found to be cost saving. Russell also noted that studies over the past 4 decades have "shown that prevention usually adds to medical spending" (p. 45). Heavily cited reviews published in previous years, such as Coffield and colleagues (2001) and Stone and colleagues (2000), have also presented findings along similar lines. Other reports from outside the peer-reviewed literature have examined particular interventions and come to qualitatively different conclusions. The Commonwealth Fund (2009) concluded that substantial savings could be achieved from reducing the use of tobacco (a net cumulative reduction in national health expenditures of $255 billion over 11 years) and the incidence of obesity ($406 billion savings over the same time period). Berenson and colleagues (2009b) analyzed the cost-saving potential of in-

terventions aimed at preventing diabetes among those at highest risk. Not only could such a program decrease the incidence of diabetes by half, the authors estimated net savings of 0.6 percent of personal healthcare expenditures over 10 years. The total 10-year savings would be $191 billion, of which 75 percent ($142.9 billion) would constitute savings to Medicare and Medicaid. PriceWaterhouseCoopers' (2009) Health Research Institute estimated annual excess costs attributable to smoking and conditions related to obesity at $567 billion to $161 billion and $200 billion, respectively; the costs of poorly controlled diabetes were $22 billion, while nonadherence cost another $100 billion.

As of this writing, the publication that is perhaps closest to Pignone's analysis (Pignone, 2009) is a Milken Institute report published in 2007 (DeVol et al., 2007). The authors estimated the impact increased prevention and early intervention for seven common chronic diseases—cancer, diabetes, hypertension, stroke, heart disease, pulmonary conditions, and mental disorders—could have on medical expenditures on the national level. Assuming "reasonable improvements in health-related behavior and treatment," they found that "the cumulative avoidable treatment costs from now to 2023 would total a whopping $1.6 trillion" and the single-year savings in 2023 would be $217 billion in their most optimistic modeling scenario. Underuse of appropriate medications for chronic conditions has been cited as a large factor contributing to waste in disease management and tertiary prevention, with the underuse of generic antihypertensives and controller medications in pediatric asthma estimated to cost over $5.5 billion annually (Delaune and Everett, 2008). However, several reviews of the disease management literature have found mixed evidence and have been cautious in projecting cost savings (Delaune and Everett, 2008; Goetzel et al., 2005).

Estimates comparisons The result in Flottemesch (2009) is generally consistent with the findings of the peer-reviewed literature. Both Flottemesch (2009) and the peer-reviewed literature provide much lower estimates than those presented in the nonpeer-reviewed reports mentioned above.

Pignone (2009) and DeVol and colleagues (2007) are not directly comparable, primarily because the former estimated a single year's savings while the latter provided estimates projected more than a decade into the future. The estimate from PriceWaterhouseCoopers' Health Research Institute (2009) is also not directly comparable given the difference in focus between the report and IOM conference paper. It is worth noting that surveys of studies with less comprehensive estimates come to more guarded conclusions than those of Pignone (2009), DeVol and colleagues (2007), and PriceWaterhouseCoopers' Health Research Institute (2009). The CBO (2004a) surveyed peer-reviewed evaluations of disease management programs for (primarily) diabetes, coronary artery disease, and congestive heart

failure, and found that there was not enough evidence to support the claim that these programs generally reduce federal spending. Another review by researchers at RAND (Mattke et al., 2007) and at the New England Healthcare Institute (Delaune and Everett, 2008) considered a broader range of diseases and also found that the evidence could not conclusively determine if these programs reduced costs. On the other hand, Kim R. Pittenger presented results in the July workshop that supports the estimate of Pignone (2009). Although these data were nonexperimental and the generalizability of the estimate may be limited, the finding is indeed provocative.

Ultimately, Steven H. Woolf argued at the May workshop that asking "how much can we save" is the wrong question. Rather, the focus should be shifted from cost savings to value, as lack of savings does not mean lack of cost-effectiveness. He asserted that "the first priority in bending the curve to slow growth in spending is less about searching for the handful of services that produce net savings and more about shifting spending from low-value to high-value services" (Woolf, 2009).

STRATEGIES THAT WORK

Building on the discussions in the first workshop, the July workshop explored methods of decreasing inefficiency and waste and their likely net yield, including:

- Knowledge enhancement-based strategies;
- Care culture and system redesign-based strategies;
- Transparency of cost and performance;
- Payment- and payer-based strategies;
- Community-based and transitional care strategies; and
- Entrepreneurial strategies and potential changes in the state of play.

Session 1: Knowledge Enhancement-Based Strategies

The ability to transform the delivery of care at the level of patient-provider interactions will certainly depend on the ability to generate and apply knowledge at the point of care. Amid the dialogue of reform, the American Recovery and Reinvestment Act of 2009 allocated $1.1 billion to comparative effectiveness research (CER), a key tool in optimizing efficient use of healthcare resources. Use of evidence-based protocols has been employed to improve quality and efficiency in the delivery of patient care. Significant attention has also focused on the ability of health information technology to provide clinical decision support and facilitate care coordination.

The presentations in this session focused on strategies to enhance the knowledge base, including:

- Comparative effectiveness research;
- Evidence-based clinical protocols; and
- Electronic health records with decision support.

Comparative Effectiveness Research

Health care provided in the United States is not always based on evidence supporting the effectiveness of a particular intervention. Complicating this, in cases where more than one treatment option exists, there may not be comparative evidence showing the relative effectiveness of each treatment (Deloitte & Touche LLP, 2009). As a result, the implementation of care models that incorporate evidence about the effectiveness of specific interventions could help lower costs and improve quality in the healthcare system.

This section presents a discussion by Carolyn M. Clancy (2009) that examined the current state of comparative effectiveness research in the United States. Cost estimates related to the use of comparative effectiveness research from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The comparative effectiveness research agenda Clancy discussed AHRQ's agenda and efforts to undertake research on comparative effectiveness. Comparative effectiveness analyses should be conducted and organized in a manner that provides those who are making decisions about health care access to the most recent evidence-based information related to the options for treatment (Clancy, 2009).

Clancy also discussed the latest funding provided by Congress for comparative effectiveness research, via the American Recovery and Reinvestment Act (ARRA) of 2009. The Act provided $1.1 billion for research, which is split among AHRQ, the National Institutes of Health (via AHRQ), and the Office of the Secretary for Health and Human Services. The ARRA legislation also required the IOM to develop priorities for CER funding. In addition, funding priorities will consider the definition of comparative effectiveness research offered by a newly established Federal Coordinating Council for CER, which incorporates comparisons of interventions and decision making that is tied to the individual needs of patients (Clancy, 2009).

Finally, Clancy addressed some issues to consider in the area of comparative effectiveness research. First, comparative effectiveness, while a useful tool, is not sufficient by itself to change the delivery of care. Results

from such analyses do not tell doctors how to practice medicine, do not make health decisions, and are not related to decisions as to whether to pay for care. Rather, CER is primarily useful in that it presents evidence in a manner that enables decision makers to make the best possible decisions given the evidence.

Additional estimates A review of the literature related to comparative effectiveness research returned no peer-reviewed papers that estimated the total system savings associated with comparative effectiveness. However, several other reports were found that addressed the potential savings.

One estimate assumed that a Center for Comparative Effectiveness would be created that would fund research on CER and make copayment and pricing recommendations based on this research (The Commonwealth Fund, 2009). If these recommendations were adopted by public and private payers into benefits design and payment and pricing policies, the authors estimated that national savings could be $480 billion between 2010 and 2019. Berenson and colleagues (2009b) described the potential uses for comparative effectiveness research, but they declined to provide an estimate because of the uncertainty associated with the methods by which the research would be applied and whether payers would in fact be able to limit coverage of technologies that were shown to be less effective. The CBO cited uncertainty on the impact of CER on expenditures given the difficulties in predicting adoption and use; however, they detailed the potential of CER to reduce healthcare costs over the long term—possibly by substantial amounts if CER were rigorously performed and if the results were ultimately tied to changes in financial incentives for providers and consumers (CBO, 2007).

Estimates comparison Because only one paper presented an estimate of the potential savings attributable to comparative effectiveness research, a comparison cannot be conducted. However, savings from comparative effectiveness research will depend on the ability of payers and government to change other aspects of the current healthcare system to realign incentives to encourage the use of more effective treatments.

Evidence-Based Clinical Protocols

As discussed in the section on CER, healthcare decisions often do not take into account the evidence associated with the effectiveness of a particular treatment, and comparisons of the effectiveness of multiple treatment options are often not available (Deloitte & Touche LLP, 2009). Over the past several years there has been a growing call for the development of processes and procedures by which evidence can be incorporated in care delivery. Evidence-based health care is characterized by a focus on the evidence

on the effectiveness of a particular treatment, as opposed to treatment based on clinical observation and experience (EBM Working Group, 1992).

This section presents the results from an analysis by Lucy A. Savitz that examines the potential savings associated with the implementation of a targeted evidence-based care model in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Cost savings from evidence-based care models An analysis presented by Savitz estimated $2 billion in annual savings from a targeted evidence-based clinical protocol designed to improve quality of care and reduce unnecessary admissions for febrile infants. This estimate was based on extrapolation from savings estimated from implementation of an evidence-based care process model at a large healthcare system in Utah.

Evidence-based care models provide clinicians with guidance on care management by presenting them with state-of-the-art knowledge. These models provide information based on accessible references and guidelines and can often improve on the clarity of prior guidelines, as well as providing timely support for decisions related to a patient's condition. Evidence-based care models at the Utah system were designed to target cost drivers, including length of stay, readmissions, and ED visits. To apply these models across the United States, however, care coordination across currently uncoordinated and nonintegrated systems is needed, and there is some concern as to the degree to which savings realized in the Intermountain Healthcare delivery system could be realized and sustained in other settings.

Savitz presented some caveats associated with adoption of evidence-based health care. First, facilitating diffusion of these model requires outside intervention (Dopson and Fitzgerald, 2005), and thus concrete steps must be taken in order to encourage adoption. Second, savings achievable by other clinics and health systems may vary owing to differences in the costs of adoption in each system. Finally, the sustainability of cost savings after initial implementation of the model remains unclear. However, it does appear that, by focusing efforts, improvements will occur (Wachter and Pronovost, 2006).

Additional estimates A review of the literature resulted in a number of articles that discussed the savings realized from implementation of evidence-based care. A number of savings estimates from implementation of specific evidence-based models have been completed. First, PriceWaterhouseCoopers (2009) has estimated that $1 billion in wasteful healthcare spending is caused by the overprescribing of antibiotics. Establishing clinical protocols designed to reduce such overprescribing could yield some savings. In addition, Stuart and colleagues (1997) estimated over $500,000 per year in health system savings from an evidence-based model designed to manage

patients with symptoms of acute dysuria. The savings were primarily attributable to reduced visits, lab tests, and prescriptions (Stuart et al., 1997). Another estimate by Wagner and colleagues (2001) found that an evidence-based care model applied to diabetes patients could save $400 to $4,000 per patient over a 3-year time period. Finally, results from the application of new clinical guidelines for the treatment of high blood pressure in elderly patients could result in $20.5 million in savings for the Medicaid program (Fischer and Avorn, 2004).

UnitedHealth Group (2009a) estimated the potential savings to the Medicare program from implementing changes that included the application of evidence-based clinical guidelines. These changes, referred to as an "integrated medical management program," also included annual care assessments, changes in the benefit design and reimbursements, and assistance in patient decision making. UnitedHealth Group compared hospital admissions from their Medicare Advantage plans to those of fee-for-service Medicare, and estimated potential savings from such a program to be $102 billion over 10 years (2010-2019). Additionally, UnitedHealth Group modeled the application of evidence-based standards to reimbursement policies, including radiology benefit management and prospective claims review, estimating an additional $75 billion in potential federal savings over the next decade. Using evidence-based clinical guidelines, Mecklenburg and Kaplan (2009) estimated a potential $6.5 billion in annual savings from reducing unnecessary MRI testing for back pain and migraines.

Estimates comparison Although the cost estimates are not directly comparable because they address different clinical problems and protocols, the evidence suggests that evidence-based care protocols have the potential to improve quality and provide cost savings. However, while Savitz's national estimate is derived from one specific care model for febrile infants and cannot be directly compared to the estimate of savings presented by UnitedHealth Group, they are likely complementary as they address separate clinical problems.

Of note, some policy options discussed by Savitz (2009) include requiring inclusion of evidence-based care models in research on comparative effectiveness; creation of a clearinghouse where systems can access previously created evidence-based care models; and elimination of flaws in reimbursement that lead to perverse incentives to increase care. The last of these is incorporated in the UnitedHealth Group (2009a) estimate of savings.

Electronic Health Records with Decision Support

Most medical records in the United States are still stored on paper in physician offices, making coordination of care with other healthcare providers, quality measurement, and reduction of medical errors extremely

difficult (Hillestad et al., 2005). With the ability to facilitate improved care coordination and reduction in medical errors, the adoption of electronic health records (EHRs) can result in savings to the healthcare system (Hillestad et al., 2005). In addition to the patient medical record, EHRs can allow providers to write prescriptions electronically (e-prescribing), request tests and treatments via computer (computerized physician order entry [CPOE]), and obtain decision support via computerized systems.

This section presents a discussion by Rainu Kaushal that examined the potential savings associated with the implementation of EHRs with decision support in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Savings from implementation of EHRs Kaushal (2009) discussed some cost saving estimates associated with implementation of various types of EHRs. A study by Walker and colleagues (2005) estimated that adoption of nationwide electronic information exchange and interoperability could save $77.8 billion annually. When CPOE is adopted in the inpatient scenario, savings estimates range from $1 million to $3 million annually per hospital after an initial investment (Massachusetts Technology Collaborative & New England Healthcare Institute, 2009). In addition, savings from adoption of EHRs in the ambulatory setting are estimated to be $86,400 per provider over 5 years (Wang et al., 2003). The CBO (1998) estimated savings from switching to generic drugs to be $8 billion to $10 billion per year, which could be facilitated by e-prescribing.

Key characteristics of EHRs include improvement of access to information, an increase in timely feedback, increased accuracy in coding and billing, and an overall change in healthcare delivery. Costs that can be reduced via EHRs include preventive care, chronic care, transitions (from one provider setting to another), and medications. In addition, Kaushal discussed the various efficiency effects of EHRs, including reduction of transcription costs, billing errors, and office visits, and reduction of redundant tests. An increase in quality has also been seen, including improved guideline adherence and improvement on performance. Kaushal (2009) indicated that the estimates of improvements in quality and cost savings depend on the specific type and definition of EHRs being studied.

Kaushal also discussed some caveats associated with implementation of EHRs. First and foremost, implementation is very difficult. It requires significant financial investment, adjustments in workflow design, and requires support staff for technical issues. Difficulties also arise when considering expanding EHRs nationwide and making them interoperable. Finally, evaluation of the value associated with EHRs is even more difficult than implementation. Not only is it expensive, but it requires extremely focused research efforts.

Additional estimates A review of both peer-reviewed literature and other reports yielded a significant number of papers that sought to estimate the costs and savings associated with implementation of EHRs. Hillestad and colleagues (2005) used the Healthcare Information and Management Systems Society survey and a literature review to estimate the rates and costs of adoption of EHRs in various provider settings. Based on their analyses, they estimated that EHRs could eventually save $81 billion annually. When combining efficiency savings with the savings associated with increased safety, the authors estimated net savings in hospital systems to be $371 billion over 15 years; in physician offices the savings could be $142 billion over the same period (Hillestad et al., 2005).

A similar analysis by Wang and colleagues (2003) used data from the authors' institution and literature reviews to estimate the costs and benefits associated with adoption of EHRs in physician offices, compared to the traditional paper method of keeping records. Results indicated that the net benefit over 5 years could be $86,400 per provider. These savings result mainly from reduced drug expenditures and better use of radiology tests, among other factors. One important limitation of this study is the fact that the effectiveness of EHRs in physician offices has not yet been firmly established, thus the results may be somewhat uncertain (Wang et al., 2003).

Girosi and colleagues (2005) estimated that savings from 80 percent implementation of EHRs in the United States could reach $80 billion; however, this study has been criticized by the CBO and others because of its sole focus on literature showing positive results from EHRs (Berenson et al., 2009). Of note, this estimate did not take into account the effects of current payment systems on EHRs, which could reduce the effectiveness of EHRs (Berenson et al., 2009). The Commonwealth Fund released a study that estimated investment in health information technology (IT) could result in savings of $261 billion over 10 years (The Commonwealth Fund, 2009). Expanding on this estimate, Russo (2009) estimated that the spillover effects from adoption of EHRs could lead to savings of $800 billion, owing to coordinated care and disease management savings. Berenson and colleagues (2009b) estimated that net 10-year savings from adoption of EHRs could be $97 billion. Finally, PriceWaterhouseCoopers (2009) estimated that ineffective use of information technology has resulted in $81 billion to $88 billion in waste. However, the methods by which this estimate was derived are not clear and thus the validity of the estimate cannot be assessed.

Other studies have focused more specifically on e-prescribing and CPOE. PriceWaterhouseCoopers (2009) found that the use of paper prescriptions has resulted in $4 billion in wasteful spending in the healthcare system. However, the methods by which this estimate was derived are not clear and thus the validity of the estimate cannot be assessed. Chaudhry and colleagues (2006) conducted a systematic literature review, finding that 8 of

10 studies examining the effects of EHRs on healthcare use found decreased rates of use that primarily resulted from the use of CPOE. Fischer and colleagues (2008) examined prescribing behavior changes and savings resulting from the use of e-prescribing, using administrative data in a pre- and poststudy with controls. Results indicated that e-prescribing led to a 3.3 percent increase in prescribing for tier 1 (less expensive) medication. Based on the average cost of prescriptions for insurers, the authors estimated that e-prescribing could lead to savings of as much as $4 billion per 100,000 patients each year (for full adoption) (Fischer et al., 2008).

Finally, Hillestad and colleagues (2005) used results from other literature to estimate the potential reduction in adverse drug events (ADEs) from using CPOE. Results indicated that full use of CPOE could lead to the elimination of 200,000 adverse drug events in the hospital setting nationwide, leading to about $1 billion in savings per year. In the outpatient setting, an estimated 2 million ADEs could be avoided, leading to savings of $3.5 billion per year (Hillestad et al., 2005).

In its analysis of these studies, the CBO concluded that, in certain circumstances, health IT has reduced costs and improved outcomes. However, in general, health IT appeared to be necessary but not sufficient on its own to generate cost savings (CBO, 2008).

Estimates comparison Significant variation appears to exist in the estimates of the savings associated with the adoption of EHRs. This is likely the result of a number of factors, including the time horizon presented, the type of technology being examined, and the extent to which the authors assume the technology will be adopted. In addition, it is not always clear whether the savings are net of costs. For savings over longer time horizons (10 to 15 years), estimates appear to range between $77 billion and $800 billion, though there is some question as to the savings from other effects on the delivery system that are included in each analysis.

It is important to note that a number of papers have called the estimated savings from EHRs into question. Others have questioned the assumptions behind the savings estimates (Himmelstein and Woolhandler, 2005) and have suggested that the limitations of EHRs in ambulatory care are not fully addressed in the cost estimates (Sidorov, 2006). In addition, the CBO has suggested that while savings are possible in EHRs, the majority of estimates overstate the potential for EHRs to result in such savings (CBO, 2008).

Session 2: Care Culture and System Redesign-Based Strategies

Strategies to lower healthcare costs and improve outcomes depend not only on knowledge enhancement, but also on changes in the delivery system

infrastructure and care culture. Such changes as care site integration and medical liability reform will likely have both individual effects as well as synergistic effects with the strategies discussed in other sessions.

The presenters in this session discussed care culture and system redesign-based strategies, including:

- Caregiver profile, efficiency, and team care;
- Care site efficiency and productivity initiatives and incentives;
- Care site integration initiatives;
- Antitrust interventions;
- Promoting information technology interoperability and connectivity;
- Service capacity restrictions; and
- Medical liability reform.

Caregiver Profile, Efficiency, and Team Care

Researchers such as Smedley and Stith (2003) have shown that socioeconomic and racial health disparities are persistent. There is also a mismatch between physician training and supply and patients needing chronic disease management. Social factors such as the availability of transportation have also operated as barriers to obtaining care (Arcury et al., 2005; Baker et al., 2008).

To address these problems, it might be informative to draw lessons from efforts to decentralize the care giving process. Early in the 1900s, the large fixed costs of acquiring state-of-the-art medical equipment and a limited supply of qualified labor (i.e., physicians) contributed to the rise of hospitals as the sole source of solutions to complex medical problems. However, advances in education and technology have led to increased provision of medical care outside the hospital. Use of mid-level practitioners and the development of retail clinics staffed by nurse practitioners provide salient examples. Community health workers, important contributors in the healthcare systems of South America (Hwang, 2009), may be another resource for care delivery (AHRQ, 2009). The appearance of these lower-cost providers suggests that they might play a role in reducing the growth in healthcare costs (Hwang, 2009).

In this section, we describe the presentations of Michelle J. Lyn and Jason Hwang on potential savings from new models of care. A discussion of other estimates is also included.

Potential savings from improved team care Lyn and colleagues (2009) made the case for developing new models of care through community engagement and provided a few suggestive examples of how this might be done. They described Just for Us (JFU), an in-home care program for

the low-income frail elderly and disabled in Durham, North Carolina, as one example of this approach. JHU is a collaborative effort between Duke University, local government, and one of the area's federally qualified health centers. This effort deploys interdisciplinary teams to provide care to patients in their homes. Yaggy and colleagues (2006) analyzed expenditures for Medicaid beneficiaries enrolled in JFU and reported that ambulance costs decreased by 49 percent, ED costs decreased by 41 percent, and inpatient costs decreased by 68 percent, while prescription costs increased 25 percent and home health costs increased 52 percent. Another ongoing study found improvement in hypertension control among enrollees over the course of 1 year. The authors looked to Community Care of North Carolina (CCNC) as another example of an interinstitutional collaboration deploying multidisciplinary teams. Estimated savings for 2006 were between $1.5 billion to $1.7 billion (Mercer, 2007). The authors concluded that the choice of appropriate performance measures was still an open question, and evaluation of these programs remains a difficult, complicated, and important issue to resolve.

Citing a recent report by AHRQ (2009), Hwang indicated that there is currently a paucity of evidence on the effect of community health workers on health and costs due to small sample sizes, an inability to perform randomized controlled trials, and the difficulty of identifying and accounting for confounders.

However, as a complementary strategy, the Commonwealth Fund (2009) estimated the potential savings that revising the Medicare fee schedule for primary care could have on U.S. healthcare spending. By changing relative value weights and applying differential updates such that primary care would be emphasized, as well as revising payments for overvalued services, the authors found that this package of policies would "reduce national health spending, relative to currently projected levels, by an estimated $71 billion through the year 2020."

Additional estimates A literature search found no comparable national estimates for use of community health workers, which is consistent with the lack of data suggested by the author and the findings of AHRQ (2009). However, in the July workshop, James G. Kaplan estimated potential national savings of $8.3 billion if half of outpatient visits for uncomplicated conditions could be handled capably by an ARNP or PA rather than by a physician (Mecklenburg and Kaplan, 2009). Similarly, a recent study concluded that expanded use of ARNPs and PAs in the delivery of primary care could save $4.2 billion to $8.4 billion over the next decade in Massachusetts (Eibner et al., 2009).

It may also be informative to consult other papers presented at this conference given that they present savings from similar efforts focusing on community-level interventions. For example, Levi (2009) reported $16 bil-

lion in potential savings from the expansion of community-based wellness programs, and Thygeson (2009) found potential savings in the range of $2 billion to $7.5 billion from increased use of retail clinics, which primarily employ mid-level practitioners.

Estimates comparison As no competing estimates were identified, a direct comparison cannot be made. However, the literature suggests that use of alternative caregivers has the potential to yield significant cost savings to the healthcare system.

Care Site Efficiency and Productivity Initiatives and Incentives

As noted previously in the discussion of Mecklenburg and Kaplan (2009), a significant amount of the cost of producing health care is attributable to the cost of labor. Deploying labor more efficiently could reduce healthcare costs by lowering the costs of production.

Kim R. Pittenger reported on the efficiency gains at VMMC that were brought about by the implementation of a new production model based on Toyota methods, and he estimated the potential savings if this new production method were adopted across the United States. His results are summarized below. Other estimates are also presented and compared.

Savings from increased care site efficiency Pittenger (2009) described the results of VMMC's move in 2002 to a production system based on the Toyota Production System. Under the Virginia Mason Production System (VMPS) work is done in small batches ("flow production") in order to decrease waits, delays, errors, and higher costs; mistake-proof devices and practices are used to reduce errors at all levels; and medical care is explicitly standardized to improve performance. Working from data collected by VMMC, Pittenger estimated $58 billion in savings could be achieved with widespread implementation of the VMPS.

Savings opportunities were classified into three main categories: operational, clinical, and patient safety. Examples of operational savings at VMMC included a decrease in liability and malpractice premiums by more than 35 percent over 2 years, and a greater than 10 percent reduction in cost per RVU for primary care owing to the implementation of flow production in result reporting, incoming phone calls, and refills. Assuming a 10 percent reduction in cost per RVU for the 302 million preventive care and 351 million chronic condition visits nationally (CDC, 2007) and a 30 percent savings from the current $10.7 billion spent on liability premiums (A.M. Best, 2009), widespread implementation of the VMPS could result in $7.5 billion in annual savings nationwide.

In the clinical category, the author restricted attention to potential savings from standardization in diabetes care. An outpatient initiative between

Boeing and VMMC showed a 35 percent cost reduction. Assuming a 30 percent reduction in the $116 billion spent in 2007 (American Diabetes Association, 2009) for diabetes treatment, VMPS-related savings could be $40.6 billion. Notably, the author endorsed the similar chronic care savings estimate provided by Pignone during the May workshop. With respect to patient safety, VMMC has seen significant declines in the rate of ventilator-associated pneumonias, surgical-site infections, and central-line infections. Assuming national rates approach VMMC-observed rates with adoption of the VMPS, total savings from increased patient safety could be $4.1 billion. Additional savings from improved care processes for MRI imaging related to lower back pain and headaches were also calculated to be in the amount of $1.3 billion.

Additional estimates As in the discussion of Milstein (2009) above, our literature review found several savings estimates directly related to efficiency initiatives. While the primary literature examining the Toyota model, Six Sigma, and lean paradigms in health care have focused on improvement in outcomes, it has been estimated that $19.4 billion in annual savings could be realized from application of lean production systems to all U.S. hospitals by eliminating nonvalue-added activities (Hafer, 2009). Please refer to the discussion of Milstein (Milstein, 2009) for further details.

Estimates comparison Although these estimates differ by a factor of three, several differences exist between the data calculations, including type of reengineering method—the Virginia Mason Production System (Pittenger, 2009) compared to lean production (Hafer, 2009), and the scope of services—inpatient and outpatient compared to just the former, respectively. Additionally, the estimates offered by Pittenger were extrapolated from a savings seen in a single medical center where the VMPS was implemented in 2002 while the extrapolations of Hafer were based on annualized average hospital savings across 75 institutions at various stages of implementation.

Case Site Integration Initiatives

As noted in previous sections, improved care coordination could reduce medical expenditures. In this section, a report from Timothy G. Ferris (2009) about a care coordination project is discussed. The findings in this paper are compared to other existing estimates as well.

Potential savings from case site integration initiatives Ferris (2009) described a 3-year care coordination demonstration project for the Centers for Medicare & Medicaid Services (CMS) instituted in the Boston area for Medicare beneficiaries with high illness burdens. If similar preliminary

estimates of savings could be realized nationally, he estimated that between $0.6 billion and $1.5 billion could be saved for Medicare over a 2-year period.

While this project is currently ongoing and data analyses are incomplete, Ferris reported that, relative to the matched control group, patients in the intervention group had lower costs, fewer admissions, lower mortality, and greater use of hospice. If the program is able to achieve the 5 percent cost savings target set by CMS and the effect of this intervention is externally valid over the entire population, a 1 to 2 percent savings could be achieved. The core of the care coordination program was what he deemed "mass customization." For example, when any individual in the intervention group registered in a local ED, his or her primary care provider and case manager would receive pages notifying them of the ED visit. The provider and manager would then proceed to the emergency room and help ensure the patient received appropriate care. Hence, patients who would otherwise have been admitted to inpatient care unnecessarily would instead be taken care of in, and released from, the ED because of the primary care provider and case manager's detailed knowledge of the medical and social histories of the patients.

To provide national savings estimates, the authors used a model based on 1.6 percent target population savings and 45 million Medicare beneficiaries with an average annual cost of $7,000. Estimating the size of the Medicare population receiving care within an integrated delivery system as between 40 and 60 percent and the proportion of those integrated delivery systems that have the necessary information technology infrastructure as being between 30 and 50 percent, the authors calculated savings of $0.6 billion and $1.5 billion for Medicare over a 2-year period from implementation of this care delivery model targeting the highest-risk patients.

Ferris noted that the program relied crucially on information technology for care coordination. First, the use of EHRs allowed real-time communication of changes in patient status or care plans. Second, administrative systems allowed physicians and care managers to track patients, manage workflow, and—as described above—know when an enrolled patient arrived at an ED. Third, analysis of the data from care management and administrative systems allowed the program to track trends in use.

Additional estimates There are few studies investigating the potential cost savings of improved case site integration. UnitedHealth Group (2009a) estimated that 10-year savings from improved institutional preadmission policies, transitional care management from inpatient to outpatient settings, and advanced illness programs including palliative care services, as well as disease and integrated medical management, would yield savings of approximately $367 billion to the federal government. The Commonwealth

Fund (2009) estimated patient-centered medical homes could save $175 billion over 10 years. Berenson and colleagues (2009) estimated that chronic care management and care coordination for dually eligible Medicare and Medicaid beneficiaries could result in 10-year (2010-2019) savings of $201 billion, assuming that care coordination could yield 5 percent savings per year. The authors suggested that the estimate might be conservative as it only applies to a very small percentage of the population at risk.

Given the high costs of readmissions (MedPAC, 2007), care coordination has been discussed as a method of reducing avoidable readmissions. Berenson and colleagues (2009) suggested that reducing payment for potentially preventable readmissions within 15 days of discharge to 60 percent of the usual payment would provide incentives to reduce preventable readmissions and potentially save Medicare and Medicaid $15 billion over the next decade. A multifaceted program to improve the hospital discharge process through focused patient education and enhanced attention to communication between inpatient and outpatient providers has been demonstrated to lower rates of postdischarge readmissions and ED visits by 30 percent and save nearly $400 per patient (Jack et al., 2009).

In comparison, estimates on the use of medical homes have been less optimistic about near-term savings. Although Berenson and colleagues (2009) believed that a commitment to increased reliance on primary care and medical homes would be a wise investment for the long term, they did not believe it would produce cost savings within the next decade. The CBO (2008) reported that more evidence on the effect of medical homes is needed before further extrapolations to the Medicare program can be completed. Improving care could reduce spending among some patients by eliminating duplicated services, increasing appropriate use of specialists, and averting serious complications from chronic illnesses through better medical management, but it could also result in increases in spending for chronically ill patients who are not receiving all recommended care.

Estimates comparison The potential annual savings estimate by Ferris (2009) is in the lower range of the estimates presented above on care coordination. However, the estimates are difficult to compare as Ferris (2009) used savings from preliminary findings in a demonstration project and focused on a target Medicare population with a high illness burden. In comparison, UnitedHealth Group extrapolated nationally from savings realized among their current beneficiaries from their current disease management programs and initiatives. It is worth noting that, regardless of the approach taken, the authors all endorse the concept of care coordination as a potential method of improving health and care coordination. For additional discussion of the potential for improved care coordination to reduce costs, please refer to the prior section on Owens (2009).

Antitrust Interventions

In a previous session in May, Capps (2009) described the relationship between hospital consolidation and prices in the market for health care. In the session described below, Roger Feldman discussed the role of competition policy in restraining these prices.

Potential savings from antitrust interventions Feldman (2009) provided an overview of the role of antitrust regulation in ensuring efficiency in the provision of health care and outlined suggestions for its improvement. He first reminded us of the legal foundations of antitrust regulation in the United States: the Sherman Act of 1890 and the Clayton Act of 1914. Of relevance to current regulators is the Hart-Scott-Rodino Act of 1976, which requires that parties of mergers meeting certain criteria both notify the Federal Trade Commission (FTC) and the Department of Justice (DOJ) in advance of their merger and delay completion of the merger until one of these agencies has evaluated the merger's effect on competition. Although this legislation may significantly affect companies in other industries, many mergers in health care are of too low a dollar value (i.e., below $130.3 million in 2009 dollars) to trigger the premerger review.

Feldman presented a detailed discussion of recent developments in horizontal (i.e., two competing hospitals) merger policy. In sum, horizontal merger activity proceeded unchecked in the 1990s. The decrease in competition resulted in higher prices, especially for minorities and lower-income communities (Town et al., 2007). The FTC and DOJ did attempt to challenge these mergers, but for various reasons the federal courts decided to reject their claims. More recently, in 2004, the FTC successfully challenged two hospital mergers by using its internal administrative processes instead of appealing to the courts. Feldman interpreted this development as evidence for the view that the trend of unchecked merger activity may be shifting. He also addressed vertical (i.e., a hospital and a physician group) mergers. As the economics and law of vertical mergers are not settled, the FTC and DOJ have to exercise much more discretion in bringing antitrust action, and it is still unclear whether their current policy is successful at protecting quality and pricing of health services.

Finally, Feldman proposed a few measures that might improve regulatory policy in the United States. First, he suggested lowering the Hart-Scott-Rodino financial trigger so that more healthcare mergers would trigger premerger reviews. Second, better coordination between federal and state antitrust agencies would perhaps foster more effective regulation. Third, the FTC and DOJ should start to challenge physician mergers, given the abundance of anecdotal evidence that these groups do exercise market power (Strunk et al., 2001). Fourth, the FTC and DOJ should be prepared to insist

on divestiture as a remedy. Fifth, the FTC and DOJ should no longer accept hospital community payments (e.g., promises to provide more charity care) as just compensation for the loss of competition given that these promises are very difficult to enforce.

Additional estimates As this presentation paper focused on the history of antitrust regulation and the lessons for future policy, the discussion of Capps' (2009) estimates that hospital consolidations have caused an increase of approximately $10 billion to $12 billion in annual national healthcare expenditures in Section II, Session 4 is highly relevant.

Estimates comparison As above, no comparison of estimates will be made. The discussion of Capps in Section II, Session 4 provides much relevant discussion. Furthermore, the view of the FTC is also of interest (FTC, 2008). The FTC describes its role in regulating practices that will either likely increase costs or limit competition. The FTC also focuses on spurring innovation through antitrust enforcement, particularly in the areas of healthcare provider clinical integration, healthcare mergers, and pharmacy benefit management services.

Promoting Information Technology Interoperability and Connectivity

The U.S. healthcare system's heavy reliance on a paper-based system has tremendous implications for cost and access. Though the cost of a single transaction is negligible, it becomes substantial over billions of transactions. In fact, it was estimated that 90 percent of the 30 billion transactions in the U.S. healthcare system were paper based (Menduno, 1999). Because information stored on paper may not be easily accessible across physicians or institutions, a paper-based system can cause physicians to perform redundant tests or lead to unnecessary hospitalizations. For example, suppose a test result from a prior examination would be sufficient to inform a physician in a future clinical encounter. If that physician will not have access to the result because the file is in another hospital, he might need to recollect that data and order a redundant test.

In this section, the potential cost savings from improved information technology interoperability described by Ashish Jha are discussed.

Potential savings from improved information technology interoperability Jha (2009) examined the prospects for a simpler, more integrated way to exchange clinical and administrative data. Jha first summarized two of the most prominent papers in the literature. Richard Hillestad and colleagues (2005) presented the most comprehensive estimate of potential national effects of improved EHRs systems interoperability. These authors

found potential savings of approximately $81 billion through improvements to safety and efficiency. He also highlighted the work of Jan Walker and colleagues (2005). These authors found potential savings of $337 billion during a 10-year implementation period and annual savings of nearly $78 billion in each subsequent year (amounts measured in 2003 dollars). However, he noted that both studies were substantively vulnerable to methodological critiques. Hillestad and colleagues (2005) depended on what can perhaps be characterized as a best-case scenario. Their estimate is only plausible if pivotal delivery system changes actually occur; the authors also overestimated the then-current penetration of EHRs at the hospital level by at least a factor of two. Walker and colleagues (2005) relied heavily on expert consensus and likely underestimated administrative costs.

Additional estimates Hillestad and colleagues (2005) and Walker and colleagues (2005) are reviewed earlier in this working paper in Section III, Session 1 discussing the findings in Kaushal (2009). Please refer to that section for further details.

Estimates comparison As above, please refer to the discussion of Kaushal (2009) for further details.

Service Capacity Restrictions

Hospital competition combined with widespread health insurance coverage, physician preference for a high quantity and quality of care, and retrospective cost reimbursement can lead to an *increase* in the cost of care. Taken together, these forces can foster nonprice competition among hospitals such that they invest in facilities and services to compete for patients. This phenomenon is known as the "medical arms race."

In this section, comments by Frank A. Sloan on future policy options to combat this arms race are summarized. Other estimates are also presented and discussed.

Potential savings from service capacity restrictions Sloan (2009) provided an overview of policies aimed at combating the medical arms race. He described the National Health Planning and Resources Development Act of 1974 and the certificate of need (CON) requirement that attempted to curtail cost growth through regulating capital investment. He then described the roughly contemporaneous introduction of selective contracting and prospective payment, and discussed their joint role in perhaps preventing CON from achieving cost containment. He concluded his review with the 1983 repeal of the CON requirement.

The final section of his presentation considered the conditions under which CON-type regulation could constitute good policy. Supposing mar-

ket competition remains the mechanism by which we expect to contain costs, he suggested that expenditure regulation and capacity reduction would not be relevant cost-containment tools. Supposing the government effectively implements price controls, it is possible that expenditure regulation and capacity reduction could be of use in restraining cost growth. Sloan returned to the CON requirement and wondered what role it could play in future policy reforms. The empirical studies show (Salkever, 2000) that CON programs have not succeeded in cost containment, and it is not altogether clear what effect they have had on access to and quality of care. The first reason for this may be that "need" has not been well defined and has not given policy makers much guidance in their oversight. Second, CON programs do not have capital budgets, which allow them to be affected by pressure from stakeholders. Third, CON programs grant a de facto franchise to incumbents. Therefore, if CON-type programs are to be implemented in the presence of price controls, policy will need to address the shortcomings above. To this end, Sloan provided some straightforward solutions to these problems and suggested that capital expenditure regulation may still be a feasible option going forward.

Additional estimates As the author believes that the effectiveness of capacity restrictions depends on other future policy decisions on cost containment, no savings estimate was provided. Note that in addition to the review cited by the author, recent work such as Vivian Ho (2007) and Grabowski and colleagues (2003) further support the notion that CON programs have not succeeded in cost containment.

Estimates comparison As no savings estimate was provided, no comparisons could be undertaken.

Medical Liability Reform

Tort reform has long been a concern of practicing physicians in the United States. Evidence for this concern can be found in recent articles and editorials from the American Medical Association (American Medical Association, 2008; Sorrel, 2008). Tort reform has also recently surfaced as an important issue in the current debate over healthcare reform (Garber, 2009).

In this section, we present the analyses of Randall R. Bovbjerg and his discussion of the potential savings that might be achieved by medical liability reform. Other estimates are also presented and discussed.

Potential savings from medical liability reform Bovbjerg (2009) assessed the evidence on malpractice reform's role in reducing healthcare spending over the next 10 years. Drawing upon published work (Berenson et al.,

2009b), he found that conventional tort reform could be expected to reduce total spending by 0.9 percent per annum, saving almost $20 billion in 2010 and almost $260 billion over a full decade.

Bovbjerg pointed out that savings from malpractice reform could come from three sources. First, a policy change affecting malpractice payouts—such as a cap on the total award or on the nonmonetary component of the award—could lead to lower liability premiums. The CBO (2004a) summarized prior literature and estimated that a $250,000 cap on noneconomic damage awards would reduce these premiums by an average of 25 to 30 percent. This estimate implied savings of $7 billion to $9 billion (0.3 percent to 0.4 percent of national health spending) in 2007 had such a reform been implemented.

Second, savings could also come by reducing the incidence of defensive medicine. Estimates of potential savings in this arena vary. Most are between zero and 0.3 percent of spending (CBO, 2004a; Currie and MacLeod, 2008; Dubay et al., 1999; Sloan and Shadle, 2009; Sloan et al., 1997). The highest peer-reviewed estimate is 4 percent of total spending (Hellinger and Encinosa, 2006; Kessler and McClellan, 1996). Sloan (2009) stated that he considered potential savings equal to or higher than those from liability premiums a reasonable view. In particular, he suggested that savings could be perhaps 0.5 percent of total health spending.

Finally, Bovbjerg explained that savings could come through synergistic interaction with other reforms. For instance, the spread of evidence-based medicine could increase the effect of malpractice reform on spending. Conversely, tort reform could soften provider resistance to use oversight owing to reduced liability concerns. However, for purposes of his national savings estimate from tort reform alone, the author conservatively excluded such additional savings. The implication was that interactive savings need estimation apart from any single component of reform.

The author concluded with the suggestion that making tort reform part of a broad health reform package could have other positive effects. Patients as a class would benefit if changing tort law could help build coalitions to enact comprehensive health system reform, as suggested by Bill Bradley (2009). One benefit is that near-universal coverage would probably ensure that those who were permanently injured during medical care would not have to rely on a liability award.

Additional estimates The maximum savings estimate that could be supported by the quantitative literature would be $90 billion, assuming the Kessler and McClellan (1996) result holds. Even larger estimates of the national costs of defensive medicine exist outside the scientific peer-reviewed literature (for example, PriceWaterhouseCoopers, 2009), but frequently do not provide details on the methods of calculation and may not specify the quantitative impact of policy interventions.

Estimates comparison Additional review of the econometric evidence and the policy literature suggests that the estimate presented in Bovbjerg (2009) is reasonable. Higher estimates can be based on such findings as Kessler and McClellan (1996), but that is a minority finding. Moreover, Patricia Danzon (2000) noted in her extensive literature review some uncertainty about the validity of that result, mainly from confounding caused by the growth of managed care in California, which was not accounted for in the original paper. Subsequent work by the CBO (2004a) was unable to replicate the finding of Kessler and McClellan (1996), and a recent extension of the latter paper's methods that also included physician spending found no impact of direct reform. Hence, it would be difficult at present to justify substantially higher savings absent further developments. One such development would be interventions combining tort reform with other initiatives as discussed by Bovbjerg (2009) and others (Gabel, 2009).

Session 3: Transparency of Cost and Performance

Transparency has been valued as a tool for quality improvement. However, transparency has also been touted as a potential means of enhancing competition and lowering costs. The presentation in this session discussed the potential impact of transparency on costs and outcomes, including

- Transparency in prices;
- Transparency in comparative value of treatment options;
- Transparency in comparative value of providers;
- Transparency in comparative value of hospitals and integrated systems; and
- Transparency in comparative value of health plans.

Transparency in Prices

Economic theory suggests that the ability of consumers to compare products based on price leads to choice of higher-value providers, lower prices, and better quality (Ginsburg, 2007). In the healthcare market, consumers have often not had access to price information, or cared little about the price because of the presence of insurance coverage. However, there has been increased interest in the release of pricing and other information as part of an effort to lower costs and increase quality in health care.

This section summarizes a discussion by John Santa regarding the potential for increased price transparency in healthcare services in the United States.

The potential for price transparency Santa (2009) discussed the rationale behind increasing transparency in pricing of healthcare services. In the cur-

rent U.S. system, rising costs have resulted in increased cost sharing and increases in bankruptcy cases among consumers specifically attributable to high healthcare costs. These changes further suggest that consumers should have access to information on the comparative effects, prices, and costs of products and services. Santa pointed out, however, that the presence of third-party payers changes the dynamic of the purchase of healthcare services by influencing the setting of reimbursements (public programs) and establishing cost sharing (employers).

In addition to a system in which the purchasing decision is separated from the consumer and prices are not easily accessible, consumers must rely on physicians to make decisions on their care. Physicians, however, may not always make a decision that is consistent with guidelines, and may have financial relationships with companies that are in conflict with patient needs. Santa (2009) suggested comparative effectiveness research as a tool to provide meaningful comparisons of different healthcare alternatives. In addition, transparent provision of price, effectiveness, and adverse events, among others, should be a goal.

Additional estimates A search for literature related to increased transparency of healthcare prices in the United States returned no studies attempting to analyze the cost savings associated with publishing price data.

Estimates comparison A comparison of cost estimates cannot be conducted for this section as there are no estimates of the potential savings from such a policy change. However, a review by the Congressional Research Service (2007) suggested that there is potential for increased price transparency to improve outcomes and lower prices. This conclusion was based on a review of empirical evidence from other markets as to the effects of increased transparency. In general, sites on the Internet that provide comparison pricing appear to have lowered prices for products, and lifting restrictions on advertising for products such as eye care, which are by nature complicated products, has also led to lower prices. Online data provision by some states and insurers of hospital costs, on the other hand, have so far showed little pricing effects (Congressional Research Service, 2007).

Transparency in Comparative Value of Treatment Options

As an extension of CER, cost-effectiveness analyses can also provide important information as to the relative effectiveness of treatments while also taking cost into account. By providing such information to decision makers, including patients and payers, the United States can move toward a system where resources are allocated in an optimal manner (Gazelle, 2009).

This section presents a discussion by G. Scott Gazelle regarding the potential for using the results of cost-effectiveness analyses in the United States.

The potential for cost-effectiveness research Gazelle (2009) discussed the use of cost-effectiveness research as a means by which effectiveness and price information can be provided in a transparent manner. Neither comparative effectiveness research, from which cost information is excluded, nor price transparency as separate policies will enable optimal allocation of resources in the healthcare system. To reduce costs in a systematic manner while preserving health, services that are more cost-effective should receive more resources than those that are less cost-effective.

Gazelle discussed some challenges present in the movement toward use of cost-effectiveness analyses in influencing coverage and reimbursement policy. These challenges include an evidence base that is currently very small, varying quality in the analyses that have already been completed, and a limited pool of researchers who are currently able to conduct such analyses. Finally, prior attempts to apply coverage decisions based on cost-effectiveness that have not been successful may "bias against the feasibility and acceptability of such an approach" (Gazelle, 2009).

In choosing to use cost-effectiveness results, there are a number of different policy options available. The most aggressive approach would be to define a set threshold for the cost-effectiveness ratio, and approve or deny coverage based on services and products meeting or exceeding that threshold. A less aggressive approach would align incentives, such as copayments and tiering, to the relative cost-effectiveness of services. Another approach would establish standards for cost-effectiveness analyses, encourage (and fund) its development, and allow the market to determine how to use the results. Finally, another option would be to focus exclusively on the effectiveness of different treatments without consideration of cost.

Additional estimates A search of the literature related to cost-effectiveness yielded no studies that present cost estimates related to the use of cost-effectiveness research. The current policy debates appear to focus more on comparative effectiveness research (i.e., not incorporating cost), and as a result there are some estimates of savings due to comparative effectiveness, but not cost-effectiveness. The estimates related to comparative effectiveness research are presented in Session 2 of this section.

Estimates comparison As there are not any cost estimates related to the potential savings attributable to the use of cost-effectiveness research, a comparison cannot be completed at this time.

Transparency in Comparative Value of Providers

Quality and outcomes can vary significantly across providers within and between different healthcare markets. In many cases physicians that perform poorly relative to their peers are not aware that they achieve poorer outcomes (UnitedHealth Group, 2009a). As a result, providing report cards to physicians and to consumers can have two potential effects. First, payers and consumers can select physicians that have higher quality ratings; and second, physicians may be given an incentive to compete on quality (Werner and Asch, 2005).

This section summarizes a discussion by Paul B. Ginsburg regarding the release of comparative quality information about providers in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The potential for quality reporting Ginsburg (2009) discussed the opportunities for providing comparative quality information about physicians, as well as increasing transparency of price data for consumers. Two trends are currently converging, making the provision of quality and price information more plausible. These include an increasing belief in accountability and transparency and a growing consumerism movement in the healthcare market (Ginsburg, 2009).

There currently exists potential for increased quality in the healthcare system, which can also lead to increased efficiency, via encouraging consumers to make wiser choices of providers and pressuring providers who have lower ratings to improve. Unfortunately, there is currently a lack of consumer interest in information related to quality; this is likely because of a lack of awareness of the significant variations in quality across providers and the challenges in determining how best to make such information accessible and useful to consumers. However, there has been a large provider response to quality information, mostly related to professionalism (Ginsburg, 2009). Ginsburg (2009) suggested three steps for generating and providing effective quality information: (1) develop measures that take into account provider input, (2) audit the reported data, and (3) take into account the different audiences that will see the data when analyzing it.

A series of options for making pricing data meaningful may include changing pricing so that it is quoted on a per episode basis as opposed to an individual service basis. This will make prices more understandable to consumers. Also, customizing pricing data for the different insurance companies, recognizing the insurer as an important player in the healthcare system, will ensure consumers will know what prices are applicable to their own experience. Finally, creating a benefit structure that distinguishes provider choice as an important metric will ensure applicability of quality measures to pricing differences (Ginsburg, 2009).

Finally, Ginsburg discussed the role of governments in the provision of quality and pricing data. He recommended that governments should require the collection of quality data, convene stakeholders to encourage agreement on quality and pricing measures, and pool information on different providers. Governments should also encourage the adoption of IT systems (Ginsburg, 2009).

Additional estimates A review of the literature returned few cost estimates related to public reporting of provider quality data. One estimate by UnitedHealth Group (2009b) explored the potential savings associated with providing quality and efficiency measures for specialist physicians solely among physicians. Based on results from UnitedHealth Group's own data-sharing programs, an estimated $14.5 billion (2010-2019) could be saved from the sharing of such information in the Medicare program.

Estimates comparison A comparison of the cost estimates cannot be conducted, given that only one estimate was found in the literature. However, it is important to note that even though savings were estimated via one type of reporting initiative, it may be that quality reporting may lead to adverse results as well. These may include unintended incentives for providers to avoid treating sick patients so as to keep their quality score high; placing little emphasis on patient preferences and clinical judgment in favor of meeting the quality score; and having providers attempt to achieve only the benchmark rate for healthcare interventions (Werner and Asch, 2005).

Transparency in Comparative Value of Hospitals and Integrated Systems

As discussed above, physician quality reporting can create positive effects in the market. These effects include payers and consumers being able to select physicians that have higher quality ratings and physicians having incentives to compete on quality (Werner and Asch, 2005).

This section presents an analysis by Peter K. Lindenauer estimating the potential cost savings associated with the release of hospital quality data in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Potential savings from release of hospital quality data Lindenauer (2009) estimated that specific public reporting requirements on hospital readmissions, complications, and healthcare-associated infection rates could result in as much as $2.5 billion to $5 billion per year in savings. The savings estimate was extrapolated from the effectiveness of a New York State reporting system, combined with data from government sources on the costs and preventability of the complications listed above (MedPAC, 2009; Scott, 2009; Zhan and Miller, 2003). The savings estimate was based on the as-

sumption that transparency could result in 10 to 20 percent reductions in adverse events, including readmissions and complication rates, given that public reporting in New York resulted in a 14 percent reduction in mortality following bypass surgery. In addition, savings is assumed to accumulate to payers (Lindenauer, 2009).

Lindenauer discussed two possible pathways through which increased transparency on price and quality of hospitals could improve the value of health care. The first such pathway is the selection pathway, through which patients and other stakeholders use information about performance to make a choice about their care. The second pathway is the change pathway, through which performance data is used to stimulate improvement efforts at the hospital. However, transparency effects of quality information may not be significant, owing to the complexity of care and lack of ability to choose the hospital under a number of different circumstances, such as emergencies (Lindenauer, 2009). Price transparency effects are also uncertain. Although release of information could reduce price discrimination and price dispersion, there could be unintended consequences on average prices (Austin and Gravelle, 2007).

Some caveats to this analysis include the fact that the current evidence on the benefits of transparency is weak, and that reporting systems provide the catalyst for change but do not improve care directly and could result in double-counting of the savings (Lindenauer, 2009).

In the short term, achievement of the benefits of transparency involves broadening and strengthening current reporting requirements and ensuring future reporting initiatives make a concerted effort to reach out to patients and encourage their use of the data. Over the long term, measures should be created that represent greater value to patients, and the data collection requirements should be made more efficient for providers. In addition, hospital payment systems must be changed in order to implement further goals, including combination of quality and cost information and extending requirements beyond current data windows (Lindenauer, 2009).

Additional estimates A review of the literature related to estimates of savings from public reporting initiatives yielded few results. Most results were related to findings of changes in quality of care associated with reporting. One study by Dranove and colleagues (2003) explored the effect of report cards in New York and Pennsylvania. Using Medicare claims data and information on U.S. hospital characteristics, the authors compared outcomes for patients with acute myocardial infarction or elective coronary artery bypass grafts in hospitals both in states with reporting requirements and in states without requirements.

The authors found that report cards were associated with higher Medicare expenditures (although these were not statistically significant when compared to the control states), as well as higher rates of adverse outcomes

(Dranove et al., 2003). However, Dranove and colleagues (2003) cautioned that report cards should not be considered as generally harmful. Some limitations of the analysis included the fact that it only measured short-run outcomes, and thus longer-term effects were not represented.

Estimates comparison There is only one cost estimate for this section, and it appears that there is no consensus on the relative savings available as a result of implementing public reporting initiatives. Lindenauer (2009) estimated significant savings as a result of public reporting, while Dranove and colleagues (2003) showed an increase in Medicare expenditures as a result of reporting initiatives for one type of surgical intervention.

Transparency in the Comparative Value of Health Plans

As previously discussed, economic theory suggests that the ability of consumers to compare products based on price leads to choice of higher-value providers, lower prices, and better quality (Ginsburg, 2007). The same is likely true for health plans operating in the U.S. healthcare system: transparency of quality data should lead to selection of higher-quality plans.

This section presents a discussion by Margaret E. O'Kane regarding the advantages of releasing health plan quality information in the United States.

The potential for releasing health plan quality information O'Kane (2009) discussed the usefulness of quality and satisfaction measures in informing different stakeholders about the performance of the healthcare system. To date, transparency has not had much effect, if any, on insurance cost trends and plan performance. This is likely due to restrictions on the ability of plans to establish networks based on value of providers because of monopsony[1] providers and access requirements. Additionally, there is ambivalence about use management, resulting in plans having limited ability to deny coverage based on value measures. In addition, consumer concerns that increasing transparency will lead to trade-offs of cost for quality results in a lack of desire to pursue either course (O'Kane, 2009).

O'Kane asserted that the perfect market as defined in economics does not exist in health care. Market conditions that are essentially monopsonies exist alongside third-party payers that separate consumers from the true cost of care. In addition, the product provided is not the same across all areas and can be very difficult to define. Information related to the quality of the product is very limited and can be difficult to comprehend (O'Kane, 2009).

[1] Monopsony is defined as the market condition that exists when there is one buyer.

According to O'Kane, an agenda that promotes value in the healthcare system should incorporate the following. Health plans operating under public programs should be required to report quality data. Hospital payments should be adjusted to align with performance across all payers; these changes should incorporate payments that reward high performance and deny payment for events that should never occur. Payments to physicians should also be reformed in a manner that rewards coordination of care and allows for incentives to develop integrated systems. Finally, consumer incentives to reward patients who use value networks, medical homes, and encourage the use of high-value treatments, should be established (O'Kane, 2009).

Additional estimates A review of the literature resulted in no studies estimating the costs or savings associated with releasing quality information about health plans. However, some of the issues referenced in O'Kane's discussion are relevant to other sections, for example hospital payment changes and value-based insurance. Readers are referred to these other sections for a more complete discussion.

Estimates comparison As there are no specific cost estimates related to health plan quality information, a comparison cannot be completed at this point.

Session 4: Payment- and Payer-Based Strategies

Strategies targeting payment models and payers have also received significant attention as a means of lowering costs and incentivizing patient-centered care. Ranging from bundled payments to value-based insurance design, ongoing efforts to employ these strategies have occurred in both the private and public sector.

Presentations in this session discussed payment- and payer-based strategies, including:

- Value-based payments such as bundled and fee-for-episode payments;
- Managed competition;
- Value-based insurance design; and
- Administrative simplification.

Value-Based Payments: Bundled and Fee-for-Episode Payments

Fee-for-service payment systems encourage the overuse of services and do not provide incentives for care coordination or for care delivery effi-

ciency (Schoen et al., 2007). Alternate payment systems have been proposed to better align provider incentives, thereby improving health care and reducing overall costs. One potential value-based system is an episode-of-care payment system, which provides payment for all services provided during a single episode of care. This type of bundled payment system creates incentives for providers to use higher-value treatments, and enables stakeholders to see the full cost of treating a patient and to compare the provider costs (Miller, 2009). Although an episode of care payment model presents some advantages relative to other payment reforms, a disadvantage is that the system does not provide incentives to reduce unnecessary episodes of care. Alternative payment methods such as comprehensive care payments set a fixed amount to cover all services for a given condition during a set period of time, thereby creating further accountability for the use of resources. (Miller, 2009).

This section discusses analyses presented by Amita Rastogi that estimated the potential savings from elimination of potentially avoidable complications via changes in reimbursement models in the United States. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

Cost savings from a fee-for-episode payment system Rastogi (2009) estimated that use of a bundled payment model for 13 specific conditions, including heart attacks, diabetes, asthma, and congestive heart failure, would induce a significant reduction in potentially avoidable complications (PACs) and could save $165 billion for the 200 million commercially insured patients in the United States. By extension, completely eliminating PACs could save $355 billion for the same population.

Rastogi (2009) based her estimates on work engaged with the Prometheus payment project, which bases payments on a complete episode of care. Evidence-informed case rates (ECRs) form the basis for the payment, and include costs for "necessary care for a given condition across the care continuum for a predefined period of time" (Rastogi, 2009). Each ECR also includes a built-in payment for PACs; if complications arise, care is provided and paid for out of the additional PAC allowance. To the extent that complications are avoided, physicians are able to keep the PAC allowance as a bonus. In addition, ECRs encompass a quality scorecard, from which payments are made depending on the scores achieved by the providers and their counterparts.

The estimate of potential savings from use of bundled payments was derived from data from a large national employer, which found that 15 percent of the total $45 billion in annual costs of care were due to PACs. Of the 15 percent, Rastogi (2009) applied best practices from the literature to estimate that PACs could be reduced by 50 percent (de Brantes et al.,

2009). These results were then extrapolated to the U.S. population to derive the above estimate.

Additional estimates There has been relatively limited experience with such payment methods, though projects that have been completed indicated that payers achieved savings ranging from 10 percent to 40 percent without negative impacts on quality (Cromwell et al., 1997; Edmonds and Hallman, 1995; Johnson and Becker, 1994). An estimate completed by Schoen and colleagues (2007) for the Commonwealth Fund estimated the potential savings to Medicare from changing to a system of payments based on episodes of care (for acute care episodes) to be $96 billion over 5 years and $229 billion over 10 years. The authors assumed that providers would seek to shift costs to other payers in response to reductions in Medicare payments. However, they also assumed that other payers would not change their methods of payment. If other payers were to follow Medicare's lead in changing payment systems, the savings could be higher (Schoen et al., 2007).

The Medicare program conducted a demonstration project in the 1990s that examined the effects of paying for heart bypass care based on bundled payments. Results indicated that most participating sites lowered their operating costs and lowered Medicare spending, while quality remained high (Cromwell and McCall, 1998). Finally, the Geisinger Health System implemented a program designed to pay a flat rate for coronary artery bypass graft surgery and for care related to the surgery for a period of 90 days after the surgery (Mechanic and Altman, 2009). An evaluation of the program found that during the first year there were fewer adverse events and lower hospital charges compared to the control group (Casale et al., 2007).

Estimates comparison There are few estimates as to the overall potential national cost savings associated with changing to a payment system based on episodes of care. However, evidence suggests that shifting to a payment system based on episodes of care can save costs. While the national savings estimates of Rastogi (2009) and Schoen and colleagues (2007) are similar in magnitude, it is difficult to compare them for two reasons: (1) the estimate by Rastogi focused on payments for 13 specific conditions while the estimates of Schoen and colleagues focused on payments for acute care episodes; and (2) the estimates focus on different populations (i.e., private compared to public insurance beneficiaries).

Managed Competition

Health insurance exchanges provide individuals, households, and small employers with the ability to purchase insurance that may be more available or more affordable than if it were not provided via the exchange. Such

exchanges provide a number of functions, including collecting and providing information about the health plan options, promoting risk pooling, establishing the benefit packages, and negotiating premiums (Frank and Zeckhauser, 2009). Exchanges are able to provide consumers that often do not have sufficient information about the available plans with the information they need to better evaluate their insurance options (Frank and Zeckhauser, 2009). For example, Stanford University has implemented a managed approach to competition, requiring employees to select among a variety of insurance options for which the University contributes a fixed dollar amount to the premium. This serves to encourage employees to select the lowest-cost option and encourages price competition among the different insurers (Enthoven and Talbott, 2004).

This section presents the comments of David R. Reimer on the effect health insurance exchanges have had on premiums and inflation in Wisconsin. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The potential for health insurance exchanges Reimer (2009) discussed the potential for health insurance exchanges as an option for lowering costs and improving quality of care in the context of the experience of Dade County, Wisconsin. Health insurance exchanges, which provide health insurance consumers with access to information related to a number of competing health plans, can address the issues of cost and quality if three conditions are present. First, the exchange must overcome the problem of adverse selection; second, the number of consumers using the exchange must be large enough to encourage insurers to participate; and third, consumers must have an incentive to purchase the lowest-cost plans.

State government employees in Wisconsin have access to county-based health insurance exchanges, presenting a number of health insurance options ranging from the least-expensive HMO to the fee-for-service standard plan. For example, premiums for the tier 1 HMO option in 2009 are limited to $31 per month for an individual, while a tier 2 HMO has premiums that are more than twice as expensive—$69 per month. The tier 3 plan is $164 per month, again more than twice as much as the next cheapest option. There is an incentive present to choose the lowest-cost HMO because employees must pay much of the extra cost of any of the higher-cost options. Of the 72 counties in Wisconsin, Dane County has the largest population of state employees (i.e., potential enrollees). Likely as a result of the large potential enrollee population, the premiums for plans in Dane County are much lower than in other counties. For example, the tier 1 HMO option costs $528 per month for an individual (2009), while the premium in other counties is as high as $628. In addition, the inflation rate in Dane County has been much lower than the rate in other counties in Wisconsin.

Additional estimates A review of the literature related to the potential savings associated with health insurance exchanges yielded few papers. One paper, however, estimated the possible savings associated with having the government operate a public plan option alongside other options in an exchange (Berenson et al., 2009b). Based on assumptions including the fact that the public plan would pay providers based on locally available prices, and would offer a set of package options, the authors estimated that significant savings could be possible due to lower government administrative costs and lower payment rates. More specifically, Berenson and colleagues (2009) estimated that the public plan could save the government $17 billion in 2010, and about $224 billion from 2010-2019. When including savings to the private sector, the 10-year savings estimate jumps to $412 billion.

Estimates comparison Given that only one estimate is at the national level and is for a public health insurance plan, and the other estimate focuses on premium differences among exchanges within a single state, a comparison of the cost estimates is not feasible. However, evidence from Wisconsin and Stanford suggest that, if certain conditions are met, managed competition has the potential to lower health spending.

Value-Based Insurance Design

Cost-sharing arrangements with health insurance enrollees have generally been constant for each service even though the effectiveness and value of each service differs in general and may even differ from patient to patient (Chernew et al., 2007). Value-based insurance design (VBID) is grounded on the concept that, by pricing different services according to their effectiveness, consumers can be encouraged to use those services that have higher value (Choudhry, 2009). Of note, the Government Accountability Office (GAO) (2007) has found that Medicare beneficiaries in 12 specific areas who saw general practitioners that treated a disproportionately large share of high-cost patients "were more likely to have been hospitalized, more likely to have been hospitalized multiple times, and more likely to have used home health services."

This section presents discussions by Niteesh K. Choudhry and Lisa Carrara of the potential savings achievable by implementing VBID nationally. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The potential for value-based insurance design (VBID) Choudhry (2009) and Carrara (2009) presented two methods by which health insurance can be designed to encourage value-based healthcare utilization. Choudhry discussed the potential for designing patient cost sharing for medications so as to encourage the patient to consume services that have higher value

than other services, and he estimated a savings of more than $2 billion if VBID were applied to five common conditions. Carrara described the potential of designating high-performing specialists based on measures of clinical quality and efficiency as a method of directing consumers to make healthcare decisions based on the overall value of care, rather than just price alone, estimating a 3 to 4 percent savings in a customer's annual claims the first year.

Choudhry presented results from various studies studying the impact of providing lower cost sharing for prescription drugs. Two studies looked at the effects of lowering cost sharing for postmyocardial infarction drugs, and found that Medicare could save $2,453 per patient over a lifetime (Choudhry et al., 2008), and commercial insurers could save $1,181 over 3 years (Choudhry et al., 2007). In addition, Rosen and colleagues (2005) found that Medicare could save $922 per patient over a lifetime by lowering cost sharing for diabetes drugs.

Using data from the literature and from the Medical Panel Expenditure Survey, Choudhry estimated that a 1 percent cost reduction brought about by applying VBID to just five common medical conditions would amount to more than $2 billion in savings. However, he does note several limitations to this estimate. First, because the true effect of VBID on healthcare expenditure is unknown, this analysis relies on estimates derived from economic models and published literature. Second, the use of relative rates as a basis for calculating national savings estimates may be inappropriate if the cost savings from copayment reductions do not accrue at a constant rate. Third, payers who already set copayments at a very low level are unlikely to use VBID, and thus this estimate may overestimate the impact of VBID. Finally, the national expenditure estimates used for this analysis, by necessity, aggregate groups of conditions into single disease categories, such as "heart disease" and do not distinguish between patients of different disease severities.

Carrara described how tiered networks could be designed to influence consumer choice of physician, and how they may lead to lower use of health services across 12 specialty categories of care[2] designated by Aetna. With such a model, she estimated a customer may save between 3 percent and 4 percent on claims in the first year, offset by a service fee charge.

Additional estimates A review of the literature found few papers that provided estimates of the potential savings resulting from VBID. RAND estimated that VBID targeting medications for six chronic conditions could reduce spending up to $1.2 billion over 10 years in Massachusetts alone

[2]The 12 specialty categories include cardiology, cardiothoracic surgery, gastroenterology, general surgery, obstetrics and gynecology, orthopedics, otolaryngology, neurology, neurosurgery, plastic surgery, urology, and vascular surgery.

(Eibner et al., 2009). Chernew and colleagues (2007) discussed some programs that have experimented with differential cost sharing based on value. One such program, by Pitney Bowes, lowered copayments for diabetes, asthma, and hypertension drugs, and reported 1-year savings of $1 million for their plan (Hensley, 2004). Other employers have programs that provided lower copayments for certain diabetes medications in an attempt to encourage diabetic patients to use those particular medications (Chernew et al., 2007).

UnitedHealth Group (2009b) estimated potential savings of $37 billion (2010-2019) from implementation of a program designed to provide Medicare beneficiaries with information on quality and efficiency variations among providers. Savings estimates were based on UnitedHealth Group's experience with their quality measurement system combined with incentives to choose high-quality, lower-cost providers. In extrapolating to the Medicare program, UnitedHealth Group assumed such a program would be voluntary and therefore assumed conservative levels of participation (UnitedHealth Group, 2009b). The GAO (2007) reported that an insurer that placed more efficient physicians in a special network saw premium decreases of 3 to 7 percent compared to those less efficient. The GAO also reported that the "sentinel" effect, or the effect of being monitored and examined, reduced spending by as much as 1 percent. Finally, the State Employee Group Insurance Program in Minnesota adjusted patients' out-of-pocket costs at the point of service based on the cost of the clinic used, and saved 13 percent (Moracco, 2009).

Estimates comparison A comparison of cost estimates cannot be conducted for value-based insurance as there currently is very little information out there on the potential national cost savings associated with such a benefit design. However, the savings estimates reported by Carrara and the GAO from physician profiling are similar; it is worth noting that Aetna was one of the insurers included in the GAO study.

Administrative Simplification

An estimated 31 percent of national health expenditures is consumed by administrative costs (Woolhandler et al., 2003). Nonstandardized formularies, forms, and reporting requirements from multiple payers demand significant time and attention from providers (Casalino et al., 2009a). Given the rising expenditures on health and the need to lower costs, administrative simplification has been viewed as a potential area of significant savings opportunity.

This section presents the discussions of Robin J. Thomashauer and David S. Wichmann. Thomashauer discussed the potential savings possible from simplifying credentialing and standardizing administrative exchange

rules, and Wichmann described the savings possible from using technology to simplify administrative burdens. Results from other studies are then presented and discussed. Finally, the cost estimates from the various studies are compared.

The potential savings from payer harmonization and coordination Thomashauer (2009) discussed efforts being made to facilitate payer collaboration and process consolidation. One such effort is the Universal Provider Datasource (UPD), which is a single uniform system designed to collect self-reported provider information, which is then used for such purposes as credentialing. Another effort underway is the Committee on Operating Rules for Information Exchange (CORE), which is working to define rules designed to facilitate administrative data exchange and increase interoperability. She estimated that the industry could save approximately $3 billion over 3 years if the first phase of the CORE project is implemented across the country (IBM Global Business Services, 2009). The first phase of CORE rules include requirements for eligibility and benefits data as well as requirements for exchanging that data, enabling providers to more easily receive information verifying an individual's eligibility for a particular insurance plan.

Wichmann (2009) presented an estimate of $332 billion in administrative savings over the next decade based on the application of technology to administrative activities (UnitedHealth Group, 2009b). More detail on these 12 options and the potential savings associated with each are presented in Table A-5. Of the $332 billion in savings, about 50 percent is estimated to accrue to providers, 20 percent to the government, and 30 percent to

TABLE A-5 Options for Achieving Administrative Cost Savings

Option	2010-2019 Savings ($ billions)
Deploy common data and transaction standards	Foundational
Perform automated eligibility verification	18
Replace explanations of benefits with monthly statement	14
Drive electronic funds transfer, remittance advice, and posting	109
Implement multipayer capability on practice management systems	29
Implement further electronic data interfaces and exchange	31
Integrate provider practice management and payer systems	11
Integrate essential elements of personal health and electronic medical records	13
Use predictive modeling to prescore claims	47
Create a national payment clearinghouse	41
Eliminate multiple credentialing and privileging	18
Adopt common quality designation standards	1
Total	332

other payers. Specific contributors to costs that were targeted in each option include excessive manual processing, duplicate data entry, and paper distribution of information among others. Where the options potentially overlapped each other, an attempt was made to account for potentially duplicative costs. Some caveats associated with estimating savings related to administrative costs include the fact that administrative costs represent a small portion of total healthcare spending; in addition, savings from associated reductions in wasteful medical spending might be possible.

Additional estimates The Commonwealth Fund (2009) estimated that a national health insurance exchange in conjunction with a public plan could offer a reduction in administrative costs of $337 billion over the next 10 years. Based on results from a number of studies examining streamlined billing, Russo (2009) estimated that such an initiative on a national basis would save $35 billion per year. As many other estimates of savings in this category were discussed previously, please refer to Section II, Session 3, for additional discussion.

Estimates comparison As it has been estimated that in small physician practices more than $247,500 per year was spent on unnecessarily complex or redundant administrative tasks; $19,444 per year was spent on phone calls with pharmacies resolving drug formulary issues; $38,761 was spent per year verifying patient coverage, copayments, and deductibles for thousands of varying health plans; and $9,248 was spent per year resubmitting denied claims (MGMA, 2004), there is significant opportunity for savings through administrative simplification. Although estimates provided by Thomashauer (2009), Wichmann (2009), and the Commonwealth Fund (2009) are not directly comparable owing to the targeting of different means of simplification, they likely have some degree of overlap.

Session 5: Community-Based and Transitional Care Strategies

Chronic illness impacts not only patients, families, and providers, it also heavily impacts healthcare expenditures. Given fragmentation of the healthcare system, care management, palliative care, and community programs have been identified as clear options to facilitating improvements in outcomes and spending.

The presenters in this session focused on community-based and transitional care strategies, including:

- Care management for medically complex patients;
- Palliative care; and
- Wellness and community programs.

Care Management for Medically Complex Patients

Fragmentation is a central characteristic of our healthcare delivery system and contributes to poor quality care, patient dissatisfaction, medical errors, redundant care, and rising health spending (Cebul et al., 2008; The Commonwealth Fund, 2008; IOM, 2001). The problems resulting from the systemic lack of care coordination are compounded for patients with multiple chronic conditions (Vogeli et al., 2007). Central to ongoing discussions on transforming the payment system to promote accountability through such mechanisms as bundled payments and accountable care organizations (Fisher et al., 2009; de Brantes et al., 2009) is the goal of promoting care coordination, especially for patients with chronic illness, as those with five or more chronic conditions account for two-thirds of the recent rise in Medicare spending (Thorpe and Howard, 2006).

This section discusses the analyses of Kenneth E. Thorpe on the potential savings that could be achieved by improving care management. Other estimates are also provided and discussed.

Potential savings from improved care management Thorpe (2009) examined the possible benefits that could arise from improving care coordination and identified policies that could help achieve this goal. Although they did not provide a comprehensive, national estimate of potential cost savings, they did provide a number of suggestive examples. Improved care coordination could help reduce the $12 billion MedPAC estimated is spent on potentially avoidable hospital readmissions every year (Miller, 2008). Findings from a recent study on frail elders in transitional care suggest a 10-year investment of $25 billion could lead to $100 billion in savings over the same period (Naylor et al., 2004). If the use of palliative care services could be increased to 7.5 percent of hospital discharges nationally, perhaps more than $37 billion could be saved over the next decade (Meier, 2009). Finally, an investment of $10 per person per year could yield more than $16 billion in medical cost savings within 5 years (Levi, 2009).

Thorpe (2009) described how the provision of coordinated care could be rewarded with three payment reforms: primary care reimbursement, bundled payments, and bonus pools. If Thorpe's ideas for community health teams were implemented, primary care practices could be encouraged to establish formal relationships with these community health teams via a per-person per-month payment for each dually eligible patient. Participation in the reimbursement program would be contingent on the practice meeting specific National Committee for Quality Assurance medical home standards, and further financial incentives could be designed to foster quality improvements. To reduce the costs associated with hospital readmissions, Thorpe proposed that payments be bundled to cover all acute services for

admission as well as Medicare-covered post-acute care for 30 days postdischarge. They also suggested that hospitals with above-average readmission rates receive reduced payments. Finally, he suggested that the formation of bonus pools could encourage primary care practices and community health teams staff to improve health outcomes and reduce unnecessary care.

Additional estimates A more extensive review of the literature is available in prior discussions on Owens (2009) and Ferris (2009). It is worth noting here that Berenson and colleagues (2009) estimate that care coordination for dually eligible Medicare and Medicaid beneficiaries could result in a 10-year (2010-2019) savings of $201 billion. For more details, please consult the summaries described in Section II, Session 2 (Owens) and Section III, Session 2 (Ferris).

Estimates comparison Thorpe (2009) did not present a national estimate for cost savings, and thus no direct comparison was performed.

Palliative Care

There is a substantial literature finding evidence supporting the notion that increased palliative care can have positive benefits across a number of areas, such as physical and psychological symptoms; family caregiver well-being; patient, family, and consulting physician satisfaction; support for families in crisis; planning for safe transitions out of hospitals; and family satisfaction and bereavement outcomes (Morrison and Meier, 2004). Given that the costs for care in the last year of life represent more than 25 percent of spending in Medicare (Berenson et al., 2009b) and that additional spending at the end of life does not buy higher-quality care (Yasaitis et al., 2009), there is significant potential for palliative care to improve outcomes and reduce healthcare costs.

This section summarizes the presentation of Diane E. Meier. Other estimates and a comparison of these estimates are also provided.

Potential savings from increased palliative care Meier (2009) described the role for palliative care programs in addressing the cost and quality problems in the U.S. healthcare system. By her calculations, potential savings from increased use of palliative care is approximately $5 billion per year. She also described the quality improvements that these programs could bring about, and the factors that might limit patients' access to them.

Meier reasoned that, of the approximately 30 million annual hospitalizations in the United States, palliative care could be provided for 5 to 8 percent of these hospitalizations, as 2 percent of all hospitalizations end in

death (AHRQ, 2002) and 3 to 6 percent of hospitalizations are for very sick patients who are discharged alive (Siu et al., 2009). Based on recent studies, the per-patient costs saved by palliative care consultation are $2,659 (Morrison et al., 2008). Currently, 53 percent of U.S. hospitals have palliative care programs (Goldsmith et al., 2008), and this type of care reaches only 1.5 percent of their hospitalizations. Hence, current savings attributable to palliative care is $1.2 billion. If the proportion of hospitals with palliative care programs increases to 90 percent and these programs reach at least 7.5 percent of hospitalizations, savings would increase to $6 billion (Goldsmith et al., 2008; Morrison et al., 2008; Siu et al., 2009). The marginal savings attributable to increased palliative care is the difference between potential ($6 billion) and current ($1.2 billion) savings.

However, to achieve these savings, a number of barriers to accessing this type of care would have to be surmounted, such as lack of physician and nursing education, financial incentives discouraging workforce development and organizational commitment, lack of an evidence base guiding quality care, and need for adequate compensation and loan forgiveness opportunities to attract young professionals into the field (Meier, 2009).

Additional estimates A subsequent literature review found that there is a small but growing literature on the cost-saving potential of extended palliative care on which other national estimates appear to be based. A core group of papers including Morrison and colleagues (2008) and Smith and colleagues (2003) appear influential. For example, a recent report by Berenson and colleagues (2009) cited an overlapping set of papers and concluded that, if a modest change to clinical decision making for patients in end-of-life care could be made, savings to Medicare could amount to $6 billion in 2010 and $91 billion over 10 years.

UnitedHealth Group (2009a) provided a notable estimate outside the peer-reviewed literature. They found that a program providing information to guide patients and their families in making medical decisions that included palliative care at the end of life could produce about $18 billion in savings between 2010 and 2019.

Estimates comparison The estimates of Meier (2009) of approximately $5 billion in annual savings and Berenson and colleagues (2009) of $6 billion in 2010 are similar. This is perhaps unsurprising as they draw on similar resources. It is not unreasonable to expect that other existing estimates based on the scientific literature would be of similar magnitude. The estimate by UnitedHealth Group (2009a) is not directly comparable because of the estimates encompass different time frames.

Wellness and Community Programs

As previously discussed, prevention has long held value in health care. As nearly 40 percent of all deaths in the United States are due to behavioral causes, attention on prevention has encompassed obesity, vaccinations, and cancer screening (Mokdad et al., 2004). Although some have argued that prevention can save costs from the prevention of illness, others have cited evidence to the contrary (Cohen et al., 2008; Elmendorf, 2009).

Although many preventive services are clinical in nature, as described in Flottemesch (2009) during the May workshop, this section focuses on the estimates presented by Jeffrey Levi, who examined the potential for community-based programs to deliver cost savings. Competing estimates are presented and discussed as well.

Potential savings from wellness and community programs Levi presented results from a collaborative study finding that a small investment in preventive services could significantly reduce U.S. net expenditures on health (TFAH, 2008). Focusing on programs that target communities or at-risk segments of communities, the Trust for America's Health (TFAH) found that an investment of $10 per person per year in proven community-based programs to increase physical activity, improve nutrition, and prevent smoking and other tobacco use could reduce net expenditures on health care by more than $16 billion annually within 5 years. Out of the total possible savings, at least $5 billion represents savings to Medicare, $2 billion represents savings to Medicaid, and $9 billion represents savings to private payers.

The two main components to the study were a comprehensive literature review of community-based prevention studies and a model that would calculate potential returns to these preventive services investments. For the literature review, the TFAH consulted with the New York Academy of Medicine and identified 84 studies of community-based programs and policy changes that could be identified as public health interventions. Many important modeling assumptions were derived from this literature review. For the calculations, researchers at the Urban Institute developed a model focused on three elements: individual-level spending on Medicare for selected preventable diseases, potential savings from reducing the prevalence of these diseases, and distribution of these potential savings across payers. The potential national savings calculated using this model are presented in Table A-6 and Table A-7. State-level results and other findings are available in *Prevention for a Healthy America* (TFAH, 2008).

The researchers described a number of limitations to these estimates. They noted that savings were calculated in a way that excluded future changes in medical technology. The modeling also excluded spending on infrastructure that would be required to implement these preventive pro-

TABLE A-6 National Return on Investment of $10 per Person

	1-2 Years	5 Years	10-20 Years
(1) Costs of interventions	$2,936	$2,936	$2,936
(2) U.S. net savings	$2,848	$16,543	$18,451
ROI = (1) / (2)	0.97 : 1.00	5.63 : 1.00	6.28 : 1.00

NOTES: This table is adapted from Appendix B of TFAH (2008). Small discrepancies between the amounts reported here and in Appendix B are due to rounding. Amounts are in millions of 2004 dollars. An ROI of 0 means the program "pays for itself," while an ROI greater than 0 indicates the program produces savings in excess of its costs.
SOURCE: Reprinted with permission from Trust for America's Health, 2008.

grams. Limitations like these suggest that the estimated benefits to increased preventive services may be overstated. However, as the researchers generally took a conservative approach to their model inputs by assuming higher costs and lower benefits whenever possible, they concluded that their estimates likely understate the potential benefits to increased preventive services.

Additional estimates Although there are many evaluations of the effect of wellness programs on health and costs, it appears that the TFAH (2008) result is unique as a comprehensive national estimate of potential savings from these community-based wellness programs. A substantial majority of papers found in our search for comparable national estimates were papers based on data collected from small-scale interventions. Furthermore, most of these papers investigated the effect of work-based wellness programs. Parks and Steelman (2008) conducted a meta-analysis of these studies, but the authors did not provide an estimate of the potential savings these wellness programs could have on costs. A review by Pelletier (2005) of 12 studies published between 2000 and 2004 also did not contain an estimate that could be used to compare the TFAH (2008) result.

Although not focused on community wellness programs, the Commonwealth Fund's estimates of $255 billion from reducing tobacco use and $406 billion from reducing obesity are of related interest. For additional discussion on the potential savings and costs related to preventive

TABLE A-7 Distribution of Payer Savings from an Investment of $10 per Person

	1-2 Years	5 Years	10-20 Years
Medicare	$487	$5,213	$5,971
Medicaid	$370	$1,951	$2,195
Other payers and out of pocket	$1,991	$9,380	$10,285

NOTE: Amounts are in millions of 2004 dollars.
SOURCE: Reprinted with permission from Trust for America's Health, 2008.

services, please refer to the section on missed prevention opportunities in Section II.

Estimates comparison Comparable estimates were not identified. However, that the TFAH (2008) found cost savings from these programs is consistent with the findings in most papers that wellness programs do reduce expenditures. Furthermore, while there is some overlap between the conditions targeted by community programs and primary clinical preventive services, the estimated annual savings of $16 billion from the former would likely complement the estimated savings of $7 billion from increased primary preventive services presented by Flottemesch (2009). Finally, as Woolf (2009) noted, even though a particular intervention may not be cost saving it may indeed be cost-effective and improve quality and quantity of life at an acceptable price.

Session 6: Entrepreneurial Strategies and Potential Changes in the State of Play

The value placed on innovation is seen throughout the healthcare industry. Emerging strategies, such as techniques to minimize artificial variability and technology, may have the ability to lower costs and improve outcomes.

The presenters in this session explored entrepreneurial strategies and potential changes in the state of play, including:

- Managing variability in healthcare delivery;
- Retail clinics; and
- Technological innovation.

Managing Variability in Healthcare Delivery

The potential savings from reducing hospital inefficiency were discussed in previous sections of this working paper. Achieving some of these potential savings might be possible with the implementation of variability methodology.

In general, the variability in patient flow through the care delivery process can be characterized in one of two ways: natural or artificial. An example of *natural variability* is the flow of patients admitted to a hospital unit through the ED. Many emergencies are random events and considered uncontrollable. However, *artificial variability* is controllable and introduced by extrinsic factors such as scheduling. Artificial variability can be found in the flow of elective admissions (e.g., elective surgical, catheterization lab,

and oncology admissions) to a hospital if the scheduling of these patients does not take into account the impact on the rest of a hospital's resources such as inpatient units, ED beds, and diagnostic services. For example, improperly scheduling these patients can lead to ED overcrowding, boarding, and diversion, and can lead to unnecessary competition for inpatient beds between elective and ED admissions. Although the science of operations management does not have any solution for artificial variability, variability methodology has been developed as a tool to specifically address artificial variability. At its core, variability methodology involves identification, quantification, and elimination of artificial variability so the remaining variability can be managed using the standard operations management tools mentioned above (Joint Commission Resources, 2009).

Below, the potential cost savings from the widespread implementation of variability methodology estimated by Sandeep Green Vaswani are summarized. Results from a literature review seeking other estimates are provided and a comparison of these estimates is made.

Potential savings from clinical service engineering applications In describing the potential for variability methodology to address artificial variability in patient flow and thereby reduce healthcare expenditures, Vaswani estimated nationwide annual savings from the implementation of variability methodology as being between $35 billion and $112 billion.

The preliminary estimate was based on two factors: (1) the number of beds in the U.S. healthcare system that could be closed through better management by implementing variability methodology, and (2) the cost of operating those beds. Vaswani (2009) first considered a scenario in which all hospital admissions would come through the ED. Results from operations management suggest that inpatient bed occupancy could be increased from the current 65 percent to 80 percent without causing excessive waiting times (Litvak, 2005). Allowing for hospital admissions to include elective admissions, bed occupancy could be increased to over 90 percent by implementing variability methodology (Litvak, 2005). Taking a conservative route, Vaswani and colleagues (2009) assumed an increase in occupation rate to 80 percent and the closing of unneeded beds. Multiplying the number of closed beds by a low estimate ($250,000) and high estimate ($800,000) of their operating costs (Butterfield, 2007) yielded the national cost savings estimate. This estimate assumed no growth in demand. Additional assumptions to account for growth, which is likely, led to annual savings estimates in the range of $39 billion to $121 billion. Notably, current capacity can absorb up to 25 percent growth of inpatient demand without cost increases or bed closures. Their estimate also assumed a full staffing rate of 100 percent. For sake of argument, if 5 percent of staffed beds are

actually unstaffed, then the annual savings estimates are in the range of $26 billion to $82 billion.

Additional estimates Variability methodology is a relatively recent innovation (Litvak and Long, 2000). It appears that the authors and their colleagues at the Management of Variability Program at Boston University have conducted the majority of research on, and evaluations of, its implementation. Hence, the estimated national savings estimate from implementing variability methodology in Litvak and colleagues (2005) is likely unique in the literature.

The operations management literature on hospital efficiency was also searched for comparable estimates. Broad studies and reviews such as those performed by Ling and colleagues (2002) and Jack and Powers (2004) provided neither comparable estimates nor reference to other papers that were close enough to the investigation described above. However, the discussion of hospital efficiencies in the context of estimates provided by Milstein (2009) and Pittenger (2009) are relevant and likely complement, and potentially overlap, the estimates provided by Vaswani.

Estimates comparison Given the above discussion, there are no directly comparable estimates of potential national savings. As mentioned, it may be informative to put the estimates presented by Vaswani's findings in context with the previous discussion on clinical inefficiency. During this workshop, Pittenger (2009) categorized savings opportunities from application of the Virginia Mason Production System into operational, clinical, and patient safety opportunities. Yet clearly variability methodology also addresses issues of efficiency of resource use. If both these strategies are employed, the savings realized will likely result from overlapping interactions. These are, of course, imperfect comparisons, and the degree of overlap cannot be estimated based on the information provided here.

Retail Clinics

Retail clinics appeared in the medical market in 2000. They are typically staffed by mid-level providers with remote physician oversight and have the aim of providing a limited set of simple clinical services. Given their lower operating costs, it may be possible that the increased use of these clinics could reduce healthcare costs in the United States.

In this section, we discuss the savings calculation presented by N. Marcus Thygeson (2009). A comparison of other existing estimates is provided at the end of this section.

Potential savings from expansion of retail clinic use Thygeson (2009) investigated the impact of retail clinics on healthcare costs and quality. He concluded that the maximum savings that could be achieved by expanding the use of these clinics was $7.5 billion per year. However, he identified a number of factors that could drive these potential savings to as low as $2 billion per year.

To obtain the estimate of national savings, the author first determined how many medical episodes could be properly treated in retail clinics across the United States. Using data from retail clinics in Minnesota, he calculated expected per-episode savings. Supposing that all retail clinic-eligible visits would be made at retail clinics instead of physician offices and emergency departments, he found that the upper bound for potential savings was $7.5 billion per year (Table A-8).

The author stated three caveats to these estimates. First, previous work has shown that, at least among the insured population, a reduction in retail clinic-eligible episodes treated in EDs was not observed. This suggests that the contribution to savings from patients' decreased ED use may well be lower than calculated. Second, over 85 percent of retail clinics are located in the 50 largest metropolitan statistical areas in the United States. It is not clear if savings could be achieved in more rural locations. Third, the estimate does not account for individuals who would not have sought treatment from a healthcare provider in the absence of a retail clinic. There is some evidence that the presence of a retail clinic may induce individuals to increase their demand for health care (Wang et al., in press). Hence, this behavioral response suggests that the $7.5 billion savings may be an overestimate. Finally, the analysis above ignores the potential competitive response on the part of established healthcare providers.

Additional estimates A search of the peer-reviewed literature found no articles that could provide a competing national estimate of the impact of increased use of retail clinics on healthcare costs. However, a recent study

TABLE A-8 Estimated National Savings Conversion of all U.S. Retail Clinic-Eligible Visits

	Physician Office Visits	Emergency	Total
Total visits (millions)	483	112	595
Percent retail clinic eligible	18%	12%	
Retail clinic-eligible visits (millions)	87	13	100
Visits per episode	1.14	1.14	
Estimated episodes (millions)	76	12	88
Savings per episode	$55	$279	

found that retail clinics provide less costly treatment compared to physician offices and urgent care centers for three common illnesses, with no apparent adverse effect on quality of care or delivery of preventive care (Mehrotra et al., 2009). It was also estimated that encouraging growth of retail clinics could yield savings up to $6 billion over a decade in Massachusetts (Eibner et al., 2009). Scott (2006), one of the more highly-referenced reports outside the peer-reviewed literature, also noted some evidence of the potential for savings but did not provide a national savings estimate. However, as retail clinics are a relatively recent phenomenon, it has been noted that "credible data on the clinics' impact on the quality and cost of care" are sparse (Alexander, 2008).

Estimates comparison Although no other national estimates of the potential savings available from use of retail clinics are available for comparison, emerging evidence indicates that use of convenience clinics is rapidly rising and may be a unique source of cost savings.

Technological Innovation

While technology has been oft cited as a driver of spending growth (Kaiser Family Foundation, 2007), technology and innovation have also empowered cost-lowering applications in health care such as telehealth and telemedicine. The Care Coordination/Home Telehealth (CCHT) national pilot program implemented by the Department of Veterans Affairs (VA) provides an informative case study on the use of telemedicine as a powerful tool to improve outcomes while lowering costs. CCHT was guided by the institutional experience of the VA and findings from a randomized-controlled study of chronic care patients using video home telehealth systems (Johnson et al., 2000). The experiment found that the technology was effective, well-received by patients, helped maintain quality care, and had cost-saving potential. The pilot program combined these telehealth methods with care coordination efforts in a chronic care model that combined patient self-management and an algorithm used to choose appropriate home telehealth technologies (Lorig et al., 2001; Ryan et al., 2003).

Adam Darkins' presentation on the use and cost improvements achieved by the VA through implementation of CCHT is described here. Other savings estimates are presented and compared as well.

Potential savings from technological innovation Darkins (2009) presented findings from a VA case report on their CCHT national pilot program. The aim of the program was to provide more appropriate care to patients with chronic conditions who might benefit from care provided outside the usual outpatient clinic appointment paradigm. Based on results from this pilot

program, Darkins estimated that national implementation of CCHT could result in annual cost savings between $1.7 billion and $2.2 billion (22 percent and 48 percent of total healthcare costs) for the target population.

Darkins and colleagues (2008) reported a number of impressive outcomes from their pilot program: a 19 percent reduction in hospital admissions, a 25 percent reduction in lengths of stay, an 86 percent mean patient satisfaction score, and no measured diminution of quality. The annual cost of providing CCHT was $1,600 per patient, which represented large savings relative to in-home care via nursing teams ($13,121) or purchasing nursing home care on the commercial market ($77,745). Basing his calculation on the above findings, the author estimated that cost savings could fall between $1.7 billion and $2.2 billion per year for the target population. Table A-9, below, provides details on the author's cost-savings calculations; these estimates cannot be summed as the target groups are not discrete.

TABLE A-9 Examples of Crude Estimates of Cost Reductions That May Be Realizable Through Implementation of Care Coordination/Home Telehealth (CCHT) Outside the Department of Veterans Affairs

Area of Health Care	Cost Savings	Percentage Cost Savings in Population Subset Managed	Notes
Medicaid Noninstitutional long-term care expenditure	$1.7 billion per annum from caring for 20% of population using CCHT	22%	2005 figures that assume 20% of estimated $35.2 billion spent on HCBS can be managed by CCHT at a cost of $1,600 per patient per annum instead of $13,121.
Hospital readmissions	$2.2 billion per annum from monitoring patients using CCHT	48%	Assumes that hospital admissions could be reduced by 19%, and the cost of managing these patients by CCHT is $1 billion.
Diabetes care	$3.9 billion per annum from reducing hospital admissions, readmissions, and lengths of stay	Not calculable for lack of patient denominator to attribute costs to	Assumes that hospital in-patient stays for diabetes are reduced by 25%. Figure does not include CCHT costs.
Cardiac disease	$14 billion per annum from reducing hospital admissions, readmissions, and lengths of stay	Not calculable for lack of patient denominator to attribute costs to	Assumes that the costs of hospital in-patient stays for cardiac disease are reduced by 25%. Figure does not include CCHT costs.

NOTE: HCBS = home care-based services.

Additional estimates Generally speaking, this intervention falls into the category of care coordination initiatives, which is discussed at length in the review of Owens (2009) and Ferris (2009). However, this case report also addresses the potential of technological innovation to reduce costs, which a few recent papers have examined. Vo (2008) estimated that, after a 6-year rollout period, $3.6 billion in savings could be achieved through implementing telehealth technology on a national scale. In particular, he claimed that physician-to-physician consultations mediated by telehealth technology would reduce unnecessary or redundant tests by 45 percent. Pan and colleagues (2008) estimated that the implementation of telehealth systems in emergency rooms, prisons, nursing home facilities, and physicians offices across the United States could achieve $4.3 billion in annual savings. Nearly all other papers surveyed noted the impact of limited implementation and did not attempt to quantify potential national savings.

Estimates comparison Although the other savings estimates from Vo (2008) and Pan and colleagues (2008) are not directly comparable, it is striking that they are of the same order of magnitude. Furthermore, the VA's experience with the use of home telehealth technology for patients with chronic conditions adds to a growing body of evidence that home telehealth has the potential to reduce costs (Polisena et al., 2009). Also as mentioned above, please refer to the Owens (2009) and Ferris (2009) literature reviews for a broader discussion of potential savings from increased care coordination.

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Summary Table of Estimates

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
UNDERSTANDING THE TARGETS			
Session 1: Unnecessary Services			
Overuse of Services beyond Evidence-Established Benchmarks			
Amitabh Chandra	8% annual reduction in both Medicare costs and mortality	10.8% to 25.5% reduction in costs, holding quality constant (Rosko and Mutter, 2008) $65.1 billion (3.4% of U.S. health spending) spent on eight selected wasteful services (Bentley et al., 2008) Overuse of urinalyses, electrocardiograms, and x-rays totaled an estimated annual direct medical cost of up to $194.0 million (Merenstein et al., 2006) $600 billion due to excess medical and surgical services; avoidable emergency department use has been estimated to cost $21.4 billion nationally and overuse of antibiotics to cost $1.1 billion annually; $300.0 million in annually spending on unnecessary MRI scans for back pain (Delaune and Everett, 2008) $5.1 billion annually could be saved from a 50 percent decline in unnecessary visits for common conditions—headaches, back pain, and benign breast conditions; $6.5 billion in annual savings from reducing unnecessary MRI testing for back pain and headaches (Mecklenburg and Kaplan, 2009)	Cost estimates of overuse of clinical services difficult to compare directly given the inclusion of different services in each estimate

Use of Services beyond Benchmarks where Evidence Is Not Established			
Elliott S. Fisher	$47.8 to $53.9 billion (18% to 20%) annual cost savings to Medicare (2005/6 dollars)	28.9% cost savings to Medicare (Wennberg et al., 2002)	Authors' study analyzes disaggregated data from a more recent period
Choice of Higher Cost Services over Evidence-Established Benchmarks			
David Wennberg	$125 billion (up to 5%) net cost savings	N/A	Few studies on shared decision-making provide assessment of costs (Leatherman and Warrick, 2008)
Session 2: Inefficiently Delivered Services			
Medical Errors and Redundant Tests			
Ashish Jha	$16.6 billion (2004 dollars) in direct medical costs for medical errors $8.2 billion for redundant tests	$17 to $29 billion in total costs (Institute of Medicine (IOM), 2000) for medical errors $4.6 billion (2000 dollars) in national health care costs for 18 injuries (Zhan and Miller, 2003)	As Zhan and colleagues (Zhan and Miller, 2003) based their estimates on coding for medical errors in administrative data, which likely underestimated the incidence of errors, while Jha utilized incidence rates and costs from studies generally relying on comprehensive chart review-based data, the latter's estimates may be more accurate

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Care Fragmentation			
Mary Kay Owens	$240 billion average annual savings by 2013 from coordinated care program	$200.5 billion over 10 years (2010-2019) from care coordination for Medicare and Medicaid dually-eligibles (Berenson et al., 2009)	Owens (2009) is only cost estimate that extrapolated results to entire population; other studies found no savings from care coordination (Fireman et al., 2004; Peikes et al., 2009)
Inefficient Use of Higher Cost Providers			
Gary S. Kaplan	$5.1 billion in annual savings from reduction in unnecessary visits; $6.5 billion annually form unnecessary MRIs; $8.3 billion for use of lower-cost providers; $2.3 billion from substituting low-cost telephone or computer-based visits for conventional visits for chronic condition	N/A	Multiple studies support findings of improved quality and lower costs from use of mid-level practitioners, though none offer national savings estimates (Eibner et al., 2009; Hatem et al., 2008; Hooker, 2002; Roblin et al., 2004)
Inefficiencies in Physician Offices and Hospitals			
William F. Jessee	$6.4 billion (2007 dollars) by reducing inefficiencies in physician offices	N/A	N/A

Arnold Milstein	2% decrease in overall U.S. healthcare spending if all hospitals achieve same performance and cost levels as top 12% (MedPAC, 2009)	$400.0 billion over 10 years for Medicare and $1.3 trillion for private payers over the same decade if U.S. hospitals reduced their inpatient costs to the level of Thedacare (Toussaint, 2009) $19.4 billion annually from elimination of non-value added activities (Hafer, 2009)	Differences likely arise from different methodologies, sources of data, and time horizons
Session 3: Excess Administrative Costs			
Estimates of Excess Administrative Costs			
James G. Kahn, Lawrence P. Casalino and James L. Heffernan	$168 to $183 billion in total excess BIR spending	$209 billion in total excess administrative spending (Woolhandler et al., 2003)	Joint workshop estimate uses micro-level approach while Woolhandler estimate uses macro-level approach
Regulatory and compliance-imposed costs beyond benchmarks			
Peter K. Smith	$87.9 billion in potential savings from reducing documentation requirements of nurses	N/A	N/A
Potential Reduction in Administrative Expenses			
Andrew L. Naugle	$20 to $23 billion in annual potential savings to commercial payers	$63 to $75 billion in excess BIR spending by private insurers (Kahn, 2009)*	Differences likely arise due to different definitions of administrative costs and different methods for calculating administrative costs

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Session 4: Prices That Are Too High			
Hospital Service Prices			
Cory S. Capps	Increase in annual national healthcare expenditures of $10 to $12 billion due to hospital consolidations	N/A	N/A
Prices of Medications			
Jack Hoadley	$9 billion in total annual savings from a 5% across-the-board price reduction (excluding government purchasers that already receive significant discounts)	$10 billion annual savings for Medicare Part D spending from increased used of generics (CBO, 2008a) $21.9 billion in annual savings for Medicare Part D if prices reduced to Federal Supply Schedule (Gellad et al., 2008) $156 billion savings over the next decade from reducing the prices for medications paid by Medicare Part D for dually eligibles by 30 percent to Medicaid price levels both target pharmaceutical manufacturers (U.S. House of Representatives Committee on Oversight and Government Reform, 2008)	Differences in estimates due to the magnitude of the price reduction utilized in each study
Prices of Durable Medical Equipment			
Thomas J. Hoerger	$2.8 billion annual savings from reduction in Medicare reimbursements, fraud, and waste for DME	Spending on DME $19 billion less than expected, relative to wealth (Farrell et al., 2008)	Differences in estimates likely due to differences in the study population—one estimate is for Medicare while the other is nationwide spending

Mark E. Wynn	Initial bids for national competitive bidding program 26% lower than fee schedules		
Prices of Medical Devices			
Jeffrey C. Lerner	$4.7 billion (2008 dollars) in savings for medical device price negotiations	N/A	N/A
Session 5: Missed Prevention Opportunities			
Savings from Increased Primary and Secondary Prevention			
Thomas J. Flottemesch	$7 billion annual spending reduction from increased primary prevention $3.3 billion annual spending *increase* from increased secondary prevention	$1.6 trillion between now and 2023 from prevention and early intervention for seven common chronic diseases (DeVol et al., 2007) $255 billion in savings over 11 years from reduction in tobacco use; $406 billion over same time period from reduction in obesity (The Commonwealth Fund, 2009) $191 billion from interventions aimed at preventing diabetes among those at highest risk (Berenson et al., 2009) Annual excess costs attributable to smoking and conditions related to obesity and being overweight at $567 to $161 billion and $200 billion, respectively; the costs of poorly controlled diabetes were $22 billion while non-adherence cost another $100 billion (PriceWaterhouseCoopers, 2009)	For most preventive services, many studies suggest expanded utilization leads to higher, not lower, medical spending overall; however, some targeted prevention interventions have been found to be cost-saving

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
		No evidence of cost savings (CBO, 2004b; Delaune and Everett, 2008; Elmendorf, 2009; Goetzel et al., 2005; Mattke et al., 2007; Russell, 2009)	
Savings from Increased Tertiary Prevention			
Michael P. Pignone	$45 billion annual spending reduction from increased tertiary prevention	Please see Flottemesch (2009) for more details	Please see Flottemesch (2009) for more details

BIR = billing and insurance-related; DME = durable medical equipment; SDM = shared-decision making.
*Estimate presented during May workshop.

STRATEGIES THAT WORK

Session 1: Knowledge Enhancement-Based Strategies

Comparative Effectiveness Research

Carolyn M. Clancy	N/A	$480 billion over 10 years (2010-2019) (Collins et al., 2009)	Given uncertainty in predicting adoption, others (Berenson et al., 2009; CBO, 2007) have noted potential for savings but declined to provide specific estimates

Evidence-Based Clinical Protocols

Lucy A. Savitz	$2 billion annual savings for evidence-based protocol for treating febrile infants	$175 billion over 10 years (2010-2019) from implementation of an integrated medical management program in Medicare and application of evidence-based standards to reimbursement policies (UnitedHealth Group, 2009a)	Estimates are not directly comparable as one is based on savings from a single clinical protocol; the other estimates saving for federal spending

Electronic Health Records with Decision Support

Rainu Kaushal	$1 to $2.7 million annually per hospital after an initial investment from adoption of computerized physician order entry (Massachusetts Technology Collaborative & New England Healthcare Institute, 2009)	$77 billion in annual savings due to efficiency gains; $371 billion for hospital systems ($142 billion physician offices) over 15 years when including gains from safety (Hillestad et al., 2005)	Significant variation exists in the estimates of savings associated with adoption of EHRs and HIT depending on the time horizon analyzed, the type of technology being examined, and the extent to which the authors assume the technology will be adopted
	$86,400 per provider over five years from adoption of EHRs in the ambulatory setting (Wang et al., 2003)	$180 billion over 10 years from investment in HIT (Collins et al., 2009) $800 billion spillover effects from adoption of EHR (Russo, 2009) $97 billion in 10-year savings from adoption of EHRs (Berenson et al., 2009) Likely no cost savings (CBO, 2008)	

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Session 2: Care Culture and System Redesign-Based Strategies			
Improved Provider Profile and Use			
Michelle J. Lyn	N/A	$8.3 billion in savings if half of outpatient visits for uncomplicated patients could be handled capably by qualified non-physicians (Mecklenburg and Kaplan, 2009)* $16 billion in savings from community-based wellness programs (Trust for America's Health, 2008) $2 to $7.5 billion in savings from retail clinics (Thygeson, 2009)*	Though the interventions are related, broadly speaking, the savings estimates are not directly comparable
Jason Hwang	N/A		
Care Site Efficiency and Productivity Initiatives and Incentives			
Kim R. Pittenger	$57.8 billion in savings from widespread implementation of Virginia Mason Production System	Please see Milstein (Milstein, 2009) for more details	Please see Milstein (2009) for more details
Sandeep Green Vaswani	$35 to $112 billion annual savings from national implementation of Variability Methodology in hospitals		

Care Site Integration Initiatives			
Timothy G. Ferris	$0.6 and $1.5 billion for Medicare over a two year period from implementation of care delivery model targeting the highest risk patients	$367.4 billion in total savings to federal government over ten years from bundle of interventions (UnitedHealth Group, 2009a) $175 billion in savings from patient-centered medical homes over ten years (Collins et al., 2009) $14.8 billion over the next decade for Medicare and Medicaid from lowering payment for potentially preventable readmissions within 15 days of discharge to 60 percent of the usual payment (Berenson et al., 2009)	Estimates are not directly comparable due to specificity of the intervention described in Ferris; regardless of the approach taken, all the reviewed papers endorse the concept of care coordination as a potential method of improving health and care coordination; please Owens (2009) for more details
Antitrust Interventions			
Roger Feldman	N/A	N/A	Please see Capps (2009) for more details
Promoting Information Technology Interoperability/Connectivity			
Ashish Jha	$81 billion through improvements in HIT safety and efficiency (Hillestad et al., 2005) $337 billion during a 10-year implementation period and annual savings of nearly $78 billion in each subsequent year (amounts measured in 2003 dollars) (Walker et al., 2005)	Please see Kaushal (2009) for more details	Both of these studies have been subject to significant methodological critiques; please see Kaushal (2009) for more details

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Service Capacity Restrictions			
Frank A. Sloan	N/A	N/A	Author suggested that effectiveness of capacity restrictions depends on other policy decisions on cost containment; recent work (Grabowski et al., 2003; Ho, 2007) support the notion that CON programs have not succeeded in cost containment
Medical Liability Reform			
Randall R. Bovbjerg	$20 billion (0.9%) of annual health spending could be saved with conventional tort reform	$210.0 billion in savings from reduction in defensive medicine (PriceWaterhouseCoopers, 2009)	PriceWaterhouseCoopers' Health Research Institute estimate far exceeds bounds established in majority of econometric research publications on this topic
Session 3: Transparency of Cost and Performance			
Transparency in Prices			
John Santa	N/A	N/A	N/A
Transparency in Comparative Value of Treatment Options			
G. Scott Gazelle	N/A	N/A	N/A

Transparency in Comparative Value of Providers			
Paul B. Ginsburg	N/A	$14.5 billion (2010-2019) from sharing quality data in Medicare (UnitedHealth Group, 2009b)	N/A
Transparency in Comparative Value of Hospitals and Integrated Systems			
Peter K. Lindenauer	$2.5 to $5 billion in annual savings from public reporting requirements related to hospitals	N/A	N/A
Transparency in Comparative Value of Health Plans			
Margaret E. O'Kane	N/A	N/A	N/A
Session 4: Payment and Payer-Based Strategies			
Bundled and Fee-for-Episode Payments			
Amita Rastogi	$165 billion from utilization of bundled payment for 13 specific conditions in commercial population	$96.4 billion over 5 years for Medicare if shift to episode-of-care based payments (Schoen et al., 2007)	Difficult to compare savings estimates due to focus on different conditions and populations
Managed Competition			
David R. Reimer	N/A	$17.4 billion in 2010 (federal savings) due to operation of a public plan option in a health insurance exchange (Berenson et al., 2009)	N/A

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Value-Based Insurance Design			
Niteesh K. Choudhry	$2 billion if VBID applied to five common conditions	N/A	N/A
Lisa Carrara	3% to 4% savings in patient's claims in the first year by designating specialists based on high quality and efficiency	3% to 7% decrease in premiums from use of more efficient providers (GAO, 2007) $37 billion (2010-2019) from implementation of a program designed to provide Medicare beneficiaries with information on quality and efficiency variations among providers (UnitedHealth Group, 2009a)	Aetna (from which Carrara's estimate were drawn) was one of the insurers included in the GAO study; as neither the Carrara or GAO estimate translated savings into dollar amounts, direct comparison are not possible
Administrative Simplification			
David S. Wichmann	$322 billion based on application of technology to administrative activities (UnitedHealth Group, 2009b)	$337 billion in administrative savings over 10 years due to a national health insurance exchange with a public plan option (The Commonwealth Fund, 2009)	Estimates are not directly comparable due to targeting of different means of simplification, though there is some degree of overlap
Robin Thomashauer	$3 billion if CORE is implemented nationwide (IBM Global Business Services, 2009)		

Session 5: Community-Based and Transitional Care Strategies

Care Management for Medically Complex Patients

Kenneth E. Thorpe	$75 billion savings over ten years from investment in transitional care from frail elders (Naylor et al., 2004)	Please see Owens (2009) and Ferris (2009) for more details	Please see Owens (2009) and Ferris (2009) for more details

Palliative Care

Diane E. Meier	$4.8 billion in annual savings from increased palliative care	$6.4 billion in savings in 2010 (Berenson et al., 2009) $18 billion in savings between 2010 and 2019 (UnitedHealth Group, 2009a)	Meier and Berenson et al. estimates draw on overlapping literature; UnitedHealth Group estimate difficult to compare given decade long estimate

Wellness and Community Programs

Jeffrey Levi	$16 billion in annual savings within five years	$7 billion in annual savings from increased primary preventive services (Flottemesch, 2009)*	Estimates not directly comparable since Flottemesch analyzed clinical preventive services while Levi analyzed community wellness and prevention programs

continued

Summary Table of Estimates (Continued)

Topic/Presenter	Presenter Estimate	Relevant Comparisons Estimates	Remarks
Session 6: Entrepreneurial Strategies and Potential Changes in the State of Play			
Retail Clinics			
N. Marcus Thygeson	$2 to $7.5 billion in annual savings from increased utilization of retail clinics	N/A	Multiple studies support findings of improved quality and lower costs from use of retail clinics, though none offer national savings estimates (Eibner et al., 2009; Mehrotra et al., 2009)
Technological Innovation			
Adam Darkins	$1.7 billion in annual cost savings from increased usage of Care Coordination/Home Telehealth	$3.6 billion in savings from national implementation of telehealth technology (Vo, 2008) $4.3 billion in annual savings from widespread implementation of telehealth systems (Pan et al., 2008)	Estimates not directly comparable given different interventions in different settings

NOTE: CORE = Committee on Operating Rules for Information Exchange; EHR = electronic health record; HIT = health information technology; MedPAC = Medicare Payment Advisory Commission; VBID = value-based insurance design.

*Estimate presented during May workshop.

SUMMING THE LOWER BOUND ESTIMATES

To provide an informal contextual perspective on the magnitude and distribution of the excess healthcare costs estimated from the workshop presentations and supplemental literature review, the staff of the Institute of Medicine's Roundtable on Value & Science-Driven Health Care considered the estimates cited in the background paper and identified the lowest estimate within each category of excess expenditure considered. After adjustment to 2009 expenditure levels, these estimates were summed and are indicated on the preceding table with a condensed summary in Box A-1. It should be emphasized that these are virtually all unvalidated extrapolations, based on assumptions from limited observations, and, in the face of obvious overlaps, duplications and uncertainties in the component estimates. They are therefore offered purely for illustrative purposes and to prompt the follow-on analyses necessary for a clearer understanding of the nature, magnitude, and interrelationships of excess health expenditures in the United States, as well as of the strategies necessary to address them.

Examples of the follow-up analyses required include the following questions and issues:

- Where are there large differences in estimates addressing similar issues, what are the methodologic differences, and how can they be accommodated or revised to improve the estimates?
- Which areas and topics need the most additional work, and are there other areas and topics to be addressed?
- To minimize double counting among categories, and account for intervention synergy, how might the crosswalk delineating areas and degrees of overlap be best approached?
- Which benchmarks in the variety of topics covered within this summary reflect the most appropriate benchmark levels to guide further analyses?
- To what degree can cost findings based on national Medicare data be applied to other populations such as those commercially insured?
- How might additional analyses be further refined to ensure accuracy of the analytics and capture of the significant dimensions and nuances of the areas covered?
- What additional research is needed to identify the specific, actionable interventions and the steps needed to achieve net savings?

BOX A-1
Excess Cost Domain Estimates:
Lower bound totals from workshop discussions*

UNNECESSARY SERVICES **Total excess = $210 B***
- Overuse: services beyond evidence-established levels
- Discretionary use beyond benchmarks
  - – Defensive medicine
- Unnecessary choice of higher cost services

INEFFICIENTLY DELIVERED SERVICES **Total excess = $130 B***
- Mistakes—medical errors, preventable complications
- Care fragmentation
- Unnecessary use of higher cost providers
- Operational inefficiencies at care delivery sites
  - – Physician offices
  - – Hospitals

EXCESS ADMINISTRATIVE COSTS **Total excess = $190 B***
- Insurance-related administrative costs beyond benchmarks
  - – Insurers
  - – Physician offices
  - – Hospitals
  - – Other providers
- Insurer administrative inefficiencies
- Care documentation requirement inefficiencies

PRICES THAT ARE TOO HIGH **Total excess = $105 B***
- Service prices beyond competitive benchmarks
  - – Physician services
    - i. Specialists
    - ii. Generalists
  - – Hospital services
- Product prices beyond competitive benchmarks
  - – Pharmaceuticals
  - – Medical devices
  - – Durable medical equipment

MISSED PREVENTION OPPORTUNITIES **Total excess = $55 B***
- Primary prevention
- Secondary prevention
- Tertiary prevention

FRAUD **Total excess = $75 B***
- All sources—payer, clinician, patient fraud

*Lower bound totals of various estimates, adjusted to 2009 total expenditure level.

Appendix B

Workshop Agendas

The Healthcare Imperative:
Lowering Costs and Improving Outcomes

An Institute of Medicine Workshop Series
The Keck Center of the National Academies
Washington, DC 20001

Workshop I Agenda

Understanding the Targets

May 21-22
Meeting Agenda

Objectives: To identify, characterize, and discuss the major causes of excess healthcare spending, waste, and inefficiency in the United States, to consider strategies that might reduce *per capita* health spending in the United States while improving health outcomes, and to explore policy options relevant to those strategies.

DAY 1

9:00 am **Welcome, Introductions and Overview**
Harvey V. Fineberg, Institute of Medicine
Denis A. Cortese, Mayo Clinic and Chair, IOM Roundtable on Value & Science-Driven Health Care

David M. Walker, Peter G. Peterson Foundation

9:30 am **Keynote Address**
Peter R. Orszag, Office of Management and Budget
What is the state of play of current spending on health care in the United States? What are the implications of unchecked spending on future generations?

10:15 am **Session 1: Unnecessary Services**
Chair: Denis A. Cortese, Mayo Clinic and Chair, IOM Roundtable on Value & Science-Driven Health Care
Qualitative description and quantitative estimates on the contribution of unnecessary services to excess healthcare spending, waste and inefficiency.

Elliott S. Fisher, Dartmouth University
Use of services beyond benchmarks where evidence is not established

Amitabh Chandra, Harvard University
Overuse of services, beyond evidence-established benchmarks

David Wennberg, Health Dialog
Choice of higher cost services, over evidence-established equivalents

Mark B. McClellan, Brookings Institution
Defensive medicine

OPEN DISCUSSION

12:00 pm **Lunch Presentation**
Eric Jensen, McKinsey & Co.
How does U.S. spending on health care compare to international benchmarks? What are areas of specific excess spending and opportunities for cost savings?

1:00 pm **Session 2: Inefficiently Delivered Services**
Chair: Arnold Milstein, Pacific Business Group on Health
Qualitative description and quantitative estimates on the contribution of inefficiency in care organization

and delivery to excess healthcare spending, waste, and inefficiency.

Ashish Jha, Harvard University
Costs from mistakes (medical errors, preventable complications)

Mary Kay Owens, Southeastern Consultants, Inc.
Costs from care fragmentation (including duplicate services, treatment delays)

Gary S. Kaplan, Virginia Mason Medical Center
Costs from inefficient use of higher cost providers

William F. Jessee, Medical Group Management Association
Arnold Milstein, Pacific Business Group on Health
Costs from inefficiencies in physician offices and hospitals

OPEN DISCUSSION

3:30 pm **Session 3: Excess Administrative Costs**
Chair: Nancy H. Nielsen, American Medical Association
Qualitative description and quantitative estimates on the contribution of excess administrative costs: (1) imposed on providers via external administrative requirements, and (2) incurred for health benefits plan administration.

James L. Heffernan, Massachusetts General Physicians Organization
Regulatory compliance-imposed costs beyond benchmarks

James G. Kahn, University of California–San Francisco
Lawrence P. Casalino, Cornell University
Plan-imposed costs beyond benchmarks

Andrew L. Naugle, Milliman
Plan-incurred costs beyond benchmarks

OPEN DISCUSSION

5:15 pm **Wrap-up Comments for the Day**
Arnold Milstein, Pacific Business Group on Health

J. Michael McGinnis, Institute of Medicine

5:30 pm **Reception**

DAY TWO

8:30 am **Welcome and Re-cap of First Day**
Arnold Milstein, Pacific Business Group on Health

8:45 am **Session 4: Prices That Are Too High**
Chair: Paul B. Ginsburg, Center for Studying Health System Change
Qualitative description and quantitative estimates on the contributions of prices that are too high to excess healthcare spending, waste, and inefficiency.

Cory S. Capps, Bates White
Service prices (beyond competitive market benchmarks)

Jack Hoadley, Georgetown Health Policy Institute
Thomas J. Hoerger, RTI International
Mark E. Wynn, Centers for Medicare & Medicaid Services
Jeffrey C. Lerner, ECRI Institute
Product prices (beyond competitive market benchmarks)

OPEN DISCUSSION

10:45 am **Session 5: Missed Prevention Opportunities**
Chair: J. Michael McGinnis, Institute of Medicine
Qualitative description and quantitative estimates on the contribution of missed prevention opportunities, the treatment of which amounts to excess healthcare spending.

Steven H. Woolf, Virginia Commonwealth University
Economic implications of missed prevention opportunities

Thomas J. Flottemesch, HealthPartners Research Foundation
Costs from missed cost-saving primary and secondary prevention opportunities

Michael P. Pignone, University of North Carolina–Chapel Hill
Costs from missed tertiary cost-saving prevention opportunities

OPEN DISCUSSION

12:30 pm **Concluding Remarks, Upcoming Workshops and Adjournment**
Arnold Milstein, Pacific Business Group on Health
J. Michael McGinnis, Institute of Medicine

WORKSHOP II AGENDA

Strategies that Work

July 16-17
MEETING AGENDA

Objectives: To identify, characterize, and discuss the major causes of excess healthcare spending, waste, and inefficiency in the United States, to consider strategies that might reduce *per capita* health spending in the United States while improving health outcomes, and to explore policy options relevant to those strategies.

DAY ONE

8:00 am **Welcome, Introductions and Overview**
J. Michael McGinnis, Institute of Medicine
David M. Walker, Peter G. Peterson Foundation

8:30 am **Keynote Address**
Glenn Steele, Jr., Geisinger Health System
What strategies have been demonstrated to lower cost expenditures and improve health outcomes? What are the key success elements and the near- and long-term changes necessary?

9:00 am **Reviewing the Targets**
Chair: J. Michael McGinnis, Institute of Medicine
This session will review the analytics from the May workshop, which assessed the amount of potentially controllable waste and efficiency in five broad categories:

Unnecessary services,
Inefficiently delivered services,
Excess administrative costs,
Prices that are too high, and
Missed prevention opportunities.

Panelists:
Len Nichols, The New America Foundation
Robert D. Reischauer, Urban Institute

OPEN DISCUSSION

10:30 am **Session 1: Knowledge Enhancement-Based Strategies**
Chair: Nancy H. Nielsen, American Medical Association
Discussion of knowledge-focused strategies for reducing waste and inefficiency, an assessment of their effectiveness and potential impact on health system efficiency, and a review of the specific opportunities for their implementation.

Peter K. Smith, Duke University
Enhancing clinical data as a knowledge utility

Lucy A. Savitz, Intermountain Healthcare
Evidence-based clinical protocols

Rainu Kaushal, Weill-Cornell Medical College
Electronic health records with decision support

Carolyn M. Clancy, Agency for Healthcare Research and Quality
Comparative effectiveness research

OPEN DISCUSSION

12:30 pm **Lunch**

1:00 pm **Session 2: Care Culture and System Redesign-Based Strategies**
Chair: Reed V. Tuckson, UnitedHealth Group
Discussion of culture and system redesign-focused strategies for reducing waste and inefficiency, an assessment of their effectiveness and potential impact on health system

efficiency, and a review of the specific opportunities for their implementation.

Michelle J. Lyn, Duke University
Caregiver profile, efficiency and team care

Kim R. Pittenger, Virginia Mason Medical Center
Care site efficiency and productivity initiatives and incentives

Timothy G. Ferris, Massachusetts General Hospital
Care site integration initiatives

BREAK

Roger Feldman, University of Minnesota
Antitrust interventions

Ashish Jha, Harvard University
Promoting information technology interoperability/connectivity

Frank A. Sloan, Duke University
Service capacity restrictions

Randall R. Bovbjerg, Urban Institute
Medical liability reform

OPEN DISCUSSION

3:30 pm **Session 3: Transparency of Cost and Performance**
Chair: Robert S. Galvin, Global Healthcare/General Electric
Discussion of transparency-based strategies for reducing waste and inefficiency, an assessment of their effectiveness and potential impact on health system efficiency, and a review of the specific opportunities for their implementation.

John Santa, Consumer's Union
Transparency in prices

G. Scott Gazelle, Institute for Technology Assessment
Transparency in comparative value of treatment options

Paul B. Ginsburg, Center for Studying Health System Change
Transparency in comparative value of providers

Peter K. Lindenauer, Tufts University
Transparency in comparative value of hospitals and integrated systems

Margaret E. O'Kane, National Committee for Quality Assurance
Transparency in comparative value of health plans

OPEN DISCUSSION

5:30 pm **Wrap-up Comments for the Day**
Arnold Milstein, Pacific Business Group on Health
J. Michael McGinnis, Institute of Medicine

5:45 pm **Reception**

DAY TWO

8:00 am **Welcome and Re-cap of First Day**
Arnold Milstein, Pacific Business Group on Health

8:30 am **Session 4: Payment and Payer-Based Strategies**
Chair: Paul B. Ginsburg, Center for Studying Health System Change
Discussion of payment and payer-based strategies for reducing waste and inefficiency, an assessment of their effectiveness and potential impact on health system efficiency, and a review of the specific opportunities for their implementation.

Amita Rastogi, Bridges to Excellence
Bundled and fee-for-episode payments

Harold D. Miller, Center for Healthcare Quality and Payment Reform
Value-based payment

David R. Riemer, Community Advocates
Managed competition

Niteesh K. Choudhry, Harvard University
Lisa Carrara, Aetna
Value-based insurance design

Robin J. Thomashauer, Council for Affordable Quality Healthcare

David S. Wichmann, UnitedHealth Group
Payer harmonization, coordination and/or consolidation

OPEN DISCUSSION

10:45 am **Session 5: Community-Based and Transitional Care Strategies**
Chair: Gail Shearer, Consumers Union
Discussion of community-based and transitional care strategies for reducing waste and inefficiency, an assessment of their effectiveness and potential impact on health system efficiency, and a review of the specific opportunities for their implementation.

Kenneth E. Thorpe, Emory
Care management for medically complex patients

Diane E. Meier, Mt. Sinai Hospital
Reform in end-of-life care

Jeffrey Levi, Trust for America's Health
Wellness/community programs

OPEN DISCUSSION

12:00 pm **Lunch**

12:30 pm **Session 6: Entrepreneurial Strategies and Potential Changes in the State of Play**
Chair: Kathleen Buto, Johnson & Johnson
Discussion of entrepreneurial initiatives that may change the state of play in ways that substantially reduce waste and inefficiency, an assessment of their potential

effectiveness and impact on health system efficiency, and a review of the specific opportunities for their implementation.

Sandeep Green Vaswani, Institute for Healthcare Optimization
N. Marcus Thygeson, HealthPartners
Highest known yield clinical service engineering applications (e.g., smoothing, retail clinics)

Jason Hwang, Innosight
Lower barriers to entry in health care (e.g. competency-based rather than credential-based clinical licensing)

Adam Darkins, Department of Veterans Affairs
Technological innovation

Gerard F. Anderson, Johns Hopkins University
Strategies importable from abroad

OPEN DISCUSSION

2:30 pm **Concluding Remarks, Upcoming Workshops and Adjournment**
Arnold Milstein, Pacific Business Group on Health
J. Michael McGinnis, Institute of Medicine

Workshop III Agenda

The Policy Agenda

September 9-10
Meeting Agenda

Objectives: To identify, characterize, and discuss the major causes of excess healthcare spending, waste, and inefficiency in the United States; to consider strategies that might reduce *per capita* health spending in the United States while improving health outcomes; and to explore policy options relevant to those strategies.

DAY ONE

8:00 am **Welcome, Introductions and Overview**
J. Michael McGinnis, Institute of Medicine
Arnold Milstein, Pacific Business Group on Health

8:30 am **Keynote Address**
Karen Davis, The Commonwealth Fund
The keynote will explore what we have learned about the relative contributions of the major sources of excessive, unnecessary, and wasteful U.S. healthcare expenditures; what we know about the forces in play, the key strategies necessary to address the problem, and the policy initiatives most likely to make a difference in the near- and longer-term; and how the necessary support might be mobilized.

9:00 am **Session 1: Reviewing the Targets and Strategies**
Chair: J. Michael McGinnis, Institute of Medicine
Opening Remarks: David M. Walker, Peter G. Peterson Foundation
This session provides an overview of the state of understanding from the May and July workshops assessing the sources of excess costs (and some prominent examples) and the potential gains from various initiatives.
Estimates of excess costs, by source:
Unnecessary services,
Inefficiently delivered services,
Excess administrative costs,
Prices that are too high, and
Missed prevention opportunities.
Estimates of potential gains, by initiative:
Payment-based strategies,
Care delivery efficiency-based strategies,
Payer harmonization-based strategies,
Transparency-based strategies,
Tort reform,
Knowledge enhancement-based strategies, and
Community-based strategies.

Joseph Antos, American Enterprise Institute
CBO scoring methods and results

OPEN DISCUSSION

10:45 am **Session 2: Policies Targeting Payments Bundled by Condition, Episode, or Outcome**
Chair: Arnold Milstein, Pacific Business Group on Health
Opening Remarks: Harvey V. Fineberg, Institute of Medicine
This session addresses the nature, status, and implementation issues for bundled payment strategies, the pivotal co-factors necessary to maximize the savings potential, and the options to minimize political barriers.

John M. Bertko, The Brookings Institution
Linda M. Magno, Centers for Medicare & Medicaid Services
State of the science, implementation course, and cadence in bundling payments

George J. Isham, HealthPartners
Provider engagement issues

Nancy Davenport-Ennis, National Patient Advocate Foundation
Patient engagement issues

OPEN DISCUSSION

12:15 pm **Lunch**

12:45 pm **Session 3: Policies Targeting Care for Medically Complex Patients**
Chair: Peter M. Neupert, Microsoft
This session considers policies that might foster delivery system innovations, ranging from care coordination and more efficient caregiver profiles, to shared services arrangements, and patient/family engagement initiatives, including consideration of policies promoting reform of palliative and end-of-life care.

Arnold Milstein, Pacific Business Group on Health
State-of-the-art initiatives

Ronald A. Paulus, Geisinger Health System
Provider perspective

R. Sean Morrison, Mt. Sinai School of Medicine
Anand K. Parekh, Department of Health and Human Services
Policy perspective

OPEN DISCUSSION

2:15 pm **Session 4: Policies Targeting Delivery System Integration**
Chair: Helen Darling, National Business Group on Health
This session addresses the current state and consequences of the fragmentation of health care, and considers the organizational, technical, and financial incentives for integrated and virtually integrated care.

John Toussaint, ThedaCare Center for Healthcare Value
Profile of system fragmentation and elements of integration

Mark E. Miller, Medicare Payment Advisory Commission
Harold S. Luft, Palo Alto Medical Foundation Research Institute
Payment to promote integration

Andrew M. Wiesenthal, The Permanente Foundation
Health information technology to promote integration

OPEN DISCUSSION

3:45 pm **Session 5: Policies Targeting Other Delivery System Innovations**
Chair: Paul B. Ginsburg, Center for Studying Health System Change
This session considers policies that might lower barriers to introduction of delivery system innovations, ranging from design of more efficient delivery systems to more efficient use of alternate caregivers.

Steven J. Spear, Massachusetts Institute of Technology
Policies to improve system efficiencies

Mary D. Naylor, University of Pennsylvania
Policies to improve provider profile and use

OPEN DISCUSSION

4:45 pm **Wrap-up Comments for the Day**
Arnold Milstein, Pacific Business Group on Health

DAY TWO

8:00 am **Welcome and Re-cap of First Day**
Arnold Milstein, Pacific Business Group on Health

8:30 am **Session 6: Policies Targeting Administrative Simplification**
Chair: Nancy H. Nielsen, American Medical Association
This session considers policies aimed at harmonizing and standardizing payer plans, and billing and reporting requirements, including review of current initiatives, experiences, barriers, and possibilities.

Lewis G. Sandy, UnitedHealth Group
Payer perspective

Linda L. Kloss, American Health Information Management Association
Provider perspective

Harry Reynolds, Blue Cross/Blue Shield of North Carolina
Policy engagement issues

OPEN DISCUSSION

10:00 am **Session 7: Policies Targeting Consumer Preferences for Higher Value Care**
Chair: Robert S. Galvin, Global Healthcare/General Electric
This session considers policies that aim to sharpen consumer awareness, focus, and choice of care that delivers higher value.

Jennifer Sweeney, National Partnership for Women and Families
Consumer engagement issues

Dick Salmon, Cigna
Payer perspective

Dolores L. Mitchell, Group Insurance Commission
Purchaser perspective

OPEN DISCUSSION

11:30 am **Lunch**

12:00 pm **Session 8: Pulling It All Together—Getting to 10 Percent**
Chair: Arnold Milstein, Pacific Business Group on Health
This session will engage key analysts in the task of each reflecting on the summary estimates from the previous meetings and related sources, and offering their views of the gains possible and the most important issues and strategies to reach the possible.

Elizabeth A. McGlynn, RAND
David O. Meltzer, University of Chicago
Peter J. Neumann, Tufts University

OPEN DISCUSSION

1:30 pm **Session 9: Pulling It All Together—The Policy Priorities and Strategies**
Chair: J. Michael McGinnis, Institute of Medicine
This session will engage participants in an open discussion of the policy priorities, how to mobilize support, and possible strategy approaches in the contemporary political environment.

Mark B. McClellan, Brookings Institution
Joseph Onek, Office of the Speaker of the House of Representatives
Dean Rosen, Mehlman Vogel Castagnetti
Short-term possibilities and goals
Long-term possibilities and goals

OPEN DISCUSSION

2:30 pm **Concluding Remarks and Adjournment**
Arnold Milstein, Pacific Business Group on Health
J. Michael McGinnis, Institute of Medicine

Workshop IV Agenda

Reaching 10 Percent: Options and Requirements

December 15-16
Meeting Agenda

Objectives: To consider, identify, and characterize practical strategies to reduce *per capita* health spending in the United States by at least 10 percent within 10 years, without compromising health status, quality of care, or valued innovation.

DAY ONE

9:30 am Coffee and light breakfast available

10:00 am **Welcome, Introductions and Overview**
J. Michael McGinnis, Institute of Medicine

10:30 am **Looking Back at *The Healthcare Imperative* Workshop Series**
Pierre L. Yong, Institute of Medicine
Review the framework and estimates from the workshop series, and reflections on further needs to improve the numbers going forward.

OPEN DISCUSSION

11:15 am **Identifying the Primary Opportunities**
Develop the priority list of the domains of highest importance to target, the cost saving strategies of highest yield and importance.

OPEN DISCUSSION

12:30 pm **Lunch**

1:00 pm **Consideration of Different Strategy Scenarios—Reaching 10 Percent**
Presentation and discussion of different strategic scenario for reaching 10 percent, including the stakeholders affected and the relative savings potentially achievable in the current delivery system milieu.

OPEN DISCUSSION

2:30 pm **Break Out Discussions**
Three groups, each working on details of a different approach.

4:00 pm **Group Discussion**
Report and feedback from each of the three break out groups.

OPEN DISCUSSION

5:00 pm **Wrap-up Comments for the Day**
J. Michael McGinnis, Institute of Medicine

DAY TWO

8:00 am Coffee and light breakfast available

8:30 am **Welcome and Re-cap of First Day**
J. Michael McGinnis, Institute of Medicine

9:00 am **Identification of Strategic Options to Reach 10 Percent**
Development of strategic roadmap for achieving 10 percent health expenditure savings, including the policies needed to implement the strategies, the potential barriers to implementations, the critical co-factors needed to maximize success.

OPEN DISCUSSION

11:00 am **Cadence Issues**
Considerations of timing of implementation of the identified strategic options.

OPEN DISCUSSION

12:00 pm **Summary and Adjournment**
J. Michael McGinnis, Institute of Medicine

Appendix C

Planning Committee Biographies

Arnold Milstein, M.D., M.P.H., (*Planning Committee Chair*), is Medical Director of the Pacific Business Group on Health (PBGH) and Chief Physician at Mercer Health & Benefits. PBGH is the largest employer healthcare purchasing coalition in the United States. His work and publications focus on healthcare purchasing strategy, the psychology of clinical performance improvement, and clinical innovations that reduce total healthcare spending. He cofounded both the Leapfrog Group and the Consumer-Purchaser Disclosure Project. He heads performance measurement activities for both initiatives and is a Congressional MedPAC Commissioner. The *New England Journal of Medicine*'s series on employer sponsored health insurance described him as a "pioneer" in efforts to advance quality of care. He was selected for the highest annual award of the National Business Group on Health (NBGH), for nationally distinguished innovation in healthcare cost reduction and quality gains. He was elected to the Institute of Medicine of the National Academy of Sciences and is a faculty member at University of California-San Francisco's Institute for Health Policy Studies. He was educated at Harvard (B.A. economics), Tufts (M.D.), and UC Berkeley (M.P.H. health services evaluation and planning).

Kathleen Buto, M.P.A., is Vice President for Health Policy, Government Affairs, at Johnson & Johnson (J&J). She has responsibility for providing policy analysis and developing positions on a wide range of issues, including the Medicare drug benefit, government reimbursement, coverage of new technologies, and regulatory requirements. In addition to reviewing how federal, state, and international government policies affect J&J

products and customers, she is responsible for helping to identify areas of opportunity for J&J to take leadership in shaping healthcare policy. Prior to joining J&J, Kathy was a senior health adviser at the Congressional Budget Office, helping to develop the cost models for the Medicare drug benefit. Before that, she spent more than 18 years in senior positions at the Health Care Financing Administration, including Deputy Director, Center for Health Plans and Providers, and Associate Administrator for Policy. In these positions, she headed the policy, reimbursement, research, and coverage functions for the agency, as well as managing Medicare's fee-for-service and managed care operations. Kathy received her B.A. from Douglass College and her master's in public administration from Harvard University.

Robert S. Galvin, M.D., M.B.A., is Director of Global Healthcare for General Electric (GE). He oversees the design and performance of GE's health programs, which total over $3 billion annually, and is responsible for GE's medical services, encompassing over 220 medical clinics in more than 20 countries. Dr. Galvin completed his undergraduate work at the University of Pennsylvania, where he graduated magna cum laude and was elected to Phi Beta Kappa. He also received his M.D. degree at the University of Pennsylvania and was elected to Alpha Omega Alpha. He received an MBA in health care management from Boston University School of Management in 1995. In his current role, Dr. Galvin has focused on issues of market-based health policy and financing, with a special interest in quality measurement and improvement. He has been a leader in pushing for public release of performance information and reform of the payment system. He was a member of the Strategic Framework Board of the National Quality Forum and currently sits on the board of the National Committee for Quality Assurance. He is a founder of both the Leapfrog Group and Bridges to Excellence. He is also a member of the Advisory Board of the Council of Health Care Economics and the IOM Committee on Redesigning Health Insurance Benefits, Payments, and Performance Improvement Programs. Dr. Galvin's work has received awards from the National Health Care Purchasing Institute, the National Business Group on Health, and the National Coalition for Cancer Survivorship. He is a Fellow of the American College of Physicians, and his work has been published in the *New England Journal of Medicine* and *Health Affairs*. He is Adjunct Professor of Medicine and Health Policy at Yale where he leads a seminar on the private sector at the School of Medicine and the MBA program at the School of Management.

Paul B. Ginsburg, Ph.D., is President of the Center for Studying Health System Change (HSC). Founded in 1995 by Dr. Ginsburg, HSC conducts research to inform policy makers and other audiences about changes in organization of financing and delivery of care and their effects on people.

HSC is widely known for the objectivity and technical quality of its research and its success in communicating it to policy makers and the media as well as to the research community. Ginsburg is particularly known for his understanding of healthcare markets and health care costs. In 2007, for the fifth time, Dr. Ginsburg was named by Modern Healthcare as one of the 100 most powerful persons in health care. Dr. Ginsburg served as the founding Executive Director of the predecessor to the Medicare Payment Advisory Commission. Widely regarded as highly influential, the Commission developed the Medicare physician payment reform proposal that was enacted by the Congress in 1989. Dr. Ginsburg was a Senior Economist at RAND and served as Deputy Assistant Director at the Congressional Budget Office. Before that, he served on the faculties of Duke and Michigan State Universities. He earned his Ph.D. in economics from Harvard University.

Eric Jensen, M.B.A., is an Engagement Manager in McKinsey & Company's Washington, DC, Office and a member of McKinsey's payer and provider practice. Since joining the firm in August 2001, Jensen has helped clients across a variety of industries with top strategic and operational issues. Within the healthcare sector, Jensen has advised hospital and pharmaceutical clients with strategic planning efforts, service line growth strategies, and game theory based strategy development. His interest in economics has extended into work within the consumer goods sector where he helped a major multinational client use microeconomic modeling to evaluate strategic options, competitive response, and likely future industry evolution. As of March 2008, Jensen joined McKinsey Global Institute (MGI) as a Fellow to help lead an ongoing review of the U.S. health system and healthcare economics. In this role, he has conducted briefings with think tanks, policy makers, and public and private sector executives on the economic incentives underpinning healthcare costs in the United States. The results of his work were recently published in the MGI report, Accounting for the Cost of U.S. Health Care: A New Look at Why Americans Spend More and has been featured in articles in *Newsweek* and the *Washington Post*. Jensen is now leading an initiative investigating the drivers of variation in healthcare costs at a U.S. state level. Jensen received an M.B.A. with high distinction from the University of Michigan. He also graduated summa cum laude with a B.S. degree in chemical engineering from Ohio State University.

James E. Mathews, Ph.D., came to MedPAC in the spring of 2007 from the Department of Health and Human Services, where he served as the deputy to the Deputy Assistant Secretary for Health Policy for the Assistant Secretary for Planning and Evaluation. He has held a variety of management and analytic positions throughout his career in health policy, having served at the U.S. Government Accountability Office, the Prospective Payment

Assessment Commission (one of MedPAC's predecessor commissions), the Office of Management and Budget, and the Health Care Financing Administration (now CMS). Prior to becoming MedPAC's Deputy Director in 2008, Jim focused on hospice, end of life, and other post-acute care.

Nancy H. Nielsen, M.D., Ph.D., an internist from Buffalo, New York, became the 163rd president of the American Medical Association (AMA) in June 2008. Dr. Nielsen was speaker of the AMA House of Delegates (HOD) from 2003 to 2007 and vice speaker for the three preceding years. She was a delegate from New York and previously served two terms on the AMA Council on Scientific Affairs, where she helped formulate policy positions for AMA-HOD debates on the diagnosis and treatment of depression, alcoholism among women, Alzheimer's disease, priorities in clinical preventive services, colorectal cancer screening, asthma control, nicotine content of cigarettes, and medication safety. Among other AMA positions, Dr. Nielsen has served as a member of the National Patient Safety Foundation Board of Directors, the Commission for the Prevention of Youth Violence, and the Task Force on Quality and Patient Safety. She is the AMA representative on many quality initiatives, including the National Quality Forum, the AMA Physician Consortium for Performance Improvement, the Ambulatory Care Quality Alliance, and the Quality Alliance Steering Committee. She served on the Institute of Medicine's Roundtable on Evidence-Based Medicine. Dr. Nielsen was speaker of the Medical Society of the State of New York House of Delegates, and a member of the board of directors of the Medical Liability Mutual Insurance Company—one of the largest malpractice carriers in the country. She was also president of her county medical society and her hospital's medical staff. Dr. Nielsen holds a Ph.D. in microbiology and received her M.D. from the State University of New York (SUNY) at Buffalo School of Medicine and Biomedical Sciences. She is Clinical Professor of Medicine and Senior Associate Dean for Medical Education at her alma mater, and has served as a trustee of the SUNY system. She was a member of the board of directors of Kaleida Health—a five-hospital system in western New York—and was chief medical officer of a large regional health plan in the Buffalo area.

Steven D. Pearson, M.D., M.Sc., FRCP, is President of the Institute for Clinical and Economic Review (ICER) at Harvard Medical School and Senior Fellow at America's Health Insurance Plans in Washington, DC. Dr. Pearson's work examines the scientific and ethical foundations of evidence-based policy making in health care. His published work includes the book *No Margin, No Mission: Health Care Organizations and the Quest for Ethical Excellence*, published in 2003 by Oxford University Press. Dr. Pearson is the current Vice Chair of the Medicare Evidence Develop-

ment and Coverage Advisory Committee, is a member of the AcademyHealth Methods Council, and also serves on the management committee of the International Society for Priority Setting in Health Care. In 2004, he was awarded an Atlantic Fellowship to pursue policy studies at the National Institute for Clinical Excellence (NICE) in London, England. He returned to the United States to serve from 2005-2006 as Special Advisor, Technology and Coverage Policy, at the Centers for Medicare & Medicaid Services. In 2006, Dr. Pearson founded the Institute for Clinical and Economic Review (ICER). ICER produces appraisals of the clinical effectiveness and cost-effectiveness of medical innovations, with the goal of providing new information to decision makers intent on improving the value of healthcare services.

Gail Shearer, M.P.P., rejoined Consumers Union in December 1985. For the first 17 years, she wrote analyses of various health policy issues ranging from medical savings accounts to the Clinton health care proposal. For the past 2 years, she has served as Director of Consumer Reports Best Buy Drugs. She spent 9 years at the Federal Trade Commission in various policy planning and consumer protection roles. Before joining the FTC, she worked for Consumers Union in both the headquarters in Mount Vernon, New York and in the Washington office. Her first project (1974) was to analyze the various national health insurance bills under consideration in Congress.

Reed V. Tuckson, M.D., was appointed Executive Vice President and Chief of Medical Affairs in December 2006. Dr. Tuckson joined UnitedHealth Group in 2000 as Senior Vice President, Consumer Health and Medical Care Advancement. Prior to joining UnitedHealth Group, Dr. Tuckson worked as Senior Vice President, Professional Standards, for the American Medical Association (AMA). He also served as president of an academic health science center, and was formerly Commissioner of Public Health for the District of Columbia.

Appendix D

Speaker Biographies

Gerard F. Anderson, Ph.D., is Professor of Health Policy and Management and Professor of International Health at the Johns Hopkins University Bloomberg School of Public Health, Professor of Medicine at the Johns Hopkins University School of Medicine, Director of the Johns Hopkins Center for Hospital Finance and Management, and co-Director of the Johns Hopkins Program for Medical Technology and Practice Assessment. Dr. Anderson is currently conducting research on chronic conditions, comparative insurance systems in developing countries, medical education, health care payment reform, and technology diffusion. He has directed reviews of healthcare systems for the World Bank and USAID in multiple countries. He has authored two books on healthcare payment policy, published over 200 peer-reviewed articles, testified in Congress over 40 times as an individual witness, and serves on multiple editorial committees. Prior to his arrival at Johns Hopkins, Dr. Anderson held various positions in the Office of the Secretary, U.S. Department of Health and Human Services, where he helped to develop Medicare prospective payment legislation.

Joseph Antos, Ph.D., is Wilson H. Taylor Scholar in Health Care and Retirement Policy at the American Enterprise Institute (AEI). He is also a Commissioner of the Maryland Health Services Cost Review Commission and an Adjunct Professor at the School of Public Health of the University of North Carolina at Chapel Hill. Prior to joining AEI, he was Assistant Director for Health and Human Resources at the Congressional Budget Office (CBO), and he held senior positions in the U.S. Department of Health and Human Services, the Office of Management and Budget, and

the President's Council of Economic Advisers. He also has extensive experience as an adviser to the U.S. Agency for International Development, the World Bank, and governments in Europe and Asia. Dr. Antos has written, lectured, and testified before Congress on the economics of health policy, including Medicare and broader health system reform, healthcare financing, health insurance regulation, and the uninsured. He is the editor, with Alice Rivlin, of *Restoring Fiscal Sanity 2007: The Health Spending Challenge* (Brookings Institution Press, 2007). He is past chairman of the Coalition for Health Services Research, a member of CBO's panel of health advisers, and he serves on a variety of professional boards. He earned his Ph.D. in economics in 1974 from the University of Rochester, his M.A. in economics in 1971 from the University of Rochester, and his B.A. in mathematics from Cornell University in 1968.

Michael Bailit, M.B.A., founded Bailit Health Purchasing, LLC in 1997 and has worked with a wide array of government agencies and purchasing coalitions across the United States since. His professional interests focus on how purchasers and regulators can influence healthcare markets to operate as effectively and efficiently as possible. Bailit has worked with clients on performance assessment activities, vendor management, chronic care model/medical home strategy design and implementation, reimbursement system design, and the use of incentives to motivate desired performance. His work has also included assistance with strategic planning activities for systems and programs. Prior to founding Bailit Health Purchasing, Bailit served as Assistant Commissioner for Benefit Plans in the Massachusetts Division of Medical Assistance, the state Medicaid agency. His responsibilities included the management of all of the Division's benefit plans, including the HMO, behavioral health, primary care case management, and senior care programs. For each of these programs he designed and supervised the execution of procurements as well as ongoing vendor performance management. He was also responsible for new managed care program development for the Division, including the Division's HCFA 1115 health reform waiver and its 1115 Medicare-Medicaid dual-eligible waiver. While with Massachusetts, he served as chair of the HCFA (now CMS) Medicaid Managed Care Technical Advisory Group. Also while with Massachusetts, Michael founded the Massachusetts Healthcare Purchaser Group and served as its chairman and president from 1993-1996. The MHPG is a statewide coalition of public and private purchasers of health insurance and is the leading voice of purchasers in the Commonwealth. Previously, Michael worked for Digital Equipment Corporation and was engaged in health and welfare benefit planning and management activities for Digital's 60,000 U.S. employees. Michael earned a B.A. degree from Wesleyan University and earned an M.B.A. from the Kellogg School of Management at Northwestern University.

John M. Bertko, F.S.A., MAAA, is currently Adjunct Staff at RAND, a Visiting Scholar at the Brookings Institution, and the retired Chief Actuary of Humana Inc., where he managed the corporate actuarial group and directed work by actuarial staff for Humana's major business units, including developing Part D, Medicare Advantage, and consumer-driven health care products. He has extensive experience with risk adjustment and has served in several public policy advisory roles. He currently serves on the Medicare Payment Advisory Commission (MedPAC) and on the panel of health advisors for the Congressional Budget Office. He served the American Academy of Actuaries as a board member from 1994 to 1996 and as vice president for the health practice council from 1995 to 1996. He is a Fellow of the Society of Actuaries and a member of the American Academy of Actuaries. He has a B.S. in mathematics from Case Western Reserve University.

Maureen Bisognano, M.S., is Executive Vice President and Chief Operating Officer of the Institute for Healthcare Improvement (IHI), an independent not-for-profit organization helping to lead the improvement of health care throughout the world. She is a prominent authority on improving healthcare systems, whose expertise has been recognized by her elected membership to the Institute of Medicine of the National Academy of Sciences and by her appointment to the Commonwealth Fund's Commission on a High Performance Health System, among other distinctions. Ms. Bisognano advises healthcare leaders around the world, is a frequent speaker at major healthcare conferences on quality improvement, and is a tireless advocate for change. She is also an Instructor of Medicine at Harvard Medical School and a Research Associate in the Division of Social Medicine and Health Inequalities at the Brigham and Women's Hospital. Prior to joining IHI, Ms. Bisognano was Senior Vice President of the Juran Institute, where she consulted with senior management on the implementation of total quality management in healthcare settings. Before that, she served as Chief Executive Officer of the Massachusetts Respiratory Hospital in Braintree, MA, where she implemented a hospital-wide strategic plan that improved the quality of care while simultaneously reducing costs. Ms. Bisognano began her career in health care in 1973 as a staff nurse at Quincy City Hospital. She was Director of Nursing at Quincy City Hospital from 1981 to 1982, Director of Patient Services from 1982 to 1986, and Chief Operating Officer from 1986 to 1987. She holds a B.S. degree from the State University of New York and an M.S. degree from Boston University.

Randall R. Bovbjerg, J.D., is a Senior Fellow in the Health Policy Center of the Urban Institute. He has studied prevention of medical injury, tort reform, and non-judicial alternatives including medical discipline, along with many other topics in health policy, currently including state health reform

and the relevance of the Federal Employees Health Benefits program for national refom. His first health policy publication was a 1975 *Duke Law Journal* article on HMOs and malpractice. Most recently, he has coauthored a forthcoming paper on health reform cost containment, which has a section on liability reform. He also co-drafted chapter 6 of the Institute of Medicine's 2000 book *To Err Is Human* and during 1992-1994 chaired the Advisory Panel on Defensive Medicine for the Office of Technology Assessment. He recently served on the Patient Safety Workgroup of the Federation of State Medical Boards and on JCAHO's taskforce on alternatives to tort litigation. He has also taught at Duke and Johns Hopkins Universities and worked as a state insurance regulator in Massachusetts.

Cory S, Capps, Ph.D., a Principal at Bates White, has more than 10 years experience as an economist specializing in industrial organization, empirical methods, and antitrust, with a focus on the healthcare industry. He has advised both private firms and government agencies on issues relating to hospital market power and competition, and he has experience analyzing joint ventures, group purchasing organizations, price-fixing and market allocation, and vertical foreclosure. Recently, Dr. Capps served as an outside expert in a Department of Justice investigation of a proposed merger in the healthcare sector. Prior to joining Bates White, Dr. Capps was a Staff Economist at the Antitrust Division of the Department of Justice (DOJ) where he concentrated in the analysis of competition in healthcare markets, including merger and civil nonmerger investigations of hospitals, physicians, nurses, insurers, home health agencies, and ambulatory surgery centers. While at the DOJ, he provided written testimony on geographic market definition before the DOJ/FTC Hearings on Healthcare Competition, Policy, and Law. And he provided oral testimony on for-profit and nonprofit hospital market power and pricing before the DOJ/FTC Hearings on Healthcare Competition, Policy, and Law. In addition to Dr. Capps' broad healthcare experience, he has conducted economic analysis for investigations and cases involving a variety of industries such as airlines, semiconductors, newspapers, online content providers, and genetically modified crops. Dr. Capps has also provided economic consulting services to corporations on business and strategy issues. Dr. Capps' academic career includes professorships at the University of Illinois at Urbana-Champaign and at Northwestern University's Kellogg School of Management. He has published widely in journals including *RAND Journal of Economics*, *Journal of Economics and Management Strategy*, *Journal of Health Economics*, *Antitrust Bulletin*, *Health Affairs*, and *Health Economics, Policy and Law*.

Lisa Carrara, has proven herself in a variety of underwriting, sales support, and product development management positions. She has been in

her current role as Head of Aexcel Product Development since July 2003. She also acquired responsibility for Group Insurance Product Development in mid-2005. Lisa began her career in a fast-track professional rotational development program where she had several assignments within medical claim as well as customer team financial underwriting. After several years in National Accounts Sales Support learning the complexities of selling managed care to jumbo accounts, she transitioned to a start-up opportunity managing Aetna's first "24-hour" line of coverage, which combined non-occupational medical and group disability with workers' compensation coverage. She moved to Aetna Group Insurance (life, disability, and long-term care) in 1996 where she assumed a number of management positions with increasing responsibility, including Proposal Unit Manager, Northeast Underwriting Director, Head of Key Accounts Underwriting, and Head of Product and Solutions Development until her final stop as Head of Multi-Channel Distribution specializing in alternate distribution channels. Carrara has specialized in various start-up opportunities over her Aetna career. Specifically, the 24-hour product in National Accounts, the Group Insurance Proposal Unit, consolidation of Key Accounts segment for underwriting of renewals and presale activity, a focused Group Insurance Product Development team separate from the Product Management team, an entirely new business segment called Multi-Channel Distribution, and lastly, the Aexcel Network Product were all start-up business areas for Aetna.

Lawrence Casalino, Ph.D., is Chief of the Division of Outcomes and Effectiveness Research in the Department of Public Health at Weill Cornell Medical College. Previously, he worked for 20 years as a family physician in private practice, obtained a Ph.D. in health services research at the University of California, Berkeley, and served as an Associate Professor at the University of Chicago. He is the recipient of an Investigator Award in Health Policy Research from the Robert Wood Johnson Foundation. Dr. Casalino studies the organization of physician practice, the use of organized processes to improve the quality of care, and physician relations with hospitals and health plans, as well as the public and private policies that influence physicians, hospitals, and health plans.

Amitabh Chandra, Ph.D., is Professor of Public Policy at the Harvard Kennedy School of Government. He is a Research Fellow at the IZA Institute in Bonn, Germany, and at the National Bureau of Economic Research (NBER) in Cambridge, Massachusetts. His current research focuses on productivity and expenditure growth in health care, racial disparities in health care, and the economics of neonatal health and cardiovascular care. His research has been supported by the National Institute of Aging and the National Institute of Child Health and Development, and has been published in the *American*

Economic Review, the *Journal of Political Economy*, the *Journal of Labor Economics*, *Journal of Policy Analysis and Management*, *Circulation*, the *American Heart Journal*, and *Health Affairs*. He serves as an editor of the *Journal of Human Resources*, *Economics Letters,* and the *American Economic Journal-Applied*. He has been a faculty member at Dartmouth and MIT, and has been a consultant to the National Academy of Science, the Robert Wood Johnson Foundation, and the RAND Corporation. He is the recipient of an Outstanding Teacher Award, the first-prize recipient of the Upjohn Institute's International Dissertation Research Award, the Kenneth Arrow Award for best paper in health economics, and the Eugene Garfield Award for the impact of medical research.

Niteesh K. Choudhry, M.D., Ph.D., is Assistant Professor at Harvard Medical School and Associate Physician in the Division of Pharmacoepidemiology and Pharmacoeconomics and the Hospitalist Program at Brigham and Women's Hospital. His research focuses on increasing the appropriate use of evidence-based medications for the treatment of common chronic conditions, such as coronary artery disease, hyperlipidemia, and diabetes, by reducing barriers to medication access and adherence. He is particularly interested in the impact of medication costs and financial incentives on medication use and is leading several randomized trials and large observational studies to explore these issues further. Dr. Choudhry attended McGill University and then received his M.D. and did his residency training in Internal Medicine at the University of Toronto. He served as Chief Medical Resident for the Toronto General and Toronto Western Hospitals and was later the Director of the Medical Clerkship Program at the Toronto General Hospital. He did his Ph.D. in health policy at Harvard University, with a concentration in statistics and the evaluative sciences, and was a Fellow in Pharmaceutical Policy Research at Harvard Medical School.

Carolyn M. Clancy, M.D., is Director of the Agency for Healthcare Research and Quality (AHRQ). Prior to 2002, she was Director of the Agency's Center for Outcomes and Effectiveness Research (COER). Dr. Clancy, a general internist and health services researcher, is a graduate of Boston College and the University of Massachusetts Medical School. Following clinical training in internal medicine, Dr. Clancy was a Henry J. Kaiser Family Foundation Fellow at the University of Pennsylvania. She was also an Assistant Professor in the Department of Internal Medicine at the Medical College of Virginia in Richmond before joining AHRQ in 1990. Dr. Clancy holds an academic appointment at George Washington University School of Medicine (Clinical Associate Professor, Department of Medicine), is the Senior Associate Editor of Health Services Research and serves on multiple editorial boards (currently *Annals of Family Medicine*, *American Journal*

of Medical Quality, and *Medical Care Research and Review*). She has published widely in peer-reviewed journals and has edited or contributed to seven books. She is a member of the Institute of Medicine and was elected a Master of the American College of Physicians in 2004.

David M. Cutler, Ph.D., has developed an impressive record of achievement in both academia and the public sector. He served as Assistant Professor of Economics from 1991 to 1995, was named John L. Loeb Associate Professor of Social Sciences in 1995, and received tenure in 1997. He is currently the Otto Eckstein Professor of Applied Economics in the Department of Economics and Kennedy School of Government and recently completed a 5-year term as Associate Dean of the Faculty of Arts and Sciences for Social Sciences. Honored for his scholarly work and singled out for outstanding mentorship of graduate students, Professor Cutler's work in health economics and public economics has earned him significant academic and public acclaim. Professor Cutler served on the Council of Economic Advisers and the National Economic Council during the Clinton administration and was senior health care advisor to Barack Obama's presidential campaign. Professor Cutler also advised the presidential campaign of Bill Bradley. Among other affiliations, Professor Cutler has held positions with the National Institutes of Health and the National Academy of Sciences. Currently, Professor Cutler is a Research Associate at the National Bureau of Economic Research and a member of the Institute of Medicine. Professor Cutler is the author of *Your Money Or Your Life: Strong Medicine for America's Health Care System*, published by Oxford University Press. This book, and Professor Cutler's ideas, were the subject of a feature article in the *New York Times Magazine*, The Quality Cure, by Roger Lowenstein. Cutler was recently named 1 of the 30 people who could have a powerful impact on health care by *Modern Healthcare* magazine and 1 of the 50 most influential men aged 45 and younger by *Details* magazine.

Adam Darkins, M.B., Ch.B., M.D., MPHM, FRCS, leads the National Care Coordination/Telehealth Program within the U.S. Department of Veterans Affairs (VA). Care Coordination/Telehealth within VA involves the use of health informatics, telehealth, and disease management technologies to enhance and extend care and case management. Under his leadership, VA has developed the clinical, technological, and business underpinnings to successfully implement and sustain enterprise-wide telehealth-based services that improve access to care for patients, reduce utilization of healthcare resources, and are associated with very high levels of patient satisfaction. VA is seen as a national/international leader in telehealth with over 200,000 patients receiving care annually. The mission of these programs is to provide the right care in the right place at the right time to the appropriate patient.

The associated aim is that of providing care for patients in the most convenient setting whenever safe, appropriate, effective, and cost-effective. The VA experience shows telehealth can bring about transformative change in the management of high incidence chronic diseases in the population, ones that pose an ever-increasing challenge for all healthcare systems. Darkins has worked in health services development using new information technologies in the United States and United Kingdom since 1991 and has a clinical background in neurosurgery.

Nancy Davenport-Ennis, cancer survivor, is the Founder and Chief Executive Officer of two organizations she founded in 1996, National Patient Advocate Foundation (NPAF), a policy organization, headquartered in Washington, DC, that seeks to improve access to care through regulatory and policy initiatives at the state and federal levels and Patient Advocate Foundation (PAF), a 501(c)3 direct patient services non-profit organization, headquartered in Newport News, Virginia, that provides professional case management services to insured, under-insured, and un-insured patients diagnosed with chronic, debilitating, and life-threatening conditions. PAF also has an office in Mission Valley, California and home office case management support in Iowa, Tennessee, Nevada, and New York. Davenport-Ennis was recently appointed by the Agency for Healthcare Research and Quality to serve on the Centers for Education and Research on Therapeutics (CERTs) Committee. She was also appointed by the National Institutes of Health to serve on its Open Ended Working Group (OEWG). In the past, she has been appointed to, or has served on, several national committees including an appointment by the United States Secretary of Health and Human Services as a Commissioner on the American Health Information Community (AHIC), with Health and Human Services (HHS) serving as Co-Chair of the Consumer Empowerment Working Group for AHIC, Directors Consumer Liaison Group (DCLG) with the National Cancer Institute (NCI), a voting seat on the Medicare Coverage Advisory Committee (MCAC) at the Centers for Medicare & Medicaid Services, Access to Quality Cancer Care Team, a committee of C-Change, One Voice Against Cancer, Virginia Governor's Government & Regulatory Reform Task Force, Virginia Attorney General's Regulatory and Government Reform Task Force-Healthcare Working Group, Health Information Technology Council for Virginia, and the Mayor's Committee on Medicaid and Physician Recruitment in Newport News, VA. Ms. Davenport-Ennis is the recipient of the 2005 Women in Business Achievement Award presented by Anthem and *Business Week*. Davenport-Ennis was honored with the 1989 Outstanding Young Woman of America Award, the Association of Community Cancer Centers Advocate of the Year Award, and the U.S. Oncology Medal of Honor Award. Ms. Davenport-Ennis was also appointed to the Governor's Commission

on the Uninsured in Virginia. Davenport-Ennis was also named as a Paul Harris Fellow by the National Rotary Foundation. Davenport-Ennis holds a B.A. degree in English from Campbell University. She resides in Yorktown, Virginia with her husband, John H. Ennis, Jr. and has two daughters and four grandchildren.

Karen Davis, Ph.D., is President of the Commonwealth Fund, a national philanthropy engaged in health and social policy research. Previously, she served as Chairman of the Department of Health Policy and Management at the Johns Hopkins School of Public Health, where she was also a Professor of Economics. She was Deputy Assistant Secretary for Health Policy in the U.S. Department of Health and Human Services from 1977-1980. Prior to that, she was a Senior Fellow at the Brookings Institution, a Visiting Scholar at Harvard University, and an Assistant Professor of Economics at Rice University. Among many other honors and awards, Dr. Davis received the AcademyHealth Distinguished Investigator Award in 2006 and was honored by the Institute of Medicine with the Adam Yarmolinsky Medal in 2007. She is on the board of directors of the Geisinger Health System and serves on the Panel of Health Advisors for the Congressional Budget Office.

Wendy Everett, Sc.D., plays a leading role in creating NEHI's lasting partnerships with other successful national health policy organizations. As President, she works with the board to create NEHI's vision and strategy, and to communicate it to the outside world. She also provides direction and oversight for NEHI's many reports and initiatives. Dr. Everett was appointed as the first President of the New England Healthcare Institute (NEHI) in July 2002. With over 30 years of experience in the healthcare field, Dr. Everett brings a unique perspective to NEHI. She has held executive positions at the University of California, San Francisco (UCSF) Medical Center and at Brigham and Women's Hospital in Boston. In the 1980s, she directed a national demonstration program for the Robert Wood Johnson Foundation and subsequently was the Program Director for the National Program in Health Promotion and Disease Prevention for the Kaiser Family Foundation. She has served as a consultant to many state and national philanthropic foundations. In the mid 1990s, she became a Director of the Institute for the Future, leading the Health and Health Care research team for 6 years and overseeing the creation of 10-year, national forecasts in health/health care. She is a Trustee of many health care and philanthropic boards. Dr. Everett holds two bachelor of science degrees and master's and doctoral degrees in health policy and management from Harvard University.

Roger Feldman, Ph.D., is the Blue Cross Professor of Health Insurance and Professor of Economics at the University of Minnesota. Dr. Feldman was a Marshall Scholar at the London School of Economics and holds a Ph.D. in economics from the University of Rochester. His research examines the organization, financing, and delivery of health care with a focus on health insurance and competition. He also studies competition among healthcare providers and insurers. Currently, he is evaluating the effect of consumer-directed health plans on medical care utilization and personal savings decisions. Dr. Feldman's experience in healthcare policy includes serving on the Senior Staff of the President's Council of Economic Advisers, where he was the lead author of a chapter in the 1985 Economic Report of the President. From 1988 to 1992, he directed one of the four national research centers sponsored by the Centers for Medicare & Medicaid Services (CMS). He advised CMS on the design of a demonstration of competitive pricing for Medicare health plans and is evaluating the competitive pricing program for durable medical equipment in Medicare. Dr. Feldman is a regular contributor to journals of economics and health services research. He has advised government agencies and has been a consultant to federal and state antitrust agencies. His research has received four "best paper" awards from the Association for Health Services Research and the National Institute for Health Care Management.

Timothy G. Ferris, M.D., M.P.H., is a practicing general internist and pediatrician and the medical director of the Mass General Physicians Organization. He is formally the Vice Chair for Quality for Partners Pediatrics and Mass General Hospital for Children. He is also a Senior Scientist in the Partners/MGH Institute for Health Policy and an Associate Professor of Medicine at Harvard Medical School. His research has focused on the measurement and improvement of healthcare quality for adults and children, particularly focused on the roles of financing and health information technology. In addition to quality improvement interventions, he has published studies on the effects of the organization and financing of care on the costs and quality of care, risk adjustment of quality measures, and disparities in health care. He has over 50 publications including those in journals such as the *New England Journal of Medicine*, *JAMA*, *Pediatrics*, and *Health Affairs*. Dr. Ferris has been leading efforts at Partners Healthcare to improve the care of patients with multiple chronic conditions with specific responsibility for design, oversight, and evaluation of programs to improve quality and efficiency of care for high-risk patients such as those with heart failure. Dr. Ferris has been a member of the Agency for Healthcare Research and Quality's Health Care Quality and Effectiveness Research study section, has chaired two Technical Advisory Panels for the National Quality Forum, sits on the Quality and Safety subcommittee to the Board of the National As-

sociation of Children's Hospitals and Related Institutions (NACHRI), and consulted to the World Health Organization.

Elliott S. Fisher, M.D., M.P.H., is Professor of Medicine and Community and Family Medicine at the Dartmouth Medical School, and Director of Health Policy Research at Dartmouth's Center for the Evaluative Clinical Sciences. He is also Co-Director of the VA Outcomes Group, a research and training program for physicians, at the Department of Veterans Affairs Medical Center in White River Junction, Vermont. Dr. Fisher received his A.B. from Harvard University, his M.D. from Harvard Medical School, and his M.P.H. from the University of Washington. Dr. Fisher has broad expertise in the use of Medicare databases and survey research methods for health system evaluation. His research interests lie in three areas: (1) he has worked to clarify the limitations of administrative databases and develop methods to overcome them; (2) he has also developed approaches to resource allocation based upon the principles of benchmarking, initially as a means of addressing inequities in the levels of hospital resources across communities in Oregon and more recently as applied to the U.S. physician supply; (3) most recently, he has focused on the health implications of the uneven distribution of healthcare resources. His current research, funded by the Robert Wood Johnson Foundation, examines the potential adverse consequences of increasing capacity in health care. Dr. Fisher publishes in professional journals such as the *Journal of the American Medical Association* and the *New England Journal of Medicine*. Some of his more recent publications include Variations in the Longitudinal Efficiency of Academic Medical Centers, *Health Affairs*, 2004; and The Implications of Regional Variations in Medicare Spending, *Annals of Internal Medicine*, 2003.

Thomas J. Flottemesch, Ph.D., is a Research Associate at HealthPartners Research Foundation with advanced degrees in economics and statistics. His particular areas of expertise are cost effectiveness analysis, econometric methods, operations/decision modeling, and health information technology. For the past 5 years, Dr. Flottemesch has worked on the Prevention Priorities Project where he has led construction of cost-effectiveness models of obesity prevention, dietary interventions, and cervical cancer and colorectal cancer screening. In addition, he has conducted econometrics analyses of tobacco use, dental care, hospital costs, chronic disease care, and patient-centered medical home (PCMH) implementation. Dr. Flottemesch has also served as consultant to hospitals where he has applied sophisticated decision support models to assess patient flow and hospital staffing patterns and has interfaced these models with existing HIT systems. These findings were presented at a didactic session of the Society of Academic Emergency Medicine's annual meeting. His current interests are in the areas of model-

ing the cost-effectiveness of preventive services, developing robust measures of primary care efficiency, and determining the impact of health information technology upon quality of care and provider performance.

G. Scott Gazelle M.D., Ph.D., M.P.H., is Professor of Radiology at Harvard Medical School and Professor in the Department of Health Policy and Management at the Harvard School of Public Health. He serves as Director of Partners Radiology, the MGH Institute for Technology Assessment, the Dana-Farber/Harvard Cancer Center Program in Cancer Outcomes Research Training, and he is Co-Director and Associate Vice Chair for Research in the MGH Department of Radiology. He is also Senior Scientist at the Partners Institute for Health Policy. Dr. Gazelle has been President of the Association of University Radiologists, the Radiology Research Alliance, and the New England Roentgen Ray Society. He has also been Chair of the American College of Radiology Commission on Research and Technology Assessment and the RSNA Research Development Committee. He is nationally and internationally known for his research evaluating the benefits, costs, and appropriate use of new medical technologies. Locally, he has been active in the development and implementation of guidelines for the appropriate use of imaging technologies. He has also led efforts at Partners HealthCare System to improve quality and safety in radiology and to develop approaches that can be used to measure and document performance improvement. Dr. Gazelle has authored more than 180 scientific articles, published two textbooks and presented numerous papers, lectures, and workshops nationally and internationally.

Richard J. Gilfillan, M.D., is former President and CEO of Geisinger Health Plan and Executive Vice President for System Insurance Operations at the Geisinger Health System. Dr. Gilfillan was responsible for Geisinger's three managed care companies that provide a full spectrum of health benefit programs for individuals, employers, and Medicare beneficiaries. With $1 billion in revenues, GHP and its affiliated companies provide health coverage to more than 225,000 members. He began his career as a family practitioner for the Georgetown University Community Health Plan. After establishing a family practice group in Massachusetts, he became Medical Director for Medigroup Central HMO, a Blue Cross of New Jersey managed care company in 1985. He was Chief Medical Officer for Independence Blue Cross from 1992 until 1995, when he became the general manager of their AmeriHealth New Jersey managed care subsidiary. Prior to joining Geisinger, Dr. Gilfillan was the Senior Vice President for National Network Management at Coventry Health Care. Dr. Gilfillan received his undergraduate and medical degrees from Georgetown University in Washington, DC. He completed a family practice residency at Hennepin County

Medical Center in Minneapolis. He also earned an MBA from the Wharton School of the University of Pennsylvania. Dr. Gilfillan has served on numerous community and corporate boards.

Dana Goldman, Ph.D., holds the RAND Chair in Health Economics and is Director of Health Economics at RAND. He is also a Professor of Health Services and Radiology at UCLA. His research interests combine applied microeconomics and medical issues, with a special interest in the role that medical technology and health insurance play in determining health-related outcomes. His work has been published in leading medical, economic, statistics, and health policy journals with funding from both the public and private sectors, including the National Institutes of Health, National Institute on Aging, National Cancer Institute, National Science Foundation, Amgen, Merck, Genentech, California Healthcare Foundation, Smith Richardson Foundation, Department of Defense, Department of Labor, and the Agency for Healthcare Research and Quality. Most recently, he is the Director of the RAND Roybal Center for Health Policy Simulation designed to provide better estimates of the impact of health policy changes. Dr. Goldman serves on several editorial boards including *Health Affairs* and the *American Journal of Managed Care*. He was the recipient of the National Institute for Health Care Management Research Foundation award for excellence in health policy, and the Alice S. Hersh New Investigator Award that recognizes the outstanding contributions of a young scholar to the field of health services research. He is also a Research Associate with the National Bureau of Economic Research. Dr. Goldman received his B.A. from Cornell University and a Ph.D. in economics from Stanford University.

James L. Heffernan, M.B.A., is the Chief Financial Officer and Treasurer of the Massachusetts General Physicians Organization (MGPO). He received his bachelors degree from Boston University and his M.B.A. with a Sloan Certificate from Cornell University. Heffernan has been with the MGPO for 14 years and is responsible for finance, budgeting, payment analysis, and the professional billing office. He is involved in strategic initiatives involving physician compliance, growth, billing compliance, and physician work life issues. Heffernan co-chairs the Partners Healthcare System Finance Information Systems Steering Committee that has set the standard for enterprise-wide system solutions for finance and accounting, materials management, revenue cycle, and business intelligence tools. Prior to returning to Boston, Heffernan worked in Cleveland where he progressed though the senior management positions in finance, operations, and strategic planning for two hospital systems. He was the first financial officer for a start-up hospital in Cleveland. He has been a key member of several

hospital mergers including a rather unique merger of a hospital into a Blue Cross plan. Heffernan has started three physician management corporations to deal with primary care and mental health risk contracting. He established a hospital based primary care practice that was recognized by the Ohio State Medical Association as a model for "clinics without walls" in the Midwest. He is the past-President of the Massachusetts Rhode Island Chapter of HFMA. Heffernan has written for the *Mass Media* and *HFMA National Magazine*. He is a contributing author to the HFMA study guide for Financial Management of Physicians Practices and is also a contributing author to the AHRQ published paper on the design of the MGPO quality incentive program in *Advances in Patient Safety*.

Jack Hoadley, Ph.D., is a Health Policy Analyst and Researcher with over 25 years experience in this field. He joined Georgetown University's Health Policy Institute as a Research Professor in January 2002, where he is conducting research projects on health financing topics, including Medicare and Medicaid, with a particular focus on prescription drug issues. Recent projects have included studies of the use of formularies by Medicare drug plans, the impact of the Medicare drug benefit's coverage gap, options for simplifying and standardizing Medicare's drug benefit and its managed-care program, the use of evidence-based medicine to manage pharmacy costs for Medicaid, and an evaluation of recent changes to Florida's Medicaid program. He is trained as a Ph.D. in political science and has worked in both academic and government settings. Prior to arriving at Georgetown, he held positions at the Department of Health and Human Services in the Office of the Assistant Secretary for Planning and Evaluation (ASPE), the Physician Payment Review Commission (PPRC) and its successor, the Medicare Payment Advisory Commission (MedPAC), and the National Health Policy Forum.

Thomas J. Hoerger, Ph.D., Senior Fellow in Health Economics, appointed in September 2005, is the Director of the RTI-UNC Center of Excellence in Health Promotion Economics. He specializes in health economics, healthcare reform, and cost-effectiveness analysis. Dr. Hoerger has led numerous research projects for the Centers for Disease Control and Prevention (CDC) and the Centers for Medicare & Medicaid Services (CMS). He has developed models for examining the cost-effectiveness of health promotion interventions and estimated the costs of diabetes, vision loss, and other conditions. He has directed a series of projects to design, implement, and evaluate competitive bidding for Medicare services. The purpose of the CDC-sponsored RTI-UNC Center of Excellence in Health Promotion Economics is to develop, evaluate, and implement health promotion recommendations, programs, and policies; to evaluate their cost-effectiveness;

and, consequently, to improve upon efforts to promote health and prevent disease, disability, and injury. Dr. Hoerger holds a Ph.D. in economics from Northwestern University and a B.A. in economics from Carleton College.

Jason Hwang, M.D., M.B.A., is an internal medicine physician and Executive Director of Healthcare at Innosight Institute, a non-profit social innovation think tank based in San Francisco. Together with Professor Clayton M. Christensen of Harvard Business School and the late Jerome H. Grossman of the Harvard Kennedy School of Government, he is co-author of *The Innovator's Prescription: A Disruptive Solution for Health Care*. Previously, Dr. Hwang taught as Chief Resident and Clinical Instructor at the University of California, Irvine, where he received multiple recognitions for his clinical work. He has also served as a clinician with the Southern California Kaiser Permanente Medical Group and the Department of Veterans Affairs Medical Center in Long Beach, California. Dr. Hwang received his B.S. and M.D. from the University of Michigan and his M.B.A. from Harvard Business School.

George J. Isham, M.D., M.S., is responsible for quality, utilization management, health promotion and disease prevention, research, and health professionals' education at HealthPartners. He is active in strategic planning and policy issues. He is a founding board member of the Institute for Clinical Systems Improvement, a collaborative of Twin Cities medical groups and health plans that is implementing clinical practice guidelines in Minnesota. Isham is a past member of the board of directors of the American's Health Insurance Plans and he is currently on the board of directors of the Alliance of Community Health Plans. He is past Co-Chair and current member of the National Committee for Quality Assurance's (NCQA) Committee on Performance Measurement which oversees health plan quality measurement standards. He has served on the Center for Disease Control's (CDC's) Task Force on Community Preventive Services and on the Agency for Healthcare Research and Quality's (AHRQ's) Advisory Board for the National Guideline Clearinghouse. He has served on the Institute of Medicine's Board on Population Health and Public Health Services and chaired the committee that authored the report Priority Areas for National Action, Transforming Health Care Quality. In 2003, Isham was appointed as a lifetime National Associate of the National Academies of Science in recognition of his contributions to the work of the Institute of Medicine. *Epidemic of Care*, published in April 2003, with co-author George Halvorson, is Isham's examination of the impending healthcare crisis with suggestions on ways to solve it. Prior to his current position, Isham was Medical Director for MedCenters Health Plan in Minneapolis and Executive Director for University Health Care, Inc., in Madison, Wisconsin. His practice experience as a

primary care physician includes 8 years at the Freeport Clinic in Freeport, Illinois, and 3.5 years as Clinical Assistant Professor in Medicine at the University of Wisconsin.

William F. Jessee, M.D., FACMPE, is President and Chief Executive Officer of the Medical Group Management Association (MGMA), the nation's leading voice for group medical practice. Before joining MGMA in 1999, Dr. Jessee served for 3 years as Vice President for Quality and Managed Care Standards at the American Medical Association (AMA), where he led the AMA's activities in clinical guidelines, quality improvement, and accreditation. He also holds academic appointments as Clinical Professor of Preventive Medicine and Biometrics at the University of Colorado Health Sciences Center in Denver, and as Adjunct Professor of Health Policy and Administration at the University of North Carolina School of Public Health, Chapel Hill. Previously, Dr. Jessee was CEO of UNIVA Health Network, a regional integrated delivery system in Louisville, Kentucky. He also has served as Vice President of the Joint Commission on Accreditation of Healthcare Organizations from 1986-1991 and 1993-1994. From 1991-1993 he was corporate Vice President for Quality Management at Humana, Inc. Dr. Jessee was a full-time academician as Associate Professor of Health Policy and Administration at the University of North Carolina, School of Public Health, Chapel Hill from 1980-1986. He received his undergraduate degree at Stanford University and his medical degree at the University of California, San Diego School of Medicine. He took residency training in pediatrics at Indiana University Hospitals, Indianapolis, and completed his training in preventive medicine at the University of Maryland Hospital, Baltimore. He is a Fellow in the American College of Preventive Medicine; an Honorary Fellow of the American College of Medical Quality; and a board certified Medical Practice Executive and Fellow of the American College of Medical Practice Executives. Dr. Jessee serves as Immediate Past Chair of the Board of Directors of Exempla Health System (Denver); Treasurer of the Board of the National Patient Safety Foundation (NPSF); Immediate Past Chair of the Commission on Accreditation of Healthcare Management Education (CAHME); and Secretary of the Board of the E-Health Initiative. Dr. Jessee was a founding board member of the International Society for Quality in Health Care, which he served as President from 1989 to 1991, and as a board member from 1985 to 1993. The Society named him a Life Member and Fellow in 1993. He also served on the National Advisory Council to the U.S. Agency for Healthcare Research and Quality (AHRQ) from 2000 until 2002.

Ashish Jha, M.D., M.P.H., is Associate Professor of Health Policy at the Harvard School of Public Health, Assistant Professor of Medicine at

Harvard Medical School, and Staff Physician at VA Boston Healthcare System and Brigham and Women's Hospital. He is currently also serving as a senior advisor to the Under Secretary for Health of the Veterans Health Administration, focusing on areas of clinical quality and patient safety. Dr. Jha received his M.D. degree from Harvard Medical School in 1997 and trained in internal medicine at the University of California, San Francisco where he also served as Chief Medical Resident. He completed his General Medicine fellowship from Brigham and Women's Hospital and Harvard Medical School and received his M.P.H. in Clinical Effectiveness from Harvard School of Public Health in 2004. He joined the faculty in July 2004. Dr. Jha's main professional interests are in quality and safety of medical care, racial disparities in health care, and the impact of information technology in these areas. He has worked in areas evaluating the quality of hospital care, especially hospitals that care for large minority populations; the impact of health information technology and public reporting on quality of care; and delineating the relationship between hospital quality and efficiency. Much of his current work focuses on the current state of health information technology use in the United States and the impact it has on the quality, safety, and efficiency of health care.

James G. Kahn, M.D., M.P.H., is Professor of Health Policy and Epidemiology at the University of California, San Francisco, based in the Philip R. Lee Institute for Health Policy Studies and at the Institute for Global Health. Dr. Kahn is an expert in policy modeling in health care, cost-effectiveness analysis, and evidence-based medicine. His work focuses on the use of cost-effectiveness analysis to inform decision making in public health and medicine with a particular focus on HIV in the developing world. Dr. Kahn is a leading expert on administrative costs in the U.S. healthcare system. In 2005, Dr. Kahn and colleagues published a study in *Health Affairs* titled The Cost of Health Insurance Administration in California: Insurer, Physician, and Hospital Estimates. This was the first study to quantify U.S. healthcare administration costs by setting (i.e., insurer, hospital, and physician groups) and within setting by functional department (e.g., billing). Dr. Kahn and colleagues recently published a follow-up study on administrative costs in a large multi-specialty group practice, providing the most detailed analysis to date of billing and insurance-related administrative activities and costs for physicians. Dr. Kahn has served on or presented to several IOM committees, and has advised the World Health Organization and other government agencies and foundations on a variety of economic issues in health care. He has published more than 100 articles, reports, and book chapters.

Gary S. Kaplan, M.D., FACP, FACMPE, FACPE, has served as Chairman and CEO of the Virginia Mason Health System since 2000. Dr. Kaplan

received his medical degree from the University of Michigan and is board-certified in internal medicine. Since Dr. Kaplan became Chairman and CEO, Virginia Mason has received significant national and international recognition, including HealthGrades' "Distinguished Hospital Award for Clinical Excellence" for 3 consecutive years. Recently, Virginia Mason was one of 26 hospitals and seven children's hospitals named 2008 Top Hospitals in the nation by the Leapfrog Group. Virginia Mason was the only hospital in the Pacific Northwest to be listed. Virginia Mason is also a national leader in deploying the Toyota Production System to healthcare management—reducing the high costs of health care while improving quality, safety, and efficiency. In addition to his patient-care duties and position as CEO, Dr. Kaplan is a Clinical Professor at the University of Washington and has been recognized for his service and contribution to many regional and national boards, including the Institute for Healthcare Improvement, the Medical Group Management Association, the National Patient Safety Foundation, the American Heart Association—King County Division, the Seattle Foundation, and the Washington Healthcare Forum. In 2007, Dr. Kaplan was designated a fellow in the American College of Physician Executives and was named the 18th most influential U.S. physician leader in health care by *Modern Healthcare* magazine. Recently, Dr. Kaplan was named 41st on Modern Healthcare's list of "100 Most Powerful People in Health Care." Dr. Kaplan joined Bill Gates, ranked third, as the only other leader from Washington state to make the list.

Rainu Kaushal, M.D., M.P.H., is the Chief of the Division of Quality and Medical Informatics at Weill Cornell Medical College. Dr. Kaushal is an expert in quality, patient safety, and health information technology (health IT). Dr. Kaushal is engaged in research, patient care, management, and operations activities, all geared toward using health IT to optimize the value of health care today. In 2005, Dr. Kaushal founded and became the Executive Director of the Health Information Technology Evaluation Collaborative (HITEC), a consortium of four universities in New York State, to conduct rigorous evaluations of initiatives being undertaken as part of a novel and ambitious $250 million New York State program called "HEAL NY." In 2006, Dr. Kaushal became the first Chief of the Division of Quality and Medical Informatics at Weill Cornell, a dynamic new Division established by the Medical College to address the importance of health IT as a cornerstone of healthcare reform. In addition, Dr. Kaushal serves as the Director of Pediatric Quality and Safety at the Komansky Center for Children's Health at New York-Presbyterian Hospital, striving to translate research learning into operational improvements. Dr. Kaushal has published more than 60 scholarly publications and is a frequent invited speaker. She has served on numerous national advisory committees focused on health

information technology and/or patient safety. Dr. Kaushal has formally consulted with other researchers on methodological issues as well as with policy makers on state and federal issues. Finally, Dr. Kaushal has served on editorial boards for healthcare journals and on several study sections for the Agency for Healthcare Research and Quality.

Linda L. Kloss, M.A., R.H.I.A., is Chief Executive Officer of the American Health Information Management Association (AHIMA), the professional association of more than 53,000 members serving the health information management (HIM) community. Founded in 1928, AHIMA today has a staff of 145 and is comprised of 52 component state chapters and the AHIMA Foundation. Kloss serves on the board of directors for AHIMA and the Foundation. AHIMA also maintains an office in Brussels. In her role at AHIMA, Kloss is responsible for delivering services to the fast changing HIM community, promoting its mission and values, and executing the Association's strategic plan. She also oversees AHIMA's industry outreach and partnership activities with key stakeholder organizations. Kloss led the Association's efforts to cofound the Certification Commission for Healthcare Information Technology, a private industry initiative to accelerate the adoption of interoperable healthcare technology, and serves on its board of trustees. Kloss also serves on the Steering Committee of *Connecting for Health*, a collaborative sponsored by the Markle Foundation and is a convener of the Healthcare Administrative Simplification Coalition. She also served on the board of directors for National Alliance for Health Information Technology and the Leadership Council of the e-Health Initiative. Prior to joining AHIMA in 1995, Kloss served as one of the founding officers for MediQual Systems, Inc., a developer of computer-based clinical performance improvement technology and data tools and InterQual, Inc., a quality improvement consulting and education company. Her health information management leadership experience also includes both academic and practice positions. Kloss holds an M.A. degree in organizational development with a concentration in change leadership from DePaul University in Chicago, and a B.S. degree in medical record science from the College of St. Scholastica where she served on its board of trustees. Other designations include Certified Association Executive (CAE). She was recently named by *Modern Healthcare* as one of the top 25 influential women in health care, and has been on its list of the most 100 influential in health care from 2002 to 2007.

Jeffrey C. Lerner, Ph.D., has served since 2001 as President and Chief Executive Officer. Prior to this, he held the position of Vice President for Strategic Planning for 17 years. He has conceived of, secured funding for, and implemented numerous programs in technology assessment. For example,

he was the first Center Director of ECRI Institute's Evidence-based Practice Center (EPC) under the U.S. Agency for Healthcare Research and Quality (AHRQ), and Coordinator of the Technical Expert Panel of the National Guideline Clearinghouse™ (a project sponsored by AHRQ in cooperation with the American Medical Association and the American Association of Health Plans). He also served as a member of the Medicare Coverage Advisory Committee (MCAC) until 2003 and is currently on the Advisory Board of the U.S. Cochrane Collaboration Center. Dr. Lerner maintains a special interest in assistive technology for the disabled and has served as principal investigator on projects for the U.S. Department of Transportation and the Easter Seals Society. He was the first Director of ECRI Institute's Center for Healthcare Environmental Management™, which offers programs worldwide. He developed ECRI Institute's annual technology assessment educational conference. Dr. Lerner was a member of the Technical Board of the Milbank Memorial Fund in New York and is a member of the United States Pharmacopeial Convention in Rockville, Maryland. He serves on the board of directors of the Philadelphia Academies, Inc., a program for high school students living in poverty areas. He is also on the Executive Board of the Greater Philadelphia Life Sciences Congress; and a former President of the Board of the Health Strategy Network, a society of healthcare planners and managers. He is an associate editor of the *Journal of Ambulatory Care Management*. He is an Adjunct Senior Fellow of the Leonard Davis Institute of Health Economics of the University of Pennsylvania and a Population Health Associate of the Jefferson School of Population Health.

Jeffrey Levi, Ph.D., is Executive Director of Trust for America's Health (TFAH), where he leads the organization's advocacy efforts on behalf of a modernized public health system. Dr. Levi oversees TFAH's work on a range of public health policy issues, including its annual reports assessing the nation's public health preparedness, investment in public health infrastructure, and response to chronic diseases such as obesity. Dr. Levi is also an Associate Professor at the George Washington University's Department of Health Policy. He has also served as an associate editor of the *American Journal of Public Health*, and Deputy Director of the White House Office of National AIDS Policy. Dr. Levi received a B.A. from Oberlin College, an M.A. from Cornell University, and a Ph.D. from the George Washington University.

Peter K. Lindenauer, M.D., M.Sc., FACP, is Director of the Center for Quality of Care Research at Baystate Medical Center, Medical Director of Clinical Decision Support and Quality Informatics for Baystate Health, and Associate Professor of Medicine at the Tufts University School of Medicine. Dr. Lindenauer's research focuses on measuring the quality and outcomes of

hospital care for patients with common medical conditions, and the design and evaluation of interventions to improve care delivery. His work has been published in *The New England Journal of Medicine*, *JAMA*, *Annals of Internal Medicine*, *Health Affairs*, *Medical Care*, and leading general internal medicine and subspecialty journals. Dr. Lindenauer is a graduate of the University of Chicago, the University of Pennsylvania School of Medicine, and completed an internship, residency, and chief residency in internal medicine at the University of California, San Francisco. He received an M.Sc. degree in Health Planning and Financing from the London School of Economics and Political Science and is the 2008 recipient of the excellence in research award from the Society of Hospital Medicine.

Harold S. Luft, Ph.D., is Director of the Palo Alto Medical Foundation Research Institute and Esselstyn Professor Emeritus of Health Policy and Health Economics and former Director of the Philip R. Lee Institute for Health Policy Studies at UCSF. He received his degrees in economics from Harvard University. His research has covered HMOs, hospital competition, volume, quality and outcomes of hospital care, risk assessment and risk adjustment, and healthcare reform. An elected member of the Institute of Medicine, he served on its Council, that of the Agency for Healthcare Policy and Research, and the Board of AcademyHealth. He was co-editor of *Health Services Research*. Author or editor of five books and over 200 articles in scientific journals, his *Total Cure: The Antidote to the Health Care Crisis*, was published by Harvard University Press in October.

Michelle J. Lyn, M.B.A., M.H.A., is Chief of the Division of Community Health of the Department of Community & Family Medicine, and Associate Director of the Duke Center for Community Research of the Duke Translational Medicine Institute. Prior to Duke, Ms. Lyn worked in the Durham Public School system, designed the first, highly successful school-based clinic, and then joined the Duke faculty, assuming a leadership role in the development and expansion of a wide range of collaborative, community-engaged disease prevention and health promotion activities. Ms. Lyn was instrumental in crafting the Local Access to Coordinated Healthcare (LATCH) program, serving over 16,000 uninsured Durham residents; neighborhood clinics; and the Just for Us Program, which cares for chronically ill homebound seniors in their homes. She is principal investigator for projects that extend the Division's reach to vulnerable children in Durham schools, including a grant which established group psychotherapy in two high schools, and another which provides bilingual mental health and acculturation services to immigrant children and their families in Durham elementary schools. Ms. Lyn also planned and managed the Division's educational programs for trainees at all levels, as well as for

faculty at Duke and across the United States regarding community-engaged service and research. She served as the founding Program Director for Duke's Master of Health Sciences in Clinical Leadership, the Community Health Leadership Program, the Community Health Fellowship, and course Director for the Community Health Elective in the School of Medicine. The Division has launched and currently operates 37 collaborative, community-based clinical, care management, research, and educational programs across Durham, the region, and the state of North Carolina. In 2008, Ms. Lyn was appointed Associate Director of the Duke Center for Community Research, of the Duke Translational Medicine Institute, where she directs a team of faculty and professional staff in the research, educational, and liaison activities of the Center. She serves on the Operational Leadership Team for the Durham Health Innovations initiative, which plans innovative Duke-Durham partnered approaches to improving health in Durham County.

Linda M. Magno, M.A., is Director of the Medicare Demonstrations Group in the Office of Research, Development and Information at the Centers for Medicare & Medicaid Services (CMS). This group is responsible for developing, implementing, and managing Medicare demonstrations of new benefits, payment methodologies, and models of healthcare delivery for the nation's 44 million elderly and disabled Medicare beneficiaries. Prior to her current position, Ms. Magno served as Managing Director for Policy Development and Director of Regulatory Affairs at the American Hospital Association in Washington, DC. She started her career at the CMS's predecessor agency, the Health Care Financing Administration, where she was responsible for early implementation of and refinements to the inpatient prospective payment system for hospitals. Ms. Magno has a Master's degree in public affairs from Princeton University and a Bachelor's degree in political science from the University of California at Berkeley.

Mark B. McClellan, M.D., Ph.D., became the Director of the Engelberg Center for Healthcare Reform at the Brookings Institution in July 2007. The Center studies ways to provide practical solutions for access, quality, and financing challenges facing the U.S. healthcare system. In addition, Dr. McClellan is the Leonard D. Schaeffer Chair in Health Policy Studies. Dr. McClellan has a highly distinguished record in public service and in academic research. He is the former Administrator for the Centers for Medicare & Medicaid Services (2004-2006) and the former Commissioner of the Food and Drug Administration (2002-2004). He also served as a member of the President's Council of Economic Advisers and Senior Director for Health Care Policy at the White House (2001-2002). In these positions, he developed and implemented major reforms in health policy. Dr. McClellan was also an Associate Professor of Economics and Associate

Professor of Medicine (with tenure) at Stanford University, from which he was on leave during his government service. He directed Stanford's Program on Health Outcomes Research and was also associate editor of the *Journal of Health Economics*, and co-principal investigator of the Health and Retirement Study (HRS), a longitudinal study of the health and economic status of older Americans. His academic research has been concerned with the effectiveness of medical treatments in improving health, the economic and policy factors influencing medical treatment decisions and health outcomes, the impact of new technologies on public health and medical expenditures, and the relationship between health status and economic well being. Dr. McClellan is a member of the Institute of Medicine of the National Academy of Sciences and a Research Associate of the National Bureau of Economic Research. A graduate of the University of Texas at Austin, Dr. McClellan earned his M.P.A. from Harvard's Kennedy School of Government in 1991, his M.D. from the Harvard-MIT Division of Health Sciences and Technology in 1992, and his Ph.D. in economics from MIT in 1993.

J. Michael McGinnis, M.D., M.P.P., is a physician, epidemiologist, and long-time contributor to national and international health programs and policy. He now is Senior Scholar and Director of the Institute of Medicine's Roundtable on Value & Science-Driven Health Care, as well as an elected IOM member. Much of his policy leadership stems from his four-Administration tenure, perhaps unique among federal appointees, with continuous service through the Carter, Reagan, Bush, and Clinton administrations as the key point person for disease prevention and health promotion. Several still prominent initiatives were launched under his guidance, including the *Healthy People* national goals and objectives process, the *Dietary Guidelines for Americans,* and the U.S. Preventive Services Task Force. Internationally, he served as epidemiologist and State Director for the successful WHO smallpox eradication program in India, and more recently as Chair of the international task force to rebuild the health and human services sector in post-war in Bosnia.

Elizabeth A. McGlynn, Ph.D., is Associate Director for RAND Health and holds the RAND Distinguished Chair in Health Care Quality. Dr. McGlynn is an internationally known expert on methods for assessing and reporting on quality of healthcare delivery. Dr. McGlynn is leading RAND Health's COMPARE initiative, which is developing a comprehensive method for evaluating health reform proposals. She is conducting research on the methodological and policy issues associated with implementing measures of efficiency and effectiveness of care at the individual physician level for payment and public reporting. She recently led a project for the state of Massachusetts to evaluate policy options for controlling the increase in

healthcare spending. She is a member of the Institute of Medicine and serves on several national advisory committees.

Diane E. Meier, M.D., FACP., is Director of the Center to Advance Palliative Care (CAPC), a national organization devoted to increasing the number and quality of palliative care programs in the United States. Under her leadership the number of palliative care programs in U.S. hospitals has more than doubled in the last 5 years. She is also Director of the Lilian and Benjamin Hertzberg Palliative Care Institute; Professor of Geriatrics and Internal Medicine; and Catherine Gaisman Professor of Medical Ethics at Mount Sinai School of Medicine in New York City. Dr. Meier is the recipient of numerous awards, including a 2008 MacArthur Fellowship, the National Institute on Aging Academic Career Leadership Award, the Open Society Institute Faculty Scholar's Award of the Project on Death in America, the Founders Award of the National Hospice and Palliative Care Organization, and the Alexander Richman Commemorative Award for Humanism in Medicine. She is the Principal Investigator of an NCI-funded 5-year multisite study on the outcomes of hospital palliative care services in cancer patients. Dr. Meier has published extensively in all major peer-reviewed medical journals, including the *New England Journal of Medicine* and the *Journal of the American Medical Association*. She edited the first textbook on geriatric palliative care, as well as four editions of *Geriatric Medicine*, and has contributed to more than 20 books on the subject of geriatrics and palliative care. As one of the leading figures in the field of palliative medicine, Dr. Meier has appeared numerous times on television and in print, including *ABC World News Tonight*, *Open Mind with Richard Hefner*, the *New York Times*, the *Los Angeles Times*, *USA Today*, the *New York Daily News*, *Newsday*, the *New Yorker*, and *Newsweek*. She figured prominently in the Bill Moyers series *On Our Own Terms: Dying in America*, a four-part documentary aired on PBS.

David O. Meltzer, M.D., Ph.D., is an Associate Professor in the Department of Medicine and an associated faculty member in the Harris School and the Department of Economics. Meltzer's research explores problems in health economics and public policy with a focus on the theoretical foundations of medical cost-effectiveness analysis and the effects of managed care and medical specialization on the cost and quality of care, especially in teaching hospitals. Meltzer is currently completing a randomized trial comparing the use of doctors who specialize in inpatient care ("hospitalists") with traditional physicians in six academic medical centers. Meltzer received his M.D. and Ph.D. in economics from the University of Chicago and completed his residency in internal medicine at Brigham and Women's Hospital in Boston. He is Director of the Center for Health and the Social

Sciences at the University of Chicago and also Co-Director of the Program on Outcomes Research Training and the M.D./Ph.D. program in the social sciences. He serves on the faculty of the Graduate Program in Health Administration and Policy, the Population Research Center, and the Center on Aging. Meltzer is a Research Associate of the National Bureau of Economic Research, elected member of the American Society for Clinical Investigation, and past President of the Society for Medical Decision Making. He has served on panels examining the future of Medicare for the National Academy of Social Insurance and the Department of Health and Human Services (HHS) and U.S. organ allocation policy for the Institute of Medicine (IOM). He recently served on an IOM panel examining the effectiveness of the U.S. drug safety system and current serves on the HHS Secretary's Advisory Committee on Healthy People 2020, which aims to established health objectives for the U.S. population.

Harold D. Miller, M.S., is the Executive Director of the Center for Healthcare Quality and Payment Reform and the President and CEO of the Network for Regional Healthcare Improvement. Miller has been working at both the regional and national levels on initiatives to improve the quality of healthcare services and to change the fundamental structure of healthcare payment systems in order to support improved value. Miller also serves as Adjunct Professor of Public Policy and Management at Carnegie Mellon University's Heinz School of Public Policy and Management, where he was Associate Dean from 1987 to 1992. Miller organized the Network for Regional Healthcare Improvement's national Summits on Healthcare Payment Reform in 2007 and 2008. His report *Creating Payment Systems to Accelerate Value-Driven Health Care: Issues and Options for Policy Reform* which was prepared for the 2007 Summit was published by the Commonwealth Fund in September 2007, and his summary of the recommendations of the 2007 Summit was published by the Jewish Healthcare Foundation as *Incentives for Excellence: Rebuilding the Healthcare Payment System from the Ground Up* in September 2007. His summary of the recommendations from the 2008 Payment Reform Summit, *From Volume to Value: Transforming Healthcare Payment and Delivery Systems to Improve Quality and Reduce Costs*, was published in November 2008 by NRHI and the Robert Wood Johnson Foundation, and his overview of healthcare payment systems, *Better Ways to Pay for Health Care: A Primer on Healthcare Payment Reform* was published in January 2009 as part of the NRHI Payment Reform Series in conjunction with the Robert Wood Johnson Foundation. He has also authored the Center for Healthcare Quality and Payment Reform's publication series *Paths to Payment Reform*. Miller's work with the Pittsburgh Regional Health Initiative (PRHI) demonstrating the significant financial penalties that hospitals can face if they reduce hospital-acquired

infections was featured in *Modern Healthcare* magazine in December 2007. He designed and is currently leading a multi-year PRHI initiative to reduce preventable hospital admissions and readmissions through improved care for chronic disease patients. In 2007 and early 2008, he served as the Facilitator for the Minnesota Health Care Transformation Task Force, which prepared the recommendations that led to passage of Minnesota's path-breaking healthcare reform legislation in May 2008.

Mark E. Miller, Ph.D., has more than 19 years of health policy experience. Dr. Miller has held several important policy, research, and management positions in health care. Dr. Miller served as Assistant Director of Health and Human Resources (HHR) at the Congressional Budget Office (CBO). Prior to CBO, Dr. Miller was the Deputy Director of Health Plans at the Centers for Medicare & Medicaid Services (CMS, formerly the Health Care Financing Administration). Before CMS, Dr. Miller was the Health Financing Branch Chief at the Office of Management and Budget (OMB). Prior to joining OMB, Dr. Miller was a Senior Research Associate at the Urban Institute. He earned a Ph.D. in public policy analysis from the State University of New York at Binghamton.

Dolores L. Mitchell, is the Executive Director of the Group Insurance Commission, the agency that provides life, health, disability, and dental and vision services to more than 300,000 state and certain municipalities, employees, retirees, and their dependents. She has been in that position since 1987, serving in the administrations of Governors Dukakis, Weld, Cellucci, Swift, Romney, and now Governor Patrick. Mrs. Mitchell is a member of a number of professional and community organizations, including the Massachusetts Health Data Consortium, of which she is a Director, the Greater Boston Big Sister Association, of which she is Board Chairman, the Massachusetts Health Council, and the Mass E-Health Collaborative of which she is a Director. Most recently, she is a member of the governing board of the Massachusetts health reform law, the Connector Authority, and its companion organization, the Quality and Cost Council, and last year was elected to the board of the National Committee for Quality Assurance (NCQA), the Hospital Quality Alliance (HQA), the Consumer/Purchaser Disclosure Group and the eHealth Initiative and eHealth Initiative Foundation. Mrs. Mitchell is a frequent speaker on health care, politics, women's career issues, and related subjects.

R. Sean Morrison, M.D., is Professor of Geriatrics and Medicine, Hermann Merkin Professor of Palliative Care, and Vice Chair for Research in the Brookdale Department of Geriatrics at the Mount Sinai School of Medicine. He is the Director of the National Palliative Care Research Center whose

mission is to develop the knowledge base to meet the need of seriously ill patients and their families. Dr. Morrison received his M.D. from the University of Chicago in 1986 and completed residency training in internal medicine at the New York Hospital-Cornell Medical Center from 1990 to 1993. Subsequently, he completed a fellowship in geriatric medicine at the Mount Sinai School of Medicine (1993-1996), after which he joined the faculty at Mount Sinai in the Department of Geriatrics. He has received numerous awards for his research in geriatrics and palliative care, edited the first textbook on geriatric palliative care, and has published over 100 research articles in palliative care and geriatrics. His research focuses on decision making at the end of life, pain and symptom management in older adults, and health services research in palliative care. Dr. Morrison chaired the NIA-C Study Section of the National Institutes of Health (2007-2009) and is the Scientific Officer of the Palliative and End-of-Life Care Review Panel of the Canadian Institutes of Health Research (CIHR). He is the President-elect of the American Academy of Hospice and Palliative Medicine. In addition to his research and administrative activities, Dr. Morrison maintains an active clinical practice in which he cares for healthy older adults and for persons living with serious illness and their families. Dr. Morrison was featured on the Bill Moyers PBS series *On Our Own Terms* and is a frequent commentator on issues related to palliative care and geriatrics in the national media.

Andrew L. Naugle, M.B.A., is a principal in the Seattle office of Milliman. He joined the firm in 2000. Andrew's area of expertise is healthcare operations. His experience spans more than 10 years in the healthcare industry. He specializes in the following: benchmarking, evaluating, and improving administrative operations for both payers and providers; technical writing and proposal development services conducting market research and surveys; writing requests for proposals and managing vendor selection processes; facilitating strategic planning and evaluation of strategic options; and designing and implementing policies and procedures. Naugle's current research is focused on administrative expense analysis for health plans. He maintains the Milliman Health Plan Operations Benchmarks, which can be used to evaluate the staffing and cost levels of health plans, insurance companies, and third-party administrators. He also has considerable experience with public-sector programs such as Medicare, Medicaid, and TRICARE. He has assisted clients in the development of winning proposals for state and federal contracts. Naugle received his M.B.A. from the University of Notre Dame and his B.A. from Wabash College.

Mary D. Naylor, Ph.D., R.N., FAAN, is the Marian S. Ware Professor in Gerontology and Director of the New Courtland Center for Transitions

and Health at the University of Pennsylvania, School of Nursing. Since 1990, Dr. Naylor has led a multidisciplinary program of research designed to improve the quality of care, decrease unnecessary hospitalizations, and reduce healthcare costs for vulnerable, community-based elders. To date, Dr. Naylor and her research team have completed three National Institute of Nursing funded randomized clinical trials testing and refining the Transitional Care Model, an innovative approach to addressing the needs of high risk chronically-ill elders and their family caregivers. With the support of several foundations, her research team has recently partnered with a major insurance organization and healthcare plan to translate this model into the "real world" of clinical practice and promote its widespread adoption. An ongoing clinical trial funded by the Marian S. Ware Alzheimer Program at PENN and the National Institute on Aging has expanded testing of this model of care among hospitalized cognitively impaired elders and their caregivers. Additionally, Dr. Naylor and colleagues are engaged in a study funded by the National Institute on Aging and the National Institute for Nursing Research that will examine over time the natural history of changes in health and quality of life among elders newly admitted to long term care settings or services. In the 1990s, Dr. Naylor co-led the establishment of a Program of All-Inclusive Care (PACE) at Penn's School of Nursing. Dr. Naylor also is the National Program Director for the Robert Wood Johnson Foundation sponsored *Interdisciplinary Nursing Quality Research Initiative* (INQRI). The primary goal of INQRI is to generate, disseminate, and translate research that demonstrates nursing's contribution to the quality of patient care.

Peter J. Neumann, Sc.D., is Director of the Center for the Evaluation of Value and Risk in Health at the Institute for Clinical Research and Health Policy Studies at Tufts Medical Center, and Professor of Medicine at Tufts University School of Medicine. Prior to joining Tufts, he was on the faculty of the Harvard School of Public Health for 10 years, most recently as Associate Professor of Policy and Decision Sciences. His research focuses on the use of cost-effectiveness analysis in healthcare decision making. He has conducted numerous economic evaluations of medical technologies, including evaluations of treatments for Alzheimer's disease. He is the founder and Director of the Cost-Effectiveness Registry (www.cearegistry.org), a comprehensive database of cost-effectiveness analyses in health care. Dr. Neumann has contributed to the literature on the use of willingness to pay and quality-adjusted life years (QALYs) in valuing health benefits. His other research has focused on the Food and Drug Administration's regulation of health economic information, and the role of clinical and economic evidence in informing public and private sector healthcare decisions, including those made by the Medicare program. He is the author or co-author of over 120

papers in the medical literature, and the author of *Using Cost-Effectiveness Analysis to Improve Health Care* (Oxford University Press, 2005). He is a contributing editor of *Health Affairs* and member of the editorial board of *Value in Health*. Dr. Neumann has served as President of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), and as a trustee of the Society for Medical Decision Making. He has also held several policy positions in Washington, including Special Assistant to the Administrator at the Health Care Financing Administration. He received his doctorate in health policy and management from Harvard University.

Len Nichols, Ph.D., a highly respected health economist and health policy analyst, directs the Health Policy Program at the New America Foundation, which aims to expand health insurance coverage to all Americans while reining in costs and improving the efficiency of the overall healthcare system. Before joining New America, Dr. Nichols was the Vice President of the Center for Studying Health System Change, a Principal Research Associate at the Urban Institute, and the Senior Advisor for Health Policy at the Office of Management and Budget during the Clinton reform efforts of 1993-1994. He has testified frequently before Congress and state legislators and has published widely in a variety of health related journals. Previously, Dr. Nichols was Chair of the Economics Department at Wellesley College, where he taught for 10 years. He also served as a member of the Competitive Pricing Advisory Commission (CPAC) and the 2001 Technical Review Panel for the Medicare Trustees Reports. He was on the advisory panel to the Robert Wood Johnson Foundation's Covering America project and has been a consultant to the World Bank, the InterAmerican Development Bank, and the Pan American Health Organization. Dr. Nichols received his Ph.D. in economics from the University of Illinois.

Margaret E. O'Kane, M.H.A., is the founding President of the National Committee for Quality Assurance and one of the nation's leading advocates for improving healthcare quality through measurement, reporting, and accountability. With her leadership, NCQA has been widely recognized as a leader in the healthcare quality field; in 2005, NCQA received awards from the National Coalition for Cancer Survivorship, the American Diabetes Association, and the American Pharmacists' Association. Ms. O'Kane plays a key role in many efforts to improve healthcare quality. In 1999, she was elected as a member of the Institute of Medicine. The following year, Ms. O'Kane received the Centers for Disease Control and Prevention's Champion of Prevention award, the agency's highest honor. She has frequently appeared on *Modern Healthcare*'s list of the 100 Most Powerful People in Healthcare, most recently in August 2008. She currently serves as co-chair of the National Priorities Partnership of the National Quality Forum, a

group charged to develop broad-based consensus around national priorities and goals for healthcare performance measurement and public reporting. Ms. O'Kane holds a master's degree in health administration and planning from the Johns Hopkins University.

Joseph Onek, M.A., currently serves as Senior Counsel to the Speaker of the House. He first entered government service as a law clerk to Chief Judge David L. Bazelon of the District of Columbia Circuit and Supreme Court Justice William J. Brennan, and as a staffer for U.S. Senator Ted Kennedy. In the Carter administration, he served as a member of the White House Domestic Policy Staff and as Deputy Counsel to the President. In the Clinton administration, he served as Principal Deputy Associate Attorney General and as Senior Coordinator for Rule of Law in the State Department. In the public interest world, Onek served as an attorney and then Director of the Center for Law and Social Policy (CLASP), as Senior Counsel and Director of the Liberty and Security Initiative at the Constitution Project, and as Senior Policy Analyst and Special Counsel at the Open Society Institute. Onek was also a partner in two Washington, DC law firms, specializing in health care and constitutional law. Onek is a member of the Council on Foreign Relations, and is Chairman of the Board of CLASP. He holds a B.A. from Harvard College, an M.A. from the London School of Economics, which he attended as a Marshall scholar, and an LLB from Yale Law School.

Peter R. Orszag, Ph.D., became Director of the Office of Management and Budget on January 21, 2009. Previously, he served as the Director of the Congressional Budget Office from January 2007 to December 2008, overseeing the agency's work in providing objective, nonpartisan, and timely analyses of economic and budgetary issues—supervising the numerous analytical papers and cost estimates that the agency produces and, to present the results, frequently testifying before the Congress. Under his leadership, the agency significantly expanded its focus on areas such as health care and climate change. In previous government service, Orszag served as Special Assistant to the President for Economic Policy and as a staff economist and then Senior Advisor and Senior Economist at the President's Council of Economic Advisers. Orszag was the Joseph A. Pechman Senior Fellow and Deputy Director of Economic Studies at the Brookings Institution. While at Brookings, he also served as Director of the Hamilton Project; Director of the Retirement Security Project; and Co-Director of the Tax Policy Center, a joint venture with the Urban Institute. Orszag graduated summa cum laude in economics from Princeton University and obtained a Ph.D. in economics from the London School of Economics, which he attended as a Marshall scholar. He has co-authored or co-edited a number of books, including *Protecting the Homeland 2006/7* (2006); *Aging Gracefully: Ideas*

to Improve Retirement Security in America (2006); *Saving Social Security: A Balanced Approach* (2004); and *American Economic Policy in the 1990s* (2002). Dr. Orszag is a member of the Institute of Medicine (IOM) of the National Academies of Sciences.

Mary Kay Owens, R.Ph., C.Ph., is President and Principal Consultant for Southeastern Consultants, Inc. (SEC), a national pharmaceutical and healthcare consulting and data services firm. She is a pharmacist by training and holds a clinical affiliate faculty position at the University of Florida College of Pharmacy, Department of Pharmacy Health Care Administration and served as a consultant to the Florida Center for Medicaid Issues, a health policy analysis and research institute affiliated with the University of Florida College of Health Professions. Ms. Owens also served on various Medicaid Advisory Boards and recently provided services to the Florida Medicaid Reform Advisory Commission and the Ohio Commission to Reform Medicaid. Ms. Owens formerly served as the Director of the 1.8 million member Florida Medicaid Drug Utilization Review (DUR) Program and served as a senior healthcare claims investigator and auditor within the Florida Medicaid Division of the Agency for Health Care Administration. She served a 3-year term on the American Drug Utilization Review Steering Committee and formerly served as the committee's national chairperson. She authored Medicaid Pharmacy Benefit Management published in the book *Managed Care Pharmacy Practice*, in nationwide distribution. She also authors healthcare policy issue briefs on Medicaid/Medicare, pharmacy journal articles, and provides content for CD-ROM educational products and Internet sites.

Anand K. Parekh, M.D., M.P.H., is Deputy Assistant Secretary for Health (Science and Medicine) in the Office of Public Health and Science at the U.S. Department of Health and Human Services. In this capacity, he provides oversight, direction, and coordination of activities pertaining to (1) a range of emerging public health and science issues; (2) the continuum of medical research—including clinical science and health services research; and (3) issues requiring expert medical analysis and advice, particularly those concerning policy, planning, formulation, and presentation of public health issues affecting the Department. Dr. Parekh maintains a medical staff position at Holy Cross Hospital in Silver Spring, Maryland and practices at the Holy Cross Health Center—a low-cost adult medicine clinic for the uninsured. He is an Adjunct Assistant Professor in the Department of Medicine at Johns Hopkins Hospital. He also serves on the board of governors of the University of Michigan School of Public Health Alumni Society and is a member of the Presidential Scholars Alumni Society and the American College of Physicians.

Ronald A. Paulus, M.D., M.B.A., is Geisinger's Chief Technology and Innovation Officer, responsible for ensuring system-wide innovation. His responsibilities include: Geisinger Ventures, the system's new business formation and intellectual property commercialization function; and Clinical Innovation, leading the system's initiatives focused on care transformation through patient activation, novel technologies, and care redesign. Prior to joining Geisinger Health System, Dr. Paulus was Chief Healthcare Officer for Quovadx, Inc., which acquired CareScience, Inc., a NASDAQ company providing clinical solutions to improve healthcare quality and efficiency where he had been President and CEO. Before joining CareScience, Dr. Paulus served as Vice President, Operations of Salick Health Care, Inc., a NASDAQ company providing oncology and dialysis services which was subsequently acquired by AstraZeneca Pharmaceuticals. Dr. Paulus received his M.D. degree from the School of Medicine, University of Pennsylvania, and his M.B.A., concentration in healthcare management, and B.S. in economics from the Wharton School, University of Pennsylvania.

Michael P. Pignone, M.D., M.P.H., is Associate Professor of Medicine and Chief of the Division of General Internal Medicine at the University of North Carolina-Chapel Hill (UNC). He also serves as the Director of the UNC Center for Excellence in Chronic Illness Care and the Co-Director of Medical Practice and Prevention Research at the Sheps Center for Health Services Research. He received his medical degree and residency training in primary care internal medicine from the University of California-San Francisco. He then completed fellowship training in clinical epidemiology and health services research through the Robert Wood Johnson Clinical Scholars Program and his Master's degree in epidemiology from the UNC School of Public Health. Dr. Pignone's research is focused on chronic disease prevention and treatment, as well as physician–patient communication and decision making in primary care settings. His main areas of interest include heart disease prevention, colorectal cancer screening, and management of common chronic conditions such as diabetes and heart failure. He has developed and tested interventions to mitigate literacy-related disparities and to improve the use of appropriate preventive services. His current cancer-related research focuses on the development, testing, and implementation of patient decision aids for colon cancer screening. He was recently awarded a K05 Established Investigator Award from the National Cancer Institute to study the use of economic techniques, including modeling, to improve cancer-related decision making.

Kim R. Pittenger, M.D., is the Deputy Chief of Satellites, Section Head of Virginia Mason Kirkland at the Virginia Mason Medical Center (VM). He is also the Chairman of the Best Practice Tactical Force and Director of the

VM Evidence Based Medicine Course. From 2008 to 2009, he served as the VM Kaizen Fellow, where he engaged in production system training. He is also a graduate of Shingijutsu Genba Kaizen in 2003 and Japan Superflow Training in 2009. Dr. Pittenger completed his residency training in family medicine at University of Cincinnati and is board-certified in family medicine. His current work focuses on reforming health care from the inside by abolishing waste and defects, enabling the survival of reliable, responsive primary care in collaborative multispecialty groups.

Amita Rastogi, M.D., M.H.A., is Chief Medical Officer of Prometheus with Bridges to Excellence. She is working on developing a new form of physician reimbursement system that focuses on globally pricing episodes of care to foster high quality, efficient medical care. Prior to this, Dr. Rastogi was Senior Medical Director at Ingenix, a leading Health IT company, where she was instrumental in developing transparency tools to measure performance among hospitals and physicians around cost and quality. Dr. Rastogi is adept in the use of statistical models and risk-adjustment methodologies. She is a Mayo Clinic-trained cardiac surgeon, certified in heart and lung transplantation and has over 20 years of experience in the health care field. She received her Master's in health administration degree from the Martin School of Public Policy and Administration, University of Kentucky. She is currently finishing her Master's in health studies from the University of Chicago.

Robert D. Reischauer, Ph.D., M.I.A., a former Director of the Congressional Budget Office (CBO) and nationally known expert on the federal budget, Medicare, and Social Security, began his tenure as the second President of the Urban Institute in February 2000. He had been a Senior Fellow of Economic Studies at the Brookings Institution since 1995. From 1989 to 1995, he was the Director of the nonpartisan CBO. Mr. Reischauer served as the Urban Institute's Senior Vice President from 1981 to 1986. He was the CBO's Assistant Director for Human Resources and its Deputy Director between 1977 and 1981. Mr. Reischauer serves on the boards of several educational and nonprofit organizations. He was a member of the Medicare Payment Advisory Commission from 2000 to 2009 and was its Vice Chair from 2001 to 2008. He frequently contributes to the opinion pages of the nation's major newspapers, comments on public policy developments on radio and television, and testifies before congressional committees. Mr. Reischauer holds an A.B. in political science from Harvard University and an M.I.A. and Ph.D. in economics from Columbia University.

Harry Reynolds, is a Vice President and Information Compliance officer at Blue Cross and Blue Shield of North Carolina. He has 30 years of experi-

ence in the technology and healthcare fields. He started his career with IBM, worked at two large teaching hospitals (Ohio State and UNC), and has been with Blue Cross and Blue Shield of North Carolina (BCBSNC) for the last 30 years. Reynolds has managed all aspects of information technology at BCBSNC, as well as managing a $500 million business unit that served 450,000 customers. He is currently responsible for administration and planning for information systems as well as the coordination of large enterprise-wide compliance projects. Reynolds currently serves as Chair on the National Committee for Vital Health Statistics (NCVHS) and Chair of the Council for Affordable Quality Healthcare (CAQH) CORE Initiative.

David R. Riemer, J.D., prepared Wisconsin's first Medicaid rule for the administration of former Governor Patrick Lucey. As counsel to U.S. Senator Edward M. Kennedy's Subcommittee on Health and Scientific Research from 1978 to 1981, he worked with interest groups, federal agencies, and the staffs of other members of Congress in drafting legislation relating to prescription drug regulation and mental health policy. Returning to Wisconsin in 1983, Riemer worked with state agency officials and legislators in helping the Wisconsin Legislature's Joint Committee on Finance to enact a budget that included several major health insurance reforms, including a major redesign of the state's own employee health insurance plan, which introduced cost-conscious consumer choice; legalization of HMOs; expansion of certificate of need; and creation of a hospital rate-setting commission. Riemer worked for several years with a Milwaukee insurance company on healthcare cost containment. In 1988, when he returned to the public sector as Budget Director for the Mayor of Milwaukee—and for the next 13 years as the Mayor's Director of Administration and Chief of Staff—Riemer coordinated the City of Milwaukee's effort to restructure the city employee health insurance plan, again introducing cost-conscious consumer choice as the organizing principle. From 2004 through 2007, Riemer launched a major statewide initiative, called the Wisconsin Health Project, to bring together the warring factions in the state's health insurance reform debate and to try to achieve as much consensus as possible on both the access and cost questions. Riemer currently works for Community Advocates, Inc., of Milwaukee, as Director of Policy and Planning. He directs the Community Advocates Public Policy Institute, and is active in health insurance reform efforts. In 2008, he coordinated a large group of stakeholders in AODA financing and treatment reform in obtaining support from the Open Society Institute and several Milwaukee-based foundations to launch the Milwaukee Addiction Treatment Initiative (MATI). The Community Advocates Public Policy Institute shortly afterwards created a Mental Health Policy Initiative.

Dean Rosen, J.D., is one of the nation's top healthcare experts, having played a leading role in developing and advancing health policy for nearly 20 years in the nation's capital. He has a deep understanding of America's complex healthcare system and an equally intimate knowledge of politics and process. A partner at Mehlman Vogel Castagnetti, Inc., Rosen provides policy counsel and strategic advice to policy makers, business leaders, trade association executives, and not-for-profit organizations on a broad range of health issues. Prior to joining Mehlman Vogel Castagnetti, Inc., Rosen held a series of high-level positions in both government and the private sector. Rosen was the chief healthcare advisor to Senate Majority Leader William H. Frist, M.D. (R-TN). He served first as Staff Director for the United States Senate Subcommittee on Public Health, then as the majority leader's health policy director. Previously, he was Senior Vice President of Policy and general counsel for the Health Insurance Association of America (HIAA). He came to HIAA from the House Ways and Means Health Subcommittee where, as majority counsel, he played a significant role in developing the Medicare provisions of the Balanced Budget Act of 1997. Rosen also served as health policy coordinator and majority counsel to the Senate Committee on Labor and Human Resources. There, he had principal responsibility for advising the Committee chair, Senator Nancy Kassebaum (R-KS), on a wide range of health care and employee benefit issues. Before entering the public sector, Rosen practiced law at Dow, Lohnes, and Albertson. Through his influential posts on Capitol Hill, Rosen helped shepherd through Congress a long list of major legislative accomplishments, including: The Medicare Prescription Drug Improvement and Modernization Act of 2003; The Project Bioshield Act of 2004; The Patient Safety and Quality Improvement Act of 2005; The Health Insurance Portability and Accountability Act of 1996 (HIPAA); The Balanced Budget Act of 1997. Rosen also holds several academic posts and is a sought after public speaker and press commentator.

Meredith B. Rosenthal, Ph.D., is Associate Professor of Health Economics and Policy in the Department of Health Policy and Management at the Harvard School of Public Health. Dr. Rosenthal received her Ph.D. in health policy at Harvard University in 1998. Her research examines the design and impact of market-oriented health policy mechanisms, with a particular focus on the use of financial incentives to alter consumer and provider behavior. She is currently working on a body of research that examines alternative models for reforming physician and hospital payment. Specific empirical projects include evaluations of several Patient-Centered Medical Home pilots, pay-for-performance initiatives, and an episode-based payment system. Dr. Rosenthal's work has been published in the *New England Journal of Medicine*, the *Journal of the American Medical Association*, *Health Affairs*, and numerous other peer-reviewed journals. Based on

her work, Dr. Rosenthal has been called to testify before the U.S. Congress and the California and Massachusetts legislatures. In 2006, Dr. Rosenthal was awarded an Alfred P. Sloan Industry Studies Fellowship in recognition of her field-based research on physician incentives. Dr. Rosenthal is an appointed member of the Massachusetts Public Health Council, which promulgates regulations and advises the Commissioner of Public Health on policy matters.

Dick Salmon, M.D., Ph.D., Vice President and National Medical Executive for Network Performance Improvement and Quality, CIGNA HealthCare, is responsible for the company's clinical network performance improvement initiatives and quality programs. Prior to this position, Dr. Salmon developed new care facilitation programs in case management and disease management. He previously was the New England Regional Medical Director, and President and General Manager of CIGNA New Hampshire. Before joining CIGNA HealthCare, Dr. Salmon was the Senior Vice President and Chief Medical Officer for HealthSource, a 3 million member HMO acquired by CIGNA in 1997. Dr. Salmon has worked extensively with managed care since 1984. His career began in academic medicine at Case Western Reserve University and the affiliated University Hospital, where he was an Assistant Professor of Family Medicine and Chief Resident in Family Practice. Dr. Salmon is board certified in family practice. He earned his medical degree and a Ph.D. in biomedical engineering from Case Western Reserve University.

Lewis G. Sandy, M.D., is Senior Vice President, Clinical Advancement, UnitedHealth Group. At UnitedHealth Group, a diversified health and well-being company, he leads efforts to promote efficient and effective health care, provide tools and information to doctors and patients to promote health, and foster the growth of evidence-based medicine. From 2003 to 2007, he was Executive Vice President and Chief Medical Officer of UnitedHealthcare, UnitedHealth Group's largest business focusing on the commercial health benefits market. From 1997 to 2003, he was Executive Vice President of the Robert Wood Johnson Foundation (RWJF), the nation's largest health-focused private foundation. At RWJF, he was responsible for the Foundation's program development and management, strategic planning and administrative operations. Prior to this, Sandy was a program vice president of the Foundation, and an active grantmaker in the Foundation's workforce, health policy, and chronic care initiatives. An internist and former health center medical director at the Harvard Community Health Plan in Boston, Massachusetts, Dr. Sandy received his B.S. and M.D. degrees from the University of Michigan and an M.B.A. degree from Stanford University. A former Robert Wood Johnson Foundation Clinical

Scholar and Clinical Fellow in Medicine at the University of California, San Francisco, Dr. Sandy served his internship and residency at the Beth Israel Hospital in Boston. He is a Senior Fellow of the University of Minnesota School of Public Health, Department of Health Policy and Management.

John Santa, M.D., M.P.H., is the Director of the Consumer Reports Health Ratings Center. The Ratings Center focuses on explicit approaches in evaluating and comparing health services, products, and practitioners. Dr. Santa was the administrator of the Office of Oregon Health Policy and Research from 2000 to 2003 during the administration of Governor John Kitzhaber, M.D. During that time, Oregon implemented an evidence-based approach to prescription drug purchasing that eventually came to be known as the Drug Effectiveness Review Project. During this same period, Dr. Santa served on the board of the Public Employees Benefit Board, Oregon's largest private health benefits purchaser, serving as the Chair of the Benefit Design Committee and Chair of the Board. He previously worked in leadership positions for hospitals, physician groups, and health insurers. Dr. Santa has taught in multiple environments including medical school, residency training, and graduate courses in public health. Dr. Santa received his Bachelor's degree from Stanford University in 1972, his M.D. from Tufts University in 1976, and M.P.H. from Portland State University in 2005. He has practiced primary care internal medicine in solo, group, and institutional settings, most recently at the Portland VA.

Lucy A. Savitz, Ph.D., M.B.A., is a Senior Scientist in the Institute for Health Care Delivery Research at Intermountain Healthcare with an Associate Professor appointment in Clinical Epidemiology in the School of Medicine, Adjunct Associate Professor of Nursing, and Associate Director of the CTSA Community Engagement Core at the University of Utah. She has been conducting applied, quasi-experimental studies in healthcare settings for over 2 decades with a focus on quality and safety. She also served as the lead contractor for the Alliance for Pediatric Quality, inventorying viable pediatric QI initiatives and achieving consensus among pediatric leaders in designating the top 10 improvement priorities for the profession. At Intermountain, Dr. Savitz has been involved in studying the effective spread of evidence-based care process models for mental health integration and care of the febrile infant. She was recently recruited to Intermountain Healthcare to bring her expertise to bear within the Intermountain Healthcare system. She has served as a Senior Health Services Researcher at Abt Associates and RTI International. At RTI, Dr. Savitz oversaw complex, applied research initiatives, directing the AHRQ Master Task Orders, Accelerating Change and Transformation in Organizations and Networks (ACTION) and Integrated Delivery System Research Network (IDSRN).

In this role, she represented the interests of five diverse integrated delivery systems across the United States and successfully led over two dozen applied research projects. Before embarking on a career in health services research, Dr. Savitz was an economist for the Colorado State Legislature and a Financial Planner for UNC Health Care. She is an expert in research knowledge utilization, implementation science, evaluation, and development of multifaceted dissemination tools. Dr. Savitz has co-authored more than a dozen book chapters and refereed publications, reviewed articles for refereed journals, and given numerous presentations on a variety of health research topics. Dr. Savitz's research over the last several years has been largely funded by the Centers for Disease Control and Prevention and the Agency for Healthcare Research and Quality. She teaches the Quality Improvement course for the School of Nursing's doctoral program and the Health Services Research course in the School of Medicine at the University of Utah. At the University of North Carolina at Chapel Hill (UNC-CH), where Dr. Savitz was on faculty in the 1990s, she continues to teach the health politics course in the Department of Health Policy and Management Executive Program and the social marketing module in the annual CDC Management Academy at UNC-CH.

Jonathan S. Skinner, Ph.D., is John Sloan Dickey Third Century Professor in Economics, and a Professor with the Dartmouth Institute for Health Policy and Clinical Practice at Dartmouth Medical School. He received his Ph.D. in economics from UCLA and taught in the Economics Department at the University of Virginia prior to moving to Dartmouth. In 2001, he was awarded the first Dartmouth Student Council teaching award, and in 2007 was elected to the Institute of Medicine of the National Academy of Sciences. He is also a Research Associate with the National Bureau of Economic Research (NBER) in Cambridge, Massachusetts, and a former editor-in-chief of the *Journal of Human Resources*. His research interests include the economics of government transfer programs, technology growth and disparities in health care, and the savings behavior of aging baby boomers.

Frank A. Sloan, Ph.D., is J. Alexander McMahon Professor of Health Policy and Management and Professor of Economics at Duke University since 1993. He is the former Director of the Center for Health Policy, Law, and Management at Duke (CHPLM) that originated in 1998. He holds faculty appointments in five departments at Duke, with Economics the primary appointment. He did his undergraduate work at Oberlin College and received his Ph.D. in economics from Harvard University. Before joining the faculty at Duke in July 1993, he was a research economist at the RAND Corporation and served on the faculties of the University of Florida and Vanderbilt

University. He was Chair of the Department of Economics at Vanderbilt from 1986 to 1989. His current research interests include alcohol use and smoking prevention, long-term care, medical malpractice, and cost-effectiveness analyses of medical technologies. He also has a long-standing interest in hospitals, including regulation of hospitals, healthcare financing, and health manpower. He has served on several national advisory public and private groups. He is a member of the Institute of Medicine and was formally a member of the Physician Payment Review Commission. He is the author of about 300 journal articles and book chapters and has co-authored and co-edited about 20 books. Recently published books are *Medical Malpractice* (MIT Press, 2008, coauthored with L. Chepke) and *Incentives and Choice in Health Care* (MIT Press, 2008, co-edited with H. Kasper).

Peter K. Smith, M.D., is Professor and Chief of Cardiothoracic Surgery at Duke University. He is a graduate of Princeton University (Phi Beta Kappa), Duke Medical School (AOA), and of the Duke General Surgery and Thoracic Surgery residencies. He has received the AHA Clinician Scientist Award, an NIH Research Career Development Award, and is currently the Duke PI in the NHLBI Cardiac Surgery Research Network. He has authored or co-authored 140 peer-reviewed publications. He has a long-standing interest in clinical databases and has managed the Duke Cardiac Surgery clinical database since 1987, collaborating with the STS National Cardiac Database since its inception. His most recent work has focused on comparative effectiveness of PCI and CABG and he is the surgeon member of the AHA/ACC Appropriateness Criteria Writing Committee. He has pioneered the use of clinical databases to improve the accuracy of the Medicare Physician Fee Schedule as the thoracic surgery member of the AMA Relative Value Update Committee (RUC). For this work, he received the Distinguished Service Award of the Society of Thoracic Surgeons in 2006.

Steven J. Spear, D.B.A., M.S., is author of the award-winning and critically acclaimed book, *Chasing the Rabbit: How Market Leaders Outdistance the Competition*. A Senior Lecturer at the Massachusetts Institute of Technology and a Senior Fellow at the Institute for Healthcare Improvement, Spear is internationally known for his expertise in innovation, operational excellence, and organizational learning, with deep expertise in industry and health care, based, in part on his 1999 *Harvard Business Review* article, Decoding the DNA of the Toyota Production System, and his 2005 article, Fixing Healthcare from the Inside, Today, which was an *HBR* McKinsey Award winner and one of his five works to win a Shingo Research Prize. Spear helped develop and deploy the Alcoa Business System in the late 1990s and the Pittsburgh Regional Healthcare Initiative's "Perfecting Patient Care" a few year's after. He has worked with several other leading

academic medical centers, and he is on a patient safety advisory panel for Beth Israel Deaconess Medical Center in Boston. Other clients have included Intel, Lockheed Martin, and Intuit, and he collaborates actively with Toyota and its North American suppliers. Spear has published in the *New York Times*, the *Boston Globe*, *Annals of Internal Medicine*, and *Academic Medicine*, and he has spoken to audiences ranging from the Association for Manufacturing Excellence to the Institute of Medicine. His degrees include a doctorate from Harvard Business School, Master's in engineering and in management from MIT, and a Bachelor's degree in economics from Princeton.

Glenn Steele, Jr., M.D., Ph.D., is President and Chief Executive Officer of Geisinger Health System. Dr. Steele previously served as the Dean of the Biological Sciences Division and the Pritzker School of Medicine and as Vice President for Medical Affairs at the University of Chicago, as well as the Richard T. Crane Professor in the Department of Surgery. Prior to that, he was the William V. McDermott Professor of Surgery at Harvard Medical School, President and Chief Executive Officer of Deaconess Professional Practice Group, Boston, Massachusetts, and Chairman of the Department of Surgery at New England Deaconess Hospital (Boston, Massachusetts). Widely recognized for his investigations into the treatment of primary and metastatic liver cancer and colorectal cancer surgery, Dr. Steele is past Chairman of the American Board of Surgery. He serves on the editorial board of numerous prominent medical journals. His investigations have focused on the cell biology of gastrointestinal cancer and pre-cancer and most recently on innovations in healthcare delivery and financing. A prolific writer, he is the author or co-author of more than 460 scientific and professional articles. He is a member of the Institute of Medicine of the National Academy of Sciences and serves on their Committee on Reviewing Evidence to Identify Highly Effective Clinical Services (HECS), the New England Surgical Society, a fellow of the American College of Surgeons, the American Surgical Association, the American Society of Clinical Oncology, and past President of the Society of Surgical Oncology. He was a member of the National Advisory Committee for Rural Health, and the Pennsylvania Cancer Control Consortium and is presently a member of the Healthcare Executives Network, the Alliance for Advancing Non-profit Health Care, the Commonwealth Fund's Commission on a High Performance Health System, and the National Committee for Quality Assurance's (NCQA) Committee on Performance Measurement. In addition, Dr. Steele was Chair for the American Hospital Association Systems Governing Council and now serves on the AHA Long-Range Policy Committee. He is currently Honorary Chair of the Pennsylvania March of Dimes Prematurity Cam-

paign. Dr. Steele serves on several boards including Bucknell University's Board of Trustees, Temple University School of Medicine's Board of Visitors, the American Hospital Association's Board of Trustees, Premier, Inc., the Healthcare Financial Management Association's Healthcare Leadership Council, the HFMA Healthcare Leadership Council, the Northeast Regional Cancer Institute, the Global Conference Institute, and previously served on the Simon School of Business Advisory Board (University of Rochester) 2002-2007. In 2006, Dr. Steele received the CEO IT Achievement Award, given by *Modern Healthcare* and the Healthcare Information and Management Systems Society (HIMSS) for promoting health information technology. In 2007, Dr. Steele received AHA's Grassroots Champion Award and was named to *Modern Healthcare*'s 50 Most Powerful Physician Executives in Healthcare.

Jennifer Sweeney, M.A., is the Director of Americans for Quality Health Care, a project of the National Partnership for Women & Families. Funded by the Robert Wood Johnson Foundation, Americans for Quality Health Care promotes consumer involvement in the drive to improve heathcare quality and increase transparency. Sweeney sits on the Center for Medical Technology's Patient Consumer Advisory Committee, AHRQ's TalkingQuality Web site editorial board, and the Consumers United for Evidence-Based Healthcare steering committee. Prior to joining the National Partnership for Women and Families, Sweeney was the Director of Public Policy at Business and Professional Women/USA. As the organization's top policy advisor, she worked to advance BPW/USA's agenda on Capitol Hill, throughout the executive branch, and in coalition with partners from the business, women's, and civil rights communities. She was also responsible for coordinating BPW/USA's grassroots campaigns and facilitating BPW/PAC's campaign contributions and endorsements. Before joining Business and Professional Women/USA, Sweeney was a Senior State Lobbyist with the American College of Obstetricians and Gynecologists (ACOG), the nation's leading group of professionals providing health care for women. While at ACOG, Sweeney led a successful campaign to increase the number of states with contraceptive equity laws. Prior to her work at ACOG, Sweeney was a Senior Research Consultant with the Corporate Executive Board, where she conducted "best-practice" benchmarking research on gender and diversity issues for Fortune 500 companies. Sweeney received a B.A. in English from Union College and an M.A. in women's studies from the George Washington University. Sweeney has been active in the Women's Information Network, Women in Government Relations, and Toastmasters International. She is the former Foundation Chair for the George Washington University's Women's Studies Endowment.

Robin J. Thomashauer, M.H.S.A., is Executive Director of CAQH, an unprecedented nonprofit alliance of health plans and trade associations that serves as a catalyst for industry collaboration on initiatives that simplify healthcare administration. Established in 2000, the organization promotes streamlined interactions between health plans, providers, and other stakeholders; reduces costs and frustrations associated with healthcare administration; and facilitates administrative healthcare information exchange. Ms. Thomashauer has overall responsibility for CAQH strategy, operations, and membership. She brings more than 30 years of experience in managed care operations and hospital administration, including responsibility for a broad range of operating and staff functions. Before joining CAQH, she was a Director in the health care practice at PricewaterhouseCoopers (PwC), with a primary focus on payer organizations. Prior to her position with PwC, Ms. Thomashauer held senior management positions with Kaiser Permanente, as well as in several teaching hospitals. Ms. Thomashauer holds an M.H.S.A. in hospital administration from the George Washington University, and a B.A. in social sciences from Colgate University. She is a Diplomate in the American College of Healthcare Executives and serves on the Adventist HealthCare Board of Trustees.

Kenneth E. Thorpe, Ph.D., is the Robert W. Woodruff Professor and Chair of the Department of Health Policy & Management, in the Rollins School of Public Health of Emory University, Atlanta, Georgia. He also co-directs the Emory Center on Health Outcomes and Quality. He was the Vanselow Professor of Health Policy and Director, Institute for Health Services Research at Tulane University. He was previously Professor of Health Policy and Administration at the University of North Carolina at Chapel Hill, an Associate Professor and Director of the Program on Health Care Financing and Insurance at the Harvard University School of Public Health, and Assistant Professor of Public Policy and Public Health at Columbia University. Dr. Thorpe has also held visiting faculty positions at Pepperdine University and Duke University. Professor Thorpe was Deputy Assistant Secretary for Health Policy in the U.S. Department of Health and Human Services from 1993 to 1995. In this capacity, he coordinated all financial estimates and program impacts of President Clinton's healthcare reform proposals for the White House. He also directed the administration's estimation efforts in dealing with congressional healthcare reform proposals during the 103rd and 104th sessions of Congress. As an academic, he has testified before several committees in the U.S. Senate and House on healthcare reform and insurance issues. In 1991, Professor Thorpe was awarded the Young Investigator Award presented to the most promising health services researcher in the country under age 40 by the Association for Health Services Research. He also received the Hettleman Award for academic and scholarly research

at the University of North Carolina and was provided an "Up and Comers" award by *Modern Healthcare*.

N. Marcus Thygeson, M.D., serves as Vice President and Medical Director for Consumer Health Solutions. Thygeson works closely in partnership with the leadership of Sales and Account Services, Customer Service and Product Development, as well as Health, Medical, and Network Management, to help translate key account trends and requirements into product, service, and other solutions. Thygeson is also a Senior Fellow at the HealthPartners Research Foundation and is currently engaged in a Bush Medical Fellowship exploring the application of complex systems science to healthcare improvement, with a particular focus on reducing overuse and misuse and promoting affordability. Prior to joining HealthPartners, Thygeson served as the Medical Director for Definity Health; he was responsible for personal care support strategy and operations, and supporting consumer activation, network strategy, and provider relations. Prior to joining Definity Health, Thygeson was the Chief Medical Officer of Mywayhealth, another consumer driven healthcare benefit plan. Before Mywayhealth, Thygeson held a number of medical management positions at Alta Bates Medical Center, in Berkeley, California, and served from 1996 to 2000 as the Medical Director from Alta Bates Medical Group, an award-winning California IPA. He is board certified in internal medicine and gastroenterology. Thygeson received his B.S. summa cum laude from the University of California at Davis, and is a graduate of Harvard Medical School. He received his medical training at Virginia Mason Hospital, where he was Chief Medical Resident, and at the University of California San Francisco.

John Toussaint, M.D., Founder and President of the ThedaCare Center for Value in Healthcare, has the experience and passion to be a driving force in creating healthcare value. From 2000-2008, Dr. Toussaint served as President and Chief Executive Officer of ThedaCare, Inc., a community-owned, four-hospital health system including 21 physician clinics, as well as home health capabilities, senior care facilities, hospice care, and behavioral health. ThedaCare is the largest employer in Northeast Wisconsin with nearly 5,400 employees, serving an eight-county region. During his tenure as President and CEO of ThedaCare, Dr. Toussaint introduced the ThedaCare Improvement System (TIS), which is derived from the Toyota Production system. This model of continuous improvement helped save millions of dollars in healthcare costs by reducing patient errors, improving outcomes, and delivering better quality care at a higher value. Presently, he is Chairman of the Wisconsin Health Information Organization, a public–private partnership centered on reporting provider efficiency using a centralized claims database derived from the major payers in the

state. In 2005, Dr. Toussaint was appointed to the Institute of Medicine's Committee on Pay for Performance for Physicians, as well as to Governor Doyle's e-Health and Patient Safety Board. ThedaCare and Dr. Toussaint's work have been featured in the *Wall Street Journal*, *Modern Healthcare*, the *Harvard Business Review*, and *Health Management Technology*. Additionally, Dr. Toussaint is asked to speak all over the world on lean and the topics of quality and efficiency in healthcare. He recently was a keynote speaker at the fourth annual Australasian Redesigning Health Care Summit in Melbourne, Australia. He also spoke at the Lean Healthcare Conference organized by the National Healthcare Group in Singapore. In October 2008, Toussaint spoke at the Association for Manufacturing Excellence's (AME) International Lean Conference in Toronto on the topic of "Innovation Using Lean in Healthcare."

Sandeep Green Vaswani, M.B.A., is a Senior Vice President with the Institute for Healthcare Optimization. In this role, Vaswani is responsible for new program development, management of various hospital flow improvement initiatives, and development of software tools. He is the lead author of a chapter (Strategies to Manage Patient Flow) in Joint Commission's upcoming book on patient flow management. Vaswani has wide ranging experience in hospital strategy, finance, operations, and data-driven business management. Since the fall of 2007, Vaswani has been working on various operating room redesign and patient flow initiatives with Dr. Eugene Litvak and Boston University's Program for the Management of Variability in Healthcare Delivery. Previously, Vaswani served as Director, Analysis & Planning at the Brigham and Women's Hospital in Boston, establishing the department within their Center for Clinical Excellence. In that role, Vaswani served as an advisor to the hospital executive team. He oversaw strategic and business planning, departmental multi-year planning, cost benchmarking, and the development of capacity utilization and projection models. He played a broad role in the development of the hospital's new cardiovascular center, including strategy planning, financial analysis, board approval process, architectural design and development, and operational planning. Along with his team, Vaswani led the development of models to assess and project the utilization of hospital capacity such as the operating rooms, inpatient beds, emergency room, cath lab, interventional radiology, outpatient clinics, and endoscopy. This initiative led to an institution-wide focus on enhancement of utilization of existing hospital assets. Prior to Brigham and Women's Hospital, Vaswani worked in a variety of settings—management consulting with the strategy-consulting firm Monitor Company, equity research and investment banking in Bombay, India and New York, and product management for a television manufacturer in India. Vaswani has an undergraduate degree in electronics engineering from

Bombay University, and an M.B.A. from the Stern School of Business at New York University.

David Wennberg, M.D., M.P.H., is an internist with specialty training in health services and outcomes research. He currently serves as Chief Science & Products Officer of Heath Dialog. Prior to this role, he co-founded Health Dialog Analytic Solutions (HDAS), the analytics division of Health Dialog, which he continues to oversee. In addition to his role at Health Dialog, Dr. Wennberg is a member of the Primary Project Team of the Dartmouth Atlas Working Group at the Dartmouth Institute for Health Policy and Clinical Practice. He also served as the Director of the Center for Outcomes Research & Evaluation at the Maine Medical Center, focusing on the drivers of utilization and quality in the delivery of healthcare services. Dr. Wennberg earned his medical degree from McGill University Faculty of Medicine and his M.P.H. from Harvard School of Public Health. Dr. Wennberg has published extensively, including in the *New England Journal of Medicine*, *Annals of Internal Medicine*, and the *Journal of the American Medical Association*, and is an internationally recognized authority on the root causes of unwarranted variation.

David S. Wichmann, joined UnitedHealth Group in 1998 and has assumed the position of Executive Vice President, UnitedHealth Group and President, UnitedHealth Group Operations. He previously held positions at UnitedHealth Group as President, Commercial Markets Group; President and Chief Operating Officer, UnitedHealthcare; President and Chief Executive Officer, Specialized Care Services; and Senior Vice President, Corporate Development. Prior to joining UnitedHealth Group in 1998, Mr. Wichmann was a partner with Arthur Andersen. Mr. Wichmann is a board member of the YMCA of Metropolitan Minneapolis, the Minnesota Orchestral Association, Sedgwick CMS, and the UnitedHealthcare Children's Foundation.

Andrew M. Wiesenthal, M.D., S.M., is Associate Executive Director for Clinical Information Support for the Permanente Federation. From 1983 until 2000, Dr. Wiesenthal served as a pediatrician and pediatric infectious disease consultant with the Colorado Permanente Medical Group (CPMG). He also led CPMG's quality management program and served as Associate Medical Director for Medical Management, with responsibility for quality management, utilization management, regulatory compliance, risk management, credentialing and physician performance, and informatics. His current work is in the arenas of development and deployment of automated medical records, decision support, and other clinical systems for all of Kaiser Permanente. He graduated from Yale University with a B.A. degree (with honors) in Latin American Studies in 1971 and received his medical

degree in 1975 from the State University of New York, Downstate Medical Center in Brooklyn. He completed his pediatric residency at the University of Colorado in 1978, and then served as an Epidemic Intelligence Service Officer with the Centers for Disease Control from 1978 to 1980 before returning to the University of Colorado for a pediatric infectious disease fellowship, which he completed in 1983. In 2004, he earned an S.M. in health care.

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