Controlling Health Care Spending in Massachusetts: An Analysis of Options

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Contents

Executive Summary 1

Acknowledgements 47

Option #1 Institute Traditional Hospital All-Payer Rate Setting 48

Option #2 Utilize Bundled Payment Strategies 58

Option #3 Institute Rate Regulation for Academic Medical Centers 69

Option #4 Institute Reference Pricing for Academic Medical Centers 76

Option #5 Promote the Growth of Retail Clinics 83

Option #6 Create Medical Homes to Enhance Primary Care 91

Option #7 Encourage Greater Use of Nurse Practitioners and Physician Assistants 99

Option #8 Increase Use of Disease Management 109

Option #9 Increase Adoption of Health Information Technology 117

Option #10 Eliminate Payment for Adverse Hospital Events 129

Option #11 Decrease the Intensity of Resource Use for End-of-Life Care 138

Option #12 Encourage Value-Based Insurance Design 147

Option #13 Reduce Administrative Overhead 154

Option #14 Extend Determination of Need Program 165

Option #15 Use Comparative Effectiveness Analysis to Guide Coverage and Payment Rules 172

Option #16 Increase Use of Pay-for-Performance (P4P) Programs 186

Option #17 Regulate Insurance Premium Rates 193

Option #18 Increase Medicaid Reimbursement Rates 198

Option #19 Increase the Use of Preventive Care 206

Option #20 Provide Incentives for Wellness and Healthy Behaviors 213

Option #21 Change Laws Related to the Non-Economic Damages Cap and Expert Witnesses 221

Technical Appendix 231

About the Authors 234

Glossary 236

Executive Summary

Introduction

In 2006, Massachusetts passed landmark legislation, Chapter 58 of the Acts of 2006, ensuring near universal health insurance to residents of the state through a combination of mechanisms. With that historic action, Massachusetts became the proving ground for the next generation of health care reform in the United States. Since that time, policymakers (at the federal and state levels), policy analysts, politicians, the press, and the public have watched with interest the implementation of health care reform Massachusetts-style, which was designed to expand insurance coverage to nearly every uninsured person in the Commonwealth. Other states have attempted to emulate the Massachusetts approach, proposing employer and individual mandates; thus far, no state has achieved the bipartisan coalition necessary to enact this kind of wide-reaching reform.

A report celebrating the critical first year of implementation of Chapter 58 highlighted challenges the Commonwealth faces as it goes forward. Rising health care costs, which have increased with the current economic downturn, are among the more acute challenges. According to this analysis, health care reform and, in particular, universal coverage, "will become unaffordable—for individuals, employers, and government—unless health care spending can be brought under control."[1] The report warned that, if health care costs rise out of proportion with government estimates of health care inflation, or the state economy weakens, the reform could be jeopardized. Unless costs can be contained (or the rate of growth moderated), the Commonwealth could face a series of unattractive options, such as reducing health benefits or increasing enrollee contributions. To address these issues, Chapter 305 of the Acts of 2008 (Senate No. 2863), an act to promote cost containment, transparency and efficiency in the delivery of quality health care, was signed into law on August 10, 2008.

Massachusetts is not alone in facing health care inflation; however, health care costs in Massachusetts are higher than in other states, and at the same time the state is attempting to cover nearly all of its uninsured. A variety of approaches to cost containment have been proposed by stakeholders in Massachusetts—both formally and informally—but there is little consensus on which ones are the most effective and appropriate. Any health care system, such as the system in the Commonwealth, faces three critical challenges: enabling access to care for everyone who needs it, delivering services at a cost that is affordable, and ensuring that the care delivered meets quality standards. Chapter 58 focused on the goal of providing access to health care coverage for all residents of Massachusetts, and also authorized the development of a Health Care Quality and Cost Council (QCC) to establish statewide goals for improving health care quality, containing health care costs, and reducing racial and ethnic disparities in health care. A general consensus is that widespread problems exist in the health care system that are driving health care costs; yet, this consensus has not been translated into agreement about solutions.

[1] A.G. Raymond, *The 2006 Massachusetts Health Care Reform Law: Progress and Challenges after One Year of Implementation.* 2007. Blue Cross Blue Shield of Massachusetts Foundation, the Massachusetts Medicaid Policy Institute, and the Massachusetts Health Policy Forum: Boston, MA.

Such a consensus is necessary for the second phase of health care reform to proceed. Chapter 305 is a beginning step, but further action will be necessary.

The Division of Health Care Finance and Policy (DHCFP) contracted with The RAND Corporation, an independent policy research organization, to develop a comprehensive menu and assessment of cost containment strategies and options and to determine their potential effect on the health care system in Massachusetts. We considered the potential effect of reforms on all sectors of the health care system, including state and federal government, providers, individuals, insurers, and employers. We were explicitly instructed not to consider political feasibility in our analysis. In collaboration with DHCFP, and in consultation with the QCC, RAND undertook a two-part study to assist stakeholders in Massachusetts in developing a consensus on approaches for the second stage of health care reform.

For the first phase of the study, RAND investigators used a combination of strategies (including local stakeholder interviews and an environmental scan) to identify approximately 75 broad approaches to cost containment. With input from DHCFP and the QCC, we selected 21 high-priority policy options and then assessed the theoretical, empirical, and experiential evidence on spending reductions associated with these options. In some instances, policy options were proposed that have been designed for purposes other than cost containment (e.g., pay-for-performance) and the evidence available for accomplishing the goal of reducing spending was often less robust than for the original purpose. We determined whether there was evidence that savings would be likely and evaluated the strength of that evidence. If savings were possible, we assessed whether they would occur in the near or long term, and (if sufficient evidence existed) provided an order of magnitude estimate of those savings.

In the second phase of the study, for the options that had some promise of savings, and for which existing data were sufficient to make projections, we developed upper- and lower-bound estimates of potential cost savings over 10 years. We estimated the effect of these options individually; however, as policymakers look for implementation strategies, some combination of approaches will likely be necessary. We discuss below some of the challenges in estimating combined effects.

Two Basic Approaches to Reducing Spending

Before we discuss the specific policy options that were assessed in this study, it is useful to take a step back and consider the two basic approaches to reducing spending: reducing prices and reducing volume. That is, to save money, we must identify ways to pay less for care or to use fewer services. Within those two basic approaches, two common methods are used: incentives and regulation. We can either make a change that uses market forces to bring prices down or reduce volume, or we can institute a regulatory process that sets prices below current levels or limits the volume of services delivered. Stakeholders tend to have clear philosophical preferences for using either market mechanisms or regulation. Our challenge in this study was to get beyond philosophy and assess the evidence available today that a particular approach within a particular context was likely to produce a reduction in health care spending. Although we were asked to explicitly set aside political feasibility, the availability of evidence in certain areas may well reflect the political infeasibility of testing a particular approach in prior efforts to reduce

health care spending. In looking at the policy options under consideration, we considered the general ways in which the options seek to reduce spending.

Spending on health could be reduced if the prices paid per unit of service were lower:

- A number of options effectively seek to substitute less-expensive for more-expensive services. The substitution can be for services provided at a point in time (e.g., nurse practitioners substituted for physicians) or for services provided now rather than later (e.g., preventive care substituted for treatment later of acute or chronic illness).
- Other options seek to change prices directly by regulating the price paid for services. Both the private and public sectors employ price-setting strategies (for example, the Medicare physician fee schedule or contracts between insurers and providers). An example of this approach would be all-payer rate setting.

Spending on health could be reduced if the volume of services provided were lower:

- One approach to reducing volume is to provide incentives for more-efficient delivery of health care, including the elimination of services that do not add value. Incentives are usually monetary, although some options envision producing better information as a basis for informed decisionmaking. An example of this type of policy option would be ending payment for serious reportable events to provide an incentive for providers to reduce the volume of such events. Many of the waste-reduction strategies considered employ market forces to spur providers or patients to make a change in utilization patterns.
- Other approaches to reducing volume use regulatory mechanisms to constrain the growth in health care infrastructure. This approach is based on the idea that increased supply can induce demand for services and therefore increase the volume of services provided. An example of a regulatory mechanism to constrain supply would be extending the Determination of Need (DoN) process to limit growth in hospital construction.

One more note on the interaction between these two approaches is warranted because it points to the potential for unintended consequences. Consider for the moment a well-functioning health care market. Economic theory tells us that if we are successful in reducing prices, volume is likely to increase. Similarly, if we were able to reduce volume (supply), we would expect to see prices increase. However, the modeling used in this report does not enable us to estimate the dynamic responses to policy changes by various stakeholders. If dynamic responses dampen the long run effects of cost containment policies, our results will likely overestimate savings.

We return at the end of the Executive Summary to consider how well these basic approaches are likely to work when viewed through the lens of specific policy options. This generalized framing should help stakeholders generate additional ideas to pursue in the future. It is clear to most who have considered the challenge of reducing health care spending that no single, magic bullet exists that can fundamentally alter the course we are on. Particularly in the short run, combined approaches will be necessary.

Summary of Analyses

Using data from the Medical Expenditure Panel Survey (MEPS), we estimate that spending on health care in Massachusetts will be $43 billion in 2010 and that cumulative spending between 2010 and 2020 will be $670 billion. We use data from the MEPS rather than the Centers for Medicare and Medicaid Services (CMS) State Health Expenditure Accounts (SHEA) because the MEPS can be disaggregated to generate estimates for specific service categories and populations, such as spending for office visits, or spending for adults ages 18 to 64. However, the MEPS does not capture all spending in the SHEA; notably, MEPS omits spending on long-term care, over-the-counter medications, incarcerated individuals, the military, and several other categories. Using SHEA data, we project that Massachusetts health spending would be $68 billion by 2010, with cumulative spending totaling more than $1 trillion by 2020. We do not anticipate that modeled reforms would have a significant impact on the SHEA spending categories that are excluded from MEPS. A more complete discussion of the MEPS and the SHEA can be found in our technical appendix.

In estimating the spending trajectory for Massachusetts over the next decade, we assume that cost growth will average about 5.7 percent annually (our assumptions are explained in more detail in the technical appendix to this report). To achieve no increase in health spending, we would have to identify policy options that would reduce spending by about that amount annually. For 9 of the 21 policy options we evaluated, there was not enough empirical evidence on which to base a quantitative estimate of the likely effects. For the remaining 12 options, only one—bundled payment—by itself could achieve this level of savings in the long run, and only if the upper-bound scenario is reasonable. This suggests that combining policies might be the best approach to achieving significant reductions in spending. However, savings from implementing multiple policy options are not likely to be additive, rather we expect that combinations would in many cases save less than the sum of the individual options would suggest. For example, the most promising options in the upper-bound estimates—bundled payment, hospital rate regulation, and rate regulation for academic medical centers (AMCs)—all seek to save money by reducing the price of hospital services. When options target the same dollars, policymakers might consider selecting the option that is most effective and most feasible to implement.

Even when our bounding analyses suggest potential savings, in most cases the ability to capture savings from policy changes is unknown, so we offer bounded estimates that provide a range of possible savings. Greater differences between the upper and lower bounds suggest higher levels of uncertainty.

Figure 1 gives a snapshot view of the upper- and lower-bound cumulative savings (as a share of projected spending) between 2010 and 2020, with the 12 modeled policy options ordered from most- to least-promising. Payment reform strategies, including bundled payment, hospital rate regulation, and rate regulation for AMCs, yield the highest potential for savings. However, there is a large difference between the upper- and lower-bound estimates for these options, and the total level of savings is uncertain. Policies that would increase the use of health information technology (HIT), eliminate potentially preventable readmissions (PPRs) and hospital-acquired infections (HAIs), and increase the use of nurse practitioners (NPs) and physician assistants (PAs) all yield moderate savings. With the exception of HIT, we estimate

relatively little difference between the upper and lower bounds. Policies that target spending on chronic illness, including disease management, medical homes, and increased use of value-based insurance design, yield limited savings and could be cost-increasing. These policies typically require up-front investments, with limited or mixed evidence on the opportunity for savings. Policies to reduce spending on chronic illness for the non-elderly did not yield significant savings because they affect a small portion of the population and spending.

We should also note that many of the promising policy options take different approaches to reducing spending by the same population for the same health services. For example, the potential savings from HIT, end-of-life, bundled payment, medical home, disease management, and some preventive care strategies primarily rely on reducing spending on chronic disease care. These are likely not additive, may be complementary, but could be counterproductive if not implemented in a coordinated manner. An option's potential to save money may also be limited simply by the scope of spending that can be targeted with that option. For example, most of the options we evaluated focus on spending for the non-Medicare population, which—based on our analysis of the MEPS—accounts for 65 percent of health spending in Massachusetts. Non-Medicare spending on 6 chronic conditions commonly targeted by disease management programs (diabetes, depression, asthma, chronic obstructive pulmonary disease, coronary artery disease, and congestive heart failure) accounts for only 21 percent of the total. Among health services, spending on hospital inpatient care accounts for the largest share of any MEPS spending category (including hospital outpatient care, emergency department visits, office visits, and prescriptions), yet only encompasses 35 percent of total health spending in the state.

We did not estimate the effect of combinations of policy options. A framework for determining which policies are likely to overlap might consider the type of spending targeted (e.g., hospital, office-based, other) and the mechanism through which savings are achieved (a reduction in price or a reduction in volume). A promising, multipronged strategy for reducing spending might include a payment reform strategy, such as bundled payment, which provides a lump sum payment for combinations of certain services and gives incentives to reduce duplication and avoidable complications; a mechanism to eliminate waste, such as HIT; and a strategy to strengthen primary care, such as increased use of NPs and PAs, which expands the availability of primary care at a lower price.

Another issue that emerged in our review of the literature is that reforms that are cost-effective may not reduce spending. When an intervention is cost-effective, it may increase both spending and value. Although a value judgment is involved in determining when the benefits of an intervention are "worth it," the literature usually categorizes interventions that cost less than $114,000 per quality-adjusted life-year (QALY) as being good investments.[2] In a recent review of the literature on prevention, Cohen, Neumann, and Weinstein found that the majority of preventive services both add value to the health system and increase total costs.[3] Our findings

[2] R. M. Kaplan and J. W. Bush, in *Health-Related Quality of Life Measurement for Evaluation Research and Policy Analysis.* Health Psychology, 1982. 1(1): p. 61-80, proposed $50,000 per QALY as a threshold for making resource-allocation decisions; we have inflated this value to 2008 price levels using the Consumer Price Index.

[3] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective—Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

suggest that comparative effectiveness analysis and disease management programs may have a similar effect: They have strong potential to improve health outcomes, but may also increase costs.[4,5] Although promoting policy options that add value to the health system may be desirable, these reforms will not address the concern about the rapid growth of health care spending.

A final question that was raised by stakeholders in Massachusetts was whether or not cost containment lessons could be gleaned from other countries. Considering international health systems was not a main focus of our analysis, but the evidence suggests that the factors driving growth in health spending are universal and not specific to the United States. Granted, health spending in the United States has been higher than that in other countries for many years; yet, growth trends in the United States have been similar to the median levels in other industrialized countries.[6] The difference in spending levels is mainly due to the prices of services provided.[7] The quantity of health care services used (e.g., hospital admissions, physician visits, length of stay) is lower in the United States than in other countries, but the intensity of services used within each encounter in the health system (e.g., tests, procedures) is higher.[8] Several reasons have been given for higher prices in the United States: relatively strong concentration of market power on the supply side of health care as a result of fragmented organization and financing; greater compensation of health professionals; higher national income; and administrative complexity and costs.[9] With the exception of the issue of higher national income, we address all of these areas to reduce spending in our report.

We turn now to a more detailed summary of the individual policy options that were selected for assessment and the results of our evaluation.

Identifying, Classifying, and Evaluating Policy Options

Starting with materials from local discussions about health care cost containment (e.g., the series of breakfast meetings sponsored by Brandeis University, Partners HealthCare, Blue Cross Blue Shield of Massachusetts, and the Greater Boston Chamber of Commerce) and early legislative and administrative proposals provided by DHCFP, we collected as many documents as we could identify that described potential cost containment ideas for Massachusetts. We also conducted a quick environmental scan of national proposals to identify additional areas of reform that had not been raised in discussions in Massachusetts. Using these materials, we developed an initial menu of 75 health care cost containment ideas (some of these were

[4] N. Devlin and D. Parkin, *Does Nice Have a Cost-Effectiveness Threshold and What Other Factors Influence Its Decisions? A Binary Choice Analysis.* Health Economics, 2004. 13(5): p. 437-52.

[5] N. McCall, J. Cromwell, and S. Bernard, *Evaluation of Phase I of Medicare Health Support (Formerly Voluntary Chronic Care Improvement) Pilot Program under Traditional Fee-for-Service Medicare. Report to Congress.* 2007. RTI International. CMS contract 500-00-0022.

[6] Organisation for Economic Cooperation and Development, *Health at a Glance 2007.* 2007. OECD: Paris, France.

[7] G.F. Anderson, U.E. Reinhardt, P.S. Hussey, et al., *It's the Prices, Stupid: Why the United States Is So Different from Other Countries.* Health Aff (Millwood), 2003. 22(3): p. 89-105.

[8] Congressional Research Service, *U.S. Health Care Spending: Comparison with Other OECD Countries,* Washington, D.C.: U.S. Congress, September 17, 2007. As of June 25, 2009: http://opencrs.com/document/RL34175

[9] U.E. Reinhardt, P.S. Hussey, and G.F. Anderson, *U.S. Health Care Spending in an International Context.* Health Aff (Millwood), 2004. 23(3): p. 10-25.

well-developed policy options, but many more were general concepts). Options were grouped into five broad categories: (1) Reform payment systems to better align financial incentives; (2) redesign health care delivery to improve efficiency and quality; (3) reduce waste; (4) encourage consumers to make good health choices; and (5) change medical liability laws to reduce the number and average payout of claims. We shared the resulting list with stakeholders in a series of conversations convened by DHCFP in April 2008. Local stakeholders (such as members of the QCC, health care providers, insurers, business leaders, and representatives of consumer organizations) provided feedback on how they would prioritize the options and which, if any, options they felt were not worth pursuing. We collaborated with DHCFP and consulted with the QCC to select 21 options for full review, making sure to select options within each of the 5 broad categories. The 21 options considered are listed in Table 1 and discussed in greater detail below. We indicate in the table those options for which we produced quantitative estimates of their likely effect on reducing health spending in the state using a spreadsheet modeling method described below.

Table 1
Cost Containment Policy Options Selected for Study

Policy Option	Modeled?
Reform Payment Systems	
Institute hospital all-payer rate setting	Yes
Utilize bundled payment strategies	Yes
Increase use of pay-for-performance	No
Regulate insurance premiums	No
Increase Medicaid reimbursement	No
Pay academic medical centers (AMCs) a community rate	Yes
Use reference pricing for AMCs	Yes
Redesign the Healthcare Delivery System	
Promote the growth of retail clinics	Yes
Create medical homes	Yes
Change scope of practice and payment policies for NPs and PAs	Yes
Increase the use of preventive care	No
Increase the use of disease management	Yes
Reduce Waste	
Reduce administrative overhead	No
Extend the Determination of Need (DON) process	No
Increase adoption of health information technology (HIT)	Yes
Use comparative effectiveness analysis to guide coverage and payment rules	No
Eliminate payment for preventable readmissions and hospital-acquired infections	Yes
Decrease intensity of resource use for end-of-life care	Yes
Encourage Consumers to Make Good Health Choices	
Encourage value-based insurance design	Yes
Promote wellness/healthy behavior	No
Change Medical Liability Laws	
Change laws related to the non-economic damages cap and expert witnesses	No

For each of these options, we conducted a comprehensive literature review to determine whether existing theory or empirical evidence suggested a potential for reducing spending. These results are summarized in the main body of this report. Options were selected for modeling if theory and/or evidence were adequate for making estimates of savings in Massachusetts, and if data were available to conduct analyses. We used a technique commonly referred to as spreadsheet modeling which produces quantitative estimates of likely spending reductions based on assumptions about the expected effect of a policy change on the price or volume of services delivered. This method is described in more detail in the technical appendix.

Reasons Options Were Not Modeled

Options were excluded from the modeling analysis if the evidence regarding cost-savings potential was weak, or if there was insufficient data and evidence to form a sound basis for modeling. Below, we list non-modeled options and provide a brief explanation for why these reforms were not modeled:

- Pay-for-performance (P4P) was excluded from modeling because there is little empirical evidence to support cost savings, and most P4P programs are designed to redistribute spending without changing overall health expenditures.
- Regulating premium growth rates was excluded because we could find no empirical studies or other relevant data to inform our bounding analyses.
- Increases in Medicaid reimbursement rates were not modeled because such changes are unlikely to produce systemwide savings, although they may reduce cost-shifting to private insurers.
- Prevention was not modeled in part due to evidence that many preventive medical interventions (e.g., mammography) are cost-effective but not cost saving.
- Reducing administrative costs was excluded from modeling due to difficulty in finding data that would allow us to separate necessary administrative spending (e.g., spending required to maintain accurate payment systems) from unnecessary spending.
- Determination of need was excluded from modeling because the best empirical evidence suggested that DoN regulations implemented in the past have not reduced spending.
- Comparative effectiveness analysis was excluded because we could find no empirical studies or other relevant data to inform systematic analyses.
- Options to promote wellness and healthy behavior were not modeled because evidence on these policies comes largely from small-scale programs that have not been systematically evaluated to address cost implications.[10]

[10] K.G. Volpp, M.V. Pauly, G. Loewenstein, et al., *P4P4P: An Agenda for Research on Pay-for-Performance for Patients.* Health Aff (Millwood), 2009. 28(1): p. 206-14.

- Changing medical liability laws was excluded from modeling because Massachusetts already has a cap on non-economic damages, and we concluded that there was little evidence to determine the likely effect of strengthening the existing law. In addition, we could find no empirical studies regarding changes in rules regarding the qualification of expert witnesses.

In the main body of the report, we discuss in greater detail the empirical literature and the strength of the evidence for both modeled and unmodeled options. The decision to exclude an option from modeling should not be taken to imply that spending reductions are not possible. For many of the unmodeled options, the decision not to model simply reflected a judgment that modeled results would be too speculative. We acknowledge that the evidence to support many of the modeled policies is also relatively limited; however, data to inform bounding analyses was, on balance, stronger for modeled than unmodeled options. Finally, our task was to evaluate these policy options for their potential to reduce health care spending. Many options are designed for purposes other than spending reductions, have been demonstrated to achieve other important goals in the health care system, and may be worth implementing even if we did not conclude that they are likely to reduce spending.

Modeling Potential Savings Relative to the Status Quo

To estimate health care spending between 2010 and 2020 in the absence of any major changes in policy or external conditions, we used Massachusetts-specific data from the Medical Expenditure Panel Survey (MEPS),[11] pooled from 2000–2005. Both the cost literature[12,13] and government budget offices commonly use a 10-year time frame for estimating changes in spending. We projected per capita spending over time, accounting for population change and health care inflation. We assumed that per capita health spending would increase by 7.42 percent annually through 2010, the average rate of growth in the Centers for Medicare and Medicaid Services (CMS) State Health Expenditure Accounts for Massachusetts from 2000 to 2004 (the most recent year available). After 2010, we assumed that the growth rate would revert to its average since 1991, 5.7 percent annually. We allowed for a small increase in spending in 2007 to account for health care reform, and we applied a 16-percent adjustment to address potential under-counting in the MEPS.[14] With these assumptions, we estimated that status quo health care spending will be $43 billion in 2010 and that status quo cumulative spending between 2010 and 2020 will be $670 billion (Table 2). A more complete description of our modeling methodology, data, and assumptions can be found in the technical appendix.

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[11] The Medical Expenditure Panel Survey, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers. The MEPS is collected and maintained by the Agency for Healthcare Research and Quality (AHRQ).

[12] C. Schoen and Commonwealth Fund, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending.* 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p.

[13] United States Congressional Budget Office, *Budget Options Volume I: Health Care.* CBO Paper. 2008, Washington, D.C.: United States Congressional Budget Office. 236 p.

[14] M. Sing, J.S. Banthin, T.M. Selden, et al., *Reconciling Medical Expenditure Estimates from the MEPS and NHEA, 2002.* Health Care Financ Rev, 2006. 28(1): p. 25-40.

Our analysis focuses on health care spending, and does not account for other societal savings that might result from improved health, worker productivity, or increased life expectancy. We focus on the potential to reduce spending (without adversely affecting health outcomes) rather than to add value, because, in the current economic climate, health care affordability is of paramount concern. In addition, we excluded savings related to Medicare spending if federal legislative or regulatory action would be required to apply a particular policy option to Medicare.

We note that there are several concepts that are related to, but slightly different from, health care spending. Reimbursement rates (or payment rates) are what individuals and insurers pay to consume health care goods and services. Charges are list prices set by providers, and costs are measures of the actual resources used to produce health care goods and services. In theory, charges and reimbursement rates should reflect the underlying costs of goods and services, but this is not necessarily the case in health care.[15] For example, negotiated contracts may result in reimbursements to hospitals and physicians that are lower than stated charges. Because reimbursement rates reflect actual spending on health care services by individuals and their insurance carriers, we try to be as consistent as possible throughout this report in using reimbursement rates or expenditure data to evaluate health care spending.[16]

Health insurance premiums reflect both expected health care spending and an administrative loading factor that covers insurer's operating expenses and profits. Because administrative costs are not captured in either the MEPS or the National Health Expenditure Accounts (NHEA), our modeling focuses on health care expenditures only and not the administrative component of premiums. Some of the options we analyze in this report—strategies to reduce administrative overhead and strategies to reduce the rate of premium growth—would specifically target administrative spending, but these options have not been modeled.

Projected Savings Due to Policy Options (Modeled)

Below, we briefly describe each of the 12 policy options that we modeled and the key assumptions that we used to develop our estimates. For each option, we produced an upper-bound estimate that drew from optimistic evidence and theory, and a lower-bound estimate that took a more pessimistic view (but was also grounded in existing theory and data). Because empirical evidence surrounding the effectiveness of many policy options is relatively scant, the results are sensitive to the assumptions made and the available data. The scenarios are designed to help policymakers consider the potential effects of the policies under alternative assumptions about the effectiveness of those policies. Because our analysis is based on projections, we cannot be certain that—if implemented—savings achieved by the reforms would fall within the bounds we estimated. However, the results reported herein represent realistic high and low estimates based on existing theory and evidence. Table 2 summarizes the projected effects of each reform we modeled on health spending.

[15] S.A. Finkler, *The Distinction between Cost and Charges: Cost Vs. Charges.* 1981, Philadelphia, PA: National Health Care Management Center, University of Pennsylvania. 28 p.

[16] There is debate about whether it is more appropriate to model spending or costs in this context. Spending is the relevant concept from the state's perspective, since it reflects expected state outlays as well as premiums that will be paid by state residents. Costs are more appropriate from an economics perspective, since a reduction in spending without a commensurate reduction in costs could distort incentives and cause some providers to go out of business. Throughout this analysis we focus on spending because this report is intended for the state, and because reliable cost data are not always available.

Goal 1:
Reform Payment Systems to Better Align Financial Incentives

There is widespread agreement that the way health care services are paid for contributes to rising health care costs. The strategies considered for this policy goal focus on reducing the price paid for services through a change in the way payments are determined or through regulatory approaches that set prices at a new level.

1. Institute Traditional Hospital All-Payer Rate Setting

- **Description of the modeled policy option**

  Traditional hospital rate setting would establish a regulatory board to determine appropriate rates for hospital inpatient, outpatient, and emergency department care, limiting payment to the minimum amount necessary to cover hospital operating expenses, and requiring all payers to adhere to the rates set. This option represents a regulatory approach to reducing prices. Massachusetts would need to obtain a waiver from the Centers for Medicare and Medicaid Services (CMS) to include Medicare and Medicaid in an all-payer rate setting strategy.

- **Summary of evidence on the potential for savings**

  - The literature on hospital rate setting shows mixed results with respect to cost savings. For example, the most comprehensive study on this topic found no effect of rate setting on hospital costs.[17]
  - Even when the programs are effective, the results dissipate over time. Research has failed to identify the factors that make some programs successful and others not successful.
  - To involve all payers, Massachusetts would require a waiver from CMS. Such waivers are generally contingent on demonstrating that Medicare costs in the state are rising faster than those in the nation, which may be difficult for Massachusetts to prove.
  - Previous studies show that it takes at least 2 years for savings to accrue.
  - The literature suggests that the most likely result is that hospital rate setting will not reduce spending; the most optimistic scenario is a 2-percent annual reduction in spending on hospital services.[18]

- **Assumptions used in modeling**

  Our upper-bound estimate assumed that, after a 2-year start-up period, rate setting reduces hospital spending by 2 percent per year. To implement rate setting, Massachusetts must establish and operate a regulatory agency; we based the cost of this agency on the budget

[17] J.J. Antel, R.L. Ohsfeldt, and E.R. Becker, *State Regulation and Hospital Costs.* Rev Econ Stat, 1995. 77(3): p. 416-422.

[18] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

for the Maryland Health Services Cost Review Commission (HSCRC).[19] We assumed that Medicare would be subject to the regulation, since states have historically received waivers to allow Medicare participation.

Our lower-bound estimate assumed that Massachusetts incurs costs associated with regulation, but that spending is unchanged.

- **Results**

We projected that cumulative spending from 2010 to 2020 would range from an increase of $57 million to a reduction of $26 billion (0 to 4.0%) compared with the status quo.

2. Utilize Bundled Payment Strategies

- **Description of the modeled policy option**

Provider payment strategies differ widely in the degree that individual services are "bundled" into a single unit of payment. Fee for service is a common method of payment for health care services whereby each service provided is priced and paid for separately. Episode-based payments provide a single payment for all care related to a particular treatment or condition for a particular patient. Capitation payments, which provide a single lump-sum payment for all care required by a patient for a defined time period, represent another form of bundled payment. The Massachusetts Special Commission on the Health Care Payment System recommended in July 2009 (after this report was completed) the use of global payments, a variant of capitation that aims to overcome concerns with previous implementation through careful transitions, robust monitoring, financial incentives for access and quality, improved risk adjustment models, and health information technology infrastructure and support.[20] In the stakeholder consultation process we used to identify high-priority policy options in 2008, capitation was assigned relatively low priority compared to bundled payment for episodes of related care. The Special Commission identified episode-based payment as a potential transition step to global payments.[21]

The policy option we modeled would encourage insurers to provide a single payment for all services related to a treatment or condition. The payment could cover services delivered by multiple providers and in multiple settings. For example, the expected cost of routine care for a chronic disease such as diabetes could be calculated and used as the basis for a bundled payment to the provider managing the patient's diabetes. We modeled a scenario in which all private payers and Medicaid adopt a bundled payment strategy. This approach is a method of reducing the overall price of providing a set of services and also provides a financial incentive to reduce the volume or intensity of services.

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[19] *Health Services Cost Review Commission—Sunset Extension and Program Evaluation,* 2007. Department of Legislative Services, Maryland General Assembly, Bill number HB 844, Introduced by Chair—Health and Government Operations Committee. As of June 25, 2009: http://mlis.state.md.us/2007RS/fnotes/bil_0004/hb0844.pdf

[20] Kirwan LA, Iselin S. on behalf of the Massachusetts Special Commission on the Health Care Payment System, *Recommendations of the Special Commission on the Health Care Payment System.* July 16, 2009. Massachusetts Division of Health Care Finance and Policy. As of July 28, 2009: http://www.mass.gov/dhcfp/paymentcommission

[21] Ibid.

- **Summary of evidence on the potential for savings**
  - The best evidence to date is from Medicare demonstration projects, which provide limited but promising results (10 percent reduction in a project bundling payment for coronary artery bypass graft surgery).
  - Significant up-front work would be required to define bundles, set payment amounts, address shared-accountability approaches (e.g., how payments are distributed across multiple providers, what entity will receive and distribute the bundled payment), adjust for differences in the case mix of patients served, and deal with operational challenges.
- **Assumptions used in modeling**

  Bundled payments are created for specific episodes of care received by Massachusetts adults ages 18–64. In the lower-bound scenario, bundled payments were applied to four hospital conditions (knee replacement, hip replacement, bariatric surgery, acute myocardial infarction); in the upper-bound scenario, bundled payments were applied to these four hospital conditions and to six chronic conditions (diabetes, congestive heart failure, chronic obstructive pulmonary disease, asthma, hypertension, and coronary artery disease). Prices for the bundles reflect the expected costs of appropriate care, plus a 50-percent discount on services related to potentially avoidable complications. As a result, savings come from reducing spending on complications for selected conditions by 50 percent. Payments were determined using Prometheus Payment analyses of a large, commercial insurance database.[22] Medicare spending was excluded.
- **Results**

  We projected cumulative savings of $685 million to $39 billion (0.1 to 5.9 percent) for 2010 to 2020 compared with the status quo.

3. Institute Rate Regulation for Academic Medical Centers

- **Description of the modeled policy option**

  This policy option would limit reimbursement for non–tertiary care provided at academic medical centers (AMCs) to the average community-hospital reimbursement rate through a regulatory strategy. It would lower the price paid for certain types of admissions. We excluded Medicare from this option because current diagnosis-related group (DRG) payment rates allow limited variation between teaching and community hospitals. Since this option is equivalent to setting reimbursement levels for all hospitals at the average community rate, it illustrates the potential effect of reducing excessive spending at highly reimbursed community hospitals and AMCs.

[22] A.G. Gosfield, *Making Prometheus Payment Rates Real: Ya' Gotta Start Somewhere.* 2008. Prometheus Payment, Inc. As of June 25, 2009: http://www.prometheuspayment.org/publications/index.htm

- **Summary of evidence on the potential for savings**
  - AMCs' charges are more than double those of community hospitals for like admissions.
  - The proportion of patients in Massachusetts who are treated in AMCs increased by 16 percent between 1998 and 2006 and is high relative to other states or the United States as a whole.
  - There is growing concern about high reimbursement rates at select community hospitals in Massachusetts.
  - A study specific to Massachusetts found large differentials in charges for maternity care between AMCs and community hospitals, but no evidence for quality differences.[23] Another Massachusetts-specific study found large differences in end-of-life care spending, and that only a fraction of these differences were explained by case mix.[24]
  - Unintended consequences for AMCs are possible if the policy is effective in reducing revenue, which, in turn, leaves AMCs without adequate funds to accomplish their teaching mission.
- **Assumptions used in modeling**

  We modeled scenarios in which hospital reimbursement rates for certain DRGs were set at the average community hospital rate. Total savings are equal to the difference between the average AMC rate and the average community rate, multiplied by the number of discharges occurring at AMCs. We assumed that, to set rates and ensure compliance, Massachusetts would establish a regulatory body comparable to the Maryland HSCRC and that regulatory costs would vary proportionately with the amount of care subject to community rates.

  For the upper-bound scenario, we assumed that 97 percent of DRGs would be subject to rate regulation, allowing exceptions for a limited amount of complex care that might require the AMC setting. In the lower-bound scenario, we assumed that only maternity care (15 percent of non-Medicare hospital discharges in Massachusetts) would be subject to the regulation.
- **Results**

  Spending is projected to be $1.3 to $18 billion (0.2 to 2.7 percent) less than the status quo for 2010 to 2020 cumulatively.

[23] Analysis in Brief. Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[24] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

4. Institute Reference Pricing for Academic Medical Centers (AMCs)

- **Description of the modeled policy option**

  An alternative approach to reducing spending on AMC services would be to encourage insurers to adopt reference pricing policies, whereby reimbursement is based on the community hospital rate for a given service, and consumers must pay the difference if they wish to obtain care at an AMC. We modeled a policy in which reference pricing for AMCs is phased in over time.

- **Summary of evidence on the potential for savings**

  - The difference in costs between AMCs and community hospitals is well established.
  - The proportion of patients in Massachusetts who are treated in AMCs grew 16 percent between 1998 and 2006.
  - No studies have evaluated the option of reference pricing for AMCs.
  - Reference pricing in other contexts, such as reimbursement for prescription drugs, has reduced spending.

- **Assumptions used in modeling**

  We modeled scenarios in which private payers and Medicaid in Massachusetts adopt reference pricing for AMC care. We assume that reference pricing could be adopted in the Medicaid program, despite potential limitations on copayments that can be charged by Medicaid. Because some consumers might not have easy access to a community hospital in the status quo, we assumed that reference pricing would apply to only 20 percent of consumers in 2010, growing to 100 percent of consumers by 2020. We assumed that, among those patients subject to reference pricing, a fraction would be willing and able to pay for care at teaching hospitals.

  For the upper-bound scenario, we assumed that 97 percent of DRGs would be subject to reference pricing, allowing exceptions for a limited amount of complex care that might require the AMC setting. In the lower-bound scenario, we assumed that only maternity care (15 percent of hospital discharges in Massachusetts) would be subject to reference pricing.

- **Results**

  Savings are projected to range from $526 million to $8.6 billion cumulatively between 2010 and 2020, or 0.1 to 1.3 percent less than projected spending in the status quo. Savings from this option are lower than savings associated with AMC rate regulation, both because we allow reference pricing to phase in over time and because some consumers opt to purchase AMC care in spite of the higher rates.

Goal 2:
Redesign Health Care Delivery to Improve Efficiency and Quality

A second goal for many cost containment efforts is to redesign the delivery of health care services to improve both quality and efficiency. Most of the policy options use incentives to reduce spending.

5. Promote the Growth of Retail Clinics

- **Description of the modeled option**

  This option would encourage the growth of limited service clinics by modifying regulations (e.g., expedited review of retail clinic applications, changes in corporate practice of medicine laws, and a relaxation of physician oversight requirements for nurse practitioners). The intent of the option is to encourage patients to substitute routine care from retail clinics for more expensive urgent care clinics and emergency departments. Although policies to encourage retail clinic entry would operate primarily through regulatory strategies, the greater availability of such clinics could lead to additional policy options that provide incentives for their use.

- **Summary of evidence on the potential for savings**

  - Evidence about the effect of retail clinics on spending is limited. Prices are lower at retail clinics, but it is unclear whether or at what rate retail clinics substitute for utilization at higher-price settings (emergency departments), or if they create demand for care that would not have occurred otherwise.
  - To estimate effects, we have to estimate the degree of substitution; no current evidence exists to inform this estimate.
  - Start-up costs for retail clinics have been estimated at $500,000 per clinic, with 3 years of operation necessary to break even (although the investment cost itself would not be counted in Health Expenditure Accounts).
  - On-site clinics are similar to retail clinics but are located within the offices of large employers rather than in retail stores. We did not explicitly model the cost effect of on-site clinics, but we expect that they could be similar to retail clinics in savings potential. A key difference, however, is that on-site clinics are generally accessible only to employees and dependents of the sponsoring firm, which could limit their reach and ultimate effect.
  - The trend in retail and on-site clinics is worth watching, and it may stimulate changes in health services delivery within the traditional medical care system (which has happened to some degree in Minnesota), but the effect on spending at this point is unknown.

- **Assumptions used in modeling**

  For both the upper- and lower-bound estimates, we assumed that start-up costs are borne by investors outside the health care system.[25]

  For the upper-bound estimate, we assumed that the number of retail clinics in Massachusetts grows from 40 in 2010 to 220 in 2020, and the number of patients seen annually at retail clinics increases from 330,000 to 2.2 million.[26] We assumed that one-third of retail clinic visits replace an office visit, one-third replace an emergency department visit, and one-third will be newly induced.

  For the lower-bound estimate, we assumed that retail clinics never take hold as a business strategy in Massachusetts and that any spending changes are negligible. We derived the lower-bound assumptions from reports that have questioned the economic viability of retail clinics, coupled with input from the Massachusetts Department of Public Health indicating that initial retail clinic utilization in Massachusetts has been low.

- **Results**

  Cumulative spending is projected to be 0 to $6.1 billion (0 to 0.9 percent), lower than the status quo for 2010 to 2020.

6. Create Medical Homes to Enhance Primary Care

- **Description of the modeled option**

  The "medical home" is designed to respond both to the need for patients to have someone orchestrating their care and to the inadequacy of payment for primary care services. A *medical home* is defined as "a practice-based structure that facilitates the delivery of comprehensive care and promotes strong relationships between patients and their primary care, physician-led team."[27] This policy option would increase payments to physician practices that function as a medical home (by managing chronic illness, improving access and coordination of acute care across settings and providers, and using health information technology [HIT]). The goal of the policy would be to encourage providers to offer, and patients to use, care settings that are structured to provide a comprehensive set of services in place of fragmented, episodic care from a variety of different providers. We excluded Medicare beneficiaries, since Medicare is separately testing a medical home model.

- **Summary of evidence on the potential for savings**

  - Several pilot projects are under way in Massachusetts (The Massachusetts Medical Project for children with special health care needs; a demonstration within MassHealth authorized under Chapter 305; and private trials, such as

[25] D. Armstrong, *Health Clinics Inside Stores Likely to Slow Their Growth, in Wall Street Journal (Eastern Edition).* 2008. p. B-1.

[26] Estimates based on state projections and information reported by M.K. Scott and California HealthCare Foundation, *Health Care in the Express Lane: Retail Clinics Go Mainstream.* 2007, Oakland, CA: California HealthCare Foundation. 32 p. As of June 18, 2009: http://www.chcf.org/topics/view.cfm?itemID=133464

[27] M. Sepulveda (2008) *The Medical Home, Round Two: Building on a Solid Foundation.* The Commonwealth Fund April 21, 2008, As of June 25, 2009: http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=678201

those by Cambridge Health Associates and Harvard Pilgrim Health Care). To date, no empirical evidence exists about their effect on overall spending.

- The cost of setting up a medical home has been estimated to be $5–$150 per person per month. The "savings" have been estimated at $250 per person per year (exclusive of operating costs).
- Estimates to date suggest that it takes a practice 2–5 years to fully transform from a traditional practice into a medical home. No estimates exist about the number of practices in Massachusetts that would be willing to participate and would be likely to meet the conditions.
- The medical home concept continues to evolve; however, at present, there is relatively little empirical information on which to base estimates about potential savings.

■ **Assumptions used in modeling**

Although various paradigms have been proposed, we assumed that medical homes would achieve savings by managing chronic illness more efficiently, implementing health information technology (HIT), and improving access to care.

Our upper-bound assumed that each medical home is paid $6 per-member per-month (PMPM), and achieves a 25-percent reduction in emergency department (ED) spending for all patients, a 25-percent reduction in hospital spending for patients with 6 chronic conditions (asthma, chronic obstructive pulmonary disease [COPD], coronary artery disease [CAD], congestive heart failure [CHF], diabetes, and depression), and savings of $65,587 per FTE physician resulting from the use of HIT.[28] We also assumed a 3-percent increase in pharmacy spending for patients with chronic conditions, resulting from improved adherence to prescribed medications. The upper-bound scenario incorporated an aggressive implementation time line, with 20 percent of eligible practices adopting by 2010, increasing to 100 percent within 5 years.

The lower-bound scenario assumed a payment of $12 per-member per-month (PMPM) and that savings are achieved only through the use of HIT. The lower-bound scenario incorporated a less-aggressive implementation time line, with adoption increasing from 10 percent to 50 percent of practices in 5 years.

■ **Results**

We projected changes in cumulative spending relative to the status quo for 2010 to 2020 ranging from a $2.8-billion increase to a $5.7-billion decrease (+0.4 to –0.9%).

[28] The $6 PMPM figure is at the low end of estimates of medical home costs; see R. Berenson. *Payment Approaches and Cost of the Patient-Centered Medical Home.* in *Stakeholders' Working Meeting, Patient-Centered Primary Care Collaborative.* 2006. Washington, DC. July 16, 2006. As of June 26, 2009: www.pcpcc.net/files/July16th/IIa.%20Berenson.ppt. The HIT savings are based on the upper-bound estimates calculated in Option 9. Our assumptions about changes in utilization are consistent with estimates of disease management (Option 8).

7. Encourage Greater Use of Nurse Practitioners and Physician Assistants

- **Description of the modeled option**

  This policy option would change the law, regulations, and financing practices that currently limit patients' reliance on physician assistants (PAs) and nurse practitioners (NPs). The policy option could save money by encouraging the use of low-cost providers, but it would require regulatory action. We included Medicare in our savings projections, because Medicare enrollees would be able to see NPs and PAs for routine primary care.

- **Summary of evidence on the potential for savings**

  - No direct empirical evidence exists on the relationship between expanding scope of practice and health care spending.
  - Studies have shown that NPs and PAs provide care that is comparable to that of primary care physicians in certain settings. These professionals are usually paid less; thus, substitution has the potential to decrease costs.
  - Given the shortage of primary care physicians, expanding the independent practice of these other health professionals could be another approach to increasing the availability of primary care at a lower cost than physician-based strategies.
  - The literature suggests that this policy option is promising, although savings are uncertain.
  - Related policies, which we did not model, could involve substituting primary care physicians for specialists or making use of other lower cost providers.

- **Assumptions used in modeling**

  We modeled an increase in the use of NPs/PAs for basic primary care in Massachusetts, assuming that any additional utilization of NPs/PAs would substitute for existing visits with physicians.

  In the upper-bound estimate, we assumed that, within 5 years, NP/PA utilization in Massachusetts would grow from 4.8 percent to 18.1 percent of all office visits. The upper-bound scenario assumed that NPs/PAs would eventually cover all office-based care related to coughs, throat symptoms, fevers, earaches, skin rashes, nasal congestion, general medical examinations, and well-baby visits. Assumptions regarding the total share of care that could be provided by NPs and PAs are described in more detail in the main text of the report, and are based on figures reported by Mehrotra et al. (2008)[29] and Cherry et al. (2008).[30]

  The lower-bound estimate assumed NP/PA utilization increases from 4.8 percent to 9.2 percent of office visits and that NPs/PAs could provide care for the acute symptoms listed above, but not well-baby visits or general medical examinations.

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[29] A. Mehrotra, M.C. Wang, J.R. Lave, et al., *Retail Clinics, Primary Care Physicians, and Emergency Departments: A Comparison of Patients' Visits.* Health Aff (Millwood), 2008. 27(5): p. 1272-82.

[30] D.K. Cherry, E. Hing, D.A. Woodwell, et al., *National Ambulatory Medical Care Survey: 2006 Summary.* Natl Health Stat Report, 2008(3): p. 1-39.

■ **Results**

For 2010 to 2020, we projected cumulative savings of $4.2 to $8.4 billion (0.6–1.3%) relative to the status quo.

8. Increase Use of Disease Management

■ **Description of the modeled option**

Disease management (DM) aims to encourage healthy behaviors, medication adherence, and appropriate utilization of care for persons with chronic illnesses. This policy option would expand the use of disease management by public and private payers, and it could save money if better management led to reduced use of higher-cost services later. Medicare beneficiaries are not included because implementation of DM in Medicare would require CMS to create a new program and the demonstration projects have not produced promising results to date.

■ **Summary of evidence on the potential for savings**

- Although disease management programs have been shown to improve adherence to guidelines and achieve better intermediate outcomes, little evidence exists to show that they save money.[31]
- The recent Medicare demonstration project was not continued into a second phase because the vendors failed to meet the cost-savings targets (5-percent savings net of operating expenses) that were set. This project had significant implementation challenges that may well have undermined its ability to appropriately demonstrate the potential for Medicare. Nonetheless, we have no reliable estimate of the effect of such programs on spending on which to base our assessment.[32]
- One review of the literature concluded that, although study findings have been mixed and inconclusive, there is evidence to support savings in DM programs that are targeted at sicker individuals and that perform more-intensive interventions.[33]
- Disease management continues to be one of the strategies people believe will help control spending on chronic disease, but evidence to support those beliefs is lacking at this time. We concluded that there is considerable uncertainty around the likelihood that this approach will reduce spending, but it is possible that this conclusion may be premature, given the state of the science.

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[31] R.Z. Goetzel, R.J. Ozminkowski, V.G. Villagra, et al., *Return on Investment in Disease Management: A Review.* Health Care Financ Rev, 2005. 26(4): p. 1-19.

[32] N. McCall, J. Cromwell, and S. Bernard, *Evaluation of Phase I of Medicare Health Support (Formerly Voluntary Chronic Care Improvement) Pilot Program under Traditional Fee-for-Service Medicare. Report to Congress.* 2007. RTI International. CMS contract 500-00-0022.

[33] J. Meyer and B. Smith, *Chronic Disease Management: Evidence of Predictable Savings.* 2008. Health Management Associates. As of June 12, 2009: http://www.healthmanagement.com/files/Chronic%20Disease%20Savings%20Report%20final.pdf

- **Assumptions used in modeling**

  We modeled a scenario in which Massachusetts adults ages 18–64 with one or more of 6 chronic conditions (asthma, COPD, CAD, CHF, depression, and diabetes) enroll in DM. Based on our analysis of the MEPS data, individuals with one or more of these chronic conditions represent 19 percent of Massachusetts adults ages 18–64 and account for 21 percent of overall spending and 38 percent of spending among non-elderly adults.

  For both the upper- and lower-bound scenarios, we assumed that the cost of DM is $500 per patient per year, an average of the costs of programs of varying intensities.[34] In the upper-bound scenario, we assumed a 25-percent reduction in average inpatient and ED spending among DM enrollees, and a 3-percent increase in average pharmaceutical costs resulting from better drug adherence. These savings take 3 years to achieve.

  For the lower-bound scenario, we assumed that costs associated with delivering DM are incurred, but that there is otherwise no effect on health spending.

- **Results**

  Change in spending is projected to range from an increase of $7.0 billion to savings of $308 million (+1% to –0.05%) for 2010–2020 cumulatively.

Goal 3: Policies to Reduce Waste

We considered options for reducing waste in three categories:[35] administrative waste, operational waste, and clinical waste. These strategies are primarily aimed at reducing the volume of non–value added activities, either through the use of incentives or of regulatory changes (including eliminating or streamlining existing regulations).

9. Increase Adoption of Health Information Technology

- **Description of modeled policy option**

  This policy option focuses on improving the information infrastructure for the health care system to enable more-efficient delivery of health care services. HIT is an enabling technology that may allow other cost containment strategies to be implemented (e.g., better claims-transaction processes, more-efficient management of patients within systems, reduction of unnecessary utilization through more clinically detailed criteria for matching patients with interventions). In this option, we consider the approaches to accelerating adoption, including financial incentives, direct provision, regulatory mandates, development of standards,

[34] Reviewing the literature, J. Meyer and B. Smith, in *Chronic Disease Management: Evidence of Predictable Savings* (Health Management Associates, November 2008) report annual DM program costs ranging from $100 to $1,399 per capita (as of June 25, 2009: http://www.healthmanagement.com/files/Chronic%20Disease%20Savings%20Report%20final.pdf). D.M. Bott, M.C. Kapp, L.B. Johnson, et al., *Disease Management for Chronically Ill Beneficiaries in Traditional Medicare.* Health Aff (Millwood), 2009. 28(1): p. 86–98.

[35] T. Bentley, R. Effros, K. Palar, et al., *Waste in the U.S. Health Care System: A Conceptual Framework.* Milbank Q, 2009, 86(4): p. 629-59.

and establishment of health information exchanges. Medicare is included in this option because HIT would be used setting-wide rather than for selected patients.

- **Summary of evidence on potential for savings**
  - Little empirical evidence exists to prove that health information technology saves money; estimates to date are based primarily on microsimulation-modeling analyses and small case studies.
  - The modeling has in part been based on successful experiences in other industries and the productivity gains experienced in those industries.
  - The experience with the Massachusetts eHealth Collaborative (MAeHC) pilot program offers the best opportunity for setting policy in the Commonwealth going forward. Among the important lessons from the pilot studies will be the expected cost of the investment and the time required to obtain a return on the initial investment.
  - Many ideas to improve the functioning of the health care system—including improving quality, expanding access, and reducing spending—rely on the availability of substantially more-sophisticated and more-powerful information systems than are typically available today.
  - The potential for savings, under the assumptions around penetration, interoperability, and process redesign, are great but will likely not produce short-term reductions in cost (i.e., over the next 10 years), and significant investments are likely.
- **Assumptions used in modeling**

  We considered scenarios in which HIT adoption in Massachusetts is accelerated from current rates to full adoption by 2015 and by 2017. We calculated savings relative to status quo adoption rates, under which we projected full adoption for all Massachusetts physicians and hospitals by 2025.[36] We derived projected savings in the upper-bound scenario, as well as implementation and maintenance costs, from analyses by Girosi, Meili, and Scoville and scaled them to reflect the Massachusetts population.[37] For our lower-bound estimates, we assumed that implementation and maintenance costs are incurred, but no savings are attained. The lower-bound estimates take a pessimistic view, because the literature on HIT savings is limited. Additionally, while Girosi, Meili, and Scoville assumed that poorly performing technologies would be abandoned quickly, mandates requiring HIT adoption in Massachusetts may cause providers to maintain HIT systems that do not save money.

[36] We derived the status quo adoption rate from S.R. Simon, M.L. McCarthy, R. Kaushal, et al., *Electronic Health Records: Which Practices Have Them, and How Are Clinicians Using Them?* Journal of Evaluation in Clinical Practice, 2008. 14(1): p. 43-47.; and C.M. DesRoches, et al., *Electronic Health Records in Ambulatory Care—a National Survey of Physicians.* N Engl J Med, 2008. 359(1): p. 50-60.

[37] F. Girosi, R. Meili, and R.P. Scoville, *Extrapolating Evidence of Health Information Technology Savings and Costs.* 2005, Santa Monica, CA: RAND Health. xiii, 94 p. As of June 25, 2009: http://www.rand.org/publications/MG/MG410/

- **Results**

  In our upper-bound scenario, we estimated savings of $12.1 billion (–1.8 percent), and in our lower-bound scenario, we estimated a $3.7 billion (+0.6 percent) *increase* in spending, cumulatively between 2010 and 2020.

10. Eliminate Payment for Adverse Hospital Events

- **Description of the modeled policy option**

  This policy option would identify specific serious, preventable medical errors (and other indicators of poor care) and allow public and private payers to deny or reduce payment for the costs associated with such care. This option would be expected to provide a financial incentive to reduce the volume of poor care and thus reduce clinical waste. Because the Medicare program has already introduced policies to eliminate payment for avoidable complications, we included Medicare spending in our savings estimates. For example, in October of 2008 Medicare implemented a policy to eliminate payment for certain conditions that could be "reasonably prevented by following generally accepted guidelines."[38]

- **Summary of evidence on the potential for savings**

  - Evidence from the literature establishes that the events on the list for nonpayment by Medicare are avoidable; other evidence establishes that providers respond to financial incentives.
  - Savings should accrue immediately; however, the mechanism for translating such savings into reductions in overall health spending is unclear. Experience with Medicare policy (implemented in October 2008) will provide the first empirical evidence of effect.
  - A potential unintended consequence is whether hospitals undertake other activities to offset lost revenues.
  - Various estimates of potential savings for specific areas exist, and they suggest savings could be at the level of tens to hundreds of millions of dollars for Massachusetts.

- **Assumptions used in modeling**

  We modeled scenarios in which reduced payment leads to the elimination of adverse hospital events. For the upper-bound scenario, we assumed that payments are eliminated for potentially preventable readmissions (PPRs) occurring within 15 days of hospitalization and all hospital-acquired infections (HAIs). We estimated that the annual cost of HAIs and

[38] CMS Office of Public Affairs. *CMS Proposes to Expand Quality Program for Hospital Inpatient Services in FY 2009 (Press Release).* [Web Page] 2008. Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=3041&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPage=&showAll (as of Thursday, April 14, 2008).

PPRs in Massachusetts is $617 million,[39] although—because some PPRs may not actually be preventable—this estimate may be overly optimistic. We projected savings associated with eliminating these events through 2020, adjusting for population change in Massachusetts and assuming that it takes 3 years to fully achieve savings. To estimate implementation and maintenance costs, we used average annual licensing fees for software reported by a large vendor. Since there may be overlap between HAIs and PPRs, our lower-bound calculations included PPRs only.

- **Results**

We projected savings of $7.6–12.3 billion (–1.1–1.9 percent) cumulatively from 2010 through 2020 relative to the status quo. Again, because these estimates assume that all PPRs could be eliminated, they may be on the high end of what is feasible.

11. Decrease Intensity of Resource Use for End-of-Life Care

- **Description of the modeled policy option**

This policy option would encourage the use of less-expensive sources of care, such as community hospitals and hospice care settings, at the end of life. Specific policy levers to achieve this goal could include lower cost-sharing for hospice care, as well as programs to encourage doctors to talk about palliative care and to consider less-intensive treatments for patients nearing the end of life. We excluded Medicare from this policy option because we anticipate that legislative or regulatory action would be required.

- **Summary of evidence on the potential for savings**

  - Strong evidence exists for variation in spending at the end of life across different geographic regions, but the evidence associated with specific approaches to reducing spending is relatively weak because the studies have had methodological problems.
  - The studies that establish the potential savings are based on retrospective analysis; to make this policy change effective would require the ability to prospectively identify patients for whom additional, extraordinary measures are unlikely to change the quality or length of life. New tools may have to be developed and disseminated (although the presence of palliative care and hospice programs might accelerate adoption of best practices).
  - The major beneficiary of policy changes affecting spending at the end of life would be Medicare, because it pays for 80 percent of spending at the end of life. However, changes in the overall approach to end-of-life care could result in reductions in per capita spending in the state for other payers.

[39] PPR incidence was calculated by DHCFP using 3M software. HAI incidence was reported by the Betsy Lehman Center and John Snow, Inc. (JSI), Betsy Lehman Center for Patient Safety and Medical Error Reduction and JSI Research and Training Institute Inc., *Prevention and Control of Healthcare-Associated Infections in Massachusetts. Part 1: Final Recommendations of the Expert Panel. 2008.* Massachusetts Department of Public Health: Boston (MA). We applied a cost-to-charge ratio of 0.493, supplied by DHCFP, to hospital charges.

- **Assumptions used in modeling**

  We modeled scenarios in which a portion of end-of-life care for adults under the age of 65 is shifted from hospitals to hospice settings. Of the remaining hospital-based care, we shifted a portion from AMCs to community hospitals. Savings phase in linearly over 5 years in both scenarios.

  In the upper-bound scenario, we assumed that, over time, 50 percent of end-of-life care for adults under age 65 could be shifted to hospice settings, and that 90 percent of remaining care could be provided by community hospitals.

  In our lower-bound scenario, we assumed that 25 percent of end-of-life care for adults under age 65 could be shifted to hospice settings and that the portion of remaining care provided by AMCs could return to 1995 levels (68 percent provided by community hospitals, versus 59 percent currently).

- **Results**

  We projected savings of $850 million to $1.4 billion (–0.1 to –0.2 percent) cumulatively between 2010 and 2020.

Goal 4:
Policies That Encourage Consumers to Make Good Health Choices

This policy goal seeks to identify mechanisms by which consumers could be enlisted to control costs through the use of different types of incentives for selecting efficient health plans and providers and for engaging in healthy behaviors. Policy options in this area require that information be developed and made available to assist consumers in making value-based choices (i.e., payments tied to expected benefits) and aligning financial incentives such that consumers are rewarded for those behaviors. These policies operate through incentives both to reduce the prices paid for services (through substitution) and to reduce the volume of care used.

12. Encourage Value-Based Insurance Design

- **Description of the modeled option**

  Value-based insurance design ties co-payments to the expected benefit of the health care service being consumed.[40] For example, to encourage better medication adherence, patients with chronic conditions might be given reduced copayments for medications necessary to treat those conditions. The logic behind this approach is that better drug adherence may ultimately save money by preventing costly and avoidable complications. Co-payments could differ based on individual patient characteristics, so that patients with a greater need for a drug would receive lower copayments. For example, a patient taking beta-blockers following a heart attack might have a lower copayment than a patient taking beta-blockers for migraines. Although value-based design could be applied to any health care service, it is

[40] M.E. Chernew, A.B. Rosen, and A.M. Fendrick, *Value-Based Insurance Design.* Health Aff (Millwood), 2007. 26(2): p. W195. (published online January 30, 2007; 10.1377/hlthaff.26.2.w195).

commonly considered in the context of pharmaceutical co-payments. Medicare is excluded because legislative or regulatory changes in Part D would be required.

- **Summary of evidence on the potential for savings**
  - Although substantial evidence suggests that lower co-payments lead to better medication adherence among chronically ill patients, there is limited evidence regarding whether value-based pricing reduces health spending.[41]
  - Savings depend on whether reduced ED and inpatient use outweigh the increase in drug spending that results from lower co-payments.
  - The policy could lead to a small increase in inpatient and ED spending among patients without chronic illness, who could face higher co-payments for certain drugs.
- **Assumptions used in modeling**

  Our upper-bound scenario assumed that reduced co-payments for adults ages 18–64 with 6 chronic conditions (asthma, chronic obstructive pulmonary disease, congestive heart failure, coronary artery disease, depression, and diabetes) would lead to a 25-percent reduction in ED use and a 5-percent reduction in inpatient utilization. We assumed that lower co-payments for chronically ill patients are offset by higher co-payments among individuals without chronic conditions and that, as a result of the higher co-payments, ED and inpatient spending among patients without the target chronic conditions increases by 1.5 percent.

  Our lower-bound estimate assumed higher co-payments for patients without chronic illness lead to slight increases in health spending, with no reduction in spending by individuals with chronic conditions. Medicare enrollees were excluded from our calculations.
- **Results**

  Changes in spending ranged from an increase of $1.1 billion to savings of $1.2 billion (+0.2 to –0.2%) relative to the status quo for 2010–2020.

What the Literature Suggests About Other Policy Options

As mentioned above, there were 9 additional policy options that we did not model, either because the literature did not show promise of savings or because existing data were insufficient to make projections. We review the evidence for each of these options below.

[41] J.J. Mahoney, *Reducing Patient Drug Acquisition Costs Can Lower Diabetes Health Claims.* Am J Manag Care, 2005. 11(5 Suppl): p. S170-6, D.P. Goldman, G.F. Joyce, and P. Karaca-Mandic, *Varying Pharmacy Benefits with Clinical Status: The Case of Cholesterol-Lowering Therapy.* Am J Manag Care, 2006. 12(1): p. 21-8.

Additional Policy Options to Reduce Waste

13. Reduce Administrative Overhead

- **Description of the policy option**

  Health care providers and insurers must incur some administrative spending if they are to carry out necessary organizational functions. For example, insurance companies must have a structure in place to pay bills, and doctors must have staff who can schedule appointments, file paperwork, and bill for services. Other administrative spending, such as investments in health information technology, might add value. However, the general consensus is that some portion of administrative spending does not add value or is not necessary to effectively execute business functions. We identified a number of areas in which administrative spending might be reduced, including billing, general management activities, sales and marketing, management of clinical care, and compliance with regulatory requirements. The approaches are designed to reduce the volume of administrative activity through either incentives or regulations.

- **Summary of evidence on potential for savings**

  - The evidence in this area is generally limited to estimates of the magnitude of the problem and cross-sectional comparisons of components of cost.
  - No studies have quantified spending on necessary versus unnecessary administrative procedures.
  - It is uncertain whether reduced administrative spending would translate into lower charges or insurance premiums.
  - Through the Washington Health Care Forum, Washington State has developed partnerships between government, health plans and hospitals to reduce administrative costs. However, no studies have assessed the degree to which changes in administrative procedures in Washington have reduced spending.
  - Most of the interventions require up-front investments (e.g., new IT systems, training personnel on new procedures), so they may increase costs in the short run.
  - Because typical medical loss ratios (MLRs, which are the proportion of premium dollars that is spent on the direct delivery of medical care) among Massachusetts' insurers exceed 85 percent, limits on the MLR are unlikely to reduce administrative waste in Massachusetts.

14. Extend Determination of Need (DoN) Program

- **Description of the policy option**

  Determination of Need (DoN) is a regulatory strategy that requires health care institutions to seek permission to make substantial capital expenditures (e.g., build new or expanded facilities, purchase high-cost technologies). The intent of the policy is to reduce the volume of utilization by constraining the supply of available resources. Because Massachusetts al-

ready has DoN laws on its books, this option would focus on strengthening or expanding the existing DoN statute or processes, including the types of expenditures or dollar thresholds that are subject to DoN or the criteria for evaluating requests. Arguments have also been made in favor of limiting the DoN to situations in which it is likely to be effective in controlling costs or eliminating DoN altogether and allowing the free market to operate.

- **Summary of evidence on potential for savings**
  - The literature offers no evidence that DoN programs reduce health care spending. In fact, a 2006 study found higher rates of utilization and inpatient spending in states with DoN laws than states those without such laws.[42]
  - There is some evidence that DoN programs may have a marginal effect on quality by reducing the number of competitors and thereby increasing the volume of complex medical procedures in existing programs. However, although such an effect might plausibly increase value, it would not necessarily decrease health spending.[43]
  - To make DoN programs more effective would likely require larger staffs and more-rigorous review processes, both of which add costs. Whether greater potential savings could justify the costs of undertaking a stronger program remains uncertain.

15. Use Comparative Effectiveness Analyses to Guide Coverage and Payment Rules

- **Description of the policy option**

  Comparative effectiveness research examines the relative effect of alternative interventions for the same condition on health outcomes. In addition to examining how well different interventions achieve an improvement in health, these studies may examine the side effects or other unintended consequences associated with different interventions. Some studies also evaluate the relative cost of achieving equivalent outcomes under alternative approaches (called cost-effectiveness). This option is proposed as a means of generating information necessary to enable public- and private-sector payers to make coverage decisions that favor more-effective, and, potentially, also less-costly, treatments over less-effective ones. Some comparative effectiveness information already exists, but most proponents of this approach favor investing in the capacity to develop much more of such information. Comparative effectiveness information could be used to create incentives for both price and volume reductions.

- **Summary of evidence on the potential for savings**
  - No empirical studies have evaluated this policy option.
  - A summary of the literature on cost-effectiveness found that less than 20 percent of health interventions save money, 4–6 percent increase costs and lead

[42] W.S. Custer, P. Ketsche, B. Sherman, et al., *The Effect of Certificate of Need Laws on Cost, Quality and Access.* 2006. Georgia State University.

[43] V. Ho, M. H. Ku-Goto and J. G. Jollis, *Certificate of Need (CON) for Cardiac Care: Controversy over the Contributions of CON.* Health Serv Res, 2009. 44(2 Pt 1): p. 483-500

to worse health outcomes, and 75 percent confer a health benefit but also increase costs.

- The UK's National Institute for Health and Clinical Effectiveness (NICE), which employs methods similar to those envisioned for this policy option, has shown an improvement in value but not a reduction in spending.
- The consequence of NICE approval has meant increased costs for the National Health Service, because approval results in a mandate for funding new treatments. New treatments are approved more frequently than older ineffective treatments are removed.
- Depending on the size of the agency responsible for conducting reviews, the number of areas that can be investigated may be quite small. For example, Washington State initiated a program in 2006 that has reviewed just 10 technologies.
- For many interventions, the decisions are not whether or not a technology provides benefit but rather for which patients do the benefits exceed the risks and costs.
- To optimize the effectiveness of this policy, substantial investment in developing new information and translating that into benefit design and payment rules would be required. For example, clinical trials of new medications cost $100 to $800 million per drug.
- The potential for savings from this approach is unknown, and we would expect to see an increase in overall spending initially as new evidence is developed. The timeframe within which one might expect to see savings exceed spending is highly uncertain.

Additional Policy Options to Reform Payment Systems

16. Increase Use of Pay-for-Performance (P4P) Programs

- **Description of the policy option**

Pay-for-performance programs reward health plans, hospitals, and physicians for performance on a selected set of measures. The approach has been used primarily to reward delivery of better-quality care, but purchasers are becoming interested in using similar approaches to reward better performance on measures of relative cost of care. Under this policy option, private and public purchasers would use financial incentives (such as increased payment for services or bonuses) to stimulate hospitals and physicians to improve efficiency of care. The intent of the program is to encourage providers to deliver care at lower prices (e.g., through substitution of less-expensive for more-expensive care) or to reduce the volume of services delivered. An argument might also be made that, if these incentive programs improved quality, they might decrease costs associated with the treatment of complications over time.

- **Summary of evidence on the potential for savings**
  - Only one study has examined the relationship between P4P and cost savings.[44] It reported positive findings for diabetes but it is uncertain whether those results are generalizable to other conditions or settings.
  - Program design features—including size of the incentive, how payment is structured, what measures are used, and whether providers understand how to change behavior to obtain rewards—are critical in determining the likely effect.
  - In general, programs to date have not made large amounts of money available to pay incentives. For many clinicians, greater financial rewards can be achieved at lower cost by seeing additional patients rather than by meeting performance targets.
  - The programs are generally designed in a budget-neutral manner, so that there is no net increase (or decrease) in spending. Rather, existing spending is redistributed. Money to fund the "reward" pool may come from forgoing inflation adjustments.
  - The administrative costs of the more-effective P4P programs tend to be high.
  - The measures of efficiency are not as mature as the measures of quality and have not yet been demonstrated to be effective in inducing changes in physician or practice behavior.
  - It appears likely that experimentation with P4P programs will continue; however, they do not appear to be a promising source of savings.

17. Regulate Insurance Premium Rate Increases

- **Description of the policy option**

  This policy option would use rate regulation to limit increases in health insurance premiums, either by establishing a minimum MLR (the proportion of premium dollars that is spent on the direct delivery of medical care) or by limiting premium growth rates. Although this policy option regulates prices, it might indirectly work to reduce volume as insurers implement strategies to operate within the premium limits.

- **Summary of evidence on the potential for savings**
  - No empirical literature has evaluated the effect of setting a minimum MLR.
  - The MLR is an accounting statistic that, by itself, does not indicate anything about the level of spending. For example, the average MLR in Massachusetts is 85 percent, considered desirable by proponents of this approach, but spending is high.

[44] K. Curtin, H. Beckman, G. Pankow, et al., *Return on Investment in Pay-for-performance: A Diabetes Case Study.* J Healthc Manag, 2006. 51(6): p. 365-74; discussion 375-6.

- No empirical studies have evaluated the effect of limiting growth in premium rates. The likelihood that savings can be realized from premium rate regulation is quite small, and it may have unintended consequences, such as a reduction in the quality and availability of insurance policies.[45]

18. Increase Medicaid Reimbursement Rates

- **Description of the policy option**

Medicaid reimbursement rates for most providers and services are low relative to those of other payers in Massachusetts (this is generally true throughout the country). This policy option would increase Medicaid reimbursement rates for all providers and services to stem cost-shifting from public to private payers. Increasing Medicaid reimbursement is intended to increase the number of primary care physicians who accept Medicaid patients, which, in turn, could contribute to lower prices by substituting visits to primary care physicians for care from urgent care clinics or emergency departments. Over the long run, it might also reduce the volume of hospitalizations by increasing the likelihood that problems are identified and addressed early in a course of illness.

- **Summary of evidence on the potential for savings**

  - There is evidence that increasing Medicaid reimbursement rates will reduce cost-shifting to private payers, but the effect is likely to be small.
  - Studies that have evaluated related changes in Medicaid reimbursement policy have found either no effect or short-lived effects on access and spending among Medicaid enrollees.
  - A relatively new program in North Carolina has shown early savings (11 percent), but it includes many more elements than just increased payment to primary care providers.
  - The only studies looking at improvements in quality were conducted in nursing homes.
  - Higher reimbursement rates, which are generally designed to increase access, might also increase spending.
  - Given the gaps in the research, it is difficult to extrapolate from the studies that have been done to estimate an effect of this specific policy.
  - The challenge with this policy is finding the balance between a guaranteed increase in costs (due to higher rates) and the potential for saving money in other areas.

[45] N. Sood, A. Alpert, D. Goldman, et al., *Health Insurance: Should California Regulate Health Insurance Premiums? (Issue Brief).* 2004. California HealthCare Foundation.

Additional Policy Options to Redesign Health Care Delivery

19. Increase the Use of Preventive Care

- **Description of the option**

  Preventable illnesses represent about 40 percent of mortality in the United States. Rates of use of both primary preventive care (e.g., immunizations, counseling to improve health habits) and secondary preventive care (e.g., early detection of disease through screening) are lower than is desirable. This option would increase the use of preventive services by, for example, expanding mandates for coverage of preventive services in public and private insurance and supporting educational campaigns to increase utilization of services. This option would save money by substituting preventive services now for treatment services later.

- **Summary of the evidence on the potential for savings**

  - Interest is increasing in pursuing strategies that reverse the trends in obesity and related diseases. Defining what is included in "preventive care" is critical to establishing expectations about the effect of investments in this area on spending and over what time period.
  - The evidence shows that 19 percent of preventive services save money, whereas the remaining 81 percent increase longevity or the quality of additional years of life (i.e., value) but increase costs.[46] Cost-increasing services include screening tests for colon, cervical and breast cancer; flu shots; pneumococcal vaccines; and cholesterol-lowering medication.[47]
  - Some community-based primary prevention interventions (e.g., raising taxes on cigarettes, Shape Up Somerville) may be effective and cost-saving. Most of the community interventions are relatively small demonstration projects that have not been replicated on a large scale.
  - Prior RAND work examining the effect of significant improvements in the management of chronic disease found that only reductions in the rate of obesity had the potential to reduce Medicare spending. Savings in disease-specific spending as a result of improvements in managing other chronic diseases were offset by costs associated with increased longevity.[48]
  - Savings, if any, may not accrue to the entity that paid for the preventive service. For example, employers might invest in prevention services, but the long-run savings are likely to accrue to the Medicare program.

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[46] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective—Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

[47] L.B. Russell, *Preventing Chronic Disease: An Important Investment, but Don't Count on Cost Savings.* Health Aff (Millwood), 2009. 28(1): p. 42-5.

[48] G.F. Joyce, E.B. Keeler, B. Shang, et al., *The Lifetime Burden of Chronic Disease among the Elderly.* Health Aff (Millwood), 2005. 24 Suppl 2: p. W5R18-29.

- There is considerable controversy around the likely savings from prevention, with many analysts concluding that no savings are likely[49] and others providing estimates of very large savings.[50] Greater clarity around the preventive interventions and activities that might be included in a policy option will be important, as will laying out the set of assumptions and logic chain required to arrive at an estimate.
- We are skeptical that this is a likely source of significant short-term savings, but efforts to address obesity may return long-term savings.
- Our analysis did not consider the potential public health benefits of increased use of preventive care, such as improved quality-of-life.

Additional Policy Options to Affect the Behavior of Consumers

20. Provide Incentives to Consumers for Wellness and Healthy Behaviors

- **Description of the option**

  The link is strong between lifetime health care costs and healthy behaviors. This link has inspired some employers to look for strategies that would reward consumers who engage in healthy behaviors. Under this policy option, public and private employers would provide premium discounts or rebates to promote enrollment in programs designed to promote healthy behaviors (smoking cessation, exercise, weight loss). This policy could save money through reducing premium prices (assuming that the improved health profile of the population eventually led to experience-related discounts) or reducing overall spending through reduced volume of services used.

- **Summary of the evidence on the potential for savings**
  - Little empirical evidence exists on the effect of this option. The evidence is based on generalized observations of response to price incentives.
  - No evidence exists to inform the size of the incentive that would be required to change different health habits. For example, do smoking cessation and weight loss require higher financial incentives than exercise?
  - The Health Insurance Portability and Accountability Act (HIPAA) sets limits on premium differentials as part of its nondiscrimination provisions. According to the Department of Labor, such programs must meet five specific requirements:
    - The premium differential must not exceed 20 percent of the base premium.

[49] L.B. Russell, *Preventing Chronic Disease: An Important Investment, but Don't Count on Cost Savings.* Health Aff (Millwood), 2009. 28(1): p. 42-5.

[50] Prevention Institute and the California Endowment with the Urban Institute, *Reducing Health Care Costs through Prevention.* 2007. As of June 28, 2009: http://www.calendow.org/Collection_Publications.aspx?coll_id=44&ItemID=310#

  - The program must be reasonably designed to promote health and prevent disease.
  - The program must give individuals the opportunity to qualify for the discount at least once a year.
  - The program must accommodate individuals for whom it is unreasonably difficult to quit using tobacco products because of addiction by providing a reasonable alternative standard (such as a discount in return for attending educational classes or for trying a nicotine patch).
  - Plan materials describing the terms of the premium differential must describe the availability of the reasonable alternative standard to qualify for the lower premium.

- Systematic reviews of the literature suggest that certain types of workplace health-promotion programs, when carefully targeted to high-risk individuals, are likely to produce a positive return on investment. However, some of this return involves nonmedical costs (e.g. reduced employee absenteeism) that would not directly affect premium prices.

Goal 5:
Change Medical Liability Laws to Reduce the Number and Average Payout of Claims

21. Change Laws Related to the Non-economic Damages Cap and Expert Witnesses

- **Description of the option**

  Massachusetts already has a law limiting the size of non-economic damages, which is one of the most effective malpractice reform options that have been advocated. This policy option is a regulatory strategy that would strengthen the existing limits on malpractice damages and/or modify rules regarding the qualification of expert witnesses. The policy would save money through a reduction in malpractice premium prices and through a potential reduction in defensive medicine practices (e.g., ordering more tests than necessary to make a diagnosis, providing treatments with little expected health benefit to the patient).

- **Summary of evidence on the potential for savings**

  - The empirical evidence on the effect of changing medical liability laws on spending is mixed, likely because of differences in study methodologies.
  - Caps on non-economic damages have been studied most frequently and, in one study, were shown to reduce the average payout per claim by $15,000.
  - No evidence exists on the relationship between expert witness qualifications and the outcomes of legal action.
  - The costs of defensive medicine have been difficult to estimate, and there is no empirical evidence that changes in malpractice laws lead to changes in physician practice.

- The direct effect would be on malpractice premiums, and it is likely to be small. To observe reductions in health spending, reductions in malpractice payouts would have to be translated into reductions in premium, which, in turn, would have to be translated into reductions in per-unit charges and/or a reduction in the volume of defensive medicine practices.
- Given that Massachusetts already has a law on the books, the marginal effect of strengthening the law is uncertain but unlikely to produce significant savings.

Who Holds the Levers?

One of the principles guiding this work was that we should identify a set of options that include all stakeholders in the effort to reduce health care spending. We summarize here the options from the perspective of the Commonwealth, private employers, insurers, providers, and consumers.

The Commonwealth of Massachusetts (the administration and the legislature) holds the lever to make many of these policy changes. State government can set Medicaid policy (within the parameters allowed by federal law and regulations), encourage or offer incentives for insurers to make certain changes (within the parameters the Employment Retirement Income Security Act [ERISA] allows for self-insured employers), provide information and education to consumers to help make them better purchasers of health care, affect consumer and employer behavior through tax policy, change laws to encourage the use of efficient providers and retail clinics, require providers and insurers to report information, regulate premiums and hospital rates, alter mandatory benefit requirements for insurers, negotiate insurance packages of plans offered through the Connector, and conduct demonstration projects to study the effects of promising but yet-to-be proven reforms.

For many of these reforms, however, private sector stakeholders hold the important levers. Employers can alter employee premium contributions to encourage selection of low-cost plans, implement wellness programs, encourage the use of preventive care (e.g., through on-site flu shots), reduce administrative costs by purchasing standard plans from insurers, and negotiate with insurance companies to alter the mix of services offered.

Insurers can attempt to alter consumer purchasing behavior through cost-sharing structures, utilize bundled payments to reduce costs, take steps to reduce administrative waste, offer providers incentives to use evidence-based treatments, offer providers incentives to use health IT, and limit reimbursement for less-efficient or less-desirable care. The power of employers and insurers to make these changes might be limited, however, if consumers respond negatively to such changes and "push back" on reforms.

Providers will play a significant role in reducing health care costs. They can implement health IT, improve patient safety, eliminate administrative waste, and ensure that patients receive appropriate preventive and treatment services delivered at the right time, in the most-efficient setting, and by the most-efficient providers. Yet, unless the payment incentives are changed, many of these improvements will lead to reductions in revenue for providers. Further, some cost savings achieved by providers may not be passed back to payers in the form of reduced

rates or smaller-than-expected increases in rates. The majority of promising strategies for reducing costs will affect hospitals and are likely to disproportionately target academic medical centers.

Consumers can play a critical role in reducing costs. Individuals, by and large, have not been well-informed and demanding consumers of health care, in part because of a lack of transparency about price, quality, and safety, but also because they have not had significant financial incentives to be more discriminating in making choices. However, when offered information, a choice of plans, and appropriate incentives, consumers can shop to find the best deal on health plans, choose to use the most-efficient settings and providers, and take charge of their own health behaviors (stop smoking, lose weight, and exercise). Consumers armed with information can "vote with their feet" and begin to affect the market share of providers and health plans not offering optimal products or care in the safest environment.

To achieve the kind of savings necessary to keep universal coverage affordable in Massachusetts will require that all stakeholders participate in "belt-tightening" measures. The status quo may not be sustainable, and sacrifices by a single group of stakeholders will not be sufficient to accomplish significant reductions in spending.

Other Consequences of Cost Containment Policies

Cost containment policies may have effects that go beyond simply reducing the amount of health care spending. Other potential positive consequences could include quality improvements, lower occurrence of adverse events, enhanced doctor-patient relationships, and improved patient satisfaction. At the same time, all of the cost containment mechanisms that we identified could lead to negative, unintended consequences, ranging from increased spending with little or no added benefit to adverse health outcomes. The evidence on the likelihood that negative, unintended consequences will occur varies across policy options and is at times theoretical rather than experience-based. There are, however, empirical examples of negative, unintended consequences from cost containment policies. For example, studies have shown that increased consumer cost-sharing leads to a reduction of both necessary and unnecessary care,[51,52] premium rate regulations enacted in the 1990s often increased costs and may have led to a decline in coverage,[53] and an article published in the *New England Journal of Medicine* found an association between hospital all-payer rate setting and elevated hospital mortality rates.[54] In the detailed report, we highlight for each option the potential unintended consequences that might result.

[51] E. Keeler, J. Buchanan, and J. Rolph, *The Demand for Episodes of Treatment in the Health Insurance Experiment.* 1998. RAND Corporation: Santa Monica, CA. RAND Report No. R-3454-HHS. As of June 25, 2009: http://www.rand.org/pubs/reports/2006/R3454.pdf

[52] D.P. Goldman, et al., *Pharmacy Benefits and the Use of Drugs by the Chronically Ill.* JAMA, 2004. 291(19): p. 2344-50.

[53] C.H. Williams and B.C. Fuchs, *Expanding the Individual Health Insurance Market: Lessons from the State Reforms of the 1990s.* 2004. Robert Wood Johnson Foundation: Princeton, NJ.

[54] S.M. Shortell and E.F. Hughes, *The Effects of Regulation, Competition, and Ownership on Mortality Rates among Hospital Inpatients.* N Engl J Med, 1988. 318(17): p. 1100-7.

For many policy options, it is unclear whether such consequences will be positive or negative. For example, proponents of hospital rate regulation often argue that—with reduced payment—hospitals would be forced to identify and eliminate unnecessary and wasteful spending. But, lower reimbursement rates could also mean that hospitals would struggle to provide necessary care. Similarly, standard economic theory predicts that regulations aimed at lowering prices will cause providers to reduce the quantity of care supplied. However, if providers are attempting to achieve fixed earnings or revenue targets, then the quantity of care supplied could increase following implementation of rate setting.[55] Below, we summarize the likely effects of cost containment policies on different stakeholders, and describe their potential responses.

Providers

A number of policy options seek to reduce provider reimbursement (e.g., rate setting, bundled payment), impose new requirements on providers (e.g., P4P, HIT, medical homes), or substitute less-costly for more-costly providers (e.g., reference pricing for AMCs, retail clinics, encourage use of NPs/PAs). As described above, the potential effect of reduced reimbursement on quantity and quality of care is ambiguous. To protect against threats to quality if payment rates are reduced, payment reform strategies could be combined with incentives to promote quality, such as P4P or provider report cards. Options such as P4P that impose new requirements on providers may have a positive effect on quality if they are designed and implemented well, but—to the extent that they are onerous and difficult—new requirements could induce provider fatigue. Finally, options to substitute less-costly for more-costly providers could put downward pressure on prices and reimbursement for costly providers (e.g., physicians), and upward pressure or prices/reimbursement for less-costly providers (e.g., NPs). Over the long term, these demand effects may limit the cost-saving potential of policies aimed at substituting low-cost for high-cost providers. Another potential consequence of substituting lower- for higher-cost providers would occur if advanced training received by higher-cost providers is necessary to ensure high-quality care in certain circumstances. While strategies such as value-based insurance design could be applied to ensure that high-risk patients receive care from specialized providers, there could be challenges in implementing these strategies—such as determining what set of conditions or attributes require treatment by specialists.

Consumers

Several policies that we considered would provide incentives to encourage patients to make healthier choices or to choose less-costly providers. If effective, these policies could have positive consequences that go beyond the health care system. For example, policies to encourage healthy behavior could improve quality of life and reduce absenteeism at work. However, a potential unintended consequence is that patients may not always prefer health plans or government policies designed to promote healthy or cost-conscious behavior. A backlash could occur if policies required consumers to pay more out of pocket for AMC care. Policies aimed at encouraging healthy behavior could also engender consumer backlash if they require tax

[55] In a well-known example from the economics literature, Camerer et al. (*Labor Supply of New York City Cab Drivers: One Day at a Time.* 1996, Pasadena, Calif.: Division of the Humanities and Social Sciences, California Institute of Technology. 20, [13] p.) found that taxicab drivers in New York City worked longer hours on days when business was poor, a result consistent with target earnings behavior but not with standard economic theory.

increases, or if they are perceived to unfairly reward individuals who have made unhealthy choices in the past. Finally, policies that would control costs by requiring higher cost-sharing for certain patients or certain types of care—such as value-based insurance design or reference pricing for AMCs—could have the effect of discouraging necessary as well as unnecessary care.

State Government

Many of the policies under consideration would require increased regulatory oversight on the part of the state government. Where possible, we have accounted for such regulatory costs in our models, but it may not always be possible to capture or even to fully foresee the extent of regulatory involvement that would be necessary to achieve certain policy goals.

Insurers

To be viable, most of the policies that we evaluated would require some form of insurer participation. For example, bundled payment policies would require insurers pay providers differently than they have been, and may even require changes in the way care is organized and delivered. Insurers may resist participating in cost containment initiatives, particularly if they believe that consumers will gravitate away from plans implementing cost control policies. Insurers who do participate may face implementation, recordkeeping, and administrative challenges, particularly in the early years, as systems must be changed to adopt new policies. Rapid change requiring new business models could be threatening to insurers' profitability.

Limitations

A key limitation of our modeling is that we have used a simple, spreadsheet approach that does not allow us to account for complex behavioral responses, such as those described above in the section on other consequences of cost containment. We have not attempted to model these behavioral responses because, for most of the policy options, there is limited or no experiential evidence on the likely magnitude or even direction of effects.

Consistent with the approach taken by the Congressional Budget Office (CBO) and other modelers who have considered long-term health spending (e.g. Schoen et al., 2008),[56] we present results in nominal dollars rather than using net present value. This approach is appropriate from a budget planning standpoint since policymakers often need to know the nominal dollar amount that will have to be raised or spent in a given year rather than the net present value of those dollars. However, results presented in nominal dollars may be less useful from a societal perspective, since individuals may value savings that will accrue in the near term more than savings that will accrue in the future.

Where possible, we have relied on past evidence and experience to generate model parameters and to draw conclusions about the likely effects of policy changes. Some readers may view this as a limitation, since the health care system has had the opportunity to learn from past

[56] C. Schoen and Commonwealth Fund, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p.

attempts at reform, and policymakers and other stakeholders could potentially implement such policies more effectively now—based on those lessons learned. On the other hand, it may be unrealistic to assume that we could do significantly better now than we have done in the past, particularly when we do not have a strong understanding of why previous attempts at implementing cost containment options failed. One aspect of the environment that has clearly changed in recent years is the general willingness across the range of stakeholders to consider cost control an imperative. This change in perspective represents an opportunity; yet, it will not necessarily make it easier to achieve the desired end result.

A more general limitation is that, for many reforms—both modeled and unmodeled—there is simply a lack of strong, systematic evidence in support of cost savings. The absence of evidence should not be taken to imply that "nothing works," but, rather, that caution, evaluation, and monitoring are needed. In some cases, it might be prudent to consider implementing a policy option on a smaller scale (e.g., in a demonstration project) to test its performance before mandating a change on a wider scale. In other cases, careful monitoring of a newly implemented policy might be required to ensure that it is working as intended. Implementation should take into account that policy options may need to be amended—or, if necessary, discontinued—should significant unintended consequences arise or the policy proves to be ineffective.

Finally, although we have attempted to be comprehensive in assessing potential policy options, there are many reforms that are not included in this analysis. Two in particular that are garnering public attention include the use of accountable care organizations (ACOs)—provider networks that are jointly responsible for patient care[57]—and capitation—a global approach to limiting spending that was tried with some apparent success in the 1990s but lost favor with consumers.[58] Global payments, a policy recently endorsed by the Massachusetts Special Commission on the Health Care Payment System, is a form of capitation that is typically paired with incentives to promote health care quality, such as pay-for-performance. As noted earlier, we did not consider global payments in our analysis because this policy was not identified as one of the highest-priority options in our stakeholder-consultation process. Another potentially promising option is competitive bidding, whereby insurers would contract for particular services (e.g., durable medical equipment) through a competitive process. The fact that we did not consider an option should not be taken to imply that the option does not hold promise, or that the option should not be analyzed in future work. The methods used in the analyses presented here can be extended to estimate the potential effect of additional options.

Conclusion

Starting with a list of more than 75 potential ideas for reducing health care spending in Massachusetts, we identified 21 options that represented five approaches to cost containment that emerged from our conversations with stakeholders and a review of documents proposing solutions to rising health care costs. The approaches are reforming payments systems, redesigning care delivery, reducing waste, engaging consumers in cost containment, and reforming medical

[57] E.S. Fisher, D.O. Staiger, J.P.W. Bynum, et al., *Creating Accountable Care Organizations: The Extended Hospital Medical Staff.* Health Aff (Millwood), 2007. 26(1): p. w44.

[58] J.C. Robinson, *The End of Managed Care.* JAMA, 2001. 285(20): p. 7.

malpractice laws. Within any of these approaches, there are two fundamental mechanisms for controlling rising costs: reducing prices paid and reducing the volume of services consumed. These mechanisms can be implemented using either incentive (market-based) or regulatory strategies. The options we reviewed demonstrate a mix of these basic approaches to cost containment.

The purpose of this report was to evaluate whether evidence currently exists to support any of these approaches to cost containment and the strength of that evidence. We were also asked to consider whether options would be likely to produce savings in the short or long run. In general, the evidence for many of these reforms is limited, and the hope for cost savings is based on theory or analogy rather than demonstrated experience. We identified 12 options that had the strongest evidence supporting their potential for cost control. All but 3 of the options rely on incentive strategies rather than regulatory strategies.

Under the upper-bound (optimistic) scenario, all of the modeled options have the potential to produce savings in the long run (cumulatively over 10 years), but only 6 are estimated to return savings in the lower-bound scenario. Just half of the options modeled have the potential to return savings in the first year of implementation under the lower-bound scenario, ranging from $11 million for reference pricing for inpatient care to $732 million for bundled payment. Three of the options (hospital all-payer rate regulation, disease management, and HIT) are estimated to increase spending in the first year of implementation from up-front investments, even though long-run savings in the upper-bound scenario could be attained. In the upper-bound scenario, the range of first-year savings (not including options that may increase costs) is estimated to be $28 million for reducing the intensity of resource use for end-of-life care to $1.8 billion for bundled payment.

Not surprisingly, we found no easy solutions to the problem of rising health care costs in Massachusetts. We have identified a set of policy options that have reasonable evidence of potential savings to start the discussion. However, finding long-term solutions to rising health care costs will require significant investments in infrastructure and in fundamentally changing the way health care is delivered. These solutions are likely to take at least a decade to implement and show a return. But, if policymakers do not begin down this path, rising health care costs will continue to pose a threat to the goal of maintaining universal coverage for the residents of Massachusetts.

Figure 1
Projected Savings as a Share of Spending, 2010–2020, for 12 Modeled Policy Options

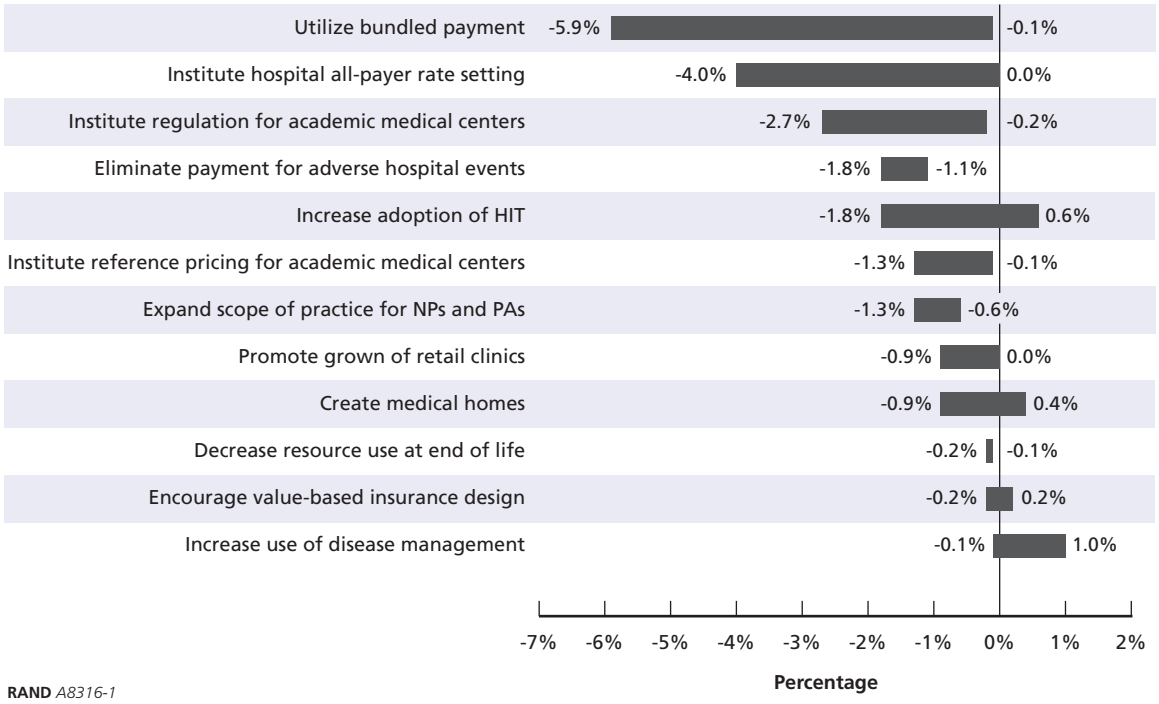

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Table 2
Effect of Policy Options on Health Spending in Massachusetts

POLICY OPTION	System-level effect: price or volume change?	Modeled population	Problem addressed	How would savings be achieved?	ESTIMATED EFFECT ON SPENDING							
					First-year spending effect (lower bound, $M)	% of total status quo ($43B)	First-year spending effect (upper bound, $M)	% of total status quo ($43B)	Cumulative spending effect, 2010–2020 (lower bound, $M)	% of total status quo ($670B)	Cumulative spending effect, 2010–2020 (upper bound, $M)	% of total status quo ($670B)
Institute hospital all-payer rate setting	Price	All	High and rising costs of inpatient care; control rate of increase and set rates that all payers use.	All-payer regulatory authority would set rates that would include Medicare reimbursement.	$5	0.0%	$5	0.0%	$57	0.0%	–$26,361	–3.9%
Utilize bundled payment strategies	Volume & price	18–64-year-olds	Fee-for-service payments encourage overuse of care, and pay for potentially preventable complications.	Medicaid and private insurers would need to adopt bundled payment reimbursement policies.	–$32	–0.1%	–$1,832	–4.2%	–$685	–0.1%	–$39,317	–5.9%
Institute rate regulation for academic medical centers	Price	<65 years old	Higher costs of academic medical centers; increased use of this setting of care.	State regulatory authority would set rates for AMCs that are in line with community hospital rates; commercial insurers would not be able to pay higher rates.	–$93	–0.2%	–$1,217	–2.8%	–$1,364	–0.2%	–$17,887	–2.7%

Table 2 (continued)
Effect of Policy Options on Health Spending in Massachusetts

POLICY OPTION	System-level effect: price or volume change?	Modeled popula-tion	Problem addressed	How would savings be achieved?	ESTIMATED EFFECT ON SPENDING							
					First-year spending effect (lower bound, $M)	% of total status quo ($43B)	First-year spending effect (upper bound, $M)	% of total status quo ($43B)	Cumu-lative spending effect, 2010–2020 (lower bound, $M)	% of total status quo ($670B)	Cumu-lative spending effect, 2010–2020 (upper bound, $M)	% of total status quo ($670B)
Institute reference pricing for academic medical centers	Price	<65 years	Higher costs of academic medical centers; increased use of this setting of care.	Consumer pays difference between cost of community hospital care and AMC charge; would require private insurers to use this pricing model.	–$11	0.0%	–$182	–-0.4%	–$526	–0.1%	–$8,597	–1.3%
Promote the growth of retail clinics	Price and Volume	All	Expensive emergency departments and urgent care clinics are used for problems that do not require a high level of care because of the availability of services after hours.	Providing an alternative to emergency departments and urgent care clinics that is convenient, accessible, and less expensive will shift care to that setting.	$0	0.0%	–$108	–0.3%	$0	0.0%	–$6,271	–0.9%

Table 2 (continued)
Effect of Policy Options on Health Spending in Massachusetts

					ESTIMATED EFFECT ON SPENDING							
POLICY OPTION	System-level effect: price or volume change?	Modeled population	Problem addressed	How would savings be achieved?	First-year spending effect (lower bound, $M)	% of total status quo ($43B)	First-year spending effect (upper bound, $M)	% of total status quo ($43B)	Cumulative spending effect, 2010–2020 (lower bound, $M)	% of total status quo ($670B)	Cumulative spending effect, 2010–2020 (upper bound, $M)	% of total status quo ($670B)
Create medical homes	Volume and Price	18–64-year-olds	Increased investments in primary care could eliminate waste and discourage the use of inappropriate care.	Medicaid and private insurers would need to begin reimbursing primary care practices as medical homes, and requiring better chronic care management, use of HIT, and improved access.	$46	0.1%	–$91	–0.2%	$2,882	0.4%	–$5,713	–0.9%
Expand scope of practice for NPs and PAs	Price	All	NPs and PAs are underutilized, despite being qualified to provide primary care at a low cost.	Some payment and scope-of-practice policies might encourage consumers and physician practices to make greater use of NPs and PAs.	–$66	–0.2%	–$130	–0.3%	–$4,246	–0.6%	–$8,353	–1.3%

Table 2 (continued)
Effect of Policy Options on Health Spending in Massachusetts

POLICY OPTION	System-level effect: price or volume change?	Modeled population	Problem addressed	How would savings be achieved?	ESTIMATED EFFECT ON SPENDING: First-year spending effect (lower bound, $M)	% of total status quo ($43B)	First-year spending effect (upper bound, $M)	% of total status quo ($43B)	Cumulative spending effect, 2010–2020 (lower bound, $M)	% of total status quo ($670B)	Cumulative spending effect, 2010–2020 (upper bound, $M)	% of total status quo ($670B)
Increase use of disease management	Volume	18–64-year-olds	Chronic care is poorly managed and coordinated, leading to potential unnecessary expenses for health problems that could have been avoided.	External service provided to help fill the gap in care-management systems; provider or insurance systems would have to adopt these programs in greater numbers than is now the case.	$457	1.1%	$131	0.3%	$6,968	1.0%	–$308	–0.1%
Increase adoption of HIT	Volume and Price	All	Through mandates and financial incentives, full adoption of HIT is achieved by 2015 or 2017.	All hospitals and physicians would need to be motivated to adopt and make appropriate use of HIT.	$259	0.6%	$82	0.2%	$3,657	0.6%	–$12,171	–1.8%
Eliminate payment for adverse hospital events	Price	All	Potentially preventable readmissions and avoidable complications add costs and reduce quality; eliminating these events would save money and increase value in the health system.	Insurers would need to agree to eliminate payment for these events (and, we assume that eliminating payment eliminates the problem).	–$346	–0.8%	–$558	–1.3%	–$7,636	–1.1%	–$12,297	–1.8%

Table 2 (continued)
Effect of Policy Options on Health Spending in Massachusetts

POLICY OPTION	System-level effect: price or volume change?	Modeled popula-tion	Problem addressed	How would savings be achieved?	ESTIMATED EFFECT ON SPENDING							
					First-year spending effect (lower bound, $M)	% of total status quo ($43B)	First-year spending effect (upper bound, $M)	% of total status quo ($43B)	Cumu-lative spending effect, 2010–2020 (lower bound, $M)	% of total status quo ($670B)	Cumu-lative spending effect, 2010–2020 (upper bound, $M)	% of total status quo ($670B)
Decrease intensity of resource use for end-of-life care	Price	18–64-year-olds	Spending on end-of-life care in hospitals can be very expensive, with little benefit; patients are often more satisfied with less-costly hospice care.	Encourage the use of hospice settings over hospital settings, and of commu-nity hospitals over teaching hospitals	–$15	0.0%	–$28	–0.1%	–$847	–0.1%	–$1,404	–-0.2%
Encourage value-based insurance design	Volume	18–64-year-olds	Reimbursement is not currently related to the health benefit expected from certain inter-ventions; since utilization is not related to benefit, there is consider-able waste in the system	Drug co-payments would be reduced for patients with certain chronic diseases to provide patients with incentives to better manage their illnesses; commercial insurers would have to adopt this approach when structuring policies.	$74	0.2%	–$79	–0.2%	$1,082	0.2%	–$1,160	–0.2%

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Option #1
Institute Traditional Hospital All-Payer Rate Setting

I. Nature of the Problem

The high and rising cost of hospital inpatient care has contributed substantially to health spending in Massachusetts. According the Centers for Medicare & Medicaid Services (CMS), spending on hospital care in Massachusetts grew by an average of 5.5 percent per year between 1991 and 2004, and it accounted for 39 percent of health care spending in the state.[59] Further, Massachusetts spent approximately $2,600 per capita on hospital care in 2004, 26 percent more than the national average. To the extent that waste or inefficiencies within the hospital system cause hospital payment rates to exceed the true value of services, there could be opportunities to reduce hospital payments without adversely affecting health care quality or patient outcomes.

II. Proposed Policy Option

What Is It?

Hospital rate setting involves regulating the amount of remuneration that hospitals are able to collect for their services. Under a hospital all-payer rate setting system, the Commonwealth of Massachusetts would regulate hospital prices, and hospitals would be required to charge all payers (private insurers, Medicaid, individuals without health insurance, and, potentially, Medicare) the same price for the same service. Rates would likely be set based on Diagnosis-Related Groups (DRGs), using a method system similar to the Medicare Prospective Payment System or the Maryland hospital rate setting system.[60] The rate setting mechanism could allow for age and risk adjustment to ensure that hospitals would be adequately reimbursed for the costliest patients.

How Would It Solve the Problem?

Rate setting has the potential to reduce costs and to slow overall cost growth by limiting payment to the minimum amount necessary to cover hospital operating expenses—thereby eliminating costs related to waste and inefficiencies.[61] Critics of rate setting argue that it may reduce incentives for competition and technological innovation,[62] that government-set rates

[59] Centers for Medicare and Medicaid Services (CMS). *2004 State Estimates - State Estimates by State of Residence - All Payers - Personal Health Care*. [Web Page] 2007. Online at http://www.cms.hhs.gov/NationalHealthExpendData/downloads/res-us.pdf (as of June 17, 2009).As of June 17, 2009: http://www.cms.hhs.gov/NationalHealthExpendData/downloads/res-us.pdf

[60] Business Wire. *State of Maryland Adopts 3m Apr-Drg Classification System for Payment of Health Care Services by All Payers*. [Web Page] 2004. Online at http://findarticles.com/p/articles/mi_m0EIN/is_2004_Oct_6/ai_n6224224 (as of June 25, 2008).

[61] C.J. Conover and E.P. Zeitler, *Hospital Rate Setting.* 2006. Duke University. Health Facilities Working Paper No. F-10.

[62] S.A. Mitchell, *Response to Gerard F. Anderson's "All Payer Rate setting: Down but Not Out.* Health Care Financ Rev, 1991 (Annual Suppl): p. 42-44.

are vulnerable to lobbying and pressure from special interests,[63] and that poorly set rates could lead to over- or underprovision of medical services.[64] Prior experience with rate setting reforms, which were adopted by more than 30 states by the late 1970s,[65] found mixed results regarding rate setting's effect on growth in health care costs.[66] However, despite modest evidence of success in some states, most rate setting reforms were dropped during the 1980s. Today, Maryland is the only state that continues to maintain an all-payer rate setting system.

What Has to Happen to Implement a Change?

Hospital rate setting would require regulatory action by the state. Massachusetts could establish a regulatory board to determine appropriate rates and then require that all payers adhere to those rates. Alternatively, the Commonwealth could require that each hospital charge the same rates to all payers for the same types of patients (e.g., by DRG), but allow hospitals to set their own prices. In Maryland, the only state that currently has a hospital all-payer rate setting system, hospitals may set their own rates, but these rates must be approved by the Maryland Health Services Cost Review Commission (HSCRC).[67,68] As in Maryland, Massachusetts could allow rates to vary to reflect case mix, local price levels, the hospital's teaching load, and the level of uncompensated care provided.[69] The regulatory board could be modeled after the HSCRC and could be responsible for both setting rates and monitoring compliance.

The Commonwealth would need to determine whether to include Medicare and Medicaid in the all-payer system. Both programs have been subject to state-specific rates under previous hospital rate setting reforms, including the existing program in Maryland. However, Maryland and other states that have implemented rate regulation have needed a federal waiver before they exempted Medicare and Medicaid from federal reimbursement requirements.[70,71] Medicare waivers are typically contingent on proof that Medicare cost growth in the state has not increased more rapidly than Medicare cost growth nationwide.[72] Given substantial health-insurance cost increases in Massachusetts over the past several years, this may be a difficult test for the state to pass. Yet, prior experience suggests that failure to include Medicare may open

[63] K.G. Volpp and B. Siegel, *State Model: New Jersey. Long-Term Experience with All-Payer State Rate Setting.* Health Aff (Millwood), 1993. 12(2): p. 59-65.

[64] K.J. Hayes, J. Pettengill, and J. Stensland, *Getting the Price Right: Medicare Payment Rates for Cardiovascular Services.* Health Aff (Millwood), 2007. 26(1): p. 13.

[65] G.F. Anderson, *All-Payer Rate Setting: Down but Not Out.* Health Care Financ Rev (Annual Suppl), 1991: p. 35-41; discussion 42-4.

[66] Ibid.

[67] Maryland Hospital Association, *Maryland Hospital Rate Regulation*, in *Fact Sheet*. 2006, MHA: Elkridge, MD.. As of June 17, 2009: http://www.mdhospitals.org/mha/News_Publications/HSCRC.Md.Rate.Setting.Facts.pdf

[68] Maryland Health Services Cost Review Commission, *Maryland Hospital Pricing Guide.* 2006. Maryland Health Care Commission: Baltimore, MD.

[69] Ibid.

[70] The Maryland Health Services Cost Review Commission Web site, Health Services Cost Review Commission. *Overview of Hscrc*. [Web Page] 2008. Online at http://www.hscrc.state.md.us/aboutHSCRC.cfm (as of September 2008).

[71] K.E. Thorpe, *Does All-Payer Rate Setting Work? The Case of the New York Prospective Hospital Reimbursement Methodology.* J Health Polit Policy Law, 1987. 12(3): p. 391-408.

[72] Ibid.

the door to an Employee Retirement Income Security Act (ERISA) challenge.[73] Including Medicaid in the rate setting program could mean increasing reimbursement rates, a move that would increase public spending on Medicaid while reducing cost-shifting from private payers. The net effect of an increase in Medicaid reimbursement is unclear.[74]

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled a scenario in which all hospital care is subject to traditional rate regulation, whereby a regulatory commission monitors hospital pricing and a hospital must charge the same price to all consumers and payers for a given service. Price variation across hospitals would also be monitored; however, variation would likely be permitted, to account for issues such as case-mix severity, teaching burden, and local wages.

What Were the Assumptions?

Our assumptions for modeling hospital rate setting are derived from evidence from states that experimented with hospital rate regulation in the 1970s and 1980s. This evidence has been mixed. Some studies have shown as much as a 2-percent annual reduction in the growth of hospital spending for certain states,[75,76] whereas other studies found no effect.[77] Morrisey, Sloan, and Mitchell[78] found that, even in states in which rate regulation was effective, rate regulation took at least two years to achieve a spending reduction. Some have argued that the effectiveness of rate regulation may diminish over time,[79] possibly because providers eventually respond by shifting care to office-based settings. Strict regulations on the hospital payments per admission could also lead to a higher number of overall admissions.[80]

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[73] K.G. Volpp and B. Siegel, *State Model: New Jersey. Long-Term Experience with All-Payer State Rate Setting.* Health Aff (Millwood), 1993. 12(2): p. 59-65.

[74] For a broader discussion of the effect of changing Medicaid reimbursement rates, see Controlling Health Care Spending in Massachusetts: An Analysis of Options Policy Option #11.

[75] C. Coelen and D. Sullivan, *An Analysis of the Effects of Prospective Reimbursement Programs on Hospital Expenditures.* Health Care Financ Rev, 1981. 2(3): p. 1-40.

[76] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

[77] J.J. Antel, R.L. Ohsfeldt, and E.R. Becker, *State Regulation and Hospital Costs*. Rev Econ Stat, 1995. 77(3): p. 7.

[78] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

[79] C.J. Conover and E.P. Zeitler, *Hospital Rate Setting.* 2006. Duke University. Health Facilities Working Paper No. F-10.

[80] S.A. Mitchell, *Response to Gerard F. Anderson's "All Payer Rate setting: Down but Not Out.* Health Care Financ Rev, 1991(Annual Supplement): p. 42-44.

Upper-Bound Assumptions

We modeled the upper-bound effect of hospital rate regulation using the most optimistic evidence from the existing literature. Specifically:

- Rate regulation begins in 2009.
- It takes two years before savings begin to accrue, based on findings reported by Morrisey, Sloan, and Mitchell.[81]
- After the two-year start-up period, rate setting attains savings of 2 percent per year for inpatient, outpatient, and emergency department (ED) facility costs,[82] based on Morrisey, Sloan, and Mitchell.
- Rate setting leads to a new, annual expenditure to pay for the functions of the regulatory body responsible for collecting and analyzing data, negotiating with hospitals, and making final rate decisions. We based this expenditure on the 2008 budget for the Maryland HSCRC, inflated over time using the average U.S. inflation rate from 2001 to 2007.
- We assumed that Medicare is subject to rate regulation, since Medicare has granted waivers to states, enabling Medicare payments to adhere to rate regulation in the past. However, we did not allow savings to accrue to Medicare, based on evidence that states with Medicare waivers did not achieve savings for the Medicare system.[83]
- We assumed that savings do not accrue to Medicaid, since it is likely that Medicaid payments would need to be adjusted upward if rates were equalized across all payers.

Lower-Bound Assumptions

In our lower bound scenario, we assumed that rate regulation has no effect on hospital spending, but that the cost of the regulatory commission adds to total spending. These lower-bound assumptions are consistent with evidence reported by Antel, Ohsfeldt, and Becker,[84] who found that hospital rate regulation did not save money and may have increased health care spending.

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[81] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

[82] Facility costs include payments to hospitals, but not payments to physicians. We included outpatient department and emergency department (ED) care provided at hospitals to show an upper-bound effect of a comprehensive rate setting reform affecting all hospital care.

[83] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47. The authors argue that Medicare rates may have *increased* to allow uniform payment rates across payers.

[84] J.J. Antel, R.L. Ohsfeldt, and E.R. Becker, *State Regulation and Hospital Costs.* Rev Econ Stat, 1995. 77(3): p. 7.

What Data Did We Use?

We estimated hospital inpatient, outpatient, and ED spending using data from the Medical Expenditure Panel Survey (MEPS).[85] The estimated cost of the regulatory body, $4.32 million annually in 2008 dollars, came from budget information from the state of Maryland,[86] which was confirmed in a conversation with a staff member at the Maryland HSCRC.

What Did We Conclude?

We concluded that, at a maximum, hospital rate setting could reduce health spending in Massachusetts by nearly 4 percent between 2010 and 2020. Table 1.1 shows the estimated savings to the Massachusetts health care system, overall and for specific payers. The rightmost column of the table quantifies new spending that would be necessary to finance the regulatory commission. Table 1.2 compares the total savings predicted by our model to total projected health spending in Massachusetts.

In the lower-bound scenario, hospital rate regulation leads to a marginal increase in total spending to fund the regulatory body, with no offsetting decrease in health care spending. In the upper-bound scenario, we predicted a small increase in total spending early on, with savings following over time. By 2020, we predicted that cumulative spending could decline by nearly 4 percent. The majority of savings predicted by the model accrue to private payers, the largest financers of hospital spending for non-Medicare beneficiaries. Savings accelerate over time, both because it takes two years for the reform to begin to have the desired effect and because health care cost inflation increases the dollar value (but not the proportional value) of savings over time. Our upper-bound results are consistent with findings reported by Schoen et al.,[87] who predict that all-payer rate setting implemented on a national level would lead to a small decline (on a proportional basis) in national health spending.

Because the literature on hospital rate regulation has been mixed, there is a wide gap between our upper- and lower-bound estimates of potential savings. It is worth noting that, although Massachusetts implemented rate regulation in the 1970s and 1980s, it did not achieve statistically significant declines in per capita hospital spending (Morrisey, Sloan, and Mitchell, 1983). A challenge for Massachusetts as it revisits rate regulation is that it is unclear what led prior rate setting experiments to be more successful in some states than in others.[88]

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[85] The Medical Expenditure Panel Survey, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

[86] *Health Services Cost Review Commission - Sunset Extension and Program Evaluation,* 2007. Department of Legislative Services, Maryland General Assembly, Bill number HB 844, Introduced by Chair - Health and Government Operations Committee. As of June 17, 2009: http://mlis.state.md.us/2007RS/fnotes/bil_0004/hb0844.pdf

[87] C. Schoen and Commonwealth Fund., *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p.

[88] G.F. Anderson, *All-Payer Rate Setting: Down but Not Out.* Health Care Financ Rev (Annual Suppl), 1991: p. 35-41; discussion 42-4.

Table 1.1
Total Savings, Traditional Hospital Rate Regulation (in millions)

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	$5	$29	$57	$5	–$5,902	–$26,361
Individual	$0	$0	$0	$0	–$183	–$815
Medicare[a]	$0	$0	$0	$0	$0	$0
Medicaid	$0	$0	$0	$0	$0	$0
Private	$0	$0	$0	$0	–$5,009	–$22,309
Other	$0	$0	$0	$0	–$740	–$3,294
Regulatory Costs	$5	$29	$57	$5	$29	$57

[a] Model assumes Medicare does not participate.

Table 1.2
Savings Relative to Status Quo, Traditional Hospital Rate Regulation (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	$5	$29	$57	$5	–$5,902	–$26,361
% Savings	0.01%	0.01%	0.01%	0.01%	–1.93%	–3.94%

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimate

Most evidence from prior studies supports the lower-bound estimates. In the most comprehensive study that we identified, Antel, Oshfeldt, and Becker[89] analyzed 20 years of data on hospital cost growth and rate regulation in the 48 contiguous states, controlling for both state-specific effects that might be related to costs and for other regulatory reforms that were implemented alongside rate regulation. The study found that rate regulation had no effect on per capita hospital costs, and—in one specification that included state-specific fixed effects—may have even increased per capita hospital costs. Mitchell[90] argues that growth in total health care spending per capita was remarkably uniform across states with and without all-payer rate setting from 1972 to 1982. This effect, however, could be biased by the fact that states that implemented rate setting reforms during the 1970s may have had higher-than-average growth in health care costs before the reform.[91] Studies that have analyzed growth in hospital costs per capita over

[89] J.J. Antel, R.L. Ohsfeldt, and E.R. Becker, *State Regulation and Hospital Costs.* Rev Econ Stat, 1995. 77(3): p. 7.

[90] S.A. Mitchell, *Response to Gerard F. Anderson's "All Payer Rate setting: Down but Not Out.* Health Care Financ Rev, 1991(Annual Suppl): p. 42-44.

[91] J.J. Antel, R.L. Ohsfeldt, and E.R. Becker, *State Regulation and Hospital Costs.* Rev Econ Stat, 1995. 77(3): p. 7.

time in states that implemented rate setting have found mixed results, with the magnitude and statistical significance of the effects having varied substantially by state. For example, Coelen and Sullivan[92] found a significant reduction in per capita hospital cost growth in four out of seven states studied, and Morrisey, Sloan, and Mitchell[93] found no reduction in cost growth in three out of five states, between 1971 and 1981. Subsequent evidence suggests that reductions in cost growth might not have been sustainable, even in states in which rate setting programs were initially successful. For example, New Jersey's rate setting program eventually collapsed as a result of ballooning Medicare costs, an increase in uninsurance rates, poor incentives to collect uncompensated care, and an ERISA challenge levied by the state's unions.[94]

Findings in support of upper-bound estimates

In general, little empirical evidence from the literature supports the upper-bound estimates. Morrisey, Sloan, and Mitchell[95] found statistically significant cost reductions in per capita hospital expenses in New York and New Jersey, however, they considered only hospital costs, not overall health spending. A report from The Commonwealth Fund entitled, *Bending the Curve,*[96] modeled a scenario in which payment rates for all providers (hospitals and physicians) were gradually equalized at rates comparable to those paid by Medicare. The report estimated that $122 billion in savings could be achieved over 10 years. However, the Schoen estimates do not consider unintended consequences that might occur as a result of the policy, such as increased readmissions or upward pressure on Medicaid payment rates.

Although the examples discussed above suggest reasons for pessimism, a potential drawback of the approach we used is that we have based estimates on historical experience. To the extent that policies could work more effectively now—perhaps due to knowledge gained from experience—results might be different. In sensitivity analyses, we examined the effect of allowing a state regulator to impose a mandatory reduction in hospital reimbursement, set as a percentage reduction in projected spending. Table 1.3 shows the results of this analysis. Note that this approach differs from the modeled approach because the modeled approach assumed a 2-percent reduction per year (so savings accumulate over time), whereas this approach imposes a flat reduction relative to projected spending. To achieve savings in excess of the model results in the upper-bound, hospital inpatient spending would need to be reduced by more than 10 percent.

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[92] C. Coelen and D. Sullivan, *An Analysis of the Effects of Prospective Reimbursement Programs on Hospital Expenditures.* Health Care Financ Rev, 1981. 2(3): p. 1-40.

[93] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

[94] K.G. Volpp and B. Siegel, *State Model: New Jersey. Long-Term Experience with All-Payer State Rate Setting.* Health Aff (Millwood), 1993. 12(2): p. 59-65.

[95] M.A. Morrisey, F.A. Sloan, and S.A. Mitchell, *State Rate Setting: An Analysis of Some Unresolved Issues.* Health Aff (Millwood), 1983. 2(2): p. 36-47.

[96] C. Schoen and Commonwealth Fund, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p. As of June 17, 2009: http://www.commonwealthfund.org/usr_doc/Schoen_bendingthecurve_1080.pdf

Table 1.3
Percentage Savings, Mandatory Reductions in Hospital Reimbursement

	Reduction in Hospital Inpatient Spending, Relative to Projected Spending			
Time Frame	2 percent	5 percent	10 percent	15 percent
2010	–0.72%	–1.82%	–3.66%	–5.50%
2010–2015	–0.73%	–1.84%	–3.68%	–5.53%
2010–2020	–0.73%	–1.85%	–3.71%	–5.56%

What Are the Critical Design Features?

Rates must be set appropriately so that providers avoid incentives to overprovide care when rates exceed marginal costs and to underprovide care when rates are below marginal costs. Policies to achieve this goal could include collecting timely and comprehensive data to determine prices, and implementing measures to reduce providers' incentives to respond to any remaining distortions.[97] In addition, the authority responsible for setting rates should be protected from political pressure from stakeholders,[98] and age and risk adjustment should be incorporated to avoid "cherry picking" by providers.[99]

In a case study of New Jersey, Volpp and Siegel[100] argue that Medicare participation may be crucial to ensure that the rate setting system is sustainable. In New Jersey, federal regulations surrounding Medicare reimbursement created a situation in which Medicare patients required cross-subsidization from other payers. A further recommendation stemming from Volpp and Siegel, which may be less salient for Massachusetts given the Commonwealth's near-universal coverage and Health Safety Net, is that uncompensated care pools must provide sufficient incentives for providers to collect payment. Because the uncompensated care pool in New Jersey fully reimbursed hospitals for bad debt, collection efforts became lax, and rates for other payers were driven up. Ultimately, the surcharges related to bad debt and Medicare subsidization in New Jersey led to a successful lawsuit brought by unions arguing that the state's rate setting regulations violated ERISA because the cost-shifting essentially meant that union members were paying for the care of non-union members. While the Health Safety Net includes provisions to ensure that emergency department bad debt will be reimbursed only after other collection activities have been undertaken, the successful ERISA challenge in New Jersey underscores the idea that rate setting regulations must be carefully designed to avoid conflict with ERISA.

[97] *See* P.B. Ginsburg and J.M. Grossman, *When the Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care.* Health Aff (Millwood), 2005. Suppl Web Exclusives: p. W5-376-84. at w5-382

[98] See K.G. Volpp and B. Siegel, *State Model: New Jersey. Long-Term Experience with All-Payer State Rate Setting.* Health Aff (Millwood), 1993. 12(2): p. 59-65.

[99] G.F. Kominski and T. Rice, *Should Insurers Pay the Same Fees under an All-Payer System?* Health Care Financ Rev, 1994. 16(2): p. 175-190.

[100] K.G. Volpp and B. Siegel, *State Model: New Jersey. Long-Term Experience with All-Payer State Rate Setting.* Health Aff (Millwood), 1993. 12(2): p. 59-65.

Finally, McDonough[101] points out that regulators must strike a balance between setting rates and allowing insurers to negotiate for low prices. In Massachusetts, health maintenance organizations (HMOs) were permitted to negotiate rates below the rate setting levels, putting them at a competitive advantage relative to other plans. Ultimately, policymakers in Massachusetts decided to deregulate, in part to allow all plans to compete on an even playing field.

Are There Unintended Consequences That Might Result?

Even if rate setting were successful in reducing spending, the potential for unintended consequences could make this policy option less attractive. We list here the potential unintended consequences, and then offer evidence from the literature about the likelihood that these consequences will occur:

- Rate setting could inhibit HMOs and other health plans from negotiating competitive prices.
- Rate setting could reduce hospital profitability, ultimately reducing hospitals' access to technology and slowing the diffusion of technology.
- Poorly set rates could distort incentives to provide care, leading to overprovision when rates are too high and to underprovision when rates are too low.
- Rates based solely on the marginal costs of care may not provide hospitals with adequate funds to maintain capacity for rare emergencies, such as trauma care, natural disasters, and terrorism.
- Rate setting could adversely affect quality of care, since, typically, there will be an incentive to spend less per patient than the preset rate.
- Providers may respond to hospital rate setting by shifting care from inpatient to outpatient settings.
- The quantity of admissions could increase under rate setting, either as a result of "gaming the system" or of an increased need for follow-up care due to poorer quality treatment.

The hypotheses discussed above are, for the most part, theoretical. Anderson[102] reviews the literature on most of these potential adverse consequences and finds that evidence to support or refute these claims is generally limited and relatively inconclusive. On balance, he finds that there is weak evidence to support the hypotheses that rate setting could negatively influence quality of care, slow the diffusion of technology, increase admissions rates, and increase length of stay. In contrast, there is no evidence to support the idea that rate setting limits competition, reduces profitability, or shifts care from inpatient to outpatient settings. The influence of rate

[101] J.E. McDonough, *Tracking the Demise of State Hospital Rate Setting.* Health Aff (Millwood), 1997. 16(1): p. 142-9.

[102] G.F. Anderson, *All-Payer Rate Setting: Down but Not Out.* Health Care Financ Rev (Annual Suppl), 1991: p. 35-41; discussion 42-4.

setting on hospital bench capacity has been raised in more recent articles[103,104] and has not been evaluated empirically.

Empirically, Morrisey, Sloan, and Mitchell[105] found that rate setting had no effect on hospital profits in the five states studied, and Thorpe[106] found that rate setting may have reduced (but not eliminated) deficit spending among hospitals in New York. However, these studies did not explore differential effects on hospitals based on the share of privately insured patients.

Using cross-sectional data, Shortell and Hughes[107] found that mortality rates among Medicare patients were 6 to 10 percent higher than would otherwise be expected (based on regression predictions) in states with rate regulation. A separate study found no relationship between rate setting and mortality in Medicare patients after elective surgery, but mixed results on the relationship between rate setting and mortality following emergency department and other types of admissions.[108] Yet a third study[109] found that regulated states had lower standardized mortality ratios than unregulated states.

Anderson[110] argues that the mixed results surrounding hospital mortality rates could reflect the complex determinants of mortality as well as omitted variables bias stemming from the fact that regulated states may be fundamentally different from unregulated states. However, studies also suggest that rate setting influences the type of care provided, with providers showing bias towards service for which regulated rates exceed actual costs (e.g., because technological improvement lowered the actual cost of the service after the rate was set).[111,112] These responses could diminish quality of care.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policies to reduce spending at academic medical centers are similar to hospital rate setting in that they seek to reduce the price of hospital care. Similarly, policies that would reduce ad-

[103] See P.B. Ginsburg and J.M. Grossman, *When the Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care.* Health Aff (Millwood), 2005. Suppl Web Exclusives: p. W5-376-84..

[104] W.J. Scanlon, *The Future of Medicare Hospital Payment.* Health Aff (Millwood), 2006. 25(1): p. 70-80.

[105] Ibid.

[106] K.E. Thorpe, *Does All-Payer Rate Setting Work? The Case of the New York Prospective Hospital Reimbursement Methodology.* J Health Polit Policy Law, 1987. 12(3): p. 391-408.

[107] S.M. Shortell and E.F. Hughes, *The Effects of Regulation, Competition, and Ownership on Mortality Rates among Hospital Inpatients.* N Engl J Med, 1988. 318(17): p. 1100-7..

[108] G.L. Gaumer, E.L. Poggio, C.G. Coelen, et al., *Effects of State Prospective Reimbursement Programs on Hospital Mortality.* Med Care, 1989. 27(7): p. 724-36.

[109] D.W. Smith, S.L. McFall, and M.B. Pine, *State Rate Regulation and Inpatient Mortality Rates.* Inquiry, 1993. 30(1): p. 23-33.

[110] G.F. Anderson, *All-Payer Rate Setting: Down but Not Out.* Health Care Financ Rev (Annu Suppl), 1991: p. 35-41; discussion 42-4.

[111] K.J. Hayes, J. Pettengill, and J. Stensland, *Getting the Price Right: Medicare Payment Rates for Cardiovascular Services.* Health Aff (Millwood), 2007. 26(1): p. 13.

[112] P.B. Ginsburg and J.M. Grossman, *When the Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care.* Health Aff (Millwood), 2005. Suppl Web Exclusives: p. W5-376-84.

ministrative waste generated by hospitals are also targeting the same potential savings. One function of rate setting could be to force hospitals to become more efficient—for example, by eliminating wasteful practices. More generally, hospital rate regulation overlaps with other reforms that seek to reduce hospital costs per admission.

Reforms That Could Be Combined with This One

Hospital rate regulation could be paired with reforms that seek to reduce spending in office-based settings (e.g., retail clinics, increased reliance on nurse practitioners and physician assistants), or reforms that would reduce the volume of hospital care. Both value-based insurance design and disease management, for example, seek to reduce spending by reducing the number of inpatient and ED visits among chronically ill patients. Similarly, efforts to reduce or eliminate payment for potentially preventable readmissions and avoidable complications could be coupled with rate setting, since these options attempt to reduce the number of hospital encounters generated by a given patient. Options such as bundled payment, which could reduce both the total number of admissions and the cost of care per admission, could potentially be grouped with rate setting. However, additional analyses would be required to determine the combined effect of implementing these options simultaneously, since there is a certain degree of overlap.

Option #2
Utilize Bundled Payment Strategies

I. Nature of the Problem

Provider payment strategies differ widely in the degree to which individual services are "bundled" into a single unit of payment. Fee-for-service is currently a common method of payment for health care services whereby each service provided is priced and paid for separately. For example, a visit to a doctor's office for a problem typically includes a charge for the time spent with the doctor and separate charges for collecting specimens (e.g., urine, blood) on which tests will be run. Another bill is generally received from the laboratory that conducted the test and interpreted the result. Fee-for-service payment systems are credited with contributing to the lack of coordination of care across providers and settings and the overuse of services with little or no health benefits.[113] Some bundling of payment for multiple services occurs for such conditions as prenatal care and delivery and for some surgical interventions, but 83 percent of Massachusetts' commercial health insurance payments are fee for service.[114] Capitation payments, which provide a single lump sum payment for all care required by a patient for a de-

[113] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2008. MedPac: Washington, DC.

[114] Massachusetts Division of Health Care Finance and Policy, *Massachusetts Health System Data Reference.* 2009. The Division of Health Care Finance and Policy: Prepared for Special Commission on the Health Care Payment System. As of June 19, 2009: http://www.mass.gov/Eeohhs2/docs/dhcfp/pc/2009_04_15_Massachusetts_Health_System.pdf

fined time period, represent another form of bundled payment. Capitation, although generally found to reduce costs, is frequently rejected as a payment reform strategy by providers because of perceived problems with financial risk and by patients because of concerns that the financial incentives encourage providers to withhold appropriate care.[115,116] Alternative approaches to payment that are currently being proposed seek a middle ground between fee-for-service and capitation. In July 2009, the Massachusetts Special Commission on the Health Care Payment System recommended the use of global payments, a variant of capitation that aims to overcome concerns with previous implementation through careful transitions, robust monitoring, financial incentives for access and quality, improved risk adjustment models, and health information technology infrastructure and support.[117] In the stakeholder consultation process we used to identify high priority policy options in 2008, capitation was assigned relatively low priority compared to bundled payment for episodes of related care.

II. Proposed Policy Option

What Is It?

Bundled payment would encourage the use of a strategy that provides a single payment for all services related to a treatment or condition, possibly spanning multiple providers and settings. For example, the expected costs of care for a chronic disease, such as diabetes, could be calculated and used as the basis for a bundled payment to the provider managing the patient's diabetes. The condition-specific approach differs from global payments (as recommended by the Massachusetts Special Commission on the Health Care Payment System), which would bundle payment for all care provided to a particular patient during a defined time period. Bundled payment can reduce the overall price of a set of services and may also provide a financial incentive to reduce the volume of services. Both private and public purchasers could use this strategy.

How Would It Solve the Problem?

Providers would receive a fixed payment covering the average cost of a bundle of services, offering them an incentive to reduce the number and cost of services contained in the bundle. The intent of bundled payment is to eliminate services that are low value (from the perspective of health outcomes), duplicative, or unnecessary.

Providers with higher than average costs would be penalized financially while providers with lower than average costs could increase their margins. A second key effect would be to encourage coordination of care by holding multiple providers in multiple settings jointly accountable for the total cost of care for a given treatment or condition through shared payment. By

[115] J.J. Mongan, T.G. Ferris, and T.H. Lee, *Options for Slowing the Growth of Health Care Costs.* N Engl J Med, 2008. 358(14): p. 1509-14.

[116] K. Davis, *Paying for Care Episodes and Care Coordination.* N Engl J Med, 2007. 356(11): p. 1166-8.

[117] Kirwan LA, Iselin S. on behalf of the Massachusetts Special Commission on the Health Care Payment System, *Recommendations of the Special Commission on the Health Care Payment System.* July 16, 2009. Massachusetts Division of Health Care Finance and Policy. As of July 28, 2009: http://www.mass.gov/dhcfp/paymentcommission

fostering shared accountability for the outcomes and resource use for patients' episodes of care, bundled payment could encourage greater coordination of care across the delivery system.

What Has to Happen to Implement a Change?

Bundled payment approaches are currently in a developmental stage. Many different types of approaches have been proposed, but significant operational and methodological issues need to be addressed before widespread implementation of these proposals can occur in Massachusetts. Several approaches are currently being tested that could potentially serve as models, however. Medicare is testing several bundled payment approaches through demonstration projects. Bundled payment is also being tested in the private sector, through the Prometheus Payment Initiative and in the Geisinger Health Plan.

The Massachusetts Special Commission on the Health Care Payment System identified bundled payment for episodes care as a potential transition step toward global payments.[118] To this end, Massachusetts could help to advance the testing of bundled payment approaches by funding pilot programs in either the private sector or Medicaid.

Bundled payments would be a significant change for providers currently receiving fee-for-service payments. A change to bundled payment methods could be voluntary or mandated through regulation. If it were voluntary, many providers might elect not to participate, limiting the potential for savings. Some types of providers, such as integrated delivery systems, may be better positioned to transition to a bundled payment system of coordinating payment and care across a range of providers and settings, and thus more likely to participate in a voluntary program. Small, independent providers, such as solo and small single-specialty physician practices, would require a more substantial change.

Massachusetts could also play a role in determining the payment rates for bundles of services. Statewide, Massachusetts' rates could be set through regulation (a variant of all payer rate setting). Alternatively, each payer could determine the payment amount separately, as in current payment arrangements.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled a scenario in which commercial and Medicaid payers replace fee-for-service payments for common services with a bundled payment. We defined bundles of services related to particular procedures or conditions, following the Prometheus Payment methodology. In our scenario, bundled payment applies to episodes of care received by Massachusetts adults ages 18–64 related to the following 10 procedures or conditions: knee replacement, hip replacement, bariatric surgery, acute myocardial infarction, diabetes, congestive heart failure, chronic obstructive pulmonary disease, asthma, hypertension, and coronary artery disease. These pro-

[118] Kirwan LA, Iselin S. on behalf of the Massachusetts Special Commission on the Health Care Payment System, *Recommendations of the Special Commission on the Health Care Payment System.* July 16, 2009. Massachusetts Division of Health Care Finance and Policy. As of July 28, 2009: http://www.mass.gov/dhcfp/paymentcommission

cedures and conditions represent a range of common, high cost, acute and chronic conditions for which cost estimates are available from the Prometheus Payment design team. We adopted a scenario based on the Prometheus definitions of service bundles because it includes the largest number of conditions, covers both chronic diseases and acute care, has developed the methods for creating bundles, and is being pilot-tested. The Prometheus definitions of service bundles are also unique in that they differentiate between services related to typical care and potentially avoidable complications, which include both adverse hospital events (see Option 10) as well as other negative consequences of care that could potentially be avoided given appropriate care. The classification of services into typical care and potentially avoidable complications is transparent and available for inspection by participating providers. The results of the scenarios we modeled provide insights into the range of potential savings that could be achieved through alternative approaches to bundled payments.

Spending directly related to the 10 procedures and conditions represented 31 percent of total National Health Spending in the MEPS.[119] Inclusion of additional procedures and conditions would increase the potential for savings. The bundle of services includes inpatient, ambulatory, and pharmacy services, but excludes rehabilitation, long-term care, and some other categories of services.

In this scenario, prices for the bundled payments would be negotiated or set through state regulation at a level that reflects the expected cost of delivering care for the condition or procedure, plus a discount on current fee-for-service payments for services related to potentially avoidable complications. Bundled payment incentives can be expected to increase collaboration and to decrease potentially avoidable complications, thereby reducing unnecessary service utilization.

Medicare beneficiaries are excluded from this analysis, since potential expansion of this or other bundled payment initiatives cannot be undertaken by Massachusetts alone.[120] Medicare is testing bundled payment for services related to hospitalizations in the Acute Care Episodes demonstration.

What Were the Assumptions?

We assumed that all payers with beneficiaries ages 18–64 reimburse for services using only bundled payment methods for the 10 procedures or conditions, and that all providers accept the bundled payments, with no change in the volume of care episodes. Our estimates do not include the cost of billing and payment for all providers involved in an episode, because we do not have a sound basis for estimating those costs and because Prometheus is working on developing software that would integrate the bundled payment methods with existing claims-

[119] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

[120] It is possible that Massachusetts could seek a waiver from the Centers for Medicare and Medicaid Services (CMS) to include Medicare in this demonstration, but we have not included that possibility in our modeling because Medicare already has demonstration projects under way in this policy area.

processing software and methods. Therefore, we estimated that the administrative cost would likely be low relative to the estimated cost effect.

Through negotiation or rate setting, we assumed that the price for the bundle of services related to each episode type equals 100 percent of average payments for typical care and 50 percent of average payments for potentially avoidable complications. This rate is being used in pilot testing the Prometheus Payment method and is used in bundled payment by Geisinger Health System.[121] The assumption in setting bundled payment rates is that providers would be able to decrease the rate of potentially avoidable complications so that, on average, the bundled payment rate would exceed the cost to providers of services related to each episode type. Actual Prometheus Payment rates are likely to be higher, since they include payments for services that are evidence-based, but not routinely delivered and an add-on to payments for typical services to compensate for depressed fee-for-service pricing. The Prometheus Payment methodology also includes other features, such as incentives for quality of care and risk adjustment, that are not included in our scenario. However, the quality incentives and risk adjustment are designed to protect against undesirable behavior, such as withholding necessary care.

We assumed that savings are phased in linearly over a three-year implementation period beginning in 2009 and that the amount of savings increases at the rate of inflation in health care costs. We assumed that the incidence rate of episodes related to the 10 procedures and conditions remains constant by age group.

Upper-Bound Assumptions

For the upper-bound estimates, we assumed that bundled payments for the 10 procedures or conditions are made at a level reflecting 100 percent of average payments related to typical care and 50 percent of average payments related to potentially avoidable complications.

Lower-Bound Assumptions

For the lower-bound estimates, we assumed that bundled payments for the four hospital-based procedures (knee replacement, hip replacement, bariatric surgery, and acute myocardial infarction) are made at a level reflecting 100 percent of average payments related to typical care and 50 percent of average payments related to potentially avoidable complications. The lower-bound scenario is limited to hospital-based bundles to reflect the focus of many bundled payment proposals and pilots, such as the Medicare Acute Care Episodes demonstration. Hospital-based care may be more feasible for bundled payments because it occurs during a relatively short, defined period and because hospitals have existing relationships with physicians that can be used to leverage payment arrangements and work jointly on cost reduction strategies.

What Data Did We Use?

The price of bundled payments was determined using data obtained from Prometheus Payment analyses of a national commercial insurance database with 4.6 million members. Services related to episodes of each condition were identified and categorized as typical care or poten-

[121] A.G. Gosfield, *Making Prometheus Payment Rates Real: Ya' Gotta Start Somewhere.* 2008. Prometheus Payment, Inc. As of June 19, 2009: http://www.prometheuspayment.org/publications/index.htm

tially avoidable complications. Table 2.1 lists the average payments in 2005–2006 for episodes of the 10 procedures or conditions for typical care and potentially avoidable complications, along with the estimated payment rates under the upper- and lower-bound scenarios.

Table 2.1
Average Payments for Targeted Bundled Payment Conditions, 2005–2006

Condition	Average Baseline Typical Episode Payments	Average Baseline Potentially Avoidable Complications Episode Payments	Average Baseline Total Episode Payments	Average Predicted Bundled Total Episode Payments	Average Predicted Savings per Episode
Knee Replacement	$23,692	$3,723	$27,415	$25,554	$1,862 (7%)
Hip Replacement	$22,702	$3,770	$26,471	$24,587	$1,885 (7%)
Bariatric Surgery	$17,769	$6,143	$23,912	$20,841	$3,071 (13%)
AMI	$38,139	$14,243	$52,382	$45,261	$7,121 (14%)
Diabetes	$2,357	$3,719	$6,076	$4,217	$1,860 (31%)
CHF	$8,378	$18,889	$27,267	$17,823	$9,445 (35%)
COPD	$2,116	$1,087	$3,203	$2,659	$543 (17%)
Asthma	$1,257	$530	$1,787	$1,522	$265 (15%)
Hypertension	$2,677	$1,321	$3,998	$3,338	$661 (17%)
CAD	$5,485	$1,488	$6,973	$6,229	$744 (11%)

SOURCE: Authors' analysis of Prometheus Payment data from national 2005–2006 commercial insurance claims.

NOTES: AMI = acute myocardial infarction; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; CAD = coronary artery disease.

The volume of episodes was estimated using a variety of data sources. When Massachusetts-specific prevalence or incidence rates were not available, we used national rates. For acute episode types (knee replacement, hip replacement, bariatric surgery, and AMI) we assumed that the incidence of episodes will be equal to the discharge rate from Massachusetts hospitals in 2007 for related DRGs.[122] For chronic episode types (diabetes, CHF, COPD, asthma, hypertension, and CAD) we used prevalence estimates and assumed that each individual has one episode per year. The result will be an overestimate in cases where a condition goes untreated. Since many chronic condition episodes last for a full year, multiple episodes related to a single condition are unlikely. However, individuals with multiple conditions would have multiple episodes per year (one per condition). Table 2.2 lists the estimated episode volume for each condition, along with the data source used to construct the estimate. More accurate estimates

[122] For knee and hip replacements, we used all-patient diagnosis-related groups (AP-DRGs) 209 and 471, which include both knee and hip. Since the baseline and predicted bundled costs are similar for knee and hip replacements, we assumed that 50 percent of the volume in AP-DRGs 209 and 471 represents hip replacements, and 50 percent, knee replacements. For bariatric surgery, we used AP-DRG 288. For AMI, we used AP-DRGs 121, 122, and 123.

of the volume of episodes of care for each condition could be constructed through analysis of Massachusetts' insurance claims data.

Table 2.2
Estimated Volume of Episodes for Massachusetts Adults Ages 18–64, 2006

Procedure or Condition	Estimated Number of Episodes, 2006	Data Source	Note
Knee Replacement	2,288	Massachusetts Inpatient Data	50% of volume in AP-DRGs 209 and 471 (Total Joint Replacement)
Hip Replacement	2,288	Massachusetts Inpatient Data	50% of volume in AP-DRGs 209 and 471 (Total Joint Replacement)
Bariatric Surgery	3,488	Massachusetts Inpatient Data	AP-DRG 288
AMI	2,228	Massachusetts Inpatient Data	AP-DRGs 121–123
Diabetes	199,189	BRFSS	
CHF	82,995	NHANES (national estimate)	Based on prevalence among adults ages 40–59
COPD	207,488	NHIS (national estimate)	COPD defined as "emphysema" or "chronic bronchitis"
Asthma	423,276	BRFSS	Includes only those reporting "currently at risk"
Hypertension	751,107	BRFSS	Includes those "ever told" they had hypertension.
CAD	124,493	NHIS (national estimate)	

NOTES: BRFSS = Behavioral Risk Factor Surveillance System; NHANES = National Health and Nutrition Examination Survey; NHIS = National Health Interview Survey.

What Did We Conclude?

We concluded that the bundled payment scenarios we modeled would lead to substantial cost savings in the upper-bound scenario (Table 2.3). In the lower-bound scenario, total health spending in Massachusetts would decrease by $685 million (0.10%) for the period 2010–2020, reflecting the relatively low incidence among the non-elderly of hospital-based episodes for knee/hip replacement, bariatric surgery, and acute myocardial infarction. In the upper-bound scenario, the projected decrease for 2010–2020 is $39.3 billion (5.87%). These savings reflect our projected savings per episode of 7–35 percent, as well as the large number of episodes related to these 10 medical conditions and procedures.

Table 2.3
Savings Relative to Status Quo, Bundled Payment (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$32	–$315	–$685	–$1,832	–$18,044	–$39,317
% Savings	–0.07%	–0.10%	–0.10%	–4.24%	–5.89%	–5.87%

How Do Our Findings Compare with Those in the Literature?

Although very few bundled payment approaches have been implemented and evaluated, some preliminary evidence supports our conclusion that they would result in reduced spending. Several evaluations with limited scope have demonstrated cost reductions.[123]

The largest evaluation of bundled payment was the Medicare Participating Heart Bypass Center demonstration conducted in the early 1990s, which tested payment for an episode that included all inpatient and physician services during hospitalization, readmissions within 72 hours, and related follow-up physician services by the surgeon, but not other pre- and post-discharge physician services.[124] Payment was made to the hospital, with the hospital and physicians free to divide the payment as they chose.[125] The payment rate was determined through a competitive bidding process.[126] An evaluation of the demonstration's effects on hospital costs found that participating hospitals reduced direct variable costs over the three-year demonstration period and that physicians changed their practice patterns to improve efficiency.[127] The Medicare program saved an average of 10 percent for bypass surgery patients in demonstration hospitals compared with the predicted Medicare payments in the absence of the demonstration.[128] Medicare is currently implementing the Acute Care Episode demonstration, which will expand this model to additional types of discharges.

Medicare also tested bundled payment in the outpatient setting in the Medicare Cataract Alternative Payment demonstration. The episode included physician and facility fees for cataract removal surgery, intraocular lens costs, and selected pre- and post-operative tests. Provider interest in the demonstration was low; the response rate to the demonstration solicitation was only 3.7 percent. Episode payment rates were negotiated with the three participating providers. The payment rates were modestly discounted from nondemonstration payment rates for the same services (2- to 5-percent discount). There was no evidence that service utilization

[123] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2008. MedPac: Washington, DC.

[124] C.F. Liu, S. Subramanian, and J. Cromwell, *Impact of Global Bundled Payments on Hospital Costs of Coronary Artery Bypass Grafting.* J Health Care Finance, 2001. 27(4): p. 39-54.

[125] J. Cromwell, D.A. Dayhoff, and et al, *Medicare Participating Heart Bypass Demonstration: Final Report.* 1998. Centers for Medicare and Medicaid Services: Baltimore, MD.

[126] Ibid.

[127] C.F. Liu, S. Subramanian, and J. Cromwell, *Impact of Global Bundled Payments on Hospital Costs of Coronary Artery Bypass Grafting.* J Health Care Finance, 2001. 27(4): p. 39-54.

[128] J. Cromwell, D.A. Dayhoff, and et al, *Medicare Participating Heart Bypass Demonstration: Final Report.* 1998. Centers for Medicare and Medicaid Services: Baltimore, MD.

decreased among participating providers during the demonstration relative to that of a baseline pre-demonstration period.[129] The difference in results between the Medicare demonstrations on cataract removal and coronary artery bypass graft (CABG) suggest that the potential for achieving the goals of bundled payment may vary widely between types of care.

Several private sector evaluations have also demonstrated cost reductions using bundled payment. One study demonstrated savings for knee and shoulder arthroscopic surgery;[130] another demonstrated savings for CABG surgery.[131] More recently, Geisinger Health Plan began accepting bundled payment for all care related to CABG surgery, including preoperative evaluation and workup, inpatient facility and physician services, routine postoperative care, and treatment of complications.[132] The price for the bundle of services (not reported) was set at a level calculated to cover average routine treatment costs plus 50 percent of the historical average costs for treating complications. Geisinger also guaranteed adherence to 40 processes of care (performance measures for CABG), and used adherence to delivering the right care as a basis for a portion of the surgeons' payments.[133] In the three months following implementation, the team increased adherence from 59 to 100 percent of patients receiving all 40 recommended processes of care. In preliminary results, patients receiving surgery after program implementation experienced fewer adverse events, more discharges to home, and shorter average length of hospital stay than did otherwise similar Geisinger CABG patients. Geisinger is an integrated delivery system. Replicating these results with non-integrated providers would likely be more challenging.

Several organizations have created estimates of savings related to different bundled payment scenarios. The Commonwealth Fund used a scenario of widespread bundled payment in the Medicare program, with payment rates set at a benchmark based on geographic areas with relatively low average Medicare spending.[134] They estimated net cumulative savings to national health spending of $96.4 billion over five years and $229.2 billion over 10 years. The Congressional Budget Office used a scenario of bundled payment in Medicare for hospital inpatient and post-acute services.[135] They estimated reduced federal outlays of $18.6 billion between 2010 and 2019.

There is some peripheral evidence that expanding the unit of payment to include multiple services reduces costs. The Medicare inpatient prospective payment system implemented in 1983 was found to have reduced growth in Medicare spending without adversely affecting access or

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[129] Abt Associates Inc, *Medicare Cataract Surgery Alternate Payment Demonstration: Final Evaluation Report.* 1997. Cambridge, MA.

[130] L.L. Johnson and R.L. Becker, *An Alternative Health-Care Reimbursement System—Application of Arthroscopy and Financial Warranty: Results of a 2-Year Pilot Study.* Arthroscopy, 1994. 10(4): p. 462-70; discussion 471-2.

[131] C. Edmonds and G.L. Hallman, *Cardiovascular Care Providers. A Pioneer in Bundled Services, Shared Risk, and Single Payment.* Tex Heart Inst J, 1995. 22(1): p. 72-6.

[132] T.H. Lee, *Pay-for-performance, Version 2.0?* N Engl J Med, 2007. 357(6): p. 531-3.

[133] A.S. Casale, et al., *"ProvenCare℠": A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care.* Ann Surg, 2007. 246(4): p. 613-21; discussion 621-3.

[134] C. Schoen and Commonwealth Fund., *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p.

[135] United States Congressional Budget Office, *Budget Options Volume I: Health Care*. CBO Paper. 2008, Washington, D.C.: United States Congressional Budget Office. 236 p.

quality of care.[136] Capitation was generally found to reduce costs, although it led to widespread consumer and provider dissatisfaction.[137]

What Are the Critical Design Features?

Bundled payment would be a substantial change from the current payment system. Of the various ways it could be implemented, all share several key design features that would be critical to the success of the reform:

- ***Definition of bundles.*** Bundles of related services would need to be defined so that they could be operationalized for billing. Clinically related services could be identified through a combination of dates of service, diagnosis codes, and procedure codes. The types of services included in the bundle would also need to be defined. Also, some bundles may be easily identified before care is delivered (e.g., scheduled surgery, ongoing management of chronic disease), whereas other bundles may be identified retroactively (e.g., treatment for an acute problem such as pneumonia).
- ***Determining the payment amount for the bundle.*** A method would have to be developed for determining the amount of payment attached to a bundle. Each payer could determine the payment amount separately, as in current payment arrangements, or statewide Massachusetts' rates could be set through regulation (a variant of all payer rate setting). This is probably where the greatest opportunity exists for cost containment: establishing a price that is reflective of high-quality and efficient care without avoidable complications, for example.
- ***Shared accountability.*** Services related to particular treatments or conditions are typically provided by multiple health care providers in multiple settings. Some type of shared-accountability arrangements would be needed for multiple providers to accept bundled payments. Most existing models rely on integrated group practices, but a minority of U.S. health care providers belongs to such groups. Other providers could form "virtual groups" to manage the bundled payment and possibly related functions, such as care coordination. However, it is not clear that the evidence supporting the benefits of integrated group practice can be generalized to virtual groups.
- ***Risk adjustment.*** The cost of providing a bundle of services will be related strongly to the patient's risk profile. Adequate risk-adjustment methodologies will be necessary so that payments can be reconciled with the case mix of patients so that providers who are treating higher-risk patients are not put at a disadvantage.
- ***Operational issues.*** Providers and payers have billing systems in place to process fee-for-service payments. A significant change in payment methods might require a substantial investment in new billing systems. Prometheus has been working to develop software that would integrate bundled payment with existing billing

[136] M. Gold, K. Chu, S. Felt, et al., *Effects of Selected Cost Containment Efforts: 1971-1993.* Health Care Financ Rev, 1993. 14(3): p. 183-225.

[137] J.J. Mongan, T.G. Ferris, and T.H. Lee, *Options for Slowing the Growth of Health Care Costs.* N Engl J Med, 2008. 358(14): p. 1509-14.

processes. Other operational issues, such as the formation of virtual groups, also require substantial changes from the status quo in the organization of the health care delivery system.

Are There Unintended Consequences That Might Result?

Bundled payment would substantially change the incentives health care providers face. These changes could lead to several types of potential unintended consequences.[138] Two of the most important of these are underuse of appropriate care and risk selection.

- ***Underuse of appropriate care.*** Bundled payments create incentives for providers to deliver fewer services, which could reduce the utilization of services having little or no benefit. However, it could also potentially reduce the utilization of appropriate, beneficial services. Tying some portion of payment to achieving health care quality benchmarks could mitigate these effects.
- ***Risk selection.*** The cost of providing a bundle of services will be strongly related to patient risk. Unless risk adjustment is used successfully, providers will face a strong incentive to avoid treating sicker, higher risk patients.

In our analysis, we assume that, through bundled payment, providers are incentivized to reduce avoidable complications by 50 percent. But, it is unclear whether the change in payment will lead to a commensurate reduction in avoidable complications, or if providers will simply be required to accept a lower payment rate regardless of whether they are able to reduce complications. If providers are unable to reduce complications, spending will be lower but actual costs will remain high, which could exacerbate the potential for negative, unintended consequences. It could also cause some providers to exit the market or refuse to accept patients with conditions subject to bundling.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

The estimated savings in the scenario we modeled result from an assumed decrease in reimbursement related to potentially avoidable complications. Other policies that would limit payment for complications would seek to save the same dollars within the existing fee-for-service payment structure.

Reforms That Could Be Combined with This One

Variants of bundled payment could be used in a medical home model. Medical homes could accept bundled payment for services related to primary and chronic care for enrolled populations. Use of bundled payments might also provide incentives for disease management.

[138] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2008. MedPac: Washington, DC.

Option #3
Institute Rate Regulation for Academic Medical Centers

I. Nature of the Problem

Stakeholders in Massachusetts have voiced concerns that a growing amount of uncomplicated care in the Commonwealth is provided by teaching hospitals.[139,140] For example, between 1998 and 2006, the number of inpatient discharges occurring at teaching hospitals in Massachusetts increased by nearly 16 percent.[141] Using data provided by the Massachusetts Division of Health Care Finance and Policy (DHCFP), we found the average charge for a service provided by a Massachusetts teaching hospital in 2007 was more than double the average charge at a nonteaching hospital. Similar differentials existed even for routine conditions, such as low-risk deliveries (diagnosis-related groups [DRGs] 370–375). Teaching hospitals often have the capability to provide specialized care for complex conditions; however, their higher prices may be difficult to justify for routine care.

II. Proposed Policy Option

What Is It?

Rate regulation for academic medical centers (AMCs) would require that all hospitals in Massachusetts, including AMCs, be reimbursed at the average community rate for certain types of care. Under rate regulation, hospitals would not be permitted to charge prices in excess of regulated reimbursement rates. This approach differs from reference pricing, where hospitals can charge what they want, but insurers agree to limit reimbursement, requiring consumers to pay the difference. Rate regulation could be applied broadly to all hospital-based care, or narrowly to a subset of services. We selected the average community rate to illustrate the decision a regulatory body might make to rapidly achieve cost control goals. A policy that sets all reimbursement levels at the average community rate would have the effect of lowering reimbursement for highly paid community hospitals as well as for AMCs.

[139] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[140] L. Kowalczyck, *Changes Urged for Teaching Hospitals*, in *Boston Globe*. 2003: Boston.

[141] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Acute Hospital Revenue and Volume Trends.* 2008. Office of Health and Human Services (EOHHS).

How Would It Solve the Problem?

AMCs in Massachusetts and throughout the country charge more per service than community hospitals.[142,143,144,145] Only part of the charge differential can be explained by case mix;[146,147,148] the rest of the differential is likely attributable to higher overhead related to teaching,[149,150] inefficient practice styles,[151] and a higher uncompensated care burden in academic settings.[152] Concern about higher prices at AMCs is particularly relevant in Massachusetts, which comprises a relatively large number of academic hospitals and whose share of residents who seek care in academic settings has grown over time.[153] There is also concern that a subset of highly paid community hospitals in Massachusetts may contribute to rising expenditures.[154] Reducing payments at AMCs and highly paid community hospitals could be a way to reduce health care costs in Massachusetts.

What Has to Happen to Implement a Change?

Massachusetts could establish a regulatory board to determine appropriate rates based on average costs in community hospitals, and then require that all payers use these rates. Rate regulation could be applied to all hospital care in Massachusetts or to a subset of care. Massachusetts could allow rates to vary to reflect case mix, local price levels, the hospital's teaching load, and the level of uncompensated care provided.[155] The regulatory board could be modeled after the

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[142] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[143] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[144] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[145] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

[146] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[147] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[148] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

[149] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[150] J.K. Iglehart, *Academic Medical Centers Enter the Market: The Case of Philadelphia.* N Engl J Med, 1995. 333(15): p. 1019-23.

[151] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[152] Ibid.

[153] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[154] For example, according to the *Boston Globe*, the expansion of Partners Health Care into suburban areas has created a subset of highly paid community hospitals that may be contributing to health care cost inflation while threatening the economic viability of smaller, less–highly reimbursed community hospitals. See T. Farragher and L. Kowalczyk, *Fueled by Profits, a Healthcare Giant Takes Aim at the Suburbs*, in *Boston Globe*. 2008: Boston, MA.

[155] Maryland Health Services Cost Review Commission, *Maryland Hospital Pricing Guide.* 2006. Maryland Health Care Commission: Baltimore, MD.

Maryland Health Services Cost Review Commission (HSCRC)[156,157] and could be responsible both for setting rates and monitoring compliance.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled scenarios in which hospital reimbursement rates for certain DRGs were set at the average community rate, without adjustments for case mix or teaching burden (such adjustments would have the effect of reducing the savings estimated for both the upper and lower bounds). We assumed that compliance would be monitored through a regulatory body similar to the Maryland HSCRC.

What Were the Assumptions?

We assumed that the regulation would affect all targeted DRGs immediately (that is, we did not model a phase-in period during which rates gradually decrease to the new level). To set rates and to ensure compliance, we assumed that Massachusetts would establish a regulatory body comparable to the Maryland HSCRC. We assumed that the regulatory costs would vary according to the amount of care subject to the community rates. Specifically, costs would be equivalent to the budget from the Maryland HSCRC[158] if all DRGs were subject to the regulation, and we reduced the costs proportionately to the amount of care covered. Costs for the regulatory body were inflated over time, using historical changes in the Consumer Price Index (CPI); these inflation rates are lower than the inflation rates applied to health care spending (which are based on the Centers for Medicare and Medicaid Services [CMS] National Health Expenditure Accounts).

Our upper- and lower-bound scenarios, described in more detail below, used different assumptions about the type of care that would be subject to rate regulation. We assumed that Medicare would not be subject to this reform, since current Medicare payment rates allow limited variation by hospital type within an area.

Upper-Bound Assumptions

In the upper-bound scenario, we assumed that all care for all DRGs would be subject to rate regulation, except for DRGs for which more than 90 percent or less than 10 percent of care is currently provided by AMCs. If more than 90 percent of care is provided by AMCs, we assumed that the higher rate would be maintained for those services because they appear to

[156] Maryland Hospital Association, *Maryland Hospital Rate Regulation*, in *Fact Sheet*. 2006, MHA: Elkridge, MD. http://www.mdhospitals.org/mha/News_Publications/HSCRC.Md.Rate.Setting.Facts.pdf

[157] Maryland Health Services Cost Review Commission, *Maryland Hospital Pricing Guide.* 2006. Maryland Health Care Commission: Baltimore, MD.

[158] That budget was $4.32 million in 2008. *Health Services Cost Review Commission - Sunset Extension and Program Evaluation,* 2007. Department of Legislative Services, Maryland General Assembly, Bill number HB 844, Introduced by Chair - Health and Government Operations Committee. As of June 17, 2009: http://mlis.state.md.us/2007RS/fnotes/bil_0004/hb0844.pdf

require the AMC setting. If less than 10 percent of care is currently provided by AMCs, we assumed that the discharges currently occurring at AMCs are unusually complex and that a higher rate for those cases would be justified on the basis of case mix. In the upper-bound scenario, 96.6 percent of non-Medicare discharges were subject to the reform.

Lower-Bound Assumptions

In our lower-bound scenario, only maternity care, which accounted for 14.7 percent of non-Medicare discharges in the 2006 Massachusetts inpatient data, is subject to rate regulation.

What Data Did We Use?

Data on charges for care at teaching and community hospitals came from the Massachusetts Inpatient Hospital Database for 2006. To convert charges to costs, we used an average hospital cost-to-charge ratio of 49.3 percent, a figure that was provided to us by the Massachusetts DHCFP.[159]

Data to determine the cost of regulation came from budget information from the state of Maryland.[160] We assumed that the regulatory costs would be proportional to the amount of care subject to rate regulation; that is, Massachusetts would incur the same level of costs as Maryland ($4.32 million in 2008) if 100 percent of care were subject to rate regulation. In 2008 dollars, we estimated that regulatory costs would be $4.2 million in the upper-bound scenario and $635,000 in the lower-bound scenario.

What Did We Conclude?

Table 3.1 shows estimated total savings, overall and by payer, for 2010 and cumulatively for 2010–2015 and 2010–2020. Table 3.2 compares total projected savings with projected spending in the status quo. Our upper-bound estimates suggest that AMC rate regulation could save as much as $18 billion over 10 years, representing a 2.7-percent decline in total projected spending. However, there is a wide gap between our upper- and lower-bound estimates. In the lower-bound scenario, projected savings would be $1.4 billion between 2010 and 2020, or 0.2 percent of total spending. The difference in savings projections is driven by our assumptions about the amount of care that would be subject to regulation. In our lower-bound scenario, less than 15 percent of care in Massachusetts is subject to the reform, whereas nearly 100 percent of care is affected by the regulation in the upper-bound scenario.

In both the upper- and lower-bound scenarios, total projected savings relative to status quo spending decline slightly over time, a result that stems from population changes that affect our spending projections. Over time, a greater fraction of the Massachusetts population is projected to be over age 65 and, therefore, eligible for Medicare. Since we exclude Medicare spending from our calculations, a smaller proportion of total spending is affected by the reform as the projection year approaches 2020.

[159] We also considered using a payment-to-charge ratio, but this was essentially equivalent to the cost-to-charge ratio due to low hospital profit margins (less than 1 percent) in Massachusetts.

[160] State of Maryland, Department of Legislative Services, Maryland General Assembly, HB 844, 2007.

Table 3.1
Total Savings, AMC Rate Regulation (in millions)[a]

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	–$93	–$641	–$1,364	–$1,217	–$8,415	–$17,887
Individual	–$1	–$6	–$12	–$11	–$73	–$155
Medicare[a]	$0	$0	$0	$0	$0	$0
Medicaid	–$11	–$73	–$156	–$138	–$952	–$2,024
Private	–$72	–$497	–$1,057	–$935	–$6,465	–$13,738
Other	–$11	–$73	–$155	–$137	–$948	–$2,014
Regulatory Costs	$1	$8	$16	$4	$28	$55

[a] Model assumes Medicare does not participate.

Table 3.2
Savings Relative to Status Quo, AMC Rate Regulation (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$93	–$641	–$1,364	–$1,217	–$8,415	–$17,887
% Savings	–0.21%	–0.21%	–0.20%	–2.82%	–2.74%	–2.67%

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimates

Existing evidence suggests that the lower-bound estimate described above may be more attainable than the upper-bound estimate. Our upper-bound estimates are feasible only if a large share of hospital care can be reimbursed at the average community rate without adverse consequences for sicker patients. In general, the literature has found that case mix differences explain some, although not all, of the cost differences between community hospitals and AMCs. For example, Frick et al.[161] found that teaching hospitals were 63 percent more expensive than community hospitals, and that 28 percent of the cost difference was explained by case mix. Another study found that costs for Medicaid Managed Care enrollees with AMC-affiliated primary care physicians (PCPs) were $1,219 higher per member per year than costs for enrollees with non–AMC-affiliated PCPs, and that half of this difference was explained by case mix.[162]

[161] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[162] Heisler et al., *Medicaid Managed Care: Are Academic Medical Centers Penalized by Attracting Patients with High-Cost Conditions?* Am J Manag Care, Vol. 9, No. 1, 2003, pp. 19–29.

Yet, a study of birth outcomes in Massachusetts did not find significantly better birth outcomes at teaching hospitals, and, in fact, found that risk-adjusted complication rates were higher at Massachusetts AMCs.[163] Further, the average risk profile of women delivering at Massachusetts AMCs and community hospitals was similar. Women delivering at teaching hospitals had a slightly higher number of co-morbid conditions than women delivering at community hospitals (4.0 versus 3.7 percent), but women delivering at teaching hospitals were less likely to have had a prior C-section (11.2 versus 12.0 percent). This evidence suggests that it may be feasible to set reimbursement rates for maternity care at community levels without compromising the quality of care delivered.

Findings in support of upper-bound estimates

As described above, our upper-bound estimates are attainable only if care currently provided by AMCs could be reimbursed at the average community rate without compromising quality of care for complex patients. In addition, to the extent that AMCs are reliant on higher reimbursement rates to support their teaching mission, restricting reimbursement to community levels could put some AMCs in financial jeopardy or threaten the quality of education. During the 1990s, cost containment pressures generated by the expansion of managed care became a significant challenge for AMCs, in part due to the higher overhead rates necessary to fund their teaching mission.[164,165] Financial pressures caused by lower reimbursement rates could lead to capacity constraints if some AMCs respond by downsizing or closing altogether.

Despite these concerns, there is evidence that AMC reimbursement rates could be reduced for broader classes of conditions than maternity care without necessarily compromising quality. The literature discussed above finds that, although case mix explains some of the cost differential between AMCs and community hospitals, a substantial gap in reimbursement levels still remains. Studies specific to Massachusetts have confirmed these findings. For example, Cai, Schiff, and Vuong[166] found that end-of-life care provided by AMCs in Massachusetts was more than three times as expensive as end-of-life care provided in community hospitals, and that case-mix severity explained only 25 percent of this differential.

In summary, although the upper-bound estimates presented in this discussion are probably overly optimistic, it would be possible to extend AMC rate regulation to a class of services beyond maternity care. To implement this policy effectively, regulators would need to adequately account for case mix and ensure that payment levels are sufficient to sustain AMCs' teaching mission. It may be appropriate to consider a different method of funding teaching, such as direct support for the activity.

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[163] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Executive Office of the Department Health and Human Services (EOHHS). Analysis in Brief.

[164] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[165] J.P. Kassirer, *Academic Medical Centers under Siege.* N Engl J Med, 1994. 331(20): p. 1370-1.

[166] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy.

What Are the Critical Design Features?

A major challenge in implementing this policy option is obtaining the data needed to adjust for differences in case mix that affect the real costs of delivering care. The methods for evaluating and pricing services based on differences in patient populations should be transparent and will have to be protected from efforts to influence the process. For example, industries or specialty groups might lobby for inappropriately high reimbursement for certain procedures.

Are There Unintended Consequences That Might Result?

To the extent that training new health care providers is a public good,[167] society at large may be adversely affected by policies that equalize reimbursement at community and teaching hospitals. This consequence could be addressed by allowing teaching hospitals to levy a surcharge over the regulated rate to cover teaching responsibilities.

Another concern is that, because AMCs often treat a disproportionate number of Medicaid and uncompensated care patients,[168,169] equalizing costs between AMCs and community hospitals could restrict AMCs' ability to shift these added costs onto private payers, possibly putting an added financial strain on AMCs and ultimately threatening their ability to stay in business. Again, surcharges could be used to address this concern.

Lower reimbursement at AMCs could jeopardize quality if hospitals respond to reduced reimbursement by cutting corners, limiting investment in new technologies, or underproviding needed care. The literature on traditional hospital rate regulation has found mixed evidence on the relationship between rate setting and quality. Shortell and Hughes [170] found that mortality rates among Medicare patients were 6 to 10 percent higher than would otherwise be expected (based on regression predictions) in states with rate regulation. A separate study found no relationship between rate regulation and mortality in Medicare patients after elective surgery, but mixed results on the relationship between rate setting and mortality following emergency department and other types of admissions.[171] Yet a third study[172] found that regulated states had lower standardized mortality ratios than unregulated states.

Rate regulation, if done on a fee-for-service basis, also could increase the overall number of admissions at AMCs. Rate regulation for hospital-based care could also cause providers to shift care from inpatient to outpatient settings.

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[167] J.K. Iglehart, *Academic Medical Centers Enter the Market: The Case of Philadelphia.* N Engl J Med, 1995. 333(15): p. 1019-23.

[168] F.A. Garcia, et al., *Effect of Academic Affiliation and Obstetric Volume On Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[169] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[170] S.M. Shortell and E.F. Hughes, *The Effects of Regulation, Competition, and Ownership on Mortality Rates among Hospital Inpatients*. N Engl J Med, 1988. 318(17): p. 1100-7..

[171] G.L. Gaumer, E.L. Poggio, C.G. Coelen, et al., *Effects of State Prospective Reimbursement Programs on Hospital Mortality.* Med Care, 1989. 27(7): p. 724-36.

[172] D.W. Smith, S.L. McFall, and M.B. Pine, *State Rate Regulation and Inpatient Mortality Rates*. Inquiry, 1993. 30(1): p. 23-33.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policies aimed at reducing the price of hospital-based care, such as traditional hospital rate regulation, reference pricing for AMCs, and bundled payment, seek to save some of the same dollars as rate regulation for AMCs.

Reforms That Could Be Combined with This One

Rate regulation for AMCs could be combined with other policies aimed at improving the efficiency of delivered care, such as policies aimed at reducing administrative waste and reducing avoidable complications and preventable readmissions. Policies aimed at reducing the cost of nonhospital services (e.g., expanding the use of retail clinics) or the volume of delivered hospital services (e.g., disease management, value-based insurance design) seek to save different dollars from AMC rate regulation and could potentially be combined with this option.

Option #4
Institute Reference Pricing for Academic Medical Centers

I. Nature of the Problem

Stakeholders in Massachusetts have voiced concerns that a growing amount of uncomplicated care in the Commonwealth is provided by teaching hospitals.[173,174] For example, between 1998 and 2006, the number of inpatient discharges occurring at teaching hospitals in Massachusetts increased by nearly 16 percent.[175] Using data provided by the Massachusetts Department of Health Care Finance and Policy (DHCFP), we found the average charge for a service provided by a Massachusetts teaching hospital in 2007 was more than double the average charge at a nonteaching hospital. Similar differentials existed even for routine discharges, such as low-risk deliveries (Diagnosis-Related Groups [DRGs] 370–-375). Teaching hospitals often have the capability to provide specialized care for complex conditions; however, their higher prices may not be warranted for routine care.

[173] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief..

[174] L. Kowalczyck, *Changes Urged for Teaching Hospitals*, in *Boston Globe*. 2003: Boston.

[175] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Acute Hospital Revenue and Volume Trends.* 2008. Office of Health and Human Services (EOHHS).

II. Proposed Policy Option

What Is It?

Reference pricing for hospital inpatient care is a benefit design strategy whereby insurers would reimburse hospitals for care at a community rate, and consumers would pay the difference if they opted to seek higher priced care at teaching hospitals. Reference pricing could be applied broadly to all hospital-based care or narrowly to a subset of services. Because not all residents in Massachusetts have easy access to a community hospital, reference pricing might initially be applied to a subset of consumers, growing over time as capacity at community hospitals expanded or as teaching hospitals adjusted pricing or delivery of services.

How Would It Solve the Problem?

Academic medical centers (AMCs) in Massachusetts and throughout the country charge more per service than community hospitals charge.[176,177,178,179] Only part of the charge differential can be explained by case mix;[180,181,182] the rest of the differential is likely attributable to higher overhead related to teaching,[183,184] inefficient practice styles,[185] and a higher uncompensated care burden in academic settings.[186] Concern about higher costs at AMCs is particularly relevant in Massachusetts because of the relatively large number of academic hospitals in the state as well as evidence of growth over time in the share of Massachusetts' residents seeking care in academic settings.[187] Restricting payment at AMCs, particularly for non–tertiary care that could be provided by community hospitals, could be a way to reduce health care costs in Massachusetts.

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[176] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[177] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[178] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[179] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

[180] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[181] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[182] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

[183] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[184] J.K. Iglehart, *Academic Medical Centers Enter the Market: The Case of Philadelphia.* N Engl J Med, 1995. 333(15): p. 1019-23.

[185] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[186] Ibid.

[187] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

What Has to Happen to Implement a Change?

Private insurers in Massachusetts could be encouraged to offer tiered pricing for care provided at AMCs, so that patients receiving non–tertiary care in academic settings would face higher cost-sharing. The extent to which Massachusetts can influence reimbursement decisions and cost-sharing arrangements of private insurers may be limited by the Employee Retiree Income Security Act (ERISA). However, the state might also require insurers offering health plans through the Connector to restrict reimbursement for AMCs.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We assumed that all insurance companies in Massachusetts agree to reimburse hospitals for select admissions at the community rate and that the patient must pay the difference if he or she wishes to access care at a teaching hospital. We assume that Medicaid also adopts a reference pricing policy, although we acknowledge that limitations on Medicaid cost sharing requirements may make this policy difficult to enact.

What Were the Assumptions?

Because some consumers might not have easy access to a community hospital in the status quo, we assumed that reference pricing would apply to only 20 percent of consumers in 2010, growing to 100 percent of consumers by 2020. Among those patients subject to reference pricing, we assumed that a fraction will be willing and able to pay for care at teaching hospitals. Specifically, we assumed that patients are able to pay AMC care only if the cost difference between teaching hospital and non–teaching hospital care is less than 5 percent of family income. Among those who are able to afford teaching hospital care, we assumed that 25 percent are willing to pay the price differential.

Our upper- and lower-bound scenarios, described in more detail below, use different assumptions about the type of care that would be subject to reference pricing. We assumed that Medicare is never subject to this reform, since current Medicare payment rates allow limited variation between teaching and community hospitals.

Upper-Bound Assumptions

In the upper-bound scenario, we assumed that all care for all DRGs is subject to the reference pricing, except for DRGs for which more than 90 percent or less than 10 percent of care is currently provided at AMCs. If more than 90 percent of care is provided at AMCs, we assumed that the community hospitals are currently unable to provide this service. If less than 10 percent of care is currently provided at AMCs, we assumed that the discharges currently occurring at AMCs are unusually complex and cannot be shifted. In the upper-bound scenario, 96.6 percent of non-Medicare discharges are subject to the new pricing policy.

Using the upper-bound assumptions, we estimated that 13.0 percent of patients subject to reference pricing will opt to pay extra to access care at teaching hospitals.

Lower-Bound Assumptions

In our lower-bound scenario, only maternity care, which accounts for 14.7 percent of non-Medicare discharges in the 2006 Massachusetts inpatient data, is subject to reference pricing. Using the lower-bound assumptions, we estimated that 15.7 percent of patients subject to reference pricing will opt to access maternity care at teaching hospitals.

What Data Did We Use?

Data on charges for care at teaching and community hospitals came from the Massachusetts Inpatient Hospital Discharge Database for 2006. To convert charges to costs, we used an average hospital cost-to-charge ratio of 49.3 percent, a figure that was provided to us by the Massachusetts DHCFP.[188] Data on the income distribution in Massachusetts, which we used to estimate the fraction of patients who would opt to pay extra for care provided by teaching hospitals, came from the U.S. Census.

What Did We Conclude?

Using the assumptions outlined above, we concluded that reference pricing for AMC care could save up to $8.6 billion (1.3 percent) between 2010 and 2020. Table 4.1 shows total savings, as well as savings that accrue to particular payers; Table 4.2 shows savings relative to projected spending in the status quo policy environment. Savings to private insurers could total as much as $8.8 billion. However, in our upper-bound scenario, we estimated that consumers will spend an additional $2.9 billion between 2010 and 2020 as a result of higher co-payments for AMC-based care.

Estimated savings in our lower-bound scenario are substantially lower than savings in the upper-bound scenario, because the lower-bound estimates assume that reference pricing is applied to only maternity care. In our lower-bound model, total savings reach only $526 million between 2010 and 2020, less than one-tenth of 1 percent of total projected health spending in Massachusetts.

Both the upper- and lower-bound estimates assume that Medicaid participates in reference pricing; however, Medicaid participation may be infeasible given Medicaid cost sharing limitations. The results in Table 4.1 imply that savings to the Medicaid program account for 15 to 19 percent of total savings due to this policy option. As a result, we estimate that cumulative savings between 2010 and 2020 would fall to -$426 billion in the lower-bound scenario, and to -$7,295 billion in the upper-bound scenario, if Medicaid were excluded.

[188] We also considered using a payment-to-charge ratio, but this was essentially equivalent to the cost-to-charge ratio due to low hospital profit margins (less than 1 percent) in Massachusetts.

Table 4.1
Total Savings, AMC Reference Pricing (in millions)[a]

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	–$11	–$159	–$526	–$182	–$2,595	–$8,597
Individual	$7	$107	$354	$60	$860	$2,851
Medicare[a]	$0	$0	$0	$0	$0	$0
Medicaid	–$2	–$30	–$100	–$28	–$393	–$1,302
Private	–$14	–$205	–$680	–$187	–$2,668	–$8,842
Other	–$2	–$30	–$100	–$27	–$391	–$1,296

[a] Model assumes Medicare does not participate.

Table 4.2
Savings Relative to Status Quo, AMC Reference Pricing (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$11	–$159	–$526	–$182	–$2,595	–$8,597
% Savings	–0.03%	–0.05%	–0.08%	–0.42%	–0.85%	–1.28%

How Do Our Findings Compare to Those in the Literature?

Findings that support the lower-bound estimate

There is much evidence indicating that care provided at AMCs is more costly than care provided in community settings. However, it is unclear whether a substantial fraction of care could be shifted to community settings without adverse consequences. Some studies have found that outcomes are better in AMCs than in community hospitals, suggesting that policy aimed at shifting large amounts of care to community settings could increase costs in the long run. For example, Kuhn et al.[189] found that private teaching hospitals had lower adjusted mortality rates at 30 and 180 days post-admission than other hospitals; by contrast, public teaching hospitals had relatively high adjusted mortality rates. Similarly, Rosenthal et al. (1997)[190] found that adjusted death rates were lower in major teaching hospitals relative to death rates in minor teaching and non-teaching hospitals in Ohio. In a study of birth outcomes, Garcia et al.[191]

[189] E.M. Kuhn, A.J. Hartz, H. Krakauer, et al., *The Relationship of Hospital Ownership and Teaching Status to 30- and 180-Day Adjusted Mortality Rates.* Med Care, 1994. 32(11): p. 1098-108.

[190] G.E. Rosenthal, D.L. Harper, L.M. Quinn, et al., *Severity-Adjusted Mortality and Length of Stay in Teaching and Nonteaching Hospitals. Results of a Regional Study.* JAMA, 1997. 278(6): p. 485-90.

[191] F.A. Garcia, et al., *Effect of academic affiliation and obstetric volume on clinical outcome and cost of childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

found that AMCs had lower overall laceration rates (combining inadvertent laceration with episiotomy rates) and a lower risk of complications than did community hospitals. A separate study of birth outcomes in Massachusetts did not find significantly better birth outcomes at teaching hospitals, and, in fact, found that risk-adjusted complication rates were higher at Massachusetts AMCs.[192] This evidence suggests that our lower-bound scenario, which assumed that only maternity care would be affected by reference pricing, represents a realistic policy option that could potentially be achieved without unintended consequences.

Findings in support of upper-bound estimates

The upper-bound estimates described above would be attainable only if care could be shifted to AMCs without adverse consequences, if capacity in community settings could grow to accommodate up to 96 percent of AMC care within 10 years, and if patients shifted from AMCs to community settings could be treated effectively if reimbursement were set at the average community rate. The bulk of the evidence suggests that, although case mix does not fully explain charge and cost differentials between AMC and community hospitals, care provided at AMCs is often more expensive and more complex than care provided elsewhere. Frick, Martin, and Shwartz[193] found that teaching hospitals were 63 percent more expensive than community hospitals, and that 28 percent of the cost difference was explained by case mix. More recently, Garcia et al.[194] found that the case mix–adjusted total charges for birth outcomes were $627 more per admission at academic hospitals than at community hospitals, a difference of 20 percent. Another study found that costs for Medicaid Managed Care enrollees with AMC-affiliated primary care physicians (PCPs) were $1,219 higher per member per year than costs for enrollees with non-AMC-affiliated PCPs, and that half of this difference was explained by case mix.[195]

Studies specific to Massachusetts have also found that AMCs are more expensive than community hospitals. DHCFP, for example, found that charges for birth outcomes were between 75 and 100 percent higher at academic hospitals than at community hospitals.[196] Similarly, Cai, Schiff, and Vuong[197] found that AMC-provided end-of-life care was more than three times as expensive as end-of-life care provided in community hospitals, and that case mix severity explained only 25 percent of this differential.

The evidence that case mix explains some, although not all, price differences between AMCs and community hospitals suggests that our upper-bound estimates are likely overly optimistic.

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[192] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[193] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[194] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[195] M. Heisler, S.M. DeMonner, J.E. Billi, et al., *Medicaid Managed Care: Are Academic Medical Centers Penalized by Attracting Patients with High-Cost Conditions?* Am J Manag Care, 2003. 9(1): p. 19-29.

[196] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[197] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy.

Similarly, evidence that AMCs may at times attain better outcomes than community hospitals suggests that a targeted approach to shifting AMC care to community settings may be more realistic than the upper-bound scenario estimated in this model.

What Are the Critical Design Features?

Since most prior research finds that the case mix of patients seen at AMCs is more complex than the case mix of patients seen in community hospitals,[198,199,200,201] an effective policy might allow additional reimbursement for complex patients that are shifted to the community sector.

In addition, policies might consider exempting individuals who do not live within a reasonable distance of a community hospital. For example, the DHCFP has pointed out that no community hospitals in Boston offer maternity care.[202]

Are There Unintended Consequences That Might Result?

During the 1990s, cost containment pressures generated by the expansion of managed care became a significant challenge for AMCs, in part because of the higher overhead rates necessary to fund their teaching mission.[203,204] As cost containment drives prices at AMCs down to the same level as prices at community hospitals, fewer resources are available to support training. To the extent that training new health care providers is a public good,[205] society at large may be adversely affected by policies that equalize reimbursement at community and teaching hospitals.

Further, because AMCs often treat a disproportionate number of Medicaid and uncompensated care patients,[206,207] equalizing costs between AMCs and community hospitals will inhibit AMCs from shifting these added costs onto private payers. This restriction could put an added financial strain on AMCs, ultimately threatening their ability to stay in business.

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[198] M. Heisler, S.M. DeMonner, J.E. Billi, et al., *Medicaid Managed Care: Are Academic Medical Centers Penalized by Attracting Patients with High-Cost Conditions?* Am J Manag Care, 2003. 9(1): p. 19-29.

[199] J.E. Bailey, D.L. Van Brunt, D.M. Mirvis, et al., *Academic Managed Care Organizations and Adverse Selection under Medicaid Managed Care in Tennessee.* JAMA, 1999. 282(11): p. 1067-72.

[200] A.P. Frick, S.G. Martin, and M. Shwartz, *Case-Mix and Cost Differences between Teaching and Nonteaching Hospitals.* Med Care, 1985. 23(4): p. 283-95.

[201] J. Cai and M. Schiff, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2006. Massachusetts Division of Health Care Finance and Policy.

[202] Massachusetts Division of Health Care Finance and Policy (DHCFP), *Maternal Outcomes at Massachusetts Hospitals.* 2003. Office of Health and Human Services (EOHHS). Analysis in Brief.

[203] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

[204] J.P. Kassirer, *Academic Medical Centers under Siege.* N Engl J Med, 1994. 331(20): p. 1370-1..

[205] J.K. Iglehart, *Academic Medical Centers Enter the Market: The Case of Philadelphia.* N Engl J Med, 1995. 333(15): p. 1019-23.

[206] F.A. Garcia, H.B. Miller, G.R. Huggins, et al., *Effect of Academic Affiliation and Obstetric Volume on Clinical Outcome and Cost of Childbirth.* Obstet Gynecol, 2001. 97(4): p. 567-76.

[207] P.D. Fox and J. Wasserman, *Academic Medical Centers and Managed Care: Uneasy Partners.* Health Aff (Millwood), 1993. 12(1): p. 85-93.

Another potential unintended consequence is that prices at community hospitals might rise in response to increased demand for their services.

Finally, as discussed above, quality of care could suffer if AMCs are better equipped to treat certain types of conditions or if case-mix adjustment for complex care provided by community hospitals is inadequate. These concerns could be mitigated if the policy were targeted to specific conditions, such as maternity care, that can be treated effectively in community settings.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policies aimed at reducing the price of hospital-based care, such as traditional rate regulation and bundled payment, seek to save some of the same dollars as reference pricing for AMCs. Nevertheless, it may be possible to combine rate regulation and reference pricing to achieve savings. For example, Massachusetts could use traditional hospital rate regulation to limit health care cost growth and variation in pricing across hospitals, and simultaneously encourage reference pricing for hospital maternity care.

Reforms That Could Be Combined with This One

Policies aimed at reducing the cost of nonhospital services (e.g., expanding the use of retail clinics) or the volume of hospital services delivered (e.g., disease management, value-based insurance design) seek to save different dollars from AMC reference pricing and potentially could be combined with this option to achieve savings. To the extent that these reforms reduce the volume of hospital and ED utilization, they also could complement AMC reference pricing by freeing capacity in community hospitals.

Option #5
Promote the Growth of Retail Clinics

I. Nature of the Problem

Emergency department (ED) utilization rates in Massachusetts are in the top quartile of utilization rates nationwide,[208] suggesting that some ED care in Massachusetts could be shifted to less expensive settings. EDs offer a source of care for individuals who may not have a usual source of care and for those who cannot obtain care during normal business hours. Similarly, urgent care clinics may provide access for patients with certain problems. Some reports have indicated that the increased health insurance coverage resulting from the 2006 health insur-

[208] A.F. Sullivan, I.B. Richman, C.J. Ahn, et al., *A Profile of US Emergency Departments in 2001.* Ann Emerg Med, 2006. 48(6): p. 694-701.

ance reform in Massachusetts has increased waiting times to see primary care providers, which may have added to the perceived limits on availability of routine care.[209] Because of their low cost and convenience, retail clinics may provide a less costly alternative to the ED or urgent care clinic for patients who do not have a usual source of care or who need treatment outside of traditional business hours. Retail clinic visits could also reduce health spending by replacing visits to primary care providers for routine, protocol-driven care.

II. Proposed Policy Option

What Is It?

Retail clinics are limited service health care clinics that offer care for common and easily treated conditions, such as strep throat, conjunctivitis, and ear infections, as well as vaccines and some preventive care services. Care is typically provided by either a nurse practitioner (NP) or a physician assistant (PA), and prices are generally lower than those in physicians' offices, urgent-care clinics, and EDs. In contrast to a traditional doctor's office, retail clinics are open on evenings and weekends; are typically located within a pharmacy, supermarket, or department store; and have prices that are transparent (often presented as a menu of options). These features increase convenience for consumers, offer greater certainty about the cost of services, and provide an alternative source of care for individuals who might consider going to the emergency department for a health concern that emerges after regular business hours.

The viability of retail clinics depends heavily on state regulations regarding scope of practice and licensing for nonphysicians, physician oversight requirements for NPs and PAs, and physician ownership requirements for health care clinics.[210] As a result, the state can promote or inhibit growth in retail clinics through its regulatory strategies. Some key regulatory issues that affect the growth of retail clinics include the following:

- ***Physician oversight requirements:*** State laws vary on the degree to which NPs can practice without physician oversight.[211] Massachusetts allows NPs to diagnose and prescribe, but only with the involvement of a physician with an unrestricted full license in the Commonwealth, and only when following a written protocol. Review with a supervisory physician must occur once every three months.[212] NPs in do not have the authority to order tests or to refer patients. Although the CVS Pharmacy chain has chosen to open clinics in Massachusetts despite these regulations, expanding the scope of practice for NPs and allowing out-of-state physician oversight could make it easier for corporate chains to locate in the Commonwealth.

[209] S.K. Long and P.B. Masi (2008) *Access and Affordability: An Update on Health Reform in Massachusetts*. Health Aff (Millwood) 28: 4, w578-w587 Health Affairs Web Exclusive. DOI: May 28, 2009, 10.1377/hlthaff.28.4.w578

[210] M.K. Scott and California HealthCare Foundation., *Health Care in the Express Lane : Retail Clinics Go Mainstream*. 2007, Oakland, CA: California HealthCare Foundation. 32 p. As of June 18, 2009: http://www.chcf.org/topics/view.cfm?itemID=133464

[211] For more details on scope of practice, see "A Blueprint for Health Care Cost Containment in Massachusetts," Option #15.

[212] Massachusetts Regulations for Governing Scope of Practice in Nursing in the Expanded Role (244 Code of Massachusetts Regulations [CMR] 4.0). See 4.22 section (3) part (a).

- ***Laws governing the corporate practice of medicine:*** Although Massachusetts does not have a specific corporate practice of medicine statute, the state's highest court has endorsed the prohibition against corporations employing physicians and practicing medicine. Enabling retail chains or private investors to operate clinics may increase incentives for clinics to locate within the state. Similarly, allowing investors outside the state to open clinics within the state may spur the growth of retail clinics.

Although relaxing regulations will make it easier for clinics to locate in Massachusetts, such regulatory changes must be balanced against the need to protect consumers. The American Academy of Pediatrics (AAP), the American Medical Association (AMA), and the American Academy of Family Physicians (AAFP) have raised concerns that retail clinics may provide poor quality care and that allowing clinics to colocate with pharmacies or retail chains may result in financial conflicts of interest. Mantese and Nowakowski[213] reiterate some of these concerns, raising the possibility that clinic staff might face inappropriate incentives to prescribe medicine or to refer patients for follow-up care. To date, there is almost no evidence on the quality of care provided at retail clinics, although one study[214] found high adherence to evidence-based guidelines for strep throat in retail clinics operating out of two metropolitan areas. In addition, the Joint Commission (formerly the Joint Commission on Accreditation of Healthcare Organizations) provided accreditation for MinuteClinic retail clinics in 2006.[215]

How Would It Solve the Problem?

Retail clinics could produce savings in the health care system by reducing ED utilization for routine conditions, by diverting patients from more expensive to less expensive providers, and by increasing the proportion of the population that receives needed vaccines and preventive services. Other savings might come from retail clinics' low administrative costs, or from their high use of electronic medical records (EMRs). However, retail clinics could increase spending if they induce new demand for health services, if they overprescribe medications, or if they result in lower quality care.

What Has to Happen to Implement a Change?

Encouraging the growth of retail clinics would require regulatory changes to make it easier for retail clinics to locate in Massachusetts. Early attempts to allow retail clinics to operate in Massachusetts were delayed by difficulties in establishing guidelines and achieving buy-in from all relevant stakeholders.[216] For example, the mayor of Boston has been vocally opposed to retail

[213] T. Mantese and G. Nowakowski, *Retail Health Clinics-Trend Versus Tradition.* Health Lawyers Weekly, 2008.

[214] J.D. Woodburn, K.L. Smith, and G.D. Nelson, *Quality of Care in the Retail Health Care Setting Using National Clinical Guidelines for Acute Pharyngitis.* Am J Med Qual, 2007. 22(6): p. 457-62.

[215] MinuteClinic. *Minuteclinic Receives Jcaho Accreditation - Press Release*. [Web Page] 2006. Online at http://www.minuteclinic.com/Documents/Press-Releases/Minue_Clinic_Receives_JCAHO_Accreditation.pdf (as of September 20, 2006). (s of June 18, 2009).

[216] *Massachusetts Opens the Door-a Little-to Retail Clinic Expansion*. FierceHealthcare News Service July 18, 2007, FierceMarkets, Inc. As of June 18, 2009: http://www.fiercehealthcare.com/story/massachusetts-opens-door-little-retail clinic-expansion/2007-07-18

clinics because of concerns about patient safety, oversight, and fragmented care.[217,218] The Massachusetts Medical Society was also initially opposed to the clinics, but became more accepting after revised guidelines were established by the Department of Public Health, emphasizing a need for clinical oversight and attention to sanitation concerns.[219] However, in early 2008, the Commonwealth adopted a policy to allow retail clinics to operate within Massachusetts, and in July 2008, Harvard Pilgrim Health Care and Tufts Health Plan agreed to reimburse for member visits at CVS retail clinics.[220,221] By late January 2009, 14 retail clinics were operating in Massachusetts.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled the effect of policies aimed at expanding the number of retail clinics in the state of Massachusetts. These policies could include expedited review of retail clinic applications, changes in corporate practice of medicine laws, and a relaxation of physician oversight requirements for NPs and PAs.

What Were the Assumptions?

Upper-Bound Assumptions

We assumed that the number of retail clinics would increase by 30 clinics per year until 2010, a rate of increase that is consistent with Massachusetts' projection that 40 clinics will be open in the state by the end of 2009.[222] After 2010, we assumed that the rate of entry slows to 15 new clinics per year, implying a total of 220 clinics by 2020. We assumed that a retail clinic will see 10 patients per day in the year that it opens, growing to a maximum of 46 patients per day over 10 years. We extrapolated this rate of growth from figures reported by Scott,[223] which stated that it takes retail clinics approximately 18 to 24 months to reach a breakeven point of seeing 17–23 patients per day. We capped retail clinic visits at 46 patients per day, using the assumption that retail clinics can see at most four patients per hour, and that clinics are typically open 11.5 hours per day. With these assumptions, we estimated that Massachusetts retail clinics will see at most 330,000 patients annually in 2010, growing to 2.2 million patients by 2020. We further assumed that one-third of retail clinic visits replace an office-based visit, one-third of

[217] S. Smith, *Merino Decries Clinics in Retailers*, in *Boston Globe*. 2008, Globe Newspaper Company: Boston, MA.

[218] J. Krasner, *Insurers to Cover Drugstore Clinic Visits*, in *Boston Globe*. 2008, Globe Newspaper Company: Boston, MA.

[219] Massachusetts Medical Society, *Massachusetts Medical Society Expresses Praise, Caution on State Approval of Limited Service Clinics; Advocates "Medical Home" Concept for Best Care.* Press Release, 2008.

[220] J. Krasner, *Insurers to Cover Drugstore Clinic Visits*, in *Boston Globe*. 2008, Globe Newspaper Company: Boston, MA.

[221] Medical News Today Web site, (2008) *Massachusetts Insurers to Cover Retail Clinic Visits*. Medical News Today July 28, 2008, Advisory Board Company and Kaiser Family Foundation. As of June 18, 2009: http://www.medicalnewstoday.com/articles/116263.php

[222] Personal communication with representatives from the Massachusetts Department of Public Health (DPH).

[223] M.K. Scott and California HealthCare Foundation, *Health Care in the Express Lane : Retail Clinics Go Mainstream*. 2007, Oakland, CA: California HealthCare Foundation. 32 p.

retail clinic visits replace an ED visit, and one-third of retail clinic visits are newly induced care (derived from unpublished data reported by Wang and colleagues).[224]

In our upper-bound scenario, we incorporated Medicare enrollees into our calculations, on the assumption that Medicare enrollees will use retail clinics for their convenience. To assign savings across payers, we assumed that 42 percent of retail clinic visits were covered by insurance in 2008,[225] growing to 95 percent by 2015.

Lower-Bound Assumptions

In our lower-bound scenario, we assumed that retail clinics never successfully take hold in Massachusetts and that any savings (or any added expenses that might occur if retail clinics induce demand for health care) are negligible. We derived the lower-bound assumptions from pessimistic reports about the economic viability of retail clinics,[226] coupled with input from the Massachusetts Department of Public Health indicating that initial retail clinic utilization has been low.[227] We did not calculate start-up costs associated with corporate investment in retail clinics; we assumed that these costs are borne by investors outside the health care system and do not contribute to health care costs.

What Data Did We Use?

Data on the cost of a retail clinic visit came from prices reported by MinuteClinic.[228] Specifically, we assumed that a typical retail clinic visit cost $59 in 2008. Data to estimate the cost of ED and office-based visits came from the Medical Expenditure Panel Survey (MEPS).[229]

What Did We Conclude?

We estimated that, at a maximum, expanded use of retail clinics could save $6 billion (0.9 percent) between 2010 and 2020. Private insurers capture more than half of the savings because private insurers currently pay the majority of costs for ED and office-based visits. In our lower-bound scenario, we found no effect of retail clinics, because we assumed that they do not take off as a business strategy and have no noticeable effect on health spending.

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[224] M. Wang, G. Ryan, E.A. McGlynn, et al., *What Makes Retail Clinics Attractive: Lessons from Patients' Experience.* Am J Med Qual, In Press.

[225] M.K. Scott and California HealthCare Foundation., *Health Care in the Express Lane : Retail Clinics Go Mainstream*. 2007, Oakland, CA: California HealthCare Foundation. 32 p.

[226] D. Armstrong, *Health Clinics inside Stores Likely to Slow Their Growth*, in *Wall Street Journal (Eastern Edition)*. 2008. p. B-1.

[227] Personal communication with Massachusetts DPH staff.

[228] MinuteClinic/CVS Pharmacy Web site, MinuteClinic. *Treatment and Cost in Clinic Beverly, Boston Area, Ma,*. [Web Page] 2009. Online at http://www.minuteclinic.com/en/USA/MA/Boston/Beverly/Treatment-and-Cost.aspx (as of June 18, 2009).

[229] The Medical Expenditure Panel Survey, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

Table 5.1 shows estimated savings, overall and by payer, using both our upper- and lower-bound assumptions. In Table 5.2, we compare estimated total savings to projected spending in the status quo.

Table 5.1
Total Savings, Retail Clinics (in millions)

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	$0	$0	$0	–$108	–$1,594	–$6,271
Individual	$0	$0	$0	$0	–$67	–$375
Medicare	$0	$0	$0	–$23	–$316	–$1,212
Medicaid	$0	$0	$0	–$9	–$122	–$470
Private	$0	$0	$0	–$66	–$935	–$3,619
Other	$0	$0	$0	–$11	–$154	–$594

Table 5.2
Savings Relative to Status Quo, Retail Clinics (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	$0	$0	$0	–$108	–$1,594	–$6,271
% Savings	0.0%	0.0%	0.0%	–0.25%	–0.52%	–0.94%

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimate

Our lower-bound estimates assume that retail clinics do not succeed as a business model, and ultimately stop operating. There is some limited evidence to support this possibility. A 2008 *Wall Street Journal* article[230] suggested that retail clinics were struggling to maintain ground in the economy and that some chains were shutting stores or delaying plans for expansion. Using claims data from a large health plan in an urban area with high rates of retail clinic penetration (Minneapolis–St. Paul), Thygeson et al.[231] evaluated trends over time in retail clinic use for five conditions that can be treated in a retail clinic (conjunctivitis, otitis media, pharyngitis, sinusitis, infection of the lower genitourinary system). While use of retail clinics increased over

[230] D. Armstrong, *Health Clinics inside Stores Likely to Slow Their Growth*, in *Wall Street Journal (Eastern Edition)*. 2008. p. B-1.

[231] M. Thygeson, K.A. Van Vorst, M.V. Maciosek, et al., *Use and Costs of Care in Retail Clinics Versus Traditional Care Sites.* Health Aff (Millwood), 2008. 27(5): p. 10.

time, retail clinic visits accounted for less than 6 percent of all visits in the most recent year, even though analysis was limited to treatment episodes for conditions that could be treated in a retail clinic.

Findings that support upper-bound estimates

Thygeson et al.[232] found that retail clinic visits resulted in lower combined pharmaceutical and medical costs per episode than care provided in other settings (physician offices, urgent care clinics, and EDs). However, over time, costs increased in both retail clinic and non–retail clinic settings. Even if retail clinic costs per episode are lower than costs in other settings, one concern is that retail clinics could induce demand for care among individuals who would not have sought care otherwise. To date, no literature has considered the overall effect of retail clinics on health spending.

Our estimates do not consider the savings potential of on-site clinics, which are similar to retail clinics but located on-site at large businesses for use by employees and their families. As with retail clinics, on-site clinics offer inexpensive and convenient care for common conditions, and additional savings could be possible if on-site clinics were introduced alongside retail clinics. However, the effect of on-site clinics is uncertain, and there are several important differences from retail clinics that could influence savings potential. First, on-site clinics are typically accessible only by employees of large businesses and their families, a relatively healthy subset of the population that typically has good health insurance. Moreover, because they are located at individuals' places of business, they may not be as effective as retail clinics in replacing ED visits that occur outside typical business hours. However, these arguments are theoretical; to date, no empirical evidence has been gathered on the net spending effect of either retail clinics or on-site clinics.

What Are the Critical Design Features?

Guidelines published by the AAP, the AMA, and the AAFP encourage retail clinics to offer a well defined, limited scope of practice, to follow appropriate guidelines for evidence-based care, and to encourage the use of medical homes by referring patients to community-based physicians. These guidelines are intended to promote quality and continuity of care, and to reduce the possibility that patients with complex conditions requiring specialized treatment will seek care at retail clinics. But, to date, no studies have evaluated the degree to which retail clinics adhere to these guidelines or the implications of guideline adherence for quality and cost.

Are There Unintended Consequences That Might Result?

Negative unintended consequences associated with retail clinics could include fragmented care, erosion of doctor-patient relationships, overprescribing, and poor-quality care. Mantese and Nowakowski[233] further argue that retail clinics could pose challenges for adherence to Health Insurance Portability and Accountability Act (HIPAA) regulations, and that partnerships between physicians and corporate chains may violate legal restrictions against providing

[232] Ibid.

[233] T. Mantese and G. Nowakowski, *Retail Health Clinics-Trend Versus Tradition.* Health Lawyers Weekly, 2008.

financial remuneration for referring patients. In addition, the AAP argues that placing retail clinics in commercial stores could spread contagious disease.[234] The AAP has been particularly concerned about the potential unintended consequences associated with retail clinics, and publicly opposes their use.[235] Guidelines for retail clinics established by the Massachusetts Department of Public Health explicitly address many of AAP's concerns, with provisions related to improved sanitation and to credentialing of staff who treat pediatric patients.[236]

Currently, only one study assesses the effect of retail clinics on health process outcomes, and it suggests that the quality of care provided by retail clinics may be high. Woodburn, Smith, and Nelson[237] analyzed antibiotic prescriptions provided to 57,331 patients seeking treatment for acute pharyngitis (sore throat) at 28 MinuteClinics in Baltimore and Minneapolis–St. Paul. The study found that 99.8 percent of patients with a positive culture for strep throat received an antibiotic, and that antibiotics were not prescribed to 99.1 percent of patients with a negative strep-throat culture. These results suggest that retail clinics have high adherence to evidence-based guidelines, and they do not support the claim that retail clinics overprescribe medication.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Other policy options aimed at reducing unnecessary ED utilization and reducing the cost of primary care seek to save the same dollars as expanded use of retail clinics. In addition, the concept of retail clinics may be at odds with policy options that seek to strengthen relationships between patients and primary care physicians, such as the creation of medical homes.

Reforms That Could Be Combined with This One

Expanded use of retail clinics could be combined with reforms that expand the scope of practice of NPs and PAs. Broader scope of practice for nonphysician providers could make retail clinics more likely to locate in Massachusetts and could encourage NPs and PAs to practice in the state. Yet, expanded scope of practice for NPs and PAs could also encourage these professionals to practice independently outside of retail clinic environments. As a result, savings from expanding scope of practice (Option #7) and expanding the use of retail clinics are unlikely to be additive.

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[234] American Academy of Pediatrics (AAP), *AAP Principles Concerning Retail-Based Clinics.* 2006. Retail-Based Clinic Policy Work Group: Policy Statement - Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children. 1098-4275 (Electronic). Online at: http://www.aap.org/advocacy/releases/rbc.pdf (as of June 26, 2009).

[235] Ibid.

[236] Massachusetts Medical Society, *Massachusetts Medical Society Expresses Praise, Caution on State Approval of Limited Service Clinics; Advocates "Medical Home" Concept for Best Care.* Press Release, 2008. Online at: http://www.massmed.org/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=20774 (as of June 26, 2009).

[237] J.D. Woodburn, K.L. Smith, and G.D. Nelson, *Quality of Care in the Retail Health Care Setting Using National Clinical Guidelines for Acute Pharyngitis.* Am J Med Qual, 2007. 22(6): p. 457-62.

Savings from expanded use of retail clinics could potentially be additive with policy options aimed at reducing spending in hospital inpatient settings, such as traditional hospital rate regulation, bundled payment, disease management, and value-based insurance design. If retail clinics were to engage in disease management (by expanding their current scope of services), the expanded availability of services could complement the disease management policy option. In addition, through value-based insurance design, insurers could encourage the use of retail clinics by offering lower co-payments to people who use such clinics for routine, protocol-driven care.

Option #6
Create Medical Homes to Enhance Primary Care

I. Nature of the Problem

Considerable concern exists about the adequacy and future of primary care practices in the United States. Bodenheimer summarized the wide ranging nature of the problem in a 2006 article: "Patients are increasingly dissatisfied with their care and with the difficulty of gaining timely access to a primary care physician; many primary care physicians, in turn, are unhappy with their jobs, as they face a seemingly insurmountable task; the quality of care is uneven; reimbursement is inadequate; and fewer and fewer U.S. medical students are choosing to enter the field."[238] The primary care crisis has deepened, even though the health benefits of primary care are supported through a long-standing and deep evidence base.[239] One potential solution to the primary care crisis is the creation of advanced medical homes or patient-centered medical homes (hereinafter, we use the generic term "medical home"). The medical home has been designed to respond to both the need for patients to have someone orchestrating their care and the inadequacy of payment for primary care services.

II. Proposed Policy Option

What Is It?

This policy option would increase payments to primary care practices that function as a medical home, defined as "a practice-based structure that facilitates the delivery of comprehensive care and promotes strong relationships between patients and their primary care, physician-led team."[240] A medical home would manage chronically ill patients, improve access to primary

[238] T. Bodenheimer, *Primary Care—Will It Survive?* N Engl J Med, 2006. 355(9): p. 861-4.

[239] B. Starfield, L. Shi, and J. Macinko, *Contribution of Primary Care to Health Systems and Health.* Milbank Q, 2005. 83(3): p. 457-502.

[240] M. Sepulveda (2008) *The Medical Home, Round Two: Building on a Solid Foundation*. The Commonwealth Fund April 21, 2008, As of June 20, 2009: http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=678201

care, and perform quality improvement. In return, the practices would receive additional payments. Advocates hope that the result will be improved patient care, improved career satisfaction for primary care physicians, and reduced costs through better care management. Achieving all these goals will be challenging, particularly in the short term.

Key principles for medical homes have been developed by a number of professional organizations, including the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Physicians (ACP), and the American Osteopathic Association (AOA):[241]

- Each patient has a personal physician trained to provide comprehensive care.
- The personal physician leads a practice-level team that takes collective responsibility for the patient's ongoing care.
- The personal physician is responsible for providing all of the patient's health care needs or for arranging for appropriate care from others.
- Care is coordinated or integrated across all parts of the health care system.
- Quality and safety are facilitated through a variety of mechanisms, including use of evidence-based medicine to guide decisionmaking, continuous quality improvement processes, and patient participation in decisionmaking.
- Enhanced and convenient access to care is available.

Using these principles, the National Committee for Quality Assurance (NCQA) has developed a method for official recognition of physician practices as medical homes.[242]

How Would It Solve the Problem?

Medical homes could improve care and potentially reduce total health care costs through reduced utilization of avoidable inpatient and emergency care services. However, current health care payment systems generally do not support the activities of a medical home. Insurers could pay for medical home services through several different arrangements. A per-member per-month (PMPM) payment could be made for enrolled populations to practices qualifying as medical homes; subsidies or incentive payments could be used to reward practices for creating a medical home model; or medical home services, such as payment for care coordination by a nurse, could be reimbursed.

Medical homes could potentially save money as better primary care substitutes for lower utilization of avoidable inpatient and emergency services and other services resulting from poor care coordination. However, these savings would need to be substantial to outweigh the higher payments to medical homes. The costs of medical homes vary widely, from $5 to $150 per

[241] AAFP, AAP, ACP, et al., *Joint Principles of the Patient-Centered Medical Home.* 2007. As of June 20, 2009: http://www.aafp.org/online/etc/medialib/aafp_org/documents/policy/fed/jointprinciplespcmh0207.Par.0001.File.dat/022107medicalhome.pdf

[242] National Committee for Quality Assurance Web site, Physician Practice Connections®—Patient-Centered Medical Home™ page. As of June 20, 2009: http://www.ncqa.org/tabid/631/Default.aspx

member per month, reflecting the heterogeneity in design and function of interventions.[243] A question worth considering is: Do all patients benefit equally from a medical home model, or is the model only appropriate for particular types of patients (e.g., those with multiple chronic diseases)? A related question is: What level of investment is required to achieve the optimal results from a medical home, and does that level of investment vary by characteristics of the practice, population served, community, and other factors?

Most designs for medical homes involve three key functions that could reduce costs:

- Improved management and coordination of care for chronically ill patients
- Use of health information technology (HIT)
- Improved access to care, such as 24-hour call access and same-day scheduling.

What Has to Happen to Implement a Change?

Several medical home initiatives are under way in Massachusetts that generally provide funding for physician practices that function as medical homes:

- The Massachusetts Medical Home Project, initiated in 2001, aims to ensure access to a medical home for every child with special health care needs.[244]
- The new cost containment law established a medical home demonstration project in the MassHealth program.[245]
- Private groups are also experimenting with medical home models, such as those funded by the Cambridge Health Alliance and Harvard Pilgrim Health Care.[246]

If initial results are promising, expanded pilot programs could be tested in the Medicaid and commercially insured populations. Several states have implemented medical home initiatives via multipayer collaboratives convened and supported by the state government. Medicare is implementing a national medical home demonstration project as well.

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[243] R. Berenson. *Payment Approaches and Cost of the Patient-Centered Medical Home*. in *Stakeholders' Working Meeting, Patient-Centered Primary Care Collaborative*. 2006. Washington, DC. July 16, 2006. As of June 26, 2009: www.pcpcc.net/files/July16th/IIa.%20Berenson.ppt

[244] The American Academy of Pediatrics' National Center of Medical Home Initiatives for Children with Special Needs, *The Massachusetts Medical Home Initiative: An Interagency Strategic Plan for the Development of Medical Homes for Children with Special Health Care Needs, 2001-2010.* 2007. The American Academy of Pediatrics. As of June 20, 2009: http://www.medicalhomeinfo.org/grant/states/MASSAC~1.PDF

[245] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[246] A. Dember, *A More Welcoming Model for Care*, in *Boston Globe*. 2007, Globe Newspaper Company: Boston, MA. As of June 20, 2009: http://www.boston.com/news/health/articles/2008/05/19/a_more_welcoming_model_for_care/

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled a policy change in which Medicaid and private payers offer financial incentives to providers to establish and maintain medical homes serving patients ages 18 through 64.

What Were the Assumptions?

We assumed medical homes are adopted by physician practices treating patients ages 18–64. We further assumed that the average practice has 3 FTE physicians and a panel of 1,750 patients in the targeted age range. (Medicare is separately conducting a medical home demonstration.) We assumed that practices receiving medical home payments must improve care coordination for chronically ill patients in the practice panel, improve access to care for all patients, and maintain a functional HIT system.

Upper-Bound Assumptions

The scenario assumed that the medical home is paid $6 PMPM for medical home services. This payment is at the low end of estimates of medical home costs,[247] in accordance with an upper-bound estimate of net savings. Our disease management estimates provided in a separate module (Option #8) assumed a $500 annual cost for program services per chronically ill beneficiary, which is higher than the $6 PMPM medical home cost assumed here because that program also covers other services. We assumed that improved chronic disease management achieves a 25-percent reduction in spending on emergency department (ED) care for patients with six conditions (coronary artery disease, chronic obstructive pulmonary disease, asthma, diabetes, depression, and congestive heart failure), as well as a 25-percent reduction in inpatient spending and a 3-percent increase in pharmaceutical costs. These savings are similar to the upper-bound estimates used in our disease management module. We further assumed that improved access to care leads to a 25-percent reduction in ED spending for patients who do not have any of the six chronic conditions.

We assumed that medical homes achieve the full benefits modeled in our upper-bound HIT estimates (Option #9), including savings from transcription, chart pulls, lab tests, drug utilization, and radiology. We assumed that the practice had previously implemented HIT, but we included the cost of maintenance in our estimates.

In the absence of reliable data on the share of practices currently operating as medical homes, we assumed that 20 percent of Massachusetts' primary care practices can be classified as medical homes at baseline, growing to 100 percent in 5 years.

Lower-Bound Assumptions

In the lower-bound model, we assumed that the medical home is paid $12 PMPM, but that savings accrue only through the use of HIT. The lower-bound assumptions, which are consis-

[247] The $5 PMPM low-end estimate of medical home payment costs for a time period of ~2007 was adjusted for medical inflation to $6 PMPM in 2010.

tent with studies finding that disease management may not always save money,[248,249,250] represent a conservative estimate of the unknown effect of improved access on health care costs for patients without chronic illness. As in the upper bound, we assumed that the medical home achieves the full benefits of HIT.

To estimate participation, we assumed that 10 percent of Massachusetts' primary care practices are currently operating as medical homes, growing to 50 percent in 5 years (and then holding constant).

What Data Did We Use?

To estimate the cost of care for patients ages 18 through 64, we used data from the Medical Expenditure Panel Survey (MEPS).[251] Payments for medical homes were derived from published literature, as well as from conversations with stakeholders in Massachusetts. We made a number of assumptions to estimate savings for medical homes, such as the current rate of adoption and the potential increase in adoption over time. Assumptions for the upper-bound and lower-bound scenarios were taken from other modules discussed in this report, primarily, disease management (Option #8) and health information technology (Option #9).

What Did We Conclude?

Table 6.1 shows estimated savings based on our model, for 2010, 2010–2015, and 2010–2020. We did not attempt to disaggregate savings by payer. In our upper-bound scenario, medical homes achieve savings of $5.7 billion, or less than 1 percent, between 2010 and 2020. In our lower-bound estimates, any savings related to medical homes are outweighed by the costs, resulting in increased spending.

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[248] S. Mattke, M. Seid, and S. Ma, *Evidence for the Effect of Disease Management: Is $1 Billion a Year a Good Investment?* Am J Manag Care, 2007. 13(12): p. 670-6.

[249] United States Congressional Budget Office, *An Analysis of the Literature on Disease Management Programs*. CBO Paper. 2004, Washington, D.C.: United States Congressional Budget Office. 37 p. As of June 20, 2009: http://www.cbo.gov/ftpdocs/59xx/doc5909/10-13-DiseaseMngmnt.pdf

[250] R.Z. Goetzel, R.J. Ozminkowski, V.G. Villagra, et al., *Return on Investment in Disease Management: A Review.* Health Care Financ Rev, 2005. 26(4): p. 1-19.

[251] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how the services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

Table 6.1
Savings Relative to Status Quo, Medical Homes (in millions)[a]

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	$46	$1,101	$2,882	–$91	–$2,182	–$5,713
% Savings	0.11%	0.36%	0.43%	–0.21%	–0.71%	–0.85%

[a] Savings estimates exclude the Medicare population.

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimate

There is limited evidence to date regarding the effect of medical home initiatives on total spending, although there is evidence suggesting that various elements of the medical home model might reduce spending. However, it is uncertain whether these reductions would exceed the investment required to establish and maintain medical homes. Further, many practices will require substantial investments in order to become medical homes.[252] Early experience from practices in medical home pilots suggests that the period needed for full transformation could be in the range of 2–5 years, depending on the practice's capabilities at the outset.[253] Many benefits may not start to accrue until after the transformation period. A demonstration project found that practices becoming medical homes developed "change fatigue" fueled by setbacks, including "staff turnover, embezzlement, death or illness in the family, financial worries, personal and personnel problems, inconsistent technology, and the bureaucratic systems['] moving at a glacial pace," among others.[254] Because medical homes are relatively new, we do not know whether widespread adoption of the model will lead to significant variation in the characteristics of these practices and their ability to deliver services more effectively than in their current configurations.

Findings that support the upper-bound estimate

Several pilot projects are evaluating medical home models, including one in the Medicare program, but to date there is limited evidence on their effect. Preliminary results from a medical home initiative in the Geisinger Health System show a 7-percent net savings, accomplished

[252] S.H. Stewart, A. Reuben, W.A. Brzezinski, et al., *Preliminary Evaluation of Phosphatidylethanol and Alcohol Consumption in Patients with Liver Disease and Hypertension.* Alcohol Alcohol, 2009. As of June 20, 2009: http://www.transformed.com/evaluatorsReports/index.cfm.

[253] D. Klitgaard. *Health Care Transformation: The Journey toward a Medical Home*. in *Patient-Centered Primary Care Collaborative Stakeholders' Meeting*. 2008. Washington, DC. July 16, 2008. As of June 26, 2009: www.pcpcc.net/files/July16th/Lunch%20-%20Klitgaard-Magee.ppt

[254] S.H. Stewart, A. Reuben, W.A. Brzezinski, et al., *Preliminary Evaluation of Phosphatidylethanol and Alcohol Consumption in Patients with Liver Disease and Hypertension.* Alcohol Alcohol, 2009.

through a 20-percent reduction in hospital admissions.[255] Several studies are available on medical homes for children with special health care needs, which have a longer track record than medical homes for adult populations. One study found some evidence for reduced use of emergency and inpatient care,[256] but another did not. [257] These studies are limited to a select number of practices treating children with special health care needs and have limited generalizability.

Several evaluations have been conducted of Community Care of North Carolina (CCNC), a Medicaid medical home program. This program builds on a primary care case management model in North Carolina Medicaid known as Access, adding disease management, utilization management, and quality improvement components.[258] Two evaluations found that CCNC led to cost savings relative to benchmarks. Mercer compared CCNC enrollee spending to synthetic benchmarks, which were estimated using historical spending data for Medicaid beneficiaries.[259] The Sheps Center compared CCNC enrollee spending to Access enrollee spending.[260] Both estimates may reflect any systematic differences that might exist between CCNC enrollees and members of the comparison groups used.

Strong evidence supports the broad concepts underlying the medical home. Primary care has been shown to improve health, reduce disparities, and reduce use of inpatient and emergency services.[261,262] The Chronic Care Model, a system for providing high quality chronic disease care that is the basis for many elements of the medical home, has generally been found to improve quality and reduce costs, although findings for specific elements and specific chronic diseases have been mixed.[263] Specific elements of medical homes (such as care management, use of health information technology for decision support, formal quality improvement programs, and 24-hour patient communication and rapid access) have individually been shown to have benefits.[264] There is, however, less evidence about the effects of all of these concepts combined

[255] R.A. Paulus, K. Davis, and G.D. Steele, *Continuous Innovation in Health Care: Implications of the Geisinger Experience.* Health Aff (Millwood), 2008. 27(5): p. 1235-45.

[256] NICHQ (National Initiative for Children's Healthcare Quality), *Spread of the Medical Home Concept: Comprehensive Final Report.* 2006. National Initiative for Children's Healthcare Quality: Cambridge, Mass. As of June 26, 2009: http://www.medicalhomeinfo.org/model/downloads/LC/MHLC_2_Final_Report_Final.doc

[257] A.B. Martin, S. Crawford, J.C. Probst, et al., *Medical Homes for Children with Special Health Care Needs: A Program Evaluation.* J Health Care Poor Underserved, 2007. 18(4): p. 916-30.

[258] Community Care of North Carolina Web page, n.d. As of June 20, 2009: http://www.communitycarenc.com/

[259] K. Lurito, CCNC/Access Cost Savings – State Fiscal Years 2005 and 2006 Analysis, September 19, 2007. September 19, 2007. As of June 20, 2009: http://www.communitycarenc.com/PDFDocs/Mercer%20SFY05_06.pdf

[260] T.C. Ricketts, North Carolina Rural Health Research and Policy Analysis Center., and Cecil G. Sheps Center for Health Services Research, *Evaluation of Community Care of North Carolina Asthma and Diabetes Management Initiatives: January 2000-December 2002*. 2004, Chapel Hill, N.C.: North Carolina Rural Health Research and Policy Analysis Center : Cecil G. Sheps Center for Health Services Research, University of North Carolina. 41 p. Available at: http://www.communitycarenc.com/PDFDocs/Sheps%20Eval.pdf, last accessed February 11, 2009.

[261] B. Starfield, L. Shi, and J. Macinko, *Contribution of Primary Care to Health Systems and Health.* Milbank Q, 2005. 83(3): p. 457-502.

[262] B. Starfield and L. Shi, *The Medical Home, Access to Care, and Insurance: A Review of Evidence.* Pediatrics, 2004. 113(5 Suppl): p. 1493-8.

[263] A summary of the literature on the Chronic Care Model is available at: http://www.improvingchroniccare.org/index.php?p=Chronic_Care_Model_Literature&s=64 and http://rand.org/health/projects/icice/index.html. Last accessed July 24, 2008.

[264] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2008. MedPAC: Washington, DC.

into a single delivery mechanism under different organizational hosts (e.g., solo or small group practice versus large multispecialty group or integrated system) or for different types of patients (healthy young patients versus older multimorbid patients).

What Are the Critical Design Features?

Sufficient revenue is required for physician practices to transform into medical homes. Some insurance plans are implementing medical home pilots on their own.[265] However, unless the plan has a large enough market share, it may not be able to invest enough resources to enable transformation of practices. Multipayer collaboratives may increase the investment in and thus feasibility of medical home programs. State involvement could help groups of payers and other stakeholders to coordinate medical home program implementation.

Evaluations are needed to determine the effects of medical homes on outcomes and costs and the design of medical homes that are more or less successful in achieving desired results.[266]

Potential Unintended Consequences

Expectations for medical homes are high, and advocacy is strong. If initial evaluations of medical home pilots fail to find the hoped for results on costs and outcomes, a backlash could potentially ensue. It is certainly possible that medical homes will increase costs, particularly if used with relatively healthy populations. It also is not completely clear how to identify a medical home, and some of the approaches being used are likely to result in considerable variability in the quality and efficiency of these organizations.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

The medical home combines aspects of several other policy changes. Many of the expected savings would come through better management of chronic disease, directly duplicating efforts of disease management programs. Other expected savings would accrue through use of HIT, directly duplicating the effects of other policies encouraging expanded adoption and use of HIT. Increased access to primary care is another key component of medical homes. Other options, such as value-based insurance design and retail clinics, also seek to save money through decreasing unnecessary emergency visits.

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[265] The Patient Center Primary Care Collaborative. *The Patient-Centered Medical Home: A Purchaser Guide*. [Web Page] 2008. Online at http://www.pcpcc.net/content/purchaser-guide (as of July 24, 2008). Available at: http://www.pcpcc.net/content/purchaser-guide. Last accessed July 24, 2008.

[266] B. Landon. *Evaluating the Patient-Centered Medical Home: How Will We Know If It Works?* in *Patient-Centered Primary Care Collaborative Stakeholders' Meeting*. 2008. Washington, DC. July 16, 2008. Available at: http://www.pcpcc.net/content/july-16-pcpcc-stakeholders-working-meeting-agenda-and-presentation-files (as of July 24, 2008).

Those That Might Be Combined with This One

As described above, medical homes combine several other policy changes, including disease management and HIT adoption.

Option #7
Encourage Greater Use of Nurse Practitioners and Physician Assistants

I. Nature of the Problem

Nurse practitioners (NPs) and physician assistants (PAs) are health care providers capable of performing a range of services, including physical examinations, ordering and interpreting diagnostic tests, treating and managing a variety of acute, episodic, and chronic conditions, prescribing medications, and certain invasive procedures. Nationally, the supply of NPs and PAs increased substantially between 1994 and 2001,[267] and these trends appear to have continued in Massachusetts through 2007.[268] Visits to NPs and PAs are considerably less expensive than visits to MDs. According to data from the Medical Expenditure Panel Survey (MEPS), the average cost of an NP or PA visit is between 20 and 35 percent lower than the average cost of an office-based visit with a physician.[269]

Even though they are educated to perform many routine aspects of primary and specialty care[270] and even though studies have shown that they provide care similar to that provided by physicians,[271,272] PAs and NPs generally cannot practice as independent medical providers and therefore are underutilized in the provision of primary care. State scope-of-practice laws[273] delineate what medical care PAs and NPs can provide and under what circumstances they may do so. Scope of practice refers to the activities that particular health care providers are permitted to

[267] R.S. Hooker and L.E. Berlin, *Trends in the Supply of Physician Assistants and Nurse Practitioners in the United States - If Numbers of Nps Continue to Fall, Some Underserved Populations Might Not Receive Even the Levels of Primary Care They Do Now.* Health Aff (Millwood), 2002. 21(5): p. 8.

[268] Data were provided to RAND by the Massachusetts Department of Public Health, Bureau of Health Care Safety and Quality.

[269] The 20-percent figure represents national data from the MEPS, and the 35-percent figure represents data specific to Massachusetts.

[270] For example, NPs are educated to practice in a variety of settings other than primary care, including ambulatory care, acute care, long-term care, and the emergency department, and to provide specialty care in, for example, neonatology, oncology, cardiovascular medicine, orthopedics, urology, and gerontology.

[271] See American College of Nurse Practitioners Web site. *NP Effectiveness—Outcome Studies and Articles*. [Web Page] 2009. Online at http://www.acnpweb.org/i4a/pages/index.cfm?pageID=3321 (as of June 27, 2009).

[272] *See*, for example, R.S. Hooker and L.F. McCaig, *Use of Physician Assistants and Nurse Practitioners in Primary Care, 1995-1999 - Nonphysician Providers Often Spend More Time with Patients and Order Fewer Tests.* Health Aff (Millwood), 2001. 20(4): p. 8.

[273] By scope-of-practice laws we refer generally to the statutes, regulations, and board of registration actions that determine the circumstances under which a particular professional can practice in the Commonwealth.

perform based on their education, training, and experience.[274] Scope-of-practice laws vary considerably across states, but they typically specify the amount of physician supervision required and whether NPs or PAs have authority to diagnose, order tests, make referrals to other health care providers, and prescribe drugs and controlled substances.[275] Given widespread agreement that there is a critical shortage of primary care physicians in the Commonwealth, expanding scope-of-practice laws could be a viable mechanism for increasing primary care capacity and reducing health care costs. Other policy options, such as reference pricing, could also be used to encourage more frequent use of NPs and PAs.

II. Proposed Policy Option

What Is It?

The Massachusetts Legislature and administrative agencies could revise the law to allow PAs and NPs to practice more independently in the Commonwealth. Under a changed scope of practice, public and private insurers could choose to reimburse PAs and NPs directly for their services (as opposed to reimbursing them as a part of clinics or physician practices) and could allow consumers to choose a nonphysician provider as their primary care physician. Insurers in Massachusetts could also encourage the use of NPs and PAs through their reimbursement policies. Some specific policy options include:

- Allow NPs and PAs to practice independently, without physician oversight. Currently, Massachusetts provides authority within the NP scope of practice to diagnose and to prescribe, but only with the involvement of a physician and when following a written protocol.[276] PAs in Massachusetts also require physician oversight, and until recently, physicians were not allowed to supervise more than two PAs at any one time.[277] Under Section 16 of the new cost containment statute, the number is doubled (from 2 to 4).[278]
- Allow greater practice autonomy for NPs by eliminating the requirement that the Board of Registration in Nursing consult and reach consensus with the Board of Registration in Medicine to promulgate its Advanced Practice Nursing regulations.[279] The Board of Registration in Nursing supports greater autonomy for NPs, as evidenced by its proposed revisions of regulations governing NP practice, which

[274] Federation of State Medical Boards, *Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety.* 2005. As of June 29, 2009: http://www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

[275] S. Christian, C. Dower, and California HealthCare Foundation, *Scope of Practice Laws in Health Care: Exploring New Approaches for California.* 2008. California Healthcare Foundation: Oakland, CA. As of June 27, 2009: http://www.chcf.org/topics/view.cfm?itemID=133590

[276] The General Laws of Massachusetts, Ch. 112, § 80B, § 80E; 244 Code of Massachusetts Regulations 4.05, 4.22, 4.26(2).

[277] The General Laws of Massachusetts, Ch. 112, § 9E; 263 Code of Massachusetts Regulations 5.00 et seq.

[278] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[279] This requirement is found at The General Laws of Massachusetts, Ch. 112, § 80B.

have been pending consideration by the Board of Registration in Medicine for the past several months.[280]

- Reimburse NPs and PAs directly for their services. Under existing scope-of- practice laws in Massachusetts as elsewhere, physicians (and hospitals) determine what services NPs and PAs can provide and what the charges will be for those services. Because nonphysician providers cannot bill directly for their services, bills presented to insurers often are not transparent. The billing may not even indicate who provided the treatment (a physician, or a PA or NP working under a physician's supervision). Were the state to allow nonphysician providers to practice independently, and therefore bill directly for their services, payers would have the option to pay differential rates for primary care services, driving down the rates for routine care. However, the level of differential payments and whether the lower prices stimulated increased demand for primary care services would determine the extent of any savings.
- Allow consumers to designate a PA or NP as their primary care provider. Section 28 of the new cost containment law accomplished this goal for NPs. It requires that all insurance carriers provide their insured members the opportunity, on a nondiscriminatory basis, to select a NP as a primary care provider (defined as a health care professional qualified to provide general medical care for common health problems; supervise, coordinate, prescribe, or otherwise provide or propose health care services; initiate referrals for specialist care; and maintain continuity of care within the scope of practice).[281] The provision does not apply to PAs.
- Use provider payment options (such as capitation and case rates) that would encourage physicians to utilize PAs and NPs. Providers or provider organizations that accept risk (such as in capitation or case rate payment) will have an economic incentive to employ NPs and PAs, whereas those paid on a fee-for-service basis may not. As observed by the Pew Commission, "capitated payments will fundamentally alter how services are reimbursed and consequently, who provides those services. The cost-saving imperatives explicit in capitation will move service delivery to the least costly practitioners. Moreover, third-party payers likely will focus more on services than on providers in determining reimbursement."[282]
- Reimburse the same amount for basic medical services, whether provided by a physician, a PA, or an NP. This option may encourage health care organizations to delegate more basic and routine medical care to NPs and PAs.[283]

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[280] Proposed revisions to 244 Code of Massachusetts Regulations 4.00 et seq.

[281] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[282] L.J. Finocchio, C.M. Dower, T. McMahon, et al., *Reforming Health Care Workforce Regulation: Policy Considerations for the 21st Century.* 1995. Pew Health Professions Commission: San Francisco, CA. Report of the Taskforce on Health Care Regulation.

[283] United States Congressional Budget Office, *Background Paper: Physician Extenders: Their Current and Future Role in Medical Care Delivery*. CBO Background Paper. 1979, Washington, D.C.: United States Congressional Budget Office. 66 p.

How Would It Solve the Problem?

Encouraging greater use of NPs and PAs could enable more efficient spending on routine primary care, since visits with NPs and PAs are considerably less expensive than visits with physicians. Despite the lower cost of PAs and NPs, utilization of these practitioners is low. MEPS data indicate that only 4.8 percent of office-based visits in Massachusetts, and 6.4 percent of office-based visits nationwide, are provided by NPs or PAs. The share of routine primary care that is currently provided by NPs and PAs could also be expanded.

What Has to Happen to Implement a Change?

The Commonwealth would need to revise existing law to broaden the scope of practice for NPs and PAs. In addition, with or without changing the scope-of-practice laws, the Commonwealth (as a purchaser) and private health insurers might explore options that would provide financial incentives to integrated delivery systems and physician practices to expand their use of PAs and NPs.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled increased use of NPs and PAs for basic primary care in Massachusetts, assuming that any additional utilization of NPs and PAs would substitute for existing visits with physicians. Because there is uncertainty regarding the amount of office-based care that NPs and PAs could provide, our upper- and lower-bound models differ in the total amount of care provided by NPs and PAs.

What Were the Assumptions?

To model the potential savings associated with greater use of NPs and PAs, we assumed that utilization patterns could be changed in Massachusetts, which would induce the existing NPs and PAs to provide more care without incurring additional costs. In both our upper- and lower-bound savings scenarios, we assumed that savings would phase in over 5 years, beginning in 2010. The phase in period takes into account the possibility that, even after scope-of-practice laws are changed, it may take time for patients and providers to change their utilization patterns. We included Medicare in our savings projections, under the assumption that Medicare patients would also see NPs and PAs as the use of these practitioners becomes more commonplace.

We calculated the savings attributable to increased use of NPs and PAs, using the cost difference between an average physician visit and an average visit with an NP or PA. Using the Massachusetts-specific MEPS data, we estimated that NP and PA visits are 35 percent less expensive than physician visits, a difference of $72 per visit in 2008 dollars. We combined PA and NP visits to get an average overall cost, because the number of PA visits in our sample is too small to generate reliable estimates.

Upper-Bound Assumptions

The total amount of office-based care that could be provided by NPs and PAs is uncertain. As an upper bound, we assumed that NPs and PAs could provide all care for 6 simple acute conditions (cough, throat symptoms, fever, earache, skin rash, and nasal congestion), corresponding to the subset of conditions commonly treated at retail clinics,[284,285] as well as for all general medical examinations and well-baby visits. We do not have data specific to Massachusetts; however, we do know that visits related to the 6 simple acute conditions plus well-baby visits and general medical examinations represent 18.1 percent of all office-based visits nationally.[286] We therefore assumed in this scenario that NP and PA utilization increases from 4.8 percent to 18.1 percent of all office-based care in Massachusetts over a 5-year period.

Lower-Bound Assumptions

For our lower-bound scenario, we estimated that NPs and PAs could provide care for the 6 simple, acute conditions discussed above, but not for well-baby care and general medical examinations. These 6 conditions used in the lower-bound scenario represent 9.2 percent of all office-based visits nationally.[287] So, for our lower-bound estimates, we assumed that, over a 5-year period, the total amount of care provided by NPs and PAs would increase from 4.8 percent to 9.2 percent.

What Data Did We Use?

Data to estimate the cost of care provided by NPs, PAs, and physicians, as well as data to estimate the share of care provided by NPs and PAs in the status quo, came from MEPS. Data to estimate the maximum amount of care that could be provided by NPs and PAs (for the upper- and lower-bound scenarios) came from a study that used the National Ambulatory Medical Care Survey.[288]

What Did We Conclude?

Table 7.1 shows our savings estimates, overall and by payer, for 2010 and cumulatively for 2010 through 2015 and 2010 through 2020. In Table 7.2, we report projected total spending, given the current policy environment in Massachusetts, estimated total savings due to expanded use of NPs and PAs, and the percentage change in spending that could be expected, given the change in NP and PA utilization. We projected that, between 2010 and 2020, Mas-

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[284] A. Mehrotra, M.C. Wang, J.R. Lave, et al., *Retail Clinics, Primary Care Physicians, and Emergency Departments: A Comparison of Patients' Visits.* Health Aff (Millwood), 2008. 27(5): p. 1272-82.

[285] MinuteClinic. *Treatment and Cost in Clinic Beverly, Boston Area, MA* [Web Page] 2009. Online at http://www.minuteclinic.com/en/USA/MA/Boston/Beverly/Treatment-and-Cost.aspx (as of June 18, 2009). As of June 27, 2009: http://www.minuteclinic.com/en/USA/Treatment-and-Cost.aspx

[286] D.K. Cherry, E. Hing, D.A. Woodwell, et al., *National Ambulatory Medical Care Survey: 2006 Summary.* Natl Health Stat Report, 2008(3): p. 1-39.

[287] Ibid.

[288] D.K. Cherry, E. Hing, D.A. Woodwell, et al., *National Ambulatory Medical Care Survey: 2006 Summary.* Natl Health Stat Report, 2008(3): p. 1-39.

sachusetts could save $4.2 to $8.4 billion through greater reliance on NPs and PAs in the delivery of primary care.

Table 7.1
Total Savings, Expand Scope-of-Practice for Nurse Practitioners and Physician Assistants (in millions)

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	–$66	–$1,601	–$4,246	–$130	–$3,151	–$8,353
Individual	–$9	–$214	–$567	–$17	–$421	–$1,116
Medicare	–$16	–$378	–$1,003	–$31	–$744	–$1,974
Medicaid	–$6	–$145	–$385	–$12	–$286	–$758
Private	–$30	–$730	–$1,935	–$59	–$1,436	–$3,808
Other	–$6	–$134	–$355	–$11	–$263	–$698

Table 7.2
Savings Relative to the Status Quo, Expand Scope of Practice of Nurse Practitioners and Physician Assistants (in Millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$66	–$1,601	–$4,246	–$130	–$3,151	–$8,353
% Savings	–0.15%	–0.52%	–0.63%	–0.30%	–1.03%	–1.25%

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimates

As discussed below, the majority of the literature supports the upper-bound findings shown in Tables 7.1 and 7.2, since prior literature has found that NPs and PAs provide equivalent quality care at a lower cost than physicians for a wide range of services. One potential threat to achieving the upper-bound estimate is that the number of NPs and PAs in active practice in Massachusetts may not be adequate to provide a substantial share of all office-based care. However, there are an adequate number of licensed practitioners in the state, which suggests that if those who are not currently practicing choose to return to clinical care in response to this policy change, the current supply is adequate. According to the Massachusetts Department of Public Health, 5,713 NPs and 1,601 PAs were licensed in Massachusetts in 2007. Hooker and

Berlin[289] report that a typical PA in family practice provides 105 outpatient visits per week, and that a typical NP provides 75 visits per week. Assuming that a full-time NP or PA works 46 weeks per year (allowing for 4 weeks of vacation and 10 holidays), these figures imply that the number of NPs and PAs in Massachusetts could provide 27 million visits per year. Yet, MEPS data for Massachusetts indicate that only 1.8 million office-based visits are provided annually by NPs and PAs.[290]

The stark difference between the actual number of visits provided by NPs and PAs and the projected number of potential visits may be due to several factors. Hooker and Berlin report that only 86 percent of PAs and 57 percent of NPs are practicing with the title of NP or PA, suggesting that many NPs and PAs are either outside the labor force or are practicing in a sub-optimal capacity. Moreover, according to Hooker and Berlin,[291] 11.7 percent of practicing PAs and 32.2 percent of practicing NPs were employed part-time in 2001. Prior research suggests that the supply of NPs is influenced both by scope-of-practice and reimbursement policies, and that a greater supply is available in states with more expansive scope-of-practice regulations.[292] To the extent that higher reimbursement would be needed to encourage nonpracticing NPs and PAs to enter the market, our lower-bound estimates might be more attainable than the upper-bound figures.

An additional issue that might support the lower-bound rather than the upper-bound estimate is that garnering consensus to expand scope of practice for NPs and PAs may be challenging. Proposed changes in scope-of-practice laws are "among the most highly charged policy issues facing state legislators and health care regulators,"[293] often triggering "turf battles among professions" that have at times lasted over a period of years.[294,295] The various constituencies "bring their own goals, biases, and agendas to a process that is often highly politicized and lacking in standardized guidelines."[296]

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[289] R.S. Hooker and L.E. Berlin, *Trends in the Supply of Physician Assistants and Nurse Practitioners in the United States - If Numbers of NPs Continue to Fall, Some Underserved Populations Might Not Receive Even the Levels of Primary Care They Do Now.* Health Aff (Millwood), 2002. 21(5): p. 8.

[290] These figures are based on pooled Massachusetts-specific MEPS data from the years 2000–2005. A potential concern is that, even in the pooled data, sample size in the Massachusetts MEPS is low (e.g., there were only 261 observations with a nurse-based office expense). Yet, even if we extrapolate NP/PA utilization rates for Massachusetts based on the national MEPS data, we predict no more than 2 million visits annually to NPs and PAs combined.

[291] R.S. Hooker and L.E. Berlin, *Trends in the Supply of Physician Assistants and Nurse Practitioners in the United States - If Numbers of Nps Continue to Fall, Some Underserved Populations Might Not Receive Even the Levels of Primary Care They Do Now.* Health Aff (Millwood), 2002. 21(5): p. 8.

[292] P.Y. Huang, E.M. Yano, M.L. Lee, et al., *Variations in Nurse Practitioner Use in Veterans Affairs Primary Care Practices.* Health Serv Res, 2004. 39(4 Pt 1): p. 887-904.

[293] Federation of State Medical Boards, *Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety.* 2005. As of June 29, 2009: http://www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

[294] Ibid. As of June 29, 2009: http://www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

[295] S. Christian, C. Dower, and California HealthCare Foundation, *Scope of Practice Laws in Health Care: Exploring New Approaches for California.* 2008. California HealthCare Foundation: Oakland, CA.

[296] Ibid.

Findings that support upper-bound estimates

Our upper-bound estimates are supported by findings that suggest that NPs and PAs can deliver care for a large fraction of diagnoses at equivalent quality and lower cost than physicians. In a study of the use of PAs in managed care settings, Hooker and Freeborn (1991) found that PAs were capable of providing care for 86 percent of the diagnoses seen in outpatient primary care settings, with high patient acceptance, and that the cost of a PA ranged from 25 to 53 percent of the cost of a physician.[297] Similarly, Grzybicki found that PAs saw the same types of patients and rendered the same care as physicians 86 percent of the time.[298] Hooker (1992), in a comparison of productivity among PAs, NPs, and physicians, found that PAs/NPs generally saw 10 percent more patients annually in the ambulatory setting than physicians, because physicians' collateral and hospital responsibilities often took them out of the ambulatory setting. However, productivity based on the number of patients seen per hour was the same for all three types of providers.[299]

Other studies have found comparable quality of care provided by NPs, PAs, and physicians. A random assignment study of NPs providing follow-up and ongoing primary care after an emergency department or urgent care visit found no significant differences in health status or service utilization after either 6 months or 1 year when comparing patients seen by a physician or an NP. The authors concluded: "This study indicated that in an ambulatory care situation in which patients are randomly assigned to either NPs or physicians, and where NPs had the same authority, responsibilities, productivity, and administrative requirements, and patient population as primary care physicians, patients' outcomes were comparable, although the demographic characteristics of the population (90 percent Hispanic, 77 percent female, and largely poor) may reduce the generalizability of the result."[300] In addition, two reviews of published studies concluded that PAs provide quality of care comparable to physicians.[301,302]

Studies have also shown that the use of NPs leads to high levels of patient satisfaction. For example, in a systematic review of the literature published in the *British Medical Journal*, data from 11 clinical trials and 23 observational studies indicated that patients were more satisfied with care provided by an NP than by a physician; that there were no differences in prescriptions, return consultations or referrals or health status; and that quality of care was in some ways better for NP practice.[303] A later study (2004), comparing 406 adults randomly assigned to either an NP or a physician, found no differences between groups in self-reported health sta-

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[297] R.S. Hooker and D.K. Freeborn, *Use of Physician Assistants in a Managed Health Care System.* Public Health Rep, 1991. 106(1): p. 90-4.

[298] D.M. Grzybicki, P.J. Sullivan, J.M. Oppy, et al., *The Economic Benefit for Family/General Medicine Practices Employing Physician Assistants.* Am J Manag Care, 2002. 8(7): p. 613-20.

[299] R.S. Hooker and L.E. Berlin, *Trends in the Supply of Physician Assistants and Nurse Practitioners in the United States - If Numbers of Nps Continue to Fall, Some Underserved Populations Might Not Receive Even the Levels of Primary Care They Do Now.* Health Aff (Millwood), 2002. 21(5): p. 8.

[300] M.O. Mundinger, R.L. Kane, E.R. Lenz, et al., *Primary Care Outcomes in Patients Treated by Nurse Practitioners or Physicians: A Randomized Trial.* JAMA, 2000. 283(1): p. 59-68.

[301] D. Lawrence, *Physician Assistants & Nurse Practitioners: Their Impact on Health Care Access, Costs, and Quality.* Health Med Care Serv Rev, 1978. 1(2): p. 1, 3-12.

[302] J.F. Cawley, G.E. Combs, and R.H. Curry, *Non-Physician Providers.* Am J Public Health, 1986. 76(11): p. 1360.

[303] S. Horrocks, E. Anderson, and C. Salisbury, *Systematic Review of Whether Nurse Practitioners Working in Primary Care Can Provide Equivalent Care to Doctors.* BMJ, 2002. 324(7341): p. 819-823.

tus, disease specific physiologic measures, satisfaction, use of a specialist, and use of emergency department or inpatient services.[304] In addition, it has been observed that nurse practitioners are more likely to provide disease prevention counseling, health education, and health promotion activities than are physicians.[305]

Encouraging greater use of NPs and PAs is only one of many policy options that could be implemented to substitute less expensive for more expensive providers. A related option would be to encourage consumers to use primary care providers rather than specialists for routine treatment. This approach would not only save money on a per visit basis, but does reduce spending for entire "episodes" of care, especially if specialists are more inclined than primary care providers to order expensive tests and follow-up visits. For example, in analyses conducted for another project, we found that patients with hypertension and no other chronic conditions who were seeing specialists incurred costs that were 25 percent higher than similar patients seeing primary care physicians. Routine exams (such as an annual physical) were 12 percent more expensive when conducted by specialists than by primary care physicians. Because this option was not on the original list of options we considered, we did not undertake a full assessment of it. One issue in implementing this change is the current capacity constraints on the existing supply of primary care physicians. If such constraints were relaxed by expanding opportunities for NPs and PAs, then a shift from specialty to primary care might be feasible as well.

What Are the Critical Design Features?

One major concern is whether PAs and NPs in Massachusetts are willing to embrace expanded opportunities, particularly in light of the increased liability that may be associated with such practice.[306] Ideally, legislation would emerge from discussion and compromise across stakeholder groups; otherwise, much time and effort may be wasted in "guild" battles fought out in the legislature. The Federation of State Medical Boards has suggested guidelines to assist regulators and legislators in considering these kinds of changes.[307] These guidelines include:

- The existence of a "verifiable need" for the proposed change(s)
- Details and rationale of change proposals
- The potential effect on public health and safety
- The implications for other practitioners
- The financial effect

Beyond legislation, the support of regulators and insurers would be critical to the success of these efforts.

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[304] E.R. Lenz, M.O. Mundinger, R.L. Kane, et al., *Primary Care Outcomes in Patients Treated by Nurse Practitioners or Physicians: Two-Year Follow-Up.* Med Care Res Rev, 2004. 61(3): p. 332-51.

[305] M.O. Mundinger, *Advanced-Practice Nursing—Good Medicine for Physicians?* N Engl J Med, 1994. 330(3): p. 211-4.

[306] We would note, however, that fear of liability was not identified by the Board of Registration in Nursing task force that recently reviewed the scope-of-practice regulations for NPs.

[307] Federation of State Medical Boards, *Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety.* 2005. As of June 29, 2009: http://www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

Are There Unintended Consequences That Might Result?

As pointed out by the Congressional Budget Office, increasing the use of PAs and NPs could have a paradoxical effect: contributing to a rise in total health expenditures if such changes tend to expand the volume of services (because they are less expensive) rather than to reduce the price.[308] If demand increases substantially, prices could also increase in response. If expanded access to PAs and NPs results in better access to care, especially for certain populations, such as residents of rural areas of the state who are currently underserved by primary care physicians, the change could be positive from a health perspective.[309]

Another potential consequence of changing the scope of practice for PAs and NPs would be related to medical liability. According to Massachusetts law, when a PA is employed by a physician or group of physicians, the employing physician(s) are legally responsible for any "acts or omissions" of the PA.[310] When a hospital is the employer, the hospital is liable. However, if PAs were to gain the right to practice independently, they would be individually liable for their treatment decisions. This would likely have implications for the medical liability system and, in turn, the cost of these practices.[311] Presumably, NPs practicing independently would have to purchase medical malpractice insurance, which would increase their costs and reduce the price differential between NPs and physicians.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policies to promote the use of retail clinics seek to save some of the same dollars as policies aimed at expanding scope of practice for NPs and PAs, since both types of policies attempt to increase the proportion of routine care provided by physician extenders. Nevertheless, it might make sense to combine retail clinics with expanded scope-of-practice laws, since retail clinics provide an outlet for NPs and PAs to practice independently of physician offices. Our lower-bound estimate is based on NPs and PAs providing care that is typically offered in retail clinics.

Reforms That Could Be Combined with This One

Expanding scope of practice for NPs and PAs could be combined with other policies aimed at substituting less expensive providers for more expensive providers, such as reference pricing for visits to specialists or value-based insurance design structured to encourage low-risk patients to use midwives rather than obstetrician-gynecologists or certified registered nurse anesthetists rather than anesthesiologists.

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[308] United States Congressional Budget Office, *Background Paper: Physician Extenders: Their Current and Future Role in Medical Care Delivery*. CBO Background Paper. 1979, Washington, D.C.: United States Congressional Budget Office. 66 p.

[309] Ibid.

[310] The General Laws of Massachusetts, Ch. 112, § 9E; 263 Code of Massachusetts Regulations 5.00 et seq.

[311] Federation of State Medical Boards, *Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety.* 2005. As of June 29, 2009: http://www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

Option #8
Increase Use of Disease Management

I. Nature of the Problem

About 44 percent of adults in 2005 reported that they had at least one chronic disease, and 13 percent reported that they had three or more chronic conditions.[312] Chronic disease accounts for the majority of health care spending. Even among people with a chronic disease, those who are the sickest account for the majority of spending. Improving care for these populations is therefore a promising strategy for reducing health care costs while improving patient care and outcomes. Disease management (DM) refers to one type of approach to improve care for people with chronic diseases by taking a proactive approach to managing chronic diseases. DM companies provide a variety of programs that can improve management of high cost, high risk patients. The services provided under such programs can vary in intensity and may focus on wellness (primary prevention) or better management of one or more chronic illnesses. This policy option would expand the use of DM in public and private insurance programs or cover additional people or conditions and/or apply more-effective disease management models. This option would save money if better management now led to less use of higher cost services later.

II. Proposed Policy Option

What Is It?

Disease management is an organized, proactive approach to health care for members of a population with a specific disease or combination of diseases. A large variety of specific approaches is subsumed under the DM rubric. The Disease Management Association of America (DMAA), a disease management trade group, lists the various components that are used in DM programs:[313]

- Population identification processes
- Evidence-based practice guidelines
- Collaborative practice models to include physician and support service providers
- Patient self-management education (may include primary prevention, behavior modification programs, and compliance/surveillance)
- Process and outcomes measurement, evaluation, and management

[312] K.A. Paez, L. Zhao, and W. Hwang, *Rising out-of-Pocket Spending for Chronic Conditions: A Ten-Year Trend.* Health Aff (Millwood), 2009. 28(1): p. 11.

[313] Disease Management Association of America. *DMAA Definition of Disease Management*. [Web Page]. Online at http://www.dmaa.org/dm_definition.asp (as of July 18, 2008).

- Routine reporting/feedback loop (may include communication with patient, physician, health plan and ancillary providers, and practice profiling).

Not all components are used in all DM programs. The intensity of the interventions varies among programs, and DM programs may apply interventions of differing intensity to different population subgroups. Mattke et al.[314] outline three levels of intensity for communication between the DM programs and patients, and, sometimes, the patients' physicians:

- Low intensity interventions include mass communications, such as mailings and prerecorded telephone messages
- Medium intensity interventions include direct communications, such as telephone calls
- High intensity interventions include direct case management, such as in-person meetings between patients and disease managers

DM programs also vary in the populations they target. Many programs focus on single chronic diseases.[315] The most commonly targeted chronic diseases are ischemic heart disease, diabetes, chronic obstructive pulmonary disease (COPD), asthma, and congestive heart failure (CHF).[316] Health plans have also recently introduced DM programs targeting other common diseases, such as orthopedic disorders, hypertension, cancer care, and fibromyalgia.[317] Eight chronic conditions (arthritis/rheumatological conditions, hypertension, heart disease, lower respiratory disease, cancer, diabetes, depression, cerebrovascular disease) account for 25 percent of all ambulatory visits and 31 percent of hospital discharges.[318] DM programs may target more severely ill patients, or they may include all patients with the target disease (population-based disease management).[319] In addition, health plans have long operated patient-centric, rather than disease-centric, plans. These case management programs focus on complex patients with multiple conditions and high costs.[320]

How Would It Solve the Problem?

The aim of DM is to increase the delivery of appropriate care to enrolled patients. Improved care is expected to lead to better health outcomes and lower costs. Cost reduction would be achieved through fewer acute exacerbations of disease, leading to lower utilization of avoidable

[314] S. Mattke, M. Seid, and S. Ma, *Evidence for the Effect of Disease Management: Is $1 Billion a Year a Good Investment?* Am J Manag Care, 2007. 13(12): p. 670-6.

[315] G.P. Mays, M. Au, and G. Claxton, *Convergence and Dissonance: Evolution in Private-Sector Approaches to Disease Management and Care Coordination.* Health Aff (Millwood), 2007. 26(6): p. 1683-91.

[316] Disease Management Association of America. *DMAA Definition of Disease Management*. [Web Page]. Online at http://www.dmaa.org/dm_definition.asp (as of July 18, 2008).

[317] G.P. Mays, M. Au, and G. Claxton, *Convergence and Dissonance: Evolution in Private-Sector Approaches to Disease Management and Care Coordination.* Health Aff (Millwood), 2007. 26(6): p. 1683-91.

[318] S.L. Decker, S.M. Schappert, and J.E. Sisk, *Use of Medical Care for Chronic Conditions.* Health Aff (Millwood), 2009. 28(1): p. 10.

[319] S. Mattke, M. Seid, and S. Ma, *Evidence for the Effect of Disease Management: Is $1 Billion a Year a Good Investment?* Am J Manag Care, 2007. 13(12): p. 670-6.

[320] G.P. Mays, M. Au, and G. Claxton, *Convergence and Dissonance: Evolution in Private-Sector Approaches to Disease Management and Care Coordination.* Health Aff (Millwood), 2007. 26(6): p. 1683-91.

inpatient and emergency care services. DM can increase spending through both the payments for DM services and increased utilization of appropriate services to manage chronic disease. Savings would be achieved if utilization of avoidable services outweighed the payments for delivering DM services and any increase in utilization of appropriate services. Most short-term savings come from reduced utilization of avoidable inpatient and emergency care services related to acute exacerbations of chronic diseases.

What Has to Happen to Implement a Change?

To implement a change, existing DM programs would need to be expanded or revised. In Massachusetts, DM programs are in use by most private health insurers[321] and by MassHealth, which covers both the managed care and fee-for-service Medicaid populations; however, DM in fee-for-service MassHealth is limited.[322,323] The MassHealth Senior Care Options (SCO) Program includes DM programs for beneficiaries enrolled in both Medicare and Medicaid.[324] In addition, DM programs are used in Commonwealth Choice and Commonwealth Care insurance plans. These programs could potentially be expanded to cover additional people or conditions. T he intensity of the interventions potentially could also be increased, or new, more effective DM models could be applied.

III. What Level of Savings Can Be Expected from this Policy Change?

What Policy Change Did We Model?

We modeled a scenario in which Massachusetts adults[325] with Medicaid or private health insurance coverage and at least one of six chronic conditions (diabetes, coronary artery disease, congestive heart failure, chronic obstructive pulmonary disease, asthma, and depression) were enrolled in a DM program. Thus, we did not assume any targeting of DM enrollment to individuals with higher predicted health care costs. Medicare beneficiaries were not included in this scenario; DM approaches are being tested in Medicare, but implementation will proceed separately from what occurs in Massachusetts.

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[321] D. Matheson, A. Wilkins, and D. Psacharopoulos, *Realizing the Promise of Disease Management: Payer Trends and Opportunities in the United States.* 2006. Boston Consulting Group: Boston, Mass. As of July 19, 2008: http://www.bcg.com/publications/files/Realizing_the_Promise_of_Disease_Management_Feb06.pdf

[322] Health Strategies Consultancy, *Disease Management in Medicaid.* 2004. California HealthCare Foundation: Oakland, CA. As of July 19, 2008: http://www.chcf.org/documents/policy/DiseaseManagementInMedicaid2004.pdf

[323] L. Flowers and Public Policy Institute (AARP), *Disease Management in Fee-for-Service Medicaid Programs*. Issue Brief / AARP, 2007, Washington, DC: AARP Public Policy Institute. 13 p. As of August 3, 2009: http://www.aarp.org/research/ppi/ltc/ltc-medicaid/articles/ib81_medicaid.html.

[324] The Official Website of the Office of Health and Human Services (EOHHS) - Commonwealth of Massachusetts. *Senior Care Options Overview*. [Web Page]. Online at http://www.mass.gov/?pageID=eohhs2terminal&L=5&L0=Home&L1=Provider&L2=Insurance+(including+MassHealth)&L3=MassHealth&L4=Senior+Care+Options&sid=Eeohhs2&b=terminalcontent&f=masshealth_provider_sco_overview&csid=Eeohhs2 (as of September 22, 2008).

[325] Individuals aged 18–64 years.

What Were the Assumptions?

Our assumptions are based on available evidence of the effects of past DM programs. This evidence is mixed and inconclusive, and DM approaches have been evolving over time. For this reason, we used a wide range of savings estimates between upper-bound and lower-bound scenarios.

For both the upper- and lower-bound scenarios, we assumed that the cost of disease management is $500 per patient per year (in 2008 dollars) and that this cost increases at the rate of health care inflation. This cost was based on the cost of past DM programs reported in the literature.[326] Actual DM costs would vary by condition and the intensity of the intervention.

Upper-Bound Assumptions

In the upper-bound scenario, we assumed that DM program participation leads to a 25-percent reduction in average inpatient spending and emergency department (ED) spending among patients with at least one of the six chronic conditions. We assumed a 3-percent increase in average pharmaceutical costs, resulting from better adherence to medication regimens as a result of DM interventions. We assumed that it takes 3 years to achieve full savings, with partial savings phased in linearly over this time period. We assumed that savings from these DM programs begin to accrue in 2009. These upper-bound savings assumptions reflect the largest expected savings based on studies of past DM programs (discussed in more detail below). Actual savings are likely to vary across conditions, but small sample sizes precluded a condition-by-condition analysis.

Lower-Bound Assumptions

In the lower-bound scenario, we assumed that the costs associated with delivering DM services are incurred, but that there is no effect on health spending. This estimate is based on evaluations of past DM programs, which found no effect or an increase in costs (discussed in more detail below).

[326] DM program costs vary widely, reflecting the variation in program characteristics. J. Meyer and B. Smith (*Chronic Disease Management: Evidence of Predictable Savings*, Health Management Associates, November 2008), reviewing the DM literature, report annual DM program costs ranging from $100 to $1,399 per capita. D. M. Bott, M. C. Kapp, et al. (*Disease Management for Chronically Ill Beneficiaries in Traditional Medicare*," Health Aff (Millwood), Vol. 28, No. 1, 2009, pp. 86–98) report average annual costs for DM programs in recent Medicare demonstrations, ranging from $900 to $2,100. J. Bigelow, K. Fonkych, et al. (*Analysis of Healthcare Interventions That Change Patient Trajectories*, Santa Monica, Calif.: RAND Corporation, MG-408-HLTH, 2005) estimated average DM program costs by condition, based on a review of the literature and estimates of labor hours and prices for DM services. Their estimates of annual per capita DM program costs were $309 to $478 (diabetes), $510 to $718 (congestive heart failure), $144 to $451 (asthma), and $330 to $487 (chronic obstructive pulmonary disease).

What Data Did We Use?

We estimated hospital inpatient, pharmaceutical, and ED spending, using data from the Medical Expenditure Panel Survey (MEPS) specific to Massachusetts.[327]

What Did We Conclude?

We concluded that, at a maximum, disease management could reduce total health spending in Massachusetts by $308 million (by 0.05 percent) between 2010 and 2020, and could increase spending by $6.7 billion (1 percent) under lower-bound assumptions. Table 8.1 shows the estimated savings to the Massachusetts health care system, overall and for specific payers. The last row of the table quantifies new spending that would be necessary to provide DM services. Table 8.2 compares the total savings predicted by our model to total projected health spending in Massachusetts.

In the lower bound scenario, DM leads to a marginal increase in Medicaid and private health insurance spending in order to fund DM services, with no offsetting decrease in health care costs. In the upper bound scenario, we predict a small increase in costs early on, with slight savings following over time. Even under highly optimistic assumptions about potential savings in inpatient and ED services, we found that the cost of delivering DM services were equal to the potential savings. This reflects both relatively low baseline average inpatient/ED spending among chronically ill people in the 18-64 age group and the relatively high cost of the DM program. In 2009, we project that inpatient and ED spending for chronically ill Massachusetts adults ages 18-64 will average $3,315, compared to $1,310 for non–chronically ill adults.

Table 8.1
Total Savings, Disease Management (in millions)

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	$457	$3,156	$6,698	$131	–$59	–$308
Individual	$0	$0	$0	$4	$36	$78
Medicare[a]	$0	$0	$0	$0	$0	$0
Medicaid	$0	$0	$0	–$38	–$372	–$811
Private	$0	$0	$0	–$270	–$2,660	–$5,797
Other	$0	$0	$0	–$22	–$218	–$476
DM Payments	$457	$3,156	$6,698	$457	$3,156	$6,698

[a] Model assumes Medicare does not participate.

[327] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

Table 8.2
Savings Relative to Status Quo, Disease Management (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	$457	$3,156	$6,698	$131	–$59	–$308
% Savings	1.06%	1.03%	1.00%	0.30%	–0.02%	–0.05%

Some have argued that disease management programs more likely would save money if they were targeted specifically to individuals with severe chronic illness. We do not have enough observations in MEPS to allow us to disaggregate chronically ill patients by severity levels. However, we conducted sensitivity analyses to determine whether programs targeted to the severely ill showed more promise. Specifically, we assumed that only one-quarter of those with chronic illness received disease management and that spending for these individuals was four times the average spending for chronically ill patients in our sample. We assumed that the cost of disease management remained $500 per patient per year (in 2008 dollars) and that the program led to a 25-percent reduction in ED and inpatient spending, and a 3-percent increase in pharmaceutical spending. Even with these assumptions (fewer patients with higher potential for spending reductions), disease management reduced spending by less than 1 percent between 2010 and 2020. Moreover, targeting chronic-disease management would require the cost of identifying patients with high expected future costs, possibly pushing the annual cost over the $500 price assumed in our scenarios.

How Do Our Findings Compare to Those in the Literature?

Findings that support the lower-bound estimate

Evidence of the effects of DM on cost from studies of previous DM programs is largely inconclusive and mixed, supporting a lower-bound scenario of no cost savings. Several comprehensive reviews of existing studies, including those by RAND and the Congressional Budget Office, have found limited evidence of cost reductions from DM.[328,329,330] Several cost-effectiveness studies of components of DM have shown reasonable values of cost-effectiveness (i.e., that DM achieves improved health at a low cost compared with other treatments). However, these studies did not find that DM reduced net costs.

[328] S. Mattke, M. Seid, and S. Ma, *Evidence for the Effect of Disease Management: Is $1 Billion a Year a Good Investment?* Am J Manag Care, 2007. 13(12): p. 670-6.

[329] United States Congressional Budget Office, *An Analysis of the Literature on Disease Management Programs*. CBO Paper. 2004, Washington, D.C.: United States Congressional Budget Office. 37 p.. As of July 19, 2008: http://www.cbo.gov/ftpdocs/59xx/doc5909/10-13-DiseaseMngmnt.pdf.

[330] R.Z. Goetzel, R.J. Ozminkowski, V.G. Villagra, et al., *Return on Investment in Disease Management: A Review.* Health Care Financ Rev, 2005. 26(4): p. 1-19.

Early results from the Medicare Health Support Demonstration,[331] an evaluation of DM in fee-for-service Medicare, do not provide strong support for cost reduction from DM.[332] Participating DM vendors were initially required to demonstrate 5-percent net cost savings in order to be reimbursed for their services. This requirement was later changed to from 5 percent to no net change in costs.[333] Several of the participating vendors withdrew from the demonstration, and the remaining vendors were not on track to achieve the budget neutrality threshold after the preliminary evaluation. Unless the final evaluation of the first three years of the demonstration (Phase I) reveals that the DM vendors were able to change course and achieve budget neutrality, CMS will cancel the optional Phase II.[334] However, the DM vendors have argued that the design and implementation of the demonstration and its evaluation have been flawed, and that cost savings have been achieved among certain population groups.[335,336,337,338,339] Members of the Senate have requested that CMS pursue the additional phase of the demonstration.[340]

Previous Medicare demonstrations have also tested various DM approaches. A review of the findings from all DM programs in Medicare demonstrations with completed evaluations found that seven of 35 DM programs were at or near budget neutrality, net of DM program fees.[341] The demonstration evaluations found no effect on mortality, limited effect on clinical quality indicators, and no effect on patient adherence or self-care, but high patient satisfaction with the DM services.[342] The results from Medicare demonstrations to date underscore the difficulty

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[331] Centers for Medicare and Medicaid Services (CMS). *Overview Medicare Health Support*. [Web Page] 2008 May 29, 2009. Online at http://www.cms.hhs.gov/CCIP/ (as of June 29, 2009).

[332] N. McCall, J. Cromwell, and S. Bernard, *Evaluation of Phase I of Medicare Health Support (Formerly Voluntary Chronic Care Improvement) Pilot Program under Traditional Fee-for-Service Medicare. Report to Congress.* 2007. RTI International. CMS contract 500-00-0022. As of July 19, 2008: http://www.cms.hhs.gov/reports/downloads/McCall.pdf

[333] Centers for Medicare and Medicaid Services (CMS). *Questions and Answers: Budget Neutrality and Medicare Health Support—Phase I: Update*. [Web Page] 2008 January 17, 2008. Online at http://www.cms.hhs.gov/CCIP/downloads/QAforPublic.pdf (as of June 20, 2009).

[334] Centers for Medicare and Medicaid Services (CMS). *Fact Sheet: Completion of Phase I of Medical Health Support Program*. [Web Page] 2008 January 28, 2008. Online at http://www.cms.hhs.gov/CCIP/downloads/EOP_Fact_Sheet_FINAL_012808.pdf (as of June 12, 2009).

[335] R. Abelson, *Medicare Finds How Hard It Is to Save Money*. 2008, The New York Times.

[336] T. Wilson (2007) *A Critique of Baseline Issues in the Initial Medicare Health Support Report*. Disease Management Viewpoints, As of June 12, 2008: http://www.dmalliance.org/dmblog/2007/07/national-expert-critiques-mhs-initial.html

[337] N. McCall, J. Cromwell, and S. Bernard, *Evaluation of Phase I of Medicare Health Support (Formerly Voluntary Chronic Care Improvement) Pilot Program under Traditional Fee-for-Service Medicare. Report to Congress.* 2007. RTI International. CMS contract 500-00-0022. Available at: http://www.cms.hhs.gov/reports/downloads/McCall.pdf

[338] Healthways. *Healthways Questions CMS' Conclusions with Regard to Company's MHS Phase I Pilot - Press Release*. [Web Page] 2008 February 13, 2008. Online at http://investors.healthways.com/phoenix.zhtml?c=91592&p=irol-newsArticle_newsroom&ID=1107809&highlight=medicare (as of June 12, 2009).

[339] T. Wilson (2007) *A Critique of Baseline Issues in the Initial Medicare Health Support Report*. Disease Management Viewpoints,

[340] R. Abelson, *Medicare Finds How Hard It Is to Save Money*. 2008, The New York Times.

[341] D.M. Bott, M.C. Kapp, L.B. Johnson, et al., *Disease Management for Chronically Ill Beneficiaries in Traditional Medicare.* Health Aff (Millwood), 2009. 28(1): p. 86–98..

[342] R. Brown, A. Chen, D. Peikes, et al. *Does Disease Management/Care Coordination Work for Medicare?* in *AcademyHealth Annual Research Meeting*. 2007. Orlando, Fla. June 4, 2007. Available at: http://www.academyhealth.org/2007/monday.htm (as of July 19, 2008).

of improving care for chronically ill Medicare beneficiaries, particularly in the short term, using existing DM methods.[343,344]

Findings that support upper-bound estimates

Several selected findings from previous studies support the upper-bound estimates. One review of the literature concluded that, although study findings have been mixed and inconclusive, there is evidence to support savings in DM programs that are targeted at sicker individuals and that perform more intensive interventions.[345] For example, some studies have found some positive cost results for CHF[346] and diabetes,[347] but often with selected high-risk populations, making the programs more like case management than population disease management. However, few rigorous studies have evaluated the effects of DM on costs; most studies have been inconclusive about effects on costs, rather than finding evidence for a lack of savings. Many of the studies have been limited in size and scope, including short time periods, and are limited by design flaws, such as a lack of comparison with a control group.[348]

What Are the Critical Design Features?

There are few barriers to increased implementation of DM programs, but the effectiveness of the programs is uncertain. A variety of DM approaches is used, and there is a lack of strong evidence to determine which approaches are most effective. Better targeting of programs using predictive modeling and more intensive interventions are two general approaches that have been promoted recently as elements of successful DM programs.[349] Better evaluation of the effect of DM programs on costs and outcomes is needed to develop effective methods for improving management of chronic disease.

Are There Unintended Consequences That Might Result?

DM is currently widespread, despite a lack of evidence regarding its effectiveness in reducing costs and improving health outcomes. Without additional evaluation of its effects, it is possible that ineffective models and applications of DM will proliferate. Investment in DM by Massachusetts could lead to lower returns than expected. A mismatch between expectations and results of DM potentially could lead to a backlash.

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[343] Ibid.

[344] R. Abelson, *Medicare Finds How Hard It Is to Save Money*. 2008, The New York Times.

[345] J. Meyer and B. Smith, *Chronic Disease Management: Evidence of Predictable Savings.* 2008. Health Management Associates. As of June 12, 2009: http://www.healthmanagement.com/files/Chronic%20Disease%20Savings%20Report%20final.pdf

[346] M.W. Rich, *Heart Failure Disease Management: A Critical Review.* J Card Fail, 1999. 5(1): p. 64-75.

[347] T. Bodenheimer, K. Lorig, H. Holman, et al., *Patient Self-Management of Chronic Disease in Primary Care.* JAMA, 2002. 288(19): p. 2469-75.

[348] S. Mattke, M. Seid, and S. Ma, *Evidence for the Effect of Disease Management: Is $1 Billion a Year a Good Investment?* Am J Manag Care, 2007. 13(12): p. 670-6.

[349] J. Meyer and B. Smith, *Chronic Disease Management: Evidence of Predictable Savings.* 2008. Health Management Associates.

IV. What Other Policy Changes Are Related to This One?

Those that Seek to Save the Same Dollars

Several other policies aim to save money by decreasing unnecessary inpatient and ED utilization by the chronically ill, including value-based insurance design, retail clinics, medical homes, some types of bundled payment, and some applications of healthcare information technology (HIT).

Reforms That Could Be Combined with This One

A variant of DM would be conducted from physician practices or other settings functioning as medical homes, combined with HIT, increased access and potentially, other features. Applications of HIT, including reminder systems, patient registries, remote patient monitoring, patient-provider communication, and others, could be used to enhance DM services.

Option #9
Increase Adoption of Health Information Technology

I. Nature of the Problem

The U.S. health care system has been called "the world's largest, most inefficient information enterprise."[350] Most health information is still stored on paper. The use of information technology in the health care system trails far behind that in other sectors of the economy. The U.S. trails far behind other developed countries in adoption of health information technology (HIT).[351] Many experts believe that widespread adoption and use of HIT will facilitate achieving substantial improvements in health care delivery, leading to improved quality, better health, and lower costs. Much of the promise associated with HIT requires high levels of adoption (i.e., 90 percent of doctors' offices, hospitals, and other clinical settings) of interoperable systems (i.e., information can be exchanged across unrelated systems) that are used to change workflow (e.g., scheduling, management of chronic disease). HIT is an enabling technology that may allow other cost containment strategies to be implemented (e.g., better claims-transaction processes; more efficient management of patients within systems, reducing unnecessary utilization through more clinically detailed criteria for matching patients to interventions). In this option, we consider the approaches to accelerating adoption, including financial incentives, direct provision, regulatory mandates, development of standards, and establishment of health information exchanges.

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[350] R. Hillestad, J. Bigelow, A. Bower, et al., *Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs.* Health Aff (Millwood), 2005. 24: p. 15.

[351] A.K. Jha, D. Doolan, D. Grandt, et al., *The Use of Health Information Technology in Seven Nations.* Int J Med Inform, 2008.

II. Proposed Policy Option

What Is It?

HIT refers to a variety of electronic tools for use in the management of health information. HIT applications include the storage and organization of health information, communication, ordering of drugs or diagnostic tests, prescribing, and aiding clinical decisionmaking. HIT is a broad term that includes a variety of tools, including:[352,353,354]

- ***Electronic medical record (EMR)*** – an electronic equivalent of a paper-based medical record maintained by providers for patients.
- ***Electronic health record (EHR)*** – an EMR that draws information from multiple clinical and administrative data sources and is accessible by multiple providers.
- ***Personal health record (PHR)*** – an EHR that is controlled and managed by the patient rather than by the provider.
- ***Computerized physician order entry (CPOE)*** – an electronic tool used by physicians to order drugs, diagnostic tests, and other ancillary services.
- ***Clinical decision support (CDS)*** – a system providing reminders, suggestions, and alerts based on clinical criteria, typically used in conjunction with other HIT, such as EMRs.
- ***E-prescribing*** – electronic transmission of prescriptions from physicians to pharmacists.
- ***Picture Archiving and Communication System (PACS)*** – an electronic system for the storage, distribution, and viewing of medical images.
- ***Health information exchange (HIE)*** – an organization that facilitates the exchange of health data between providers and institutions.

How Would It Solve the Problem?

These tools are expected to improve the efficiency and quality of care in several direct ways, including providing more efficient access to patient information; reducing duplicate diagnostic tests and other services; and reducing errors in orders and prescriptions. The exchange of information between providers could improve the coordination of care. HIT could also be used as a tool to enable other changes in health care delivery, such as quality measurement and improvement, disease management, and payment reforms.

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[352] C.M. DesRoches, E.G. Campbell, S.R. Rao, et al., *Electronic Health Records in Ambulatory Care—a National Survey of Physicians.* N Engl J Med, 2008. 359(1): p. 50-60.

[353] K. Fonkych and R. Taylor, *The State and Pattern of Health Information Technology Adoption.* 2005. RAND Corporation: Santa Monica, CA. RAND monograph MG-409.

[354] United States Congressional Budget Office, *Evidence on the Costs and Benefits of Health Information Technology*. CBO Paper. 2008, Washington, D.C.: United States Congressional Budget Office. 37 p.

What Has to Happen to Implement a Change?

Massachusetts, along with almost all states and the federal government, is engaged in activities to increase the use of HIT.[355] Several general types of policies could be used to increase the adoption and use of HIT:

- Financial incentives for providers to adopt or use HIT, such as those enacted in the American Recovery and Reinvestment Act of 2009[356]
- Mandates for providers to adopt HIT, such as requirements in Massachusetts' new cost containment law (Chapter 305) that hospitals and community health centers adopt CPOE by 2012 and EHRs by 2015
- Standards for health information that would increase the utility of HIT, such as those required for adoption by the Massachusetts e-Health Institute in the new law
- Facilitating the establishment of HIEs as required of the Massachusetts e-Health Initiative in the new law.

As of 2005, 18 percent of Massachusetts' office-based physician practices reported having an EHR.[357] However, the functionality of the EHRs in use varied widely: Most EHRs were used for viewing laboratory test results and electronically documenting visit notes; fewer were used for e-prescribing and order entry. EHRs in use, therefore, often do not have the functionality needed to achieve some improvements in quality and safety.

The Massachusetts eHealth Collaborative (MAeHC) has implemented a pilot program to increase the adoption of interoperable HIT in three communities: Greater Newburyport, Greater Brockton, and Northern Berkshire.[358] Physicians in the pilot communities are supplied with EHRs that are connected through HIEs. The pilot is funded through private donors, including $50 million from Blue Cross Blue Shield of Massachusetts. If the pilot proves to be successful, one policy option would be to provide additional funding to expand the program throughout the state. The CEO of the program has estimated that the cost of expansion throughout the Commonwealth would be $500 million.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We estimated the potential savings of accelerating the adoption of interoperable HIT in Massachusetts. We considered a scenario in which, through mandates, creation of health standards, federal subsidies, and related activities, HIT adoption in Massachusetts is accelerated from

[355] V.K. Smith, K. Gifford, S. Kramer, et al., *State e-Health Activities in 2007: Findings from a State Survey*. 2008, New York, N.Y.: Commonwealth Fund. xiii, 58 p.

[356] D. Blumenthal, *Stimulating the Adoption of Health Information Technology.* N Engl J Med, 2009. 360(15): p. 2..

[357] S.R. Simon, M.L. McCarthy, R. Kaushal, et al., *Electronic Health Records: Which Practices Have Them, and How Are Clinicians Using Them?* J Eval Clin Pract, 2008. 14(1): p. 43-47.

[358] Massachusetts eHealth Collaborative. *Pilot Program*. [Web Page] 2009. Online at http://www.maehc.org/pilot.html (as of June 20, 2009).

current rates to a scenario of full adoption in 2015 or 2017. We calculated the effects of HIT adoption on costs by comparing estimated HIT-related savings at an adoption rate resulting in full adoption in 2015 or 2017 to a baseline rate, in which full adoption is estimated in 2025.

What Were the Assumptions?

We used a consistent set of assumptions about HIT adoption rates for both upper- and lower-bound scenarios; the difference between scenarios is the assumption about HIT-related savings. In the upper-bound scenario, we used savings estimates based on an earlier RAND study.[359] In the lower-bound scenario, we assumed that increased HIT use will not lead to any cost savings.

Because there is substantial uncertainty regarding the likely rate of adoption over time, we considered two adoption scenarios for both lower and upper bounds. Under the first scenario (A), full adoption is achieved for both hospitals and physicians by 2015, assumptions that reflect the expected effect of the mandates for adoption included in the Massachusetts cost containment law (Chapter 305). Under the second scenario (B), we assumed that full adoption is delayed until 2017. For each adoption scenario, we estimated both upper- and lower-bound savings.

In this projection, we assumed that the HIT adopted is an integrated system, including an EMR, clinical decision support, and a central data repository, from the same vendor to ensure interoperability. We predicted the savings from using these tools to improve the efficiency of care delivered. We did not include other types of savings, such as savings related to:

- Replacing in-person visits with secure electronic messaging and with telephone visits, which have been shown to reduce per capita visit rates by 26 percent in Kaiser Permanante Hawaii,[360] since these results may not be replicable outside an integrated delivery system
- Data sharing through an HIE, thereby reducing need for testing in emergency departments
- Activities enabled by HIT, such as disease management, which are covered in separate projections in this report (Option 8)
- Improvement in patient safety (e.g., treatment of adverse drug events).

Cost of implementing and maintaining HIT

We assumed that adoption of HIT incurs implementation costs during the implementation periods listed above, and then maintenance costs are incurred each year thereafter. We used the following parameters, estimated in an earlier RAND study[361]:

[359] F. Girosi, R. Meili, and R.P. Scoville, *Extrapolating Evidence of Health Information Technology Savings and Costs*. 2005, Santa Monica, CA: RAND Health. xiii, 94 p.

[360] C. Chen, T. Garrido, D. Chock, et al., *The Kaiser Permanente Electronic Health Record: Transforming and Streamlining Modalities of Care.* Health Aff (Millwood), 2009. 28(2): p. 11.

[361] F. Girosi, R. Meili, and R.P. Scoville, *Extrapolating Evidence of Health Information Technology Savings and Costs*. 2005, Santa Monica, CA: RAND Health. xiii, 94 p.

- ***Implementation in physician practices:*** estimated at $22,000 per full-time-equivalent (FTE) physician in 2004
- ***Maintenance in physician practices:*** estimated at $4,400 per FTE physician in 2004
- ***Implementation in hospitals:*** implementation cost is related to the number of beds, averaging $60,000 per bed. Based on the bed sizes of Massachusetts hospitals, implementation cost is estimated at $11.4 million per hospital on average in 2004
- ***Maintenance in hospitals:*** estimated at 30 percent of implementation costs, or $3.4 million per hospital in 2004
- ***Implementation time:*** in physician practices, estimated to take 2 years; in hospitals, estimated to take 4 years.

Adoption Level

Surveys of adoption by physicians in Massachusetts indicate that adoption rates are higher than in other parts of the country. Simon et al.,[362] using a survey of Massachusetts physicians, estimated that 18 percent of 6,174 physician practices employing 20,227 physicians used HIT in 2005, although the functionality varied. A similar HIT-adoption survey does not exist for Massachusetts hospitals. A review of HIT-adoption surveys found hospital adoption rates are in the range of 5–24 percent nationally, with differences in assessment methods.[363] We assumed adoption levels of 18 percent for practices in 2005 and 20 percent for hospitals in 2008.

Status Quo Assumptions

We assumed that, in the absence of policy change, HIT adoption would increase at a rate of 4.7 percentage points per year in both physician practices and hospitals. There is little longitudinal information on HIT adoption that can be used to calculate adoption rates. Our estimate is based on a national survey of HIT adoption in physician practices,[364] which found that adoption increased from 9.3 to 14.0 percent of physicians between 2006 and 2008.

Upper-Bound Assumptions

The upper-bound scenario assumes that HIT adoption achieves the level of savings predicted in an earlier RAND study, [365] scaled to represent the Massachusetts population. Implicitly, this study assumes that only effective technologies are adopted and that providers effectively use the full functionality of the technology.

We estimated savings in the following categories:

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[362] S.R. Simon, M.L. McCarthy, R. Kaushal, et al., *Electronic Health Records: Which Practices Have Them, and How Are Clinicians Using Them?* J Eval Clin Pract, 2008. 14(1): p. 43-47.

[363] D. Blumenthal, C.M. DesRoches, K. Donelan, et al., *Executive Summary of Health Information Technology in the United States: Where We Stand.* 2008. Robert Wood Johnson Foundation: Princeton, NJ.

[364] C.M. DesRoches, et al., *Electronic Health Records in Ambulatory Care—A National Survey of Physicians.* N Engl J Med, 2008. 359(1): p. 50-60.

[365] F. Girosi, R. Meili, and R.P. Scoville, *Extrapolating Evidence of Health Information Technology Savings and Costs*. 2005, Santa Monica, CA: RAND Health. xiii, 94 p.

Physician Practices

- Transcription: Direct entry of physicians' notes into the EMR is less expensive than dictation and transcription of notes
- Chart pulls: Reduces or eliminates the need to maintain paper patient files
- Lab tests: Reduces duplicate and unnecessary testing because it contains more current, comprehensive information on tests performed
- Drug utilization: Enables more cost-effective prescribing by physicians from use of clinical decision support in CPOE systems
- Radiology/imaging: Reduces duplicate and unnecessary imaging because it contains more current, comprehensive information on imaging performed

Hospitals

- Nursing time: Demand for nurses is reduced because nursing time spent on documentation is reduced, leading to hiring of fewer nurses (and to using existing staff more effectively)
- Lab tests: Duplicate and unnecessary testing is lessened because system contains more current, comprehensive information on tests performed
- Drug utilization: Prescribing by physicians is more cost-effective because it involves clinical decision support in CPOE systems
- Length of stay: Improved patient flow results in shorter lengths of inpatient stays
- Medical charts: Reduces or eliminates the need to maintain paper patient files

Table 9.1 shows the estimate of savings in each category at full adoption of HIT and the parameters used to derive each estimate. Further description of the methodology for deriving the estimates can be found in a previous RAND report.[366] Savings in a particular year were calculated by scaling the savings at full adoption by the estimated adoption rate in that year. We assumed that, during the implementation time period, savings are phased in linearly.

[366] Ibid.

Table 9.1
Estimated Upper-Bound Savings Related to HIT Adoption in Massachusetts, by Source of Savings

Category	Savings Estimate at Full Adoption	Parameters Used in Estimate (Source)
Physician Practices		
Transcription	$105,463,578	• Savings per FTE physician: $5,214 (Girosi) • FTE physicians in MA: 20,227 (Simon)
Chart pulls	$94,197,139	• Savings per FTE physician: $4,657 (Girosi) • FTE physicians in MA: 20,227 (Simon)
Lab tests	$125,043,314	• Savings per FTE physician: $6,182 (Girosi) • FTE physicians in MA: 20,227 (Simon)
Drug utilization	$532,097,143	• Savings = 15% of outpatient drug spending (Girosi) • Outpatient drug spending = 77% of total drug spending (Girosi) • Total MA drug spending = $4,606,901,672 (MEPS)
Radiology/ imaging	$93,073,487	• Savings = 14% of total outpatient radiology spending (Girosi) • Total national radiology spending = $29.4 billion (Girosi) • MA total radiology spending (scaled from national spending by population) = $664.8 million
Hospitals		
Nursing time	$503,678,564	• Reduction in demand for RNs = 11.4% (Girosi) • Number of MA FTE nurses, 2004 = 59,337 (HRSA) • Average RN salary, 2004 = $74,460 (Girosi)
Lab tests	$78,059,224	• Savings = 11.8% of inpatient lab costs (Girosi) • Inpatient lab costs = 8% of hospital costs (Girosi) • Total MA hospital costs = $8,268,985,672 (MEPS)
Drug utilization	$91,752,665	• Savings = 15.2% of inpatient drug costs (Girosi) • Inpatient drug costs = 7.3% of total hospital costs (Girosi) • Total MA hospital costs = $8,268,985,672 (MEPS)
Length of stay	$879,820,075	• Reduction in ALOS = 15.2% (Girosi) • Elasticity of hospital charges to reduction in ALOS = 0.7 (Girosi) • Total MA hospital costs = $8,268,985,672 (MEPS)
Medical charts	$62,017,392	• Savings = 50% of chart management costs (Girosi) • Chart management costs = 1.5% of total hospital costs (Girosi) • Total MA hospital costs = $8,268,985,672 (MEPS)

SOURCES: (Girosi): F. Girosi, R. Meili, and R. Scoville, *Extrapolating Evidence of Health Information Technology Savings and Costs*, Santa Monica, Calif.: RAND Corporation, MG-410, 2005; S. R [25]; (Simon): S.R. Simon, M.L. McCarthy, R. Kaushal, et al., *Electronic Health Records: Which Practices Have Them, and How Are Clinicians Using Them?* J Eval Clin Pract, 2008. 14(1): p. 43-47. (MEPS): U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey (MEPS) (as of June 20, 2009: http://www.meps.ahrq.gov/mepsweb/); (HRSA): U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), The Registered Nurse Population: Findings from the 2004 National Sample Survey of Registered Nurses (as of June 29, 2009: http://bhpr.hrsa.gov/healthworkforce/rnsurvey04/).

NOTES: ALOS = average length of stay; RN = registered nurse.

Lower-Bound Assumptions

The RAND study[367] used as the basis for the upper-bound savings estimates assumed that providers would quickly abandon HIT software that did not save money. However, because HIT adoption is mandated in Massachusetts, providers might feel compelled to maintain technologies even if they perform poorly. As a result, we estimated lower-bound scenarios in which providers incur the expense associated with investment in HIT, but no savings are achieved.

What Data Did We Use?

The sources of data used to construct savings estimates are listed in Table 9.1. We subtracted estimated savings from estimates of total Massachusetts health spending based on the Medical Expenditure Panel Survey.[368]

What Did We Conclude?

Figures 9.1 and 9.2 present the HIT-adoption rates in Massachusetts physician practices and hospitals under our status quo and the two adoption scenarios used in both lower- and upper-bound estimates (full adoption by 2015 or 2017). The savings we estimated are those related to the differential rate of adoption between the baseline scenario and the lower- and upper-bound scenarios. That is, we assume that status quo spending estimates include a level of increased HIT adoption over time. Our savings estimates only count the additional impact of adopting HIT faster—at the rates of lines "A" and "B" in Figures 9.1 and 9.2.

[367] Ibid.

[368] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of these services, and how they are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

Figure 9.1
Estimated HIT Adoption Rate in MA Physician Practices, Status Quo and Two Adoption Scenarios, 2008-2020

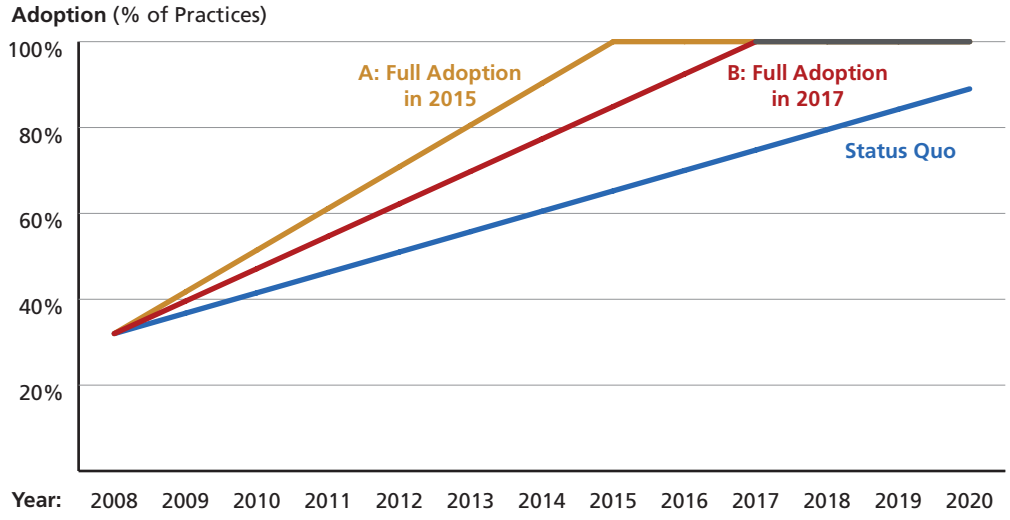
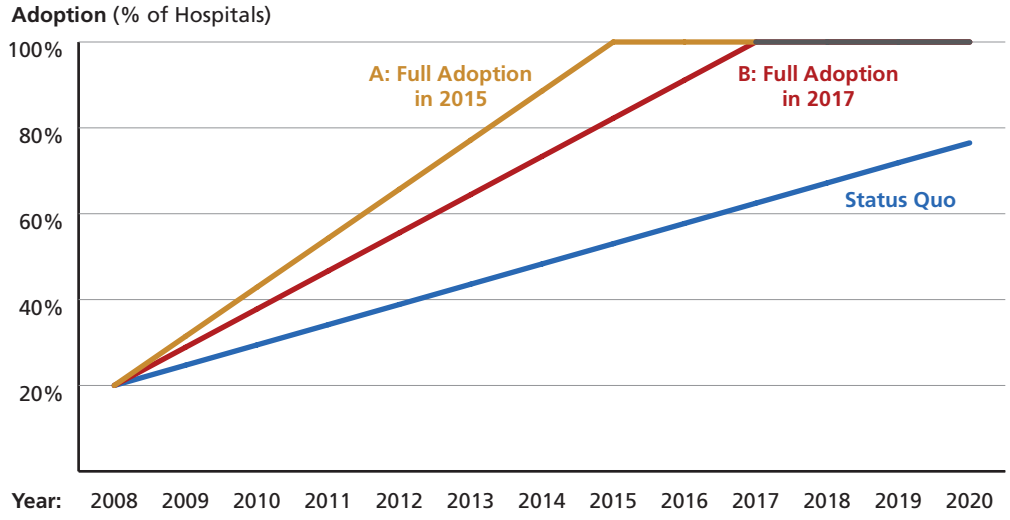


Figure 9.2
Estimated HIT Adoption Rate in MA Hospitals, Status Quo and Two Adoption Scenarios, 2008-2020



In our upper-bound scenarios, we found that increased adoption of HIT would lead to reductions in spending of 1.2 to 1.8 percent between 2010 and 2020, depending on the rate at which full adoption is achieved (Table 9.2). The increased rate of adoption would increase spending in 2010 because of the cost of HIT implementation. However, savings would begin to accrue thereafter. In our lower-bound scenarios, HIT increased spending by assumption, because providers make investments in ineffective technologies. Because implementation costs for HIT exceed maintenance costs, the magnitude of the spending increase in the lower-bound

scenario varies over time, depending on our assumptions about the rate of adoption. Total spending on HIT converges over the long run, because all providers adopt and most move beyond the implementation period. (The implementation period for hospitals is 4 years, so a handful of providers are still in the implementation phase in 2020, when we assume full adoption by 2017.)

Table 9.2
Savings Relative to Status Quo, Accelerated Adoption of HIT (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
A. Full Adoption by 2015						
Total Savings	$259	$3,171	$3,657	$82	–$2,078	–$12,171
% Savings	0.60%	1.03%	0.55%	0.19%	–0.68%	–1.82%
B. Full Adoption by 2017						
Total Savings	$158	$1,941	$3,475	$51	–$1,224	–$8,260
% Savings	0.36%	0.63%	0.52%	0.12%	–0.40%	–1.23%

How Do Our Findings Compare with Those in The Literature?

The RAND HIT study, published in 2003, used all available evidence on the costs and benefits of HIT as the basis for upper-bound savings estimates. It then used the results to predict HIT-enabled efficiency savings after full adoption of interoperable HIT. Full adoption was predicted after 15 years (2019), at which point total U.S. health care spending would be reduced by approximately $80 billion annually relative to predicted spending at current adoption rates.

The Congressional Budget Office (CBO) subsequently published a review of the evidence on HIT that focused heavily on the RAND report.[369] CBO concluded that the HIT-related savings could be lower than predicted by the RAND study. The main reason is that CBO focused on the expected effects of policies to increase the adoption of HIT, whereas the RAND study focused on the potential effects of HIT after full adoption (other components of the RAND study examined the expected effect of financial subsidies on the adoption rate). The effects attributable to a specific policy are smaller than the total potential effects, since some rate of HIT adoption would occur in the absence of a new policy. The CBO report also criticized the decision by the RAND researchers to exclude certain studies that found negative effects of HIT adoption on efficiency.[370] RAND responded that its estimate was more likely too low than too high because it excluded several areas of potential savings and that studies that did not find positive effects were dropped because the RAND team believed that unsuccessful technologies

[369] United States Congressional Budget Office, *Evidence on the Costs and Benefits of Health Information Technology*. CBO Paper. 2008, Washington, D.C.: United States Congressional Budget Office. 37 p.

[370] Ibid.

would be discontinued in favor of technologies that performed to expectations.[371] More recently, CBO found in estimates related to the stimulus package that investments in HIT would produce a positive return on investment for the Medicare and Medicaid programs.

Our approach differed from the previous RAND study in several important ways. First, since our goal was to estimate the effect of policy changes on spending, our estimates are based on the difference between a status quo adoption rate and several adoption scenarios under policies to expand HIT use. In contrast, the previous RAND study calculated potential HIT-related savings relative to current adoption levels. Second, since the HIT-related savings predicted in the previous RAND report may not materialize, we assumed in our lower-bound scenario that HIT adoption would incur implementation and maintenance costs, but no savings. Our upper-bound savings estimates also differ from the previous RAND study in that they were scaled to Massachusetts.

Both CBO and RAND concluded that HIT-enabled reforms, such as quality improvement activities and comparative effectiveness studies, could lead to substantial savings.[372] However, these conclusions are not based on strong evidence from existing studies. To date, there is limited evidence of a significant association between EHR use and improved quality of care.[373,374] The lack of evidence could be due to measurement limitations, an insufficient time frame to capture long-term effects, or a lack of effectiveness of EHRs for quality improvement.[375]

The evidence of savings benefits of HIT is limited to a relatively small number of case studies, and it is unknown how generalizable those studies are to other settings. The available evidence is fairly consistent in predicting cost savings, but the expectations for the amount of savings may outstrip the strength of the evidence. Many of the expected effects are predicated on HIT-enabled changes in health care delivery that may be difficult to implement. The short-term savings are likely to be relatively modest, with greater potential savings in the long term.

The available evidence is based on the effectiveness of existing tools and systems. New tools and applications could potentially increase the effectiveness of HIT. New studies, such as the evaluation of MAeHC, could provide new information on the expected effects of HIT adoption.

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[371] R. R. Hillestad and R. Brook, Letter to Peter Orszag, Director, Congressional Budget Office. May 27, 2008. As of June 20, 2009: http://cboblog.cbo.gov/wp-content/uploads/2008/06/rand-response-on-hit.pdf

[372] Ibid.

[373] D. Blumenthal and C.M. DesRoches, K. Donelan, et al., *Executive Summary of Health Information Technology in the United States: Where We Stand.* 2008. Robert Wood Johnson Foundation: Princeton, NJ.

[374] J.A. Linder, J. Ma, D.W. Bates, et al., *Electronic Health Record Use and the Quality of Ambulatory Care in the United States.* Arch Intern Med, 2007. 167(13): p. 6.

[375] D. Blumenthal, C.M. DesRoches, K. Donelan, et al., *Executive Summary of Health Information Technology in the United States: Where We Stand.* 2008. Robert Wood Johnson Foundation: Princeton, NJ.

What Are The Critical Design Features?

Obtaining the funding needed for investment in and maintenance of HIT is critical to increased adoption.[376,377,378] Many providers have refrained from investment in HIT because of an uncertain return on investment.[379] State governments have identified funding as the most significant barrier to widespread adoption of HIT.[380]

Privacy concerns are another major potential obstacle.[381] Appropriate data-safeguarding plans are necessary to ensure that health information is protected. Without appropriate safeguards, the data sharing needed to achieve the potential of HIT to improve care coordination will not be possible.[382] Differing consent requirements, particularly for services related to substance abuse, mental health, and HIV/AIDS, may be an additional barrier to the storage and sharing of health information.[383] Their concerns about legal liability may also make physicians reluctant to make use of HIT.[384]

Well designed tools and training in how to use them are other key features for HIT to succeed. Providers will not make use of HIT to its full potential if the tools are not intuitive and easy to use. One key element of HIT design is data standards that permit interoperability. No such standards currently exist. To avoid obsolescence of their equipment, providers may delay adoption of HIT until standards have been developed.

Finally, having trained people available to facilitate adoption of new technology and workflow redesign will be essential. Large systems, such as the VA and Kaiser, and smaller organizations, such as Geisinger Health System, have made front-line technical assistance available to physicians and hospitals undergoing major HIT adoption. These individuals can identify problems in implementation and help health professionals resolve those problems before a new set of dysfunctional work-arounds becomes the standard way that business gets done.

Are There Unintended Consequences That Might Result?

Inadequate safeguarding of health information could result in breaches of patient privacy. Investment in HIT without adequate planning for interoperability could lead to the proliferation of systems that do not allow for data exchange.

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[376] American Hospital Association, *Continued Progress: Hospital Use of Information Technology.* 2007. American Hospital Association: Chicago, IL.

[377] C.M. DesRoches, E.G. Campbell, S.R. Rao, et al., *Electronic Health Records in Ambulatory Care—a National Survey of Physicians.* N Engl J Med, 2008. 359(1): p. 50-60.

[378] R. Hillestad, J. Bigelow, A. Bower, et al., *Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs.* Health Aff (Millwood), 2005. 24: p. 15.

[379] DesRoches et al., 2008.

[380] V.K. Smith, K. Gifford, S. Kramer, et al., *State e-Health Activities in 2007: Findings from a State Survey*. 2008, New York, N.Y.: Commonwealth Fund. xiii, 58 p.

[381] Ibid.

[382] J.J. Mongan, T.G. Ferris, and T.H. Lee, *Options for Slowing the Growth of Health Care Costs.* N Engl J Med, 2008. 358(14): p. 1509-14.

[383] V.K. Smith, K. Gifford, S. Kramer, et al., *State E-Health Activities in 2007: Findings from a State Survey*. 2008, New York, N.Y.: Commonwealth Fund. xiii, 58 p.

[384] DesRoches et al., 2008.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Bundled payment seeks to create many of the same efficiencies as HIT, such as reducing duplicate lab testing.

Reforms That Could Be Combined with This One

HIT is an element of medical home initiatives. HIT can also be used to enhance other interventions, including disease management, disease prevention, and reducing administrative waste.

Option #10
Eliminate Payment for Adverse Hospital Events

I. Nature of the Problem

In a 1999 report, the Institute of Medicine estimated that 45,000 to 98,000 deaths occur annually in hospitals as a result of medical errors.[385] According to the National Quality Forum (NQF), adverse health care events are a leading cause of death and injury in the United States.[386] Treatment related to these events is considered by some to be a major driver of health care spending. For example, while acknowledging that not all readmissions are avoidable, the Medicare Payment Advisory Commission (MedPAC) reported to Congress in 2007 that 17.6 percent of hospital admissions result in a readmission within 30 days of discharge, accounting for $15 billion in Medicare spending.[387] The belief is that, with better quality during the hospital stay, a majority of those readmissions could be avoided. In addition, patients who experience complications of treatment in the hospital usually have longer lengths of stay and generate a higher reimbursement as a result of the increased case complexity associated with the complication. Payers (including governments, insurers, and employers) are increasingly frustrated at having to pay for services that could have been avoided or that are more expensive as a result of poor quality. Policymakers and insurers are looking for policy options that would give hospitals incentives to improve quality and avoid medical error.

[385] L.T. Kohn, J. Corrigan, M.S. Donaldson, et al., *To Err Is Human: Building a Safer Health System*. 1999, Washington, D.C.: National Academy Press. xvi, 223 p.

[386] National Quality Forum, *National Quality Forum Updates Endorsement of Serious Reportable Events in Healthcare*. 2006, Press Release. As of June 12, 2009: http://www.qualityforum.org/pdf/news/prSeriousReportableEvents10-15-06.pdf

[387] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2007. MedPac: Washington, DC. As of June 12, 2009: http://www.medpac.gov/documents/jun07_EntireReport.pdf

II. Proposed Policy Option

What Is It?

Policy options to reduce the occurrence of adverse health care events include reducing or eliminating payment for serious reportable events, hospital-acquired infections, and potentially preventable readmissions. Below, we describe each of these adverse health care events in detail, and discuss programs undertaken by other states, as well as the Medicare program, to reduce their occurrence.

Serious Reportable Events ("Never Events")

According to the National Quality Forum, serious reportable events (formerly known as "never events") are errors in medical care that are clearly identifiable and measurable, and thus feasible to include in a reporting system; usually preventable; serious (resulting in death or loss of a body part, disability, or more than transient loss of a body function); and either adverse and/or indicative of a problem in a health care facility's safety systems and/or important for public credibility or public accountability.[388] NQF's 28 serious reportable events include wrong-site surgery, retention of an object after surgery, injury from contaminated drugs or devices, and other serious medical errors.[389] Massachusetts, along with several other states, including Minnesota, [390] New Jersey,[391] and Illinois,[392] requires mandatory reporting of serious reportable events. Some states and insurers have taken the additional step of eliminating payment for serious reportable events. As of June 2008, Pennsylvania and New York had announced that they would no longer reimburse for serious reportable events in their Medicaid programs.[393] Major insurers (including Cigna, Aetna, HealthPartners, Anthem/Wellpoint, Blue Cross Blue Shield Association) have also adopted "never event" payment policies.[394,395] In May 2006, the Centers for Medicare and Medicaid Services (CMS) reported that it was "reviewing its administrative authority to reduce payments for never events" and will work with Congress "on further legis-

[388] National Quality Forum. *Serious Reportable Events in Healthcare: 2005-2006 Update*. [Web Page] 2008. Online at http://www.qualityforum.org/projects/completed/sre/ (as of June 12, 2009).

[389] For the current full list, see National Quality Forum Web site. As of September 2008: http://www.qualityforum.org/

[390] Centers for Medicare and Medicaid Services, CMS Office of Public Affairs. *Eliminating Serious, Preventable and Costly Medical Errors - Never Events (Press Release)*. [Web Page] 2006. Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=1863 (as of May 18, 2006).

[391] Centers for Medicare & Medicaid Services, CMS Press Release, *Eliminating Serious, Preventable and Costly Medical Errors - Never Events*. 2006, Centers for Medicare and Medicaid Services: Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=1863.

[392] Ibid.

[393] New York's ban includes serious reportable events and avoidable hospital complications. New York State Press Release. *Medicaid to Cease Reimbursement to Hospitals for "Never Events" and Avoidable Errors*. [Web Page] 2008. Online at http://www.health.state.ny.us/press/releases/2008/2008-06-05_medicaid_cease_paying_never_events.htm (as of June 5, 2008).

[394] Hospital Buyer. *Non-Payment for Never Events Gaining Momentum with Insurers*. [Web Page] 2008. Online at http://www.hospitalbuyer.com/industry-market/non-payment-for-never-events-gaining-momentum-with-insurers-2145/ (as of February 29, 2008).

[395] Hospital Buyer. *Cigna Joins in, Halts Reimbursement for Never Events*. [Web Page] 2008. Online at http://www.hospitalbuyer.com/health-issues/quality-safety-errors/cigna-joins-in-halts-reimbursement-for-never-events-2316/ (as of April 22, 2008).

lative steps to reduce or eliminate these payments."[396] CMS also committed to partnering with hospitals and other health care organizations on efforts to reduce serious reportable events.[397] With the passage of Chapter 305, Massachusetts has also taken steps to prohibit health care facilities from seeking reimbursement for services provided in response to serious reportable events.

Hospital-acquired complications

Although empirical studies show that patient safety practices can prevent the development of hospital-acquired complications (e.g., urinary tract infections, bloodstream infections, ventilator-associated pneumonia),[398] hospitals have been slow to adopt such practices. The 2007 Leapfrog Survey found that 87 percent of reporting hospitals did not follow recommendations that would prevent common hospital-acquired complications[399] (i.e., complications that add not only to patient suffering but also needlessly to the costs of health care). MedPAC, in assessing Medicare payment policy in 2007, pointed out that DRGs (which were higher if a complication was present) were "fail[ing] to reward hospitals for investing in quality and process improvements to reduce the frequency of these adverse events."[400] On April 14, 2008, CMS announced a proposed rule that would update payment policies and rates under the hospital inpatient prospective payment system for fiscal year (FY) 2009 (beginning October 1, 2008): "Medicare will no longer pay hospitals at a higher rate for the increased costs of care that result when a patient is harmed by one of several conditions they didn't have when they were first admitted to the hospital and that have been determined to be reasonably prevented by following generally accepted guidelines."[401] The proposed rules identified 17 specific conditions.[402] In Massachusetts, The Betsy Lehman Center for Patient Safety and Medical Error Reduction has contracted with John Snow, Inc. (JSI) to prepare an estimate of the economic burden gen-

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[396] Centers for Medicare and Medicaid Services Web site, CMS Press Release, *Eliminating Serious, Preventable and Costly Medical Errors - Never Events*. 2006, Centers for Medicare & Medicaid Services: Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=1863.

[397] Centers for Medicare and Medicaid Services Web site, Ibid.

[398] Agency for Healthcare Research and Quality, *Advances in Patient Safety: From Research to Implementation Volumes 1-4*. 2005. AHRQ Pub. No. 050021. As of January 2008: http://www.ahrq.gov/qual/advances

[399] CMS Office of Public Affairs. *CMS Proposes to Expand Quality Program for Hospital Inpatient Services in FY 2009 (Press Release)*. [Web Page] 2008. Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=3041&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPage=&showAll (as of Thursday, April 14, 2008).

[400] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2007. MedPac: Washington, DC.

[401] CMS Office of Public Affairs. *CMS Proposes to Expand Quality Program for Hospital Inpatient Services in FY 2009 (Press Release)*. [Web Page] 2008. Online at http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=3041&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&srchOpt=0&srchData=&keywordType=All&chkNewsType=1%2C+2%2C+3%2C+4%2C+5&intPage=&showAll (as of Thursday, April 14, 2008).

[402] Eight of these conditions overlap with the NQF never events (e.g., objects left in after surgery). The complete list can be found at Centers for Medicare and Medicaid Services Web site, CMS Office of Public Affairs. *Incorporating Selected National Quality Forum and Never Events into Medicare's List of Hospital-Acquired Conditions (Fact Sheet)*. [Web Page] 2008 April 14, 2008. Online at http://www.cms.hhs.gov/apps/media/press/factsheet.asp?Counter=3043&intNumPerPage=10&checkDate=&checkKey=2&srchType=2&numDays=0&srchOpt=0&srchData=incorporating&keywordType=All&chkNewsType=6&intPage=&showAll=1&pYear=&year=0&desc=&cboOrder=date (as of June 17, 2009).

erated by hospital-acquired infections in Massachusetts and cost issues related to prevention, surveillance, and mandatory reporting.[403]

Avoidable readmissions

Although definitions vary, generally, potentially avoidable (or preventable) readmissions follow a hospital discharge within a defined time window, typically 15 to 30 days; are clinically related to the initial admission; and are unexpected. Not all preventable readmissions can be avoided; however, according to an analysis by MedPAC, "hospital readmissions are sometimes indicators of poor care or missed opportunities to better coordinate care. Research shows that specific hospital-based initiatives to improve communication with [Medicare] beneficiaries and their other caregivers, coordinate care after discharge, and improve the quality of care during the initial admission can avert many readmissions."[404,405] Readmission rates are higher for some Medicare beneficiaries than for others (e.g., beneficiaries with end-stage renal disease).[406] Rates of readmission vary considerably across hospitals, related in part to case mix. But, even taking disease-specific and severity-related differences into account, variation is still considerable.[407]

In 2007, MedPAC concluded that hospitals had not invested in managing transitions of care and needed stronger incentives to improve performance in this area. They acknowledged that current incentives in fee-for-service Medicare were part of the problem: "Medicare pays each provider separately, and the payment amount is not affected by providers' ability to coordinate care across settings. Hospitals that invest in reducing readmissions reap none of the reward of the investment (unless they are able to fill the unused beds with more profitable patients)."[408]

Payers, health plans, and health care vendors have developed algorithms for a range of conditions and decision rules to identify which readmissions could have been prevented.[409] Some apply narrow rules (e.g., identifying only those readmissions "that with near certainty could have been avoided, such as complications resulting from a perforation during surgery").[410] Others apply broader criteria, for example, viewing a readmission due to inappropriate medication management for COPD or congestive heart failure to have been avoidable.[411] As with never events, MedPAC recommended to Congress a two-step policy: first, to require public disclosure of hospital-specific risk-adjusted readmission rates for selected conditions, followed

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[403] The Official Website of the Office of Health and Human Services (EOHHS) - Commonwealth of Massachusetts. *Healthcare-Associated Infection Prevention Expert Panel.* [Web Page] 2008. Online at http://www.mass.gov?pageID=eohhs2terminal&L=4&L0=Home&L1=Consumer&L2=Community+Health+and+Safety&L3=Patient+Safety&sid=Eeohhs2&b=terminalcontent&f=dph_patient_safety_c_expert_panel&csid=Eeohhs2 (as of September 2008).

[404] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2007. MedPac: Washington, DC.

[405] For specific recommendations to reduce avoidable readmissions, see discussion at 111–114.

[406] Medicare Payment Advisory Commission, *Report to Congress: Promoting Greater Efficiency in Medicare.* 2007. MedPac: Washington, DC.

[407] Ibid.

[408] Ibid.

[409] Ibid.

[410] Ibid.

[411] Ibid.

after 1–2 years by a change in the payment rates (so that hospitals with high rates receive lower average per-case payments).[412]

How Would It Solve the Problem?

Policies to reduce or eliminate adverse hospital events would save money by reducing wasteful spending on conditions or health care events that could have been avoided. In addition, such policies would add value to the health care system by reducing pain, suffering, lost productivity, disability, and death stemming from medical errors.

What Has to Happen to Implement a Change?

Public and private insurers in the state would need to eliminate or reduce reimbursement for serious medical errors, preventable readmissions, and avoidable complications. Some policies to reduce reimbursement are already under way in Massachusetts. In April 2007, the Division of Health Care Finance and Policy (DHCFP) began requiring hospitals to report conditions present on admission as part of quarterly hospital discharge database submissions. On June 18, 2008, the Executive Office of the Department of Health and Human Services (EOHHS) announced that Commonwealth agencies no longer will pay for costs associated with the 28 NQF never events.[413] Through its HealthyMass Compact, Massachusetts is the first state to establish such a policy across state government. The policy will affect Medicaid, the Group Insurance Commission, the Connector, and the Department of Corrections and will be implemented by each agency in the next contract cycle.[414] In July 2008, Blue Cross Blue Shield of Massachusetts announced that it will follow suit and no longer pay for the same 28 NQF never events, and the Massachusetts Hospital Association has already adopted a voluntary practice not to charge for costs related to serious reportable events. Under the new cost containment law (Chapter 305), reporting of serious reportable events and hospital-acquired infections will be a condition of hospital licensure; the new law also prohibits facilities from charging or seeking reimbursement for such events.[415]

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled savings that could be achieved if Massachusetts were able to eliminate all potentially avoidable readmissions and hospital-acquired infections. We did not include serious reportable events in our calculations since they represent a very small proportion of total health

[412] Ibid.

[413] The Official Website of the Office of Health and Human Services (EOHHS) - Commonwealth of Massachusetts. *Patrick Administration Announces Non-Payment Policy for 28 Serious Reportable Events*. [Web Page] 2008. Online at http://www.mass.gov/?pageID=eohhs2pressrelease&L=1&L0=Home&sid=Eeohhs2&b=pressrelease&f=080618_non_payment_policy&csid=Eeohhs2 (as of September 2008).

[414] Ibid.

[415] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

care events. For example, a 2008 report found that 205 serious reportable events occurred in Massachusetts between January and June 2008.[416]

What Were the Assumptions?

We assumed that, by reducing or eliminating payment for all potentially preventable readmissions (PPRs) and hospital-acquired infections, Massachusetts could completely eliminate such events. This assumption is aggressive, since some adverse events could occur even if payment is eliminated, and some events flagged as being potentially preventable may not, in fact, be preventable. We assumed that it would take three years to achieve the full degree of savings, beginning in 2009. Because the Medicare program is actively pursuing policies to reduce preventable readmissions and avoidable complications, we included Medicare spending in our savings estimates.

We assumed that, to implement a reduction in potentially preventable readmissions and hospital-acquired infections, all hospitals and insurers in Massachusetts would choose to invest in software programs to identify avoidable and hospital-acquired complications and potentially preventable readmissions.

Upper-Bound Assumptions

We assumed that the policy would eliminate all potentially preventable hospitalizations occurring within 15 days of hospitalization, defined using methodology developed by 3M Corporation. 3M defines an admission as being potentially preventable if it occurs within a specified time window (typically, 15 or 30 days following an initial admission) and if the reason for readmission is clinically related to the initial hospitalization (based on primary or secondary diagnosis). Certain complex conditions for which rehospitalization may be inevitable, including metastatic malignancies and multiple trauma, are excluded from consideration. Using the 3M methodology, the Massachusetts Division of Health Care Finance and Policy estimates that there were 36,048 PPRs occurring within 15 days of admission in Massachusetts in FY 2006, with charges accumulating to $778,199,805. Applying the 2006 cost-to-charge ratio of 0.493 to these figures, we estimated that total costs related to PPRs in 2006 were $384,000,000.[417] Assuming that—in the absence of a policy change—per capita spending on PPRs would be constant over time, we projected these savings out through 2020, adjusting for changes in the size of the Massachusetts population.

For our upper-bound scenario, we added to the PPR estimate a Massachusetts-specific estimate of the costs of hospital-acquired infections reported by The Betsy Lehman Center and JSI

[416] Division of Health Care Quality, *Serious Reportable Events in Massachusetts Hospitals: January 1, 2008-June 30, 2008. An Interim Report.* 2008. The Massachusetts Department of Public Health. As of June 17, 2009: http://www.mass.gov/Ihqcc/docs/meetings/2008_12_03_patient_safety_serious_events_int_rept.pdf

[417] This cost-to-charge ratio was provided to us by the Division of Health Care Finance and Policy. We also considered using a payment-to-charge ratio, but this was essentially equivalent to the cost-to-charge ratio due to low hospital profit margins (less than 1 percent) in Massachusetts.

(2007).[418,419] The Lehman/JSI report includes several estimates of the cost of hospital-acquired infections, derived using slightly different methodologies. For our analysis, we use Lehman/JSI's estimate based on hospital financial data for the Northeast region of the United States, which implies that hospital-acquired infections in Massachusetts cost $233,504,602 in 2006. As with the PPR data, we projected the costs of hospital-acquired infections over time, adjusting for changes in the size of the Massachusetts population.

Lower-Bound Assumptions

Our lower-bound estimate includes the cost of PPRs only, and excludes savings related to hospital-acquired infections. We drop hospital-acquired infections from our lower-bound savings estimate because some hospital costs associated with hospital-acquired infection are likely included in the PPR analysis, potentially leading to double counting.

What Data Did We Use?

Data to estimate the cost of PPRs in Massachusetts came from a DHCFP report based on the 3M methodology. Data to estimate the cost of hospital-acquired infections came from a 2007 report by the Betsy Lehman Center and JSI. To estimate implementation and maintenance costs, we used average annual licensing fees for grouping software reported by a single, large vendor. We applied these fees to all hospitals and insurers currently operating in the state of Massachusetts.

To allocate cost savings across payers, we assumed that savings would accrue proportionately to hospital spending recorded in the Massachusetts-specific Medical Expenditure Panel Survey (MEPS) data.[420]

What Did We Conclude?

Table 10.1 shows upper- and lower-bound estimates of projected savings, overall and across payer. Table 10.2 shows total savings relative to projected health spending in the status quo. Both tables show results for 2010, and cumulatively for 2010–2015 and 2010–2020.

We projected that savings could total as much as $12 billion between 2010 and 2020, representing a 1.8-percent reduction in overall health spending. Savings relative to spending are smaller in 2010 because we assumed that it would take three years for the policy to take full

[418] Betsy Lehman Center for Patient Safety and Medical Error Reduction and JSI Research and Training Institute Inc., *Prevention and Control of Healthcare-Associated Infections in Massachusetts. Part 1: Final Recommendations of the Expert Panel.* 2008. Massachusetts Department of Public Health: Boston (MA).

[419] In much of the literature, the terms "nosocomial infection" and "hospital-acquired infection" are used interchangeably. In this report, we define nosocomial infection as an infection that results from medical treatment in any setting and hospital-acquired complications as a subset of nosocomial conditions that occur specifically in the hospital. Although the Lehman/JSI data refer to nosocomial infections, they focus only on infections acquired in a hospital setting; so, for our purposes, the terms are interchangeable. The term "complication" is used to cover a broader set of treatment-associated problems than just infections (e.g., bedsores).

[420] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

effect. In our lower-bound model, we projected that savings could reach $7.6 billion over 10 years, representing a 1.1-percent reduction in overall health spending. Again, savings relative to the status quo are smaller in 2010 because of the start-up period.

Table 10.1
Total Savings, Reduce or Eliminate Payment for Adverse Events (in millions)

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	–$346	–$3,460	–$7,636	–$558	–$5,572	–$12,297
Individual	–$6	–$58	–$128	–$9	–$93	–$206
Medicare	–$138	–$1,377	–$3,039	–$222	–$2,218	–$4,894
Medicaid	–$20	–$202	–$446	–$33	–$325	–$718
Private	–$159	–$1,588	–$3,505	–$256	–$2,558	–$5,645
Other	–$23	–$235	–$518	–$38	–$378	–$834

Table 10.2
Savings Relative to Status Quo, Reduce or Eliminate Payment for Adverse Events (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$346	–$3,460	–$7,636	–$558	–$5,572	–$12,297
% Savings	–0.80%	–1.13%	–1.14%	–1.29%	–1.82%	–1.84%

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimate

Our model assumes that, by eliminating payment for adverse events, we can also eliminate the occurrence of these events. Our lower-bound model estimates might be more realistic if some events continue to occur even after payment is eliminated. Another argument that supports a conservative estimate is uncertainty surrounding which hospital readmissions are truly preventable. For example, readmissions among people with serious mental health conditions may not be preventable, even if they occur within a short period after an initial hospitalization for a related diagnosis.

Findings that support the upper-bound estimate

Based on strong evidence from the literature, serious reportable events, hospital-acquired complications, and readmissions (related to some conditions) are all preventable. Patient safety

practices have been developed that would prevent these types of medical errors and lapses in care. There is strong empirical evidence to support the effectiveness of these safe practices. Implementation information is widely available from AHRQ and other public and private sources, and patient safety measures are widely available to track progress.[421] Nevertheless, hospitals have been slow to adopt safe practices, and most agree that the non-alignment of payment policy has been a significant contributing factor. Data from CMS and other sources document the high cost of medical error, economic theory and empirical evidence demonstrate the role that financial incentives can play in changing the behavior of health care providers. However, there are no studies that we could identify that specifically compare these kinds of policy options (altering payment policies) with other policy options (such as public reporting or collaborative, educational efforts), holding other factors constant.

What Are the Critical Design Features?

For the policy options to succeed, critical design features might include agreement on the following:

- Definitions—for example: What is an avoidable readmission? What conditions will be included?
- Who decides whether an event is avoidable (currently hospitals self-determine)?
- Whether there will be a "hold harmless" period (e.g., for hospitals to attempt improvements before being penalized)
- Whether there will be risk adjustment (for avoidable readmissions and possibly hospital-acquired conditions)
- Whether penalties will be applied in real time or assessed at the end of the year
- Whether there will be an appeals process
- Whether the policy applies to patients readmitted to the same hospital or whether it includes admissions to any other hospital

The problem of poorly performing hospitals is a real one, and a penalty-only approach assumes that all hospitals have it within their means to improve their performance. The Commonwealth might need to consider actions that could be taken to help willing but poorly performing hospitals to improve.

Are There Unintended Consequences That Might Result?

Reduced payment for avoidable readmissions might lead some hospitals to stop readmitting people who really need to return to the hospital. Will payment be rendered for an admission if a patient is admitted to a different facility to be treated for a condition related to a prior surgery/procedure/treatment at a different hospital? That is, can hospitals "game" the system by referring patients to other hospitals for follow-up care? Would continuity of care be negatively

[421] Agency for Healthcare Research and Quality, *Advances in Patient Safety: From Research to Implementation Volumes 1-4.* 2005. AHRQ Pub. No. 050021.

affected? Would patients suffer because hospitals would be refused payment for admitting them again to treat complications resulting from an error? Another possible unintended consequence is that withholding payments from hospitals with the poorest patient safety profiles will only make those hospitals' financial conditions worse, preventing them from being able to invest in patient safety activities that ultimately would improve their performance.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Bundled payment approaches seek to reduce spending by limiting payment for avoidable complications; therefore, they target the same dollars as reforms aimed solely at reducing potentially preventable readmissions and hospital-acquired infections. Although policies related to hospital rate regulation do not explicitly address avoidable complications, reduced reimbursement rates might force hospitals to become more aggressive about eliminating avoidable complications. Although hospital rate regulation and reduced payment for avoidable complications could be combined, it is not clear that the savings would be additive.

Reforms That Could Be Combined with This One

Policies to eliminate avoidable complications could be combined with disease management or medical homes, to improve the overall value of health care.

Option #11
Decrease the Intensity of Resource Use for End-of-Life Care

I. Nature of the Problem

There is conflicting opinion about the extent to which prolonged hospitalization in the last year of life, with intensive but seemingly futile treatment, is a major driver of health care costs. The Congressional Budget Office (CBO), in a 2005 report on high cost Medicare beneficiaries, concluded that roughly one-quarter of Medicare payments were for costly treatments provided in the last year of life.[422] Other studies have argued that health care costs are driven more by repeated hospitalizations necessitated by chronic illness than by end-of-life care per se, and suggest that opportunities for cost reduction lie in improved management of chronic diseases

[422] United States Congressional Budget Office, *High-Cost Medicare Beneficiaries.* 2005. U.S. Congressional Budget Office: Washington, D.C. The report cites two studies to back up this conclusion: C. Hogan, J. Lunney, J. Gabel, et al., *Medicare Beneficiaries' Costs of Care in the Last Year of Life.* Health Aff (Millwood), 2001. 20(4): p. 188-95. and J.D. Lubitz and G.F. Riley, *Trends in Medicare Payments in the Last Year of Life.* N Engl J Med, 1993. 328(15): p. 1092-6.

so that costly hospitalizations are avoided.[423] There is also notable geographic variation in end-of-life spending,[424,425] which raises the possibility that savings could be attained by reducing geographic disparities. A study based on the Dartmouth Atlas—a on-going project describing geographic variation in resource use across the US—found that Massachusetts could save up to $2.3 billion over 5 years (2001–2005) if end-of-life care spending for Medicare enrollees could be reduced to approximate end-of-life care spending in Minnesota.[426] Because a change in payment incentives for Medicare patients would require a policy change, we include in our analysis only decreased intensity of resource use among the non-elderly population. Because Medicare is the predominant payer for end-of-life care, policy options with regard to state spending will be limited to affecting the 20 percent of persons who die who are not Medicare beneficiaries.[427] Still, there may be opportunities to reduce costs related to end-of-life care whether or not such spending is the primary driver of health care costs among the non-Medicare population.

II. Proposed Policy Option

What Is It?

End-of-life care is typically thought of as care provided in the final weeks to months of a person's life. It can include conventional medical treatment, palliative care (i.e., treatment to prevent and relieve symptoms rather than to cure), and a variety of support services for individuals and their families (e.g., counseling). However, experts in end-of-life care at both RAND and the Urban Institute suggest that the concept of end-of-life care should be broadened to encompass all care provided to a person with a terminal illness, whether that period spans weeks or years.[428,429]

The intensity of resource use for end-of-life care could be decreased in several ways, although the mechanisms to motivate these changes are not well specified:

- ***Increase referral to and use of hospice care, especially in non–acute care settings.*** The Commonwealth mandates that health insurers provide a hospice benefit. There has been some discussion of eliminating insurance mandates due to their high cost. However, according to an analysis by the Division of Health Care Finance and Policy (DHCFP), the hospice mandate is not one of those that accounts for most

[423] T. Bodenheimer and A. Fernandez, *High and Rising Health Care Costs. Part 4: Can Costs Be Controlled While Preserving Quality?* Ann Intern Med, 2005. 143(1): p. 26-31. For a discussion of the cost containment potential of disease management, see Massachusetts Blueprint for Cost Containment Policy, Option #17.

[424] M.B. Buntin and H. Huskamp, *What Is Known About the Economics of End-of-Life Care for Medicare Beneficiaries?* Gerontologist, 2002. 42(3): p. 9.

[425] S.M. Lieberman, J. Lee, T. Anderson, et al., *Reducing the Growth of Medicare Spending: Geographic Versus Patient-Based Strategies.* Health Aff (Millwood), 2003. Suppl Web Exclusives: p. W3-603-13.

[426] Lewis, 2008, and personal communication with the author.

[427] B.J. Austin, L.K. Fleisher, and AcademyHealth, *Financing End-of-Life Care: Challenges for an Aging Population*. 2003, Washington, DC: AcademyHealth. 16 p.

[428] See, J. Lynn, D.M. Adamson, RAND Health, et al., *Redefining and Reforming Health Care for the Last Years of Life*. 2006, RAND: Santa Monica, CA. As of June 21, 2009: http://www.rand.org/pubs/research_briefs/RB9178/

[429] M. Moon, C. Boccuti, and Urban Institute, *Medicare and End-of-Life Care*. 2002, Washington, D.C.: Urban Institute. 24 p.

of the spending.[430] Therefore, at a minimum, policymakers may want to retain the hospice mandate to encourage the provision of palliative care, especially in nonhospital settings (freestanding facilities, at home). Kaiser Permanente reports that, with their In Home Palliative Care Program, which is available to terminally ill patients in their last year of life, they have shifted from an acute care model to a chronic care model for providing end-of-life care. Recent studies conducted by investigators at Kaiser found that the program is more responsive to patient preferences, as well as to cost savings (through decreased use of emergency department visits and hospitalizations).[431,432] The Kaiser developers believe that earlier referral to hospice care is an important factor in improving patient experience and lowering costs. They point out that their program does not preclude the use of any other services (e.g., physician visits, specialty care, emergency, or inpatient care) but has reduced the use of those services by providing most services in the patient's home.[433]

- ***Increase the role of primary care physicians in treating patients with terminal illness.*** Primary care physicians may be able to improve the quality of end-of-life care by actively managing the course of treatment for chronic disease leading to death, by talking to patients and their family members about preferences and options (such as palliative care), and by coordinating palliative care and social services to allow patients to stay in their homes.[434] To increase the effectiveness of this option, policymakers may want to mandate or create incentives for primary care physicians to seek training and certification in palliative care.
- ***Encourage substitution of community hospitals for academic medical centers.*** A 2007 analysis by the DHCFP of the variation in use of hospital inpatient resources in end-of-life care found that, even after controlling for patient age and severity, hospital discharge data show that academic medical centers (AMCs) tend to treat end-of-life patients with substantially more resources (as indicated by intensive care unit [ICU] days, significant procedures, longer lengths of stay) and at substantially higher costs than community hospitals.[435] The availability of ICU beds appears to be related to the higher rate of ICU use (and costs) in academic medical centers. In contrast, the availability of ICU beds among community hospitals does not correlate with higher ICU use for their end-of-life patients.[436] The Institute for Healthcare Improvement (IHI) has focused attention on strategies to identify terminally ill

[430] Division of Health Care Finance and Policy, *Comprehensive Review of Mandated Benefits in Massachusetts: Report to the Legislature.* 2008. Commonwealth of Massachusetts.

[431] R. D. Brumley, S. Enguidanos, and K. Hillary, *The Palliative Care Program*, The Permanente Journal, Vol. 7, No. 2, 2003a, pp. 7–12.

[432] R.D. Brumley, S. Enguidanos, and D.A. Cherin, *Effectiveness of a Home-Based Palliative Care Program for End-of-Life.* J Palliat Med, 2003. 6(5): p. 715-24.

[433] Partners in Care Foundation. *End-of-Life Care: Institute for Change – Research Center – Palliative Care Initiative*. [Web Page] 2008. Online at http://www.picf.org/landing_pages/74,3.html (as of July 30, 2008).

[434] Ibid.

[435] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy. The analysis also noted that resource use varies substantially across academic medical centers.

[436] Ibid..

> patients whose needs may be better served outside of ICUs.[437] There also appears to be a trend over time toward more end-of-life care being provided in AMCs than in community hospitals.[438] One policy option would be to use various financial incentives to increase the use of community hospitals for end-of-life care.[439]

The new cost containment law directs the Executive Office of the Department of Health and Human Services (EOHHS), in consultation with the Massachusetts Quality and Cost Commission (QCC), the Commission on End of Life Care, and the Betsy Lehman Center to convene an expert panel on quality and cost of end-of-life care for patients with serious chronic illnesses.[440] The report of such a panel might explicitly address the ethical considerations in restricting end-of-life procedures that are of questionable benefit and identify strategies for encouraging reduced intensity of service delivery. However, Medicare is the payer for most end-of-life care and the purview of this panel does not necessarily extend to Medicare.[441] In 1997, of the 2.3 million adults who died, 80 percent were Medicare beneficiaries (either because they were over age 65 or suffering from a disability or end-stage renal disease).[442] Medicare covers conventional medical care provided in acute care hospitals and also hospice care for individuals who are certified as having a life expectancy of six months or less.[443] Eighty percent of hospice users are Medicare beneficiaries. As a result, there will be limits on what Massachusetts can save by strategies to reduce the intensity of spending on end-of-life treatment.

How Would It Solve the Problem?

The policies discussed above could reduce spending on end-of-life care by moving patients from costly AMC and hospital settings to less costly hospice and community settings.

What Has to Happen to Implement a Change?

Insurers and physicians must provide encouragement or incentives for patients to use less costly care at the end of life. Policy options could include lower cost-sharing for hospice care, as well as programs to encourage doctors to talk about palliative care and to consider less intensive treatments for patients nearing the end of life. There may be innovative payment models that could be developed to encourage timely referral to hospice and palliative care programs.

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[437] See Institute for Health Improvement. *Intensive Care*. [Web Page]. Online at http://www.ihi.org/ihi/topics/criticalcare/intensivecare/ (as of June 21, 2009).

[438] Ibid.

[439] For a discussion of such incentives related to AMCs, see Controlling Health Care Spending in Massachusetts: An Analysis of Options Policy, Option #12.

[440] The Commonwealth Of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[441] With the exception of that provided in nursing homes. M.B. Buntin and H. Huskamp, *What Is Known About the Economics of End-of-Life Care for Medicare Beneficiaries?* Gerontologist, 2002. 42(3): p. 9.

[442] D.L. Hoyert, K.D. Kochanek, and S.L. Murphy, *Deaths: Final Data for 1997.* Natl Vital Stat Rep, 1999. 47(19): p. 1-104.

[443] B.J. Austin, L.K. Fleisher, and AcademyHealth, *Financing End-of-Life Care: Challenges for an Aging Population*. 2003, Washington, DC: AcademyHealth. 16 p.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled a policy change that shifted end-of-life care from AMCs to community hospitals, and from hospital-based settings to hospice settings. We focused on care for Massachusetts residents between the ages of 18 and 64, since spending on older adults is controlled by Medicare.

We do not have good evidence on the degree to which end-of-life-care episodes for patients aged 18 through 64 could be shifted from higher cost to lower cost care settings. A key challenge is that it may be hard to identify end of life episodes *a priori*, especially for patients under the age of 65. Analysis by the Massachusetts DHCFP shows large differences in spending for end-of-life care at AMCs and community hospitals, even after adjusting for case-mix severity.[444] Moreover, Massachusetts has experienced a steady increase in the proportion of end-of-life care episodes occurring in AMCs. In 1995, 32 percent of all end-of-life care episodes took place at AMCs; in 2006, 41 percent occurred in AMCs.[445] However, we do not know whether this change in utilization patterns over time was appropriate and it is unclear how much of this care could be shifted to hospice settings. As a result of the uncertainty, our estimates are driven largely by assumption.

What Were the Assumptions?

Our overarching assumption was that a policy can be developed to accomplish a major shift in the intensity of resource use at the end of life, that a high intensity episode can be identified at the outset (that is, people who are at the end of their life can be identified before intensive services are delivered), that doctors and patients are willing to take a different approach, and that the relative costs of care delivery in the different settings do not change as a result of major market shifts.

Upper-Bound Assumptions

In our upper-bound savings scenario, we assumed that we could shift 50 percent of all hospital-based end-of-life care for adults ages 18–64 to hospice settings. Of the remaining hospital care, we assumed that we could shift 90 percent of AMC-based end-of-life care to community hospitals. We assumed that it takes 5 years to fully achieve these shifts, so savings phase in gradually. From figures reported by Cai et al.,[446] we assumed that care shifted from AMCs to community settings would cost 25 percent more than care currently occurring at community hospitals due to case-mix differences.

[444] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy.

[445] Ibid.

[446] Ibid.

Lower-Bound Assumptions

In our lower-bound savings scenario, we assumed that we could shift 25 percent of all hospital-based end-of-life care for adults ages 18–64 to hospice settings. We derived costs for hospice care from Brumley, Enguidanos, and Chernin.[447] Of the remaining hospital care, we assumed that the distribution of care at teaching and nonteaching hospitals could be rolled back to levels occurring in 1995. Again, we adjusted community hospital costs for shifted care to reflect case-mix differences, and we assumed that savings phase in gradually over 5 years.

What Data Did We Use?

Data to estimate the cost of end-of-life care in community and teaching hospitals in Massachusetts, as well as the number of end-of-life episodes, came from Cai et al.[448] and are specific to the 19–64-year-old population in Massachusetts. These data excluded deaths from accidents and violence. Since these are charge data, we adjusted using a 49-percent cost-to-charge ratio provided by the DHCFP.[449] Data to estimate the cost of hospice care came from Brumley et al.[450]

Table 11.1 shows the estimated cost of an end-of-life care episode in 2008, after accounting for health care cost inflation. Community hospital costs for shifted care reflect that care shifted from AMCs to community settings would likely be more complex than the care currently provided in community settings. From figures reported in Cai et al.,[451] we assumed that 25 percent of the difference in community and AMC costs is due to case mix.

Table 11.1
Estimated Costs for End-of-Life Care, by Setting

Care Setting	Cost (2008 dollars)
Hospice	$15,017
Community hospital, current care	$17,677
Community hospital, shifted care (after accounting for case-mix severity)	$27,385
Teaching hospital (AMC)	$56,509

SOURCE: Cai et al., 2007

[447] R.D. Brumley, S. Enguidanos, and D.A. Cherin, *Effectiveness of a Home-Based Palliative Care Program for End-of-Life.* J Palliat Med, 2003. 6(5): p. 715-24.

[448] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy.

[449] We also considered using a payment-to-charge ratio, but this was essentially equivalent to the cost-to-charge ratio due to low hospital profit margins (less than 1 percent) in Massachusetts.

[450] R.D. Brumley, S. Enguidanos, and D.A. Cherin, *Effectiveness of a Home-Based Palliative Care Program for End-of-Life.* J Palliat Med, 2003. 6(5): p. 715-24.

[451] J. Cai, M. Schiff, and N. Vuong, *Variation in Use of Hospital Inpatient Resources in End-of-Life Care in Massachusetts.* 2007. Massachusetts Division of Health Care Finance and Policy.

We used data from the Massachusetts-specific Medical Expenditure Panel Survey (MEPS)[452] to allocate savings across payers. Specifically, we calculated the share of inpatient spending for individuals under age 65 that accrued to each payer (individuals, Medicaid, private insurers, and others), and then we used these proportions to allocate savings.

What Did We Conclude?

Table 11.2 shows upper- and lower-bound savings estimates, overall and by payer. Table 11.3 compares estimated savings to projected spending in the status quo. Both tables show results for 2010 and cumulatively for 2010–2015 and 2010–2020.

Even in our upper-bound scenario, for which we made relatively liberal estimates about the degree of care that could be shifted out of hospital and AMC settings, cumulative savings over 10 years are far less than 1 percent of total spending. We projected that, at a maximum, Massachusetts could save $1.4 billion between 2010 and 2020 by increasing the efficiency of non-Medicare spending at the end of life. These low estimates are driven almost entirely by the fact that mortality rates among the non-Medicare population are relatively low, especially after excluding deaths related to accidents and injury. For example, in 2005, the Centers for Disease Control and Prevention (CDC) reported that there were 11,570 deaths in Massachusetts for people under the age of 65.[453] Additional data from the CDC shows that 18.2 percent of Massachusetts deaths among people ages 1 to 64 are the result of unintentional injuries, suicide, or homicide,[454] causes that are unlikely to incur substantial end-of-life spending.

Table 11.2
Total Savings, Increased Efficiency in End-of-Life Spending (in millions)[a]

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	–$15	–$329	–$847	–$28	–$557	–$1,404
Individual	$0	–$3	–$7	$0	–$5	–$12
Medicare	$0	$0	$0	$0	$0	$0
Medicaid	–$2	–$37	–$96	–$3	–$63	–$158
Private	–$12	–$252	–$649	–$22	–$427	–$1,075
Other	–$2	–$37	–$95	–$3	–$63	–$158

[a] Savings estimates exclude the Medicare population.

[452] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

[453] Centers for Disease Control and Prevention - National Center for Health Statistics. *Table 23f. Deaths by 10-Year Age Groups: United States and Each State, 2005*. Online at http://www.cdc.gov/nchs/data/statab/MortFinal2005_Worktable23F.pdf (as of June 21, 2009).

[454] Centers for Disease Control and Prevention - National Center for Health Statistics. *Data Warehouse - Mortality Tables*. [Web Page] October 15, 2008. Online at http://www.cdc.gov/nchs/data/statab/MortFinal2005_Worktable23F.pdf (as of June 21, 2009).

Table 11.3
Savings Relative to Status Quo, Increased Efficiency in End-of-Life Spending (in millions)[a]

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	–$15	–$329	–$847	–$28	–$557	–$1,404
% Savings	–0.03%	–0.11%	–0.13%	–0.07%	–0.18%	–0.21%

[a] Savings estimates exclude the Medicare population.

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimates

Relative to the upper-bound estimates, our lower-bound figures may represent a more realistic estimate of the savings that we could expect from a reform focused on the population of those less than 65 years old. The assumptions about the amount of end-of-life care that could be shifted to community hospitals in the lower-bound scenario are grounded in historical experience, suggesting that they may be more attainable than the upper-bound assumptions. Moreover, since neither the upper- nor the lower-bound estimates account for any implementation costs, the lower-bound scenario might be a more realistic picture of what might be attained with little or no additional investment.

As noted above, one reason that our estimates show a relatively small effect on savings is that we exclude the Medicare population. Yet, even if Medicare were included, the evidence does not necessarily imply that substantial savings could be achieved. In their paper "The Economics of Dying," Emanuel and Emanuel concluded: "None of the individual studies of cost savings at the end of life associated with advance directives, hospice care, or the elimination of futile care are definitive. Yet they all point in the same direction: cost savings due to changes in practice at the end of life are not likely to be substantial. The amount that might be saved by reducing the use of aggressive, life sustaining interventions for dying patients is at most 3.3% of total national health care expenditures."[455] Although the estimates quoted earlier stating that Massachusetts could save $2.3 billion dollars over 5 years within the Medicare population[456] are difficult to annualize because the study did not adjust for inflation, they suggest annual savings of about $460 million. Even after updating to 2010 dollars, this still amounts to annual savings of less than 2 percent per year. Moreover, the study does not propose specific policy changes that Massachusetts could make to reduce end-of-life spending to levels achieved in Minnesota.

[455] E.J. Emanuel and L.L. Emanuel, *The Economics of Dying—the Illusion of Cost Savings at the End of Life.* N Engl J Med, 1994. 330(8): p. 540.

[456] Lewis, J. The Dartmouth Institute for Health Policy and Clinical Practice, "Special End-of-Life Committee at IHI." briefing, and personal conversation with the author.

Findings that support the upper-bound estimates

There are several studies to suggest that shifting patients from hospital to hospice care settings could save money, but methodological considerations make the evidence weak. Buntin and Huskamp (2002) report that a number of studies have found that those who receive hospice care have lower average expenditures at end of life than Medicare beneficiaries who did not use hospice, but they conclude that these studies are likely to overstate any cost savings because of methodological issues with the studies (e.g., patients are not randomized to receive conventional care or hospice care, and selection bias may account for differences in costs because those who choose hospice are less likely to have pursued aggressive treatment even had hospice not been an option).[457] Of two randomized controlled trials they identified (both VA hospice programs), one study found no differences in cost or utilization between the hospice group and control group, and the other documented lower net per capita spending, but the differences were not statistically significant.[458] A recent study conducted by Kaiser investigators found that their Chronic Care Model of home-based palliative care was cost saving (through decreased use of emergency department visits and hospitalizations).[459,460]

What Are the Critical Design Features?

Policies designed to reduce spending on end-of-life care must be sensitive to the needs of patients and their families. In their paper, Emanuel and Emanuel state, "to many people reducing expenditures at the end of life seems an easy and readily justifiable way of cutting wasteful spending and freeing resources to ensure universal access to health care." They go on to say, "Many believe that interventions for patients whose death is imminent are inherently wasteful, since they neither cure nor ameliorate disease or disability."[461] While this may be true in the abstract, talk of rationing care, even at the end of life, raises concerns that government or private payers may withhold life saving treatment based on cost considerations. The public might agree, in general, that futile interventions are not worth paying for, but "futile interventions are hard to define, let alone stop."[462] What an intervention is "worth" is a calculation that is value-laden, not just economic. Employing comparative effectiveness analysis to determine which procedures and treatments are cost-effective may be one approach to the economic calculation. However, ethical considerations will also need to be taken into account.

In addition, a systematic effort to reduce the intensity of resource use at the end of life would have to:

- Have a method for identifying patients prospectively who are at the end of life and for whom additional services are futile

[457] M.B. Buntin and H. Huskamp, *What Is Known About the Economics of End-of-Life Care for Medicare Beneficiaries?* Gerontologist, 2002. 42(3): p. 9.

[458] Ibid.

[459] See R.D. Brumley, S. Enguidanos, and K. Hillary, *The Palliative Care Program.* The Permanente Journal, 2003. 7(2).

[460] R.D. Brumley, S. Enguidanos, and D.A. Cherin, *Effectiveness of a Home-Based Palliative Care Program for End-of-Life.* J Palliat Med, 2003. 6(5): p. 715-24.

[461] E.J. Emanuel and L.L. Emanuel, *The Economics of Dying—the Illusion of Cost Savings at the End of Life.* N Engl J Med, 1994. 330(8): p. 540.

[462] Ibid.

- Convince physicians that a less-aggressive approach to treatment is consistent with the standard of care in the community and with professional best practices
- Engage patients and families in this pathway when it involves their own care (not more generally as applied to the care delivered to others)
- Ensure that adequate hospice and palliative-care capacity are available (this appears to be true in Massachusetts, which has training programs)
- Have an adequate incentive to cause the shift in resource use to occur in a majority of cases and for most of the episode

Are There Unintended Consequences That Might Result?

Lower quality of care might result if people who could have benefited from intensive treatments provided by AMCs are shifted to hospice care or community settings. The reform could lead to increased spending if the investments required to expand access to high-quality hospice-based care outweigh savings.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policy options aimed at reducing the cost of hospital care, including hospital rate regulation, rate regulation for AMCs, and reference pricing for AMCs, seek to save the same dollars as policies aimed at increasing the efficiency of spending on end-of-life care. These options, which apply to a broader range of hospital services than end-of-life care, may be more effective at reducing overall spending.

Reforms That Could Be Combined with This One

Policies to increase the efficiency of spending at the end of life could be combined with options to enhance primary care, such as disease management and increased use of medical homes.

Option #12
Encourage Value-Based Insurance Design

I. Nature of the Problem

In most benefit packages for health insurance, pharmaceutical and other co-payments do not vary with a patient's need for a drug or service. As a result, cost-sharing arrangements that raise co-payments to discourage overuse of health care services may have the unintended consequence of reducing necessary, as well as unnecessary, care. Value-based insurance design is an

alternative approach to cost-sharing whereby co-payments are tied to the expected benefit of a drug or service.[463] Value-based insurance design could be applied to any health care service or treatment; however, it is most commonly considered in the context of pharmaceutical co-payments. Value-based insurance design could save money if it encourages greater compliance with drug regimes among chronically ill patients and—as a result—reduces avoidable hospitalizations and emergency department (ED) visits.

II. Proposed Policy Option

What Is It?

Value-based insurance design ties co-payments to the expected benefit of the health care service being consumed. Insurers in Massachusetts could implement value-based insurance design by reducing pharmaceutical co-payments for drugs used to treat chronic illness. Chernew, Rosen, and Fendrick[464] discuss two approaches to implementing value-based insurance design for pharmaceutical benefits. Under the first approach, co-payments for drugs that have a high benefit for a wide class of people, such as statins and beta blockers, would be lowered for all patients. Although this approach is easy to implement, it does not differentiate between patients with high need and low need for the drug and could potentially lead to overuse among low-risk patients. Under the second approach, co-payments would be tiered according to patients' risk profiles, so that chronically ill or high-risk patients would face lower co-payments than other patients. The latter approach is more targeted, but requires more-advanced data systems to implement.

How Would It Solve the Problem?

Goldman, Joyce, and Escarce[465] documented that high pharmaceutical co-payments resulted in decreased utilization of necessary drugs among chronically ill patients. Chernew et al.[466] found that reduced co-payments led to greater pharmaceutical adherence among chronically ill patients. To the extent that greater drug adherence reduces avoidable hospitalizations, value-based insurance design could save money by keeping chronically ill patients out of the hospital.

What Has to Happen to Implement a Change?

A switch to value-based insurance would require public and private insurers in Massachusetts to begin offering plans with this benefit design. Massachusetts could encourage this switch by

[463] M.E. Chernew, A.B. Rosen, and A.M. Fendrick, *Value-Based Insurance Design.* Health Aff (Millwood), 2007. 26(2): p. W195.

[464] Ibid.

[465] D.P. Goldman, G.F. Joyce, J.J. Escarce, et al., *Pharmacy Benefits and the Use of Drugs by the Chronically Ill.* JAMA, 2004. 291(19): p. 2344-50.

[466] M.E. Chernew, M.R. Shah, A. Wegh, et al., *Impact of Decreasing Copayments on Medication Adherence within a Disease Management Environment.* Health Aff (Millwood), 2008. 27(1): p. 10.

advocating the use of value-based benefits and by implementing value-based insurance co-payment strategies within Medicaid and other state-sponsored health plans.

III. What Level of Savings Can Be Expected from This Policy Change?

What Policy Change Did We Model?

We modeled a policy change in which all insurers in Massachusetts other than Medicare offer reduced pharmaceutical co-payments to patients with one of six targeted chronic conditions. The reduced revenue resulting from the co-payment reduction is offset by a corresponding increase in pharmaceutical co-payments for patients without the six chronic conditions.

What Were the Assumptions?

We modeled an upper-bound scenario using optimistic savings estimates based on the experience of a single large employer (the Pitney Bowes Corporation), as well as simulated results reported by Goldman, Joyce, and Karaca-Mandic.[467] But, since the literature is scant, we modeled a pessimistic lower-bound scenario that assumes hospital and ED costs increase for healthy patients who now face higher drug co-payments, with no offsetting decline in spending for the chronically ill. In both the upper- and lower-bound scenarios, we limit our analysis to non-Medicare spending for adults ages 18 through 64.

We defined target chronic illnesses using 6 conditions—diabetes, congestive heart failure (CHF), coronary artery disease (CAD), asthma, chronic obstructive pulmonary disease (COPD) and depression. Using these definitions, 19 percent of our sample (adults ages 18–64) had a target chronic condition.

Upper-Bound Assumptions

In our upper-bound scenario, we considered a case in which total drug spending among adults ages 18–64 with any of the 6 target chronic conditions is reduced by 10 percent (corresponding to a 38-percent reduction in out-of-pocket payments), and this change is coupled with an offsetting increase in pharmaceutical co-payments for adults ages 18–64 without any of the target chronic conditions. Because changes in pharmaceutical spending for patients with targeted conditions is completely offset by spending increases among individuals without the targeted conditions, total pharmaceutical spending is constant in our analysis.

We assumed that the change in pharmaceutical benefit design leads to a 25-percent reduction in ED use and a 5-percent reduction in inpatient utilization, among consumers with targeted chronic illnesses. The 25-percent reduction for ED use is based on ED savings for diabetes

[467] D.P. Goldman, G.F. Joyce, and P. Karaca-Mandic, *Varying Pharmacy Benefits with Clinical Status: The Case of Cholesterol-Lowering Therapy.* Am J Manag Care, 2006. 12(1): p. 21-8.

patients reported by Pitney Bowes.[468,469] The 5-percent reduction in inpatient spending corresponds to a 4.9- to 6.3-percent reduction in hospitalizations estimated by Goldman, Joyce, and Karaca-Mandic,[470] using a model that estimated changes in utilization due to the elimination of statin co-payments among severely and moderately ill patients.

Goldman, Joyce, and Karaca-Mandic[471] estimated a small increase in inpatient utilization and ED use among low-risk patients who become subject to higher co-payments with value-based insurance design, so we increased hospital and ED costs by 1.5 percent for people without the target chronic conditions in our model.

Lower-Bound Assumptions

Since evidence to date is limited, the upper-bound results in our model should be considered speculative. To model the lower-bound effects of value-based insurance design, we assumed a worst-case scenario in which higher co-payments for patients without the target conditions result in a 1.5-percent increase in hospitalizations and ED use among these individuals, but the policy has no effect on spending for people with the targeted chronic conditions.

What Data Did We Use?

Data on health spending, including spending for drugs, ED, and inpatient care, came from the Medical Expenditures Panel Survey (MEPS).[472]

What Did We Conclude?

We projected that value-based insurance design could reduce spending up to $1.2 billion (0.17 percent) over 10 years. Table 12.1 shows projected savings, overall and for specific payers for 2010 and cumulatively for 2010–2015 and 2010–2020. The relatively small change in spending is driven by the assumption that value-based insurance design affects costs primarily through a reduction in ED utilization among the chronically ill. Although unnecessary ED utilization is a concern in Massachusetts and elsewhere, ED spending represents a relatively small fraction of total spending for patients with the target chronic conditions. Using the MEPS data, we estimated that annual per capita ED spending among Massachusetts patients with target chronic conditions will be $275 in 2010, compared with $2,500 for inpatient spending and $2,490 for pharmaceutical spending. Overall, ED spending accounts for 2.8

[468] J.J. Mahoney, *Reducing Patient Drug Acquisition Costs Can Lower Diabetes Health Claims.* Am J Manag Care, 2005. 11(5 Suppl): p. S170-6.

[469] Anonymous, *Benefit-Based Copays in the Real World: The Employer Perspective.* Am J Manag Care, 2006. 12(13 Suppl): p. S353-8.

[470] D.P. Goldman, G.F. Joyce, and P. Karaca-Mandic, *Varying Pharmacy Benefits with Clinical Status: The Case of Cholesterol-Lowering Therapy.* Am J Manag Care, 2006. 12(1): p. 21-8.

[471] Ibid.

[472] MEPS, which began in 1996, is a set of large-scale surveys of families and individuals, their medical providers (doctors, hospitals, pharmacies, etc.), and employers across the United States. MEPS collects data on the specific health services that Americans use, how frequently they use them, the cost of those services, and how those services are paid for, as well as data on the cost, scope, and breadth of health insurance held by and available to U.S. workers.

percent of per capita health care costs for adults (ages 18–64) in Massachusetts with the target chronic illnesses.

Table 12.2 shows the estimated savings relative to status quo spending. In our lower- bound scenario, we projected that total spending will increase with the reform, since we assumed that there will be slightly worse outcomes for individuals without the target conditions (who now have higher pharmaceutical co-payments), and no change in outcomes for patients with target chronic conditions. Our upper-bound assumptions show total savings of less than 1 percent.

The literature on value-based insurance design stresses potential savings to employers from increased worker productivity.[473] Since we are more narrowly focused on health spending, any savings related to changes in productivity are excluded from our model. Anecdotally, the Pitney Bowes Corporation may have experienced savings from reduced short-term disability following a reduction in co-payments for chronic disease drugs.[474]

Table 12.1
Total Savings, Value-Based Insurance Design (in millions)[a]

Category of Spending	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Total	$74	$510	$1,082	–$79	–$547	–$1,160
Individual	$9	$65	$138	–$12	–$86	–$183
Medicare[a]	$0	$0	$0	$0	$0	$0
Medicaid	$7	$48	$101	–$25	–$174	–$369
Private	$50	$343	$728	–$40	–$277	–$588
Other	$8	$55	$116	–$1	–$10	–$21

[a] Model assumes Medicare does not participate.

Table 12.2
Savings Relative to Status Quo, Value-Based Insurance Design (in millions)

	Lower-Bound Estimates			Upper-Bound Estimates		
	2010	2010–2015	2010–2020	2010	2010–2015	2010–2020
Status Quo	$43,222	$306,563	$669,617	$43,222	$306,563	$669,617
Total Savings	$74	$510	$1,082	–$79	–$547	–$1,160
% Savings	0.17%	0.17%	0.16%	–0.18%	–0.18%	–0.17%

[473] M.E. Chernew, A.B. Rosen, and A.M. Fendrick, *Value-Based Insurance Design.* Health Aff (Millwood), 2007. 26(2): p. W195.

[474] Anonymous, *Benefit-Based Copays in the Real World: The Employer Perspective.* Am J Manag Care, 2006. 12(13 Suppl): p. S353-8.

How Do Our Findings Compare with Those in the Literature?

Findings that support the lower-bound estimate

Evidence on the effect of value-based insurance design is relatively sparse. Few empirical studies report savings that have resulted from a switch to value-based insurance design. Some have argued that methodological problems, such as selective reporting and lack of an adequate control group, cast doubt on the existing literature supporting the efficacy of value-based insurance design.[475]

Findings that support the upper-bound estimates

Studies have reported an inverse relationship between pharmaceutical co-payments and medication adherence among chronically ill patients (Chernew et al., 2008; Goldman et al., 2004; Wagner et al. 2008).[476,477,478] However, it is not clear whether improved medication adherence translates into reduced overall spending. The Pitney Bowes Corporation[479] reported statistically significant declines in ED use, but not inpatient utilization among diabetes patients. Goldman, Joyce, and Karaca-Mandic[480] used a simulation model to estimate changes in spending among chronically ill and non–chronically ill patients following a switch to value-based insurance design, but the estimated changes are based on projections rather than on actual experience with a benefit change.

What Are the Critical Design Features?

At least two design features can affect how value-based insurance operates. First, lower co-payments can be assigned according to individuals' health status, or they can be uniformly assigned for particular classes of drugs (e.g., statins). Tailoring co-payments to an individual's health status requires sophisticated data systems that can identify high risk or chronically ill patients who would benefit most from the drug, and might therefore require greater investment on the part of insurers. Value-based pricing that varies by drug type but not individual health status may be easier to implement, but runs the risk of encouraging overuse among low-risk patients. We modeled a situation in which value-based insurance was targeted at chronically ill patients, but we did not model any increased costs related to investments in data systems. As a result, our upper-bound model estimates might be overly optimistic.

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[475] K.A. Fairman and F.R. Curtiss, *Making the World Safe for Evidence-Based Policy: Let's Slay the Biases in Research on Value-Based Insurance Design.* J Manag Care Pharm, 2008. 14(2): p. 198-204.

[476] M.E. Chernew, M.R. Shah, A. Wegh, et al., *Impact of Decreasing Copayments on Medication Adherence within a Disease Management Environment.* Health Aff (Millwood), 2008. 27(1): p. 10.

[477] D.P. Goldman, G.F. Joyce, J.J. Escarce, et al., *Pharmacy Benefits and the Use of Drugs by the Chronically Ill.* JAMA, 2004. 291(19): p. 2344-50.

[478] T.H. Wagner, M. Heisler, and J.D. Piette, *Prescription Drug Co-Payments and Cost-Related Medication Underuse.* Health Econ Policy Law, 2008. 3(Pt 1): p. 51-67.

[479] J.J. Mahoney, *Reducing Patient Drug Acquisition Costs Can Lower Diabetes Health Claims.* Am J Manag Care, 2005. 11(5 Suppl): p. S170-6.

[480] D.P. Goldman, G.F. Joyce, and P. Karaca-Mandic, *Varying Pharmacy Benefits with Clinical Status: The Case of Cholesterol-Lowering Therapy.* Am J Manag Care, 2006. 12(1): p. 21-8..

A second key design feature is whether lower co-payments for certain patients or drug classes are offset by higher co-payments elsewhere. In our model, we assumed that lower co-payments for patients with targeted chronic conditions are offset by higher co-payments for other patients. As a result, we projected a slight increase in ED and inpatient utilization among patients without targeted conditions. An alternative approach would be to lower co-payments for high risk patients or patients with chronic conditions while keeping co-payments for other patients constant. This approach would eliminate adverse consequences for non–chronically ill patients, but it would lead to higher spending by insurers; this spending could potentially be passed back to individuals in the form of higher premiums.

Are There Unintended Consequences That Might Result?

Value-based insurance design could have the unintended consequence of encouraging unhealthy behavior, since less-healthy individuals are "rewarded" with lower co-payments.[481,482] A related concern is that consumers may have a negative response if co-payments vary across individuals within the same health plan. Chernew, Rosen, and Fendrick[483] discuss a number of additional challenges, such as privacy concerns, that might arise if data systems are used to identify patients with specific health conditions, the possibility that sicker workers will self-select into businesses or health plans that offer value-based design, and the need for complex data systems to appropriately target co-payments.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policy options that seek to reduce spending among the chronically ill, such as increased use of disease management and medical homes, may target the same dollars as value-based insurance design. Chernew, Shah, Wegh, et al.,[484] however, argue that disease management and value-based insurance design can be complementary, and they provide evidence of increased adherence to drug regimens at an employer with telephonic disease management and value-based insurance relative to an employer with telephonic disease management only. More research is needed to understand the relative contributions of disease management and value-based insurance design in cost reductions for the chronically ill, and what features of disease management programs can be most effectively combined with value-based insurance design to produce maximum savings.

[481] Ibid.

[482] M.E. Chernew, A.B. Rosen, and A.M. Fendrick, *Value-Based Insurance Design.* Health Aff (Millwood), 2007. 26(2): p. W195.

[483] Ibid.

[484] M.E. Chernew, M.R. Shah, A. Wegh, et al., *Impact of Decreasing Copayments on Medication Adherence within a Disease Management Environment.* Health Aff (Millwood), 2008. 27(1): p. 10.

Reforms That Could Be Combined with This One

Since value-based insurance design seeks to reduce the volume of hospital services consumed and not the price per service, policy options that limit the price per episode of hospital or ED care could be combined with value-based insurance design without targeting the same dollars. Examples of policy options that limit the price per episode of care include traditional hospital rate regulation and reference pricing for inpatient care. Reforms that seek to reduce spending outside hospital settings, such as expanding the use of retail clinics, expanding the scope of practice for nurse practitioners and physician assistants, and reducing administrative waste, could also be combined with value-based insurance design.

Value-based insurance design could also be used alongside retail clinics. For example, co-payment structures could be designed to encourage low risk consumers to use retail clinics for routine, protocol-driven care (e.g., treatment for sore throats, sinusitis). Similarly, by implementing lower co-payments for community hospitals relative to academic medical centers for some diagnosis-related groups (DRGs), value-based insurance design could be used to encourage greater use of community hospitals.

Option #13
Reduce Administrative Overhead

I. Nature of the Problem

The Institute of Medicine report *Crossing the Quality Chasm* called for the U.S. health care system to be efficient as well as effective, equitable, patient-centered, safe, and timely.[485] Recent focus on increasing value in health care has brought policy attention to identifying areas in which efficiency can be improved. Unfortunately, the U.S. health care system is uniquely complex, even compared with other industrialized countries that have mixed public-private financing structures.[486,487] Complexity in the health care system results because multiple payers are financing the system; multiple regulatory bodies (federal and state) require compliance with multiple mandates; multiple layers of organizations are contracting with one another to deliver health services; and payers and providers are often part of larger organizational systems with their own internal mandates. Such a complex system requires significant administrative activities and costs. Despite the United States' having the highest administrative costs in the world,[488] there is no consensus about what constitutes non-essential administrative overhead, what portion of overhead could be eliminated, and what specific mechanisms would be ef-

[485] Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the 21st Century*. 2001, Washington, DC: National Academy Press. p. 337.

[486] K. Davis, *Paying for Care Episodes and Care Coordination.* N Engl J Med, 2007. 356(11): p. 1166-8.

[487] McKinsey Global Institute, *Accounting for the Cost of Health Care in the United States.* 2007. McKinsey: San Francisco. As of June 21, 2009 (member-only): http://www.mckinsey.com/mgi/rp/healthcare/accounting_cost_healthcare.asp

[488] Insurance-related administrative costs per person and as a percentage of National Health Expenditures.

fective in eliminating such administrative costs. Nonetheless, most efforts to identify ways to reduce health spending focus some attention on reducing administrative costs.

II. Proposed Policy Option

What Is It?

Because discussions on reducing administrative costs were already underway when this project began, we focused on the ideas generated by the HealthyMass Administrative Simplification Task Force. The Task Force identified two clusters of opportunities to reduce administrative waste, although they did not endorse any of them as policy options. They are included here for purposes of discussion.

The first set of possibilities was defined as "areas of Commonwealth-driven complexity" and the second, "areas of system complexity."[489] Beginning first with areas of Commonwealth-driven complexity, policy options under this rubric might include the following:

- ***The Commonwealth could align state reporting requirements with federal reporting requirements to reduce the burden of collecting and reporting data.*** In the Task Force's initial discussions, they noted that some data must be reported to both the federal and state governments or to multiple agencies within state government, but that the reporting is administratively burdensome because either the data elements or the reporting format are different even though the subject matter is the same.[490]
- ***The Commonwealth could eliminate duplicative reporting requirements (or, at a minimum, standardize and coordinate data collection).*** Insurers and health care providers report the same (or similar) information (e.g., financial information, deaths, serious injury, and adverse events) to different state agencies in response to multiple state laws and regulations.[491] Paper submission requires each agency to have staff to review and compile the data and incur costs of document storage.[492] The Commonwealth could require health care organizations to report electronically through a single state portal (that would, in turn, provide the necessary information to all state agencies that needed it)[493] or, alternatively, review all health care reporting requirements and designate a single state agency to have responsibility for data collection in a particular area. This latter approach would decrease the burden on insurers and providers but perhaps increase the burden on state agencies. At a minimum, the state should standardize the reporting format (e.g., the way that race

[489] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Executive Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

[490] Ibid.

[491] For an enumeration of specific instances of duplicative or inefficient reporting to multiple state agencies, see Andrea Dodge and David Friedman, "Recommendations Provided by External Partners to the Administrative Simplification Survey and Regulatory Review Initiative," Memorandum to HealthyMass Steering Committee, July 21, 2008.

[492] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

[493] Ibid.

and ethnicity data are reported)[494] so that data elements required to be reported are reported in the same format for all state mandates.

- ***The Commonwealth could create a portal for management of Medicaid and Commonwealth Care eligibility and coverage renewal.*** The Administrative Simplification Task Force is recommending a system that would enable online viewing of eligibility and application status.[495]
- ***The Commonwealth could reduce the medical records storage requirements.*** This action has already been taken by the legislature in the new cost containment law. Under Sections 12 and 13 of the new law, hospital and clinic record retention requirements have been reduced from 30 to 20 years.[496] These limits are in line with federal (Medicare, HIPAA) regulations; however, the Massachusetts Hospital Association has advocated a 15-year retention limit.[497] Section 25 also reduces the retention requirements for mental health records.

A second area of opportunity defined by the Task Force was "system complexity." Again, although the Task Force did not make recommendations, some policy options that might be included in this cluster are as follows:

- ***Insurers could reduce the number and complexity of insurance product offerings.*** Perhaps the most widely recognized area of administrative waste is billing and reimbursements. For providers to be paid, they must submit a bill with information to support the claim. What should be a relatively straightforward process is often not because a single insurer may offer multiple insurance products, each of which covers different services, at different levels of reimbursement for the provider, and different co-payments that must be collected by the provider from the consumer.[498] This multiplicity of products necessitates that the provider hire billing staff to make sure that codes for tests, procedures, or services are entered correctly and that the insurance company is billed for the appropriate amount.[499] Were insurers to limit the types of plans to a few standard offerings, the complexity of the billing system would be reduced, as would the necessity for dedicated billing specialists to be employed by both insurers and providers. Apparently, some of the complexity arises from employer demands. According to one insurer, employers want unique product offerings; however, employers may not realize that their demands for unlimited choice of benefit designs is contributing to their costs of insurance.

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[494] Ibid.

[495] Ibid.

[496] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[497] Massachusetts Hospital Association, *Administrative Simplification: An Underestimated and Overlooked Opportunity for Significant Savings*, in *Controlling Healthcare Costs: A Report Series from MHA*. 2009, Massachusetts Hospital Association: Burlington, Mass.

[498] CALPIRG Education Fund, *Diagnosing the High Cost of Health Care: How Spending on Unnecessary Treatments, Administrative Waste, and Overpriced Drugs Inflates the Cost of Health Care in California.* 2008.

[499] Ibid.

- ***Insurers could adopt a single set of payment policies (e.g., adopt Medicare payment policies).*** Within the area of insurance billing, perhaps the most frequently cited waste is in the adjudication of claims. Stakeholders with whom we spoke estimated that 10–12 percent of insurance claims are rejected on first submission; they then go into a manual adjudication process that is labor-intensive and subject to "rules" that seem arbitrary to providers (e.g., a provider can appeal only five decisions on a single phone call). Payment policies are difficult to follow and each insurer has its own policies ("the stack of payment policies for radiology is 7 inches thick"). If there were one set of payment policies that was readily accessible on a Web site, providers could train their billing staff on a single set of policies, reducing the amount of time staff now spend attempting to match policy to billing, potentially saving labor costs for providers. As one stakeholder put it, such an option would help reduce the current "arms race" of providers and insurers hiring more and more staff to fight over billing.
- ***The Commonwealth could require or provide an incentive for the development of standardized systems for medical coding and billing.*** Unless fundamental changes occur in payment methods, billing cannot be eliminated. Thus, there will always be a need for medical billing staff. However, most stakeholders agree that the proliferation of different billing systems is adding complexity to the health care system without adding value. At least one interest group in California has recommended that states take a role: "the state could offer financial incentives to health care providers who participate in a standard system [for billing and payment], could make participation a requirement for insurers who provide health care coverage to state employees or could simply mandate the adoption of a system."[500]

  The new cost containment law requires that the Executive Office of the Department of Health and Human Services (EOHHS) and its subcontractors "shall, without local customization, accept and recognize patient diagnostic information and patient care service and procedure information submitted pursuant to and consistent with the current Health Insurance Portability and Accountability Act (HIPAA) compliant code sets…" for processing claims.[501] The statute also requires that all such claims be recognized in the standard format by July 2012. Sections 26 and 27 extend the requirements to insurance carriers and their subcontractors.
- ***Insurers could require electronic submission of claims from providers.*** The latest figures from a survey administered by America's Health Insurance Plans (AHIP) in 2006 show that electronic submission of health insurance claims tripled in the past decade. Electronic (including online, Web-based) claims submission would contribute to reducing administrative costs by allowing the vast majority of claims to be processed quickly (within 30 days of receipt).[502] In addition, the survey found that

[500] Ibid.

[501] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[502] America's Health Insurance Plans (AHIP) Center for Policy Research, *An Updated Survey of Health Care Claims Receipt and Processing Times, May 2006.* 2006. AHIP Center for Policy and Research: Washington, D.C.

the percentage of claims automatically adjudicated (i.e., processed without manual intervention) increased significantly for electronic claims.

- ***A standard model for credentialing physician staff could be expanded.*** Credentialing is a labor-intensive process. According to a Medical Group Management Association survey, physicians, on average, must submit 17 credentialing applications annually to insurance companies, hospitals, and health care facilities. Completing each application requires approximately 90 minutes of staff time.[503] The Administrative Simplification Task Force has taken note of the work of HealthCare Administrative Solutions (HCAS), a joint venture of major health plans in the Commonwealth (Blue Cross Blue Shield, Tufts, Fallon, Harvard Pilgrim) established in 2005 to collaborate on issues of administrative simplification. The first project was the development of a centralized provider-credentialing process.[504] Currently, HCAS has signed a contract with a vendor to allow providers to submit a uniform credentialing application once for several health plans. The HCAS effort builds on the prior work of the Massachusetts Physician Credentialing Initiative, which went into effect on April 1, 2006, and which provides a standardized process for physician credentialing by a larger number of health plans and hospitals, using a uniform application. The Task Force suggests that there may be room for advancement or more-aggressive implementation of standardized credentialing.
- ***Hospitals, physician practices, and other health care providers could adopt interoperable electronic medical records systems.*** Interoperable systems would facilitate treatment, payment, operations, and information sharing among providers and insurers. The new cost containment statute links licensure to the adoption of various types of health information technology (HIT).[505]
- ***Insurers could adopt standard health insurance cards (so-called Smart Cards).*** Standard health insurance cards across all payers would enable an automated check for coverage and co-pay benefits for payers, providers, and health plan members.[506] Smart Cards would reduce the need for paper transactions and staff to verify coverage limits and co-payment information.

Another option that was not considered by the HealthyMass Administrative Simplification Task Force was setting a minimum standard for the MLR (MLR) of health care spending to premium spending. A low MLR implies that health plans spend a large amount of premiums on administration. A 2004 survey conducted by the American Society of Actuaries found that, among states with mandated MLRs, the minimum allowed ratio ranged from 50 to 75 per-

[503] Medical Group Management Association, *Analyzing the Cost of Administrative Complexity in Group Practice*. 2004. As of June 21, 2009: http://www.mgma.com/workarea/showcontent.aspx?id=19248

[504] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

[505] For further discussion of health IT reforms, see Controlling Health Care Spending in Massachusetts: An Analysis of Options Policy Option #3.

[506] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Executive Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

cent.[507] However, in Massachusetts, administrative costs account for only about 14 percent of spending,[508] and half of the major insurers in Massachusetts spent at least 90 percent of total revenue on health care expenses in 2007.[509] MLRs in Massachusetts appear high not because administrative spending in Massachusetts is low but because both administrative spending and health care spending in Massachusetts are high. This implies that reducing administrative waste can be only part of the solution to containing health care costs in Massachusetts, and that the MLR may not be a good measure of efficiency in Massachusetts' case.

How Would It Solve the Problem?

Policies to reduce administrative waste would eliminate costs associated with redundant or unnecessary processes. A significant portion of the cost reduction would come from a reduction in labor time spent on these processes; the result could be a reduction in jobs or a shift from less productive to more productive uses of time without a reduction in jobs.

What Has to Happen to Implement a Change?

Courses of action depend on the specific policy that is attempted. However, in general, policies to reduce administrative waste will require coordinated efforts on the part of state and federal regulators, insurers, and providers.

III. What Level of Savings Can Be Expected from This Policy Change?

Logic suggests that the high costs attributed to administrative waste of various kinds would present an opportunity for significant cost reductions. Whether those cost reductions would result in a decrease in overall health spending would depend on whether the savings were captured or just redirected by organizations into profit or other administrative activities. The magnitude of the effect is unknown, and the determination is heavily dependent on assumptions about the extent to which consensus can be reached on which policy options to pursue and how aggressively stakeholders (the Commonwealth, payers, medical providers) would commit to removing existing administrative practices that are of questionable value. Start-up and transition costs for some options could also be substantial and may increase costs in the short run.

Summary of Findings from the Literature Review

- The evidence in this area is generally limited to estimates of the magnitude of the problem and cross-sectional comparisons of components of cost. There is less discussion of potential solutions or evidence showing that reductions in overhead costs lead to reductions in spending.

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[507] American Academy of Actuaries' Rate Filing Taskforce, *Report to the NAIC's A&H Working Group of the Life and Health Actuarial Task Force.* 2004. American Academy of Actuaries. As of June 21, 2009: http://actuary.org/pdf/health/rate_may04.pdf

[508] K. Davis, C. Schoen, S. Guterman, et al., *Slowing the Growth of U.S. Health Care Expenditures: What Are the Options.* 2007. The Commonwealth Fund. As of June 21, 2009: http://www.cmwf.org

[509] Massachusetts Division of Health Care Finance and Policy, *Health Care in Massachusetts: Key Indicators.* 2008.

- Evidence is lacking on whether improvements in the efficiency of insurance companies will be translated into reductions in premiums for their customers. Similarly, it is uncertain whether improvements in hospital efficiency will be translated into reductions in charges for services.
- While studies have quantified total administrative costs, they usually have not separated necessary from unnecessary administrative spending.
- The experience in Washington State with administrative simplification involved a partnership between state government and a nonprofit forum that brought together all stakeholders in the state.
- Most of the interventions require up-front investments (e.g., new computer systems, training personnel on new procedures), so they may increase costs in the short run.
- The HealthyMass Administrative Simplification Task Force has adopted a number of principles that guide its selection of projects. Given that these principles are modeled after the success in Washington State, savings may be possible although the magnitude is uncertain at this time.

The Evidence

Some administrative spending is necessary for the delivery of health care (hiring staff, billing, procuring supplies), and some administrative activities can actually improve the quality of care. For example, investments in electronic medical record systems are categorized as administrative costs, but such systems can both improve medical recordkeeping and be useful in identifying and preventing medical errors.[510] However, there is general agreement that all administrative spending is not value-added. The HealthyMass Compact's Administrative Simplification Task Force, borrowing from other sources, has defined administrative complexity as a nonvalued redundancy in processes and procedures and lack of uniformity or guidelines in the health care delivery system.[511] Such redundancies (or lack of uniformity) occur across the health care system, involving all stakeholder organizations and entities (i.e., insurers, government agencies, hospitals, nursing homes, physician practices, clinics, home health agencies). Non-value activities may be found within all aspects of administration, including:

- Transaction-related activities (e.g., claims billing, claims processing, accounting)
- General management activities (e.g., contracting, selective contracting, negotiation, network tiering, administrative supplies and equipment, information systems)
- Selling and marketing (e.g., insurance underwriting, membership, provider credentialing, advertising, public relations, assistance to consumers on the Internet)

[510] CALPIRG Education Fund, *Diagnosing the High Cost of Health Care: How Spending on Unnecessary Treatments, Administrative Waste, and Overpriced Drugs Inflates the Cost of Health Care in California.* 2008.

[511] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

- Administrative activities that overlap with clinical activities (e.g., utilization review and management, maintenance of medical records, pay-for-performance initiatives)
- Ensuring compliance with federal and state regulatory mandates (e.g., HIPAA compliance, state licensure, JCAHO accreditation).[512,513]

Estimates of the costs attributable to administrative overhead vary by source and by method of estimation; however, most estimates suggest that the amount spent for administrative overhead is considerable:

- The Massachusetts Hospital Association[514] estimates that administrative costs related to insurance and billing in Massachusetts amount to more that $5 billion annually. MHA further estimates that administrative costs in the Commonwealth grew by 48 percent between 2003 and 2007.[515]
- According to Davis,[516] net insurance overhead and administrative costs (i.e., the difference between premiums and claims payment) accounts for 14 percent of total private insurance expenditures. In the public sector, administrative expenses account for up to 3 percent of the Medicare budget and 3–5 percent of the Medicaid budget.[517] The differences in administrative costs may be due to private sector expenses related to marketing and underwriting. According to one study, 64 percent of administrative costs in the private sector are associated with product design, underwriting, and marketing.[518]
- From the insurers' perspective, costs associated with government payments, regulation, and other costs associated with administration (e.g., claims administration) used up 6 percent of every premium dollar in 2005.[519]
- A comprehensive accounting of administrative costs for private insurers, physician groups, and hospitals was conducted in California. The authors found that physician groups had the highest administrative costs and billing and insurance-related expenses as a percentage of revenues (14 percent), followed by hospitals (7–11

[512] These are illustrative examples based on K.E. Thorpe's framework in *Inside the Black Box of Administrative Costs.* Health Aff (Millwood), 1992. 11(2): p. 41-55. Thorpe accounted for administrative costs by sector of the health care system, including health insurance, hospitals, nursing homes, physicians, employers, and consumers.

[513] This framework is somewhat consistent with N. L. McKay and C. H. Lemak's model in *Analyzing Administrative Costs in Hospitals.* Health Care Manage Rev, 2006. 31(4): p. 347-54, which explicitly accounted for operational costs, and to Kahn and colleagues' *The Cost of Health Insurance Administration in California: Estimates for Insurers, Physicians, and Hospitals.* Health Aff (Millwood), 2005. 24(6): p. 1629-39, which included administrative activities supporting major clinical activities.

[514] Massachusetts Hospital Association, *Administrative Simplification: An Underestimated and Overlooked Opportunity for Significant Savings*, in *Controlling Healthcare Costs: A Report Series from MHA*. 2009, Massachusetts Hospital Association: Burlington, Mass.

[515] Ibid.

[516] Davis et al., 2007.

[517] McKinsey Global Institute, *Accounting for the Cost of Health Care in the United States.* 2007. McKinsey: San Francisco.

[518] Ibid.

[519] PriceWaterhouseCoopers LLP, *The Factors Fueling Rising Healthcare Costs 2006.* 2006. America's Health Insurance Plans.As of June 21, 2009; http://www.ahip.org/redirect/pwccostofhc2006.pdf

percent), and private insurers.[520] Billing and insurance-related activities represented 85 percent of administrative costs for insurance plans, equaling 8 percent of premiums.[521] The authors of the study did not convert their estimates to dollars, but the California Public Interest Research Group recently estimated that these activities consume 5 percent of total health care spending in California, representing $9 billion annually.[522]

Administrative costs are also the fastest growing segment of health costs, at least according to some studies, taking up increasing amounts of time that could have been spent delivering clinical care:

- According to an analysis of health expenditure growth in the United States between 1980 and 2005, insurance administrative overhead has been the fastest-rising component of health expenditure in recent years. Administrative overhead grew by 12 percent from 2000 to 2005, outpacing growth in expenditures for prescriptions drugs (11 percent), hospital care (8 percent), and physician and clinical services (8 percent).[523]
- An American Medical Association (AMA) survey of doctors found that more than one-third spends an hour completing Medicare paperwork for every one to four hours of patient care.[524]
- A similar study for the American Hospital Association found that, for every hour of care delivered to a Medicare patient, hospital officials spend roughly one-half hour or more complying with Medicare paperwork.[525]

There are some important caveats to consider in using these studies to support policy options aimed at reducing administrative waste. First, across studies, there is no uniform definition of what constitutes the administrative overhead category; therefore, synthesizing information across studies is challenging. Second, it is possible that there is duplication of cost accounting for different entities, making the total amount of "waste" seem larger than it is. Third, administrative needs may be different across organizations, so that what constitutes "waste" in one organization may be seen by another organization as mission critical. Because one organization's expense may contribute to another organization's income, the consensus on reducing "waste" may be lower for some options. However, despite these caveats, there is general agreement that the high costs of health care administration create potential opportunities for cost reduction.

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[520] J.G. Kahn, R. Kronick, M. Kreger, et al., *The Cost of Health Insurance Administration in California: Estimates for Insurers, Physicians, and Hospitals.* Health Aff (Millwood), 2005. 24(6): p. 1629-39.

[521] Ibid.

[522] CALPIRG Education Fund, *Diagnosing the High Cost of Health Care: How Spending on Unnecessary Treatments, Administrative Waste, and Overpriced Drugs Inflates the Cost of Health Care in California.* 2008. The authors of the report attempted to translate the study's estimates into dollar amounts using national figures on spending by private insurers and total California spending in hospitals and physician offices.

[523] K. Davis, *Paying for Care Episodes and Care Coordination.* N Engl J Med, 2007. 356(11): p. 1166-8.

[524] R.E. Moffitt, T.R. Saving, J. Lemieux, et al., *What Will Medicare's Future Hold for Seniors and Taxpayers?* Heritage Lectures, 2003, Washington, DC: Heritage Foundation. 13 p.

[525] American Hospital Association and PriceWaterhouseCoopers, *Patients or Paperwork? The Regulatory Burden Facing America's Hospitals*, 2001.

Direction and Timing of Effect

Some savings might be achieved in the short term, but many of these policy recommendations would require consensus development and further exploration before they can be implemented, and then would take time and resources (e.g., new systems, training personnel, issuing new cards to enrollees) to implement. Policy options requiring adoption of HIT would take significant time and money to implement, suggesting that if there are savings, those savings will occur in later years.

The Strength of the Evidence

The evidence of administrative waste comes from a variety of sources including internal reports of health providers and health insurers, which are not in the public domain. However, there is no evidence to prove that any of these specific interventions would reduce costs.

The Potential Effect on Stakeholders

Robinson perhaps summed up the dilemma best when he characterized the cost containment environment at the time (1997): "[T]he nation is engaged in a manhunt for the culprit behind rising health care costs, with the hope that the miscreant can be eliminated without forcing consumers, payers and providers to relinquish any of the things they cherish. Consumers want full coverage and unrestricted choice without any premium contributions or cost sharing at the points of services. Providers want high incomes and a 'hassle-free' practice environment where they can pursue professional goals without interference. Purchasers want low premiums and no complaints from employees and retirees. The search for easy solutions to these fundamentally incompatible demands, he concluded, was leading to the focus on waste." However, it is clear that the definition of what constitutes waste varies across stakeholder groups.

What Are the Critical Design Features?

Design features vary by the specific option being considered. One important aspect of implementation was emphasized by the HealthyMass Administrative Simplification Task Force in its review of the experience of Washington State.[526] The Task Force noted that Washington has one of the most well developed administrative simplification plans in the country. This is likely due to the partnership between state government and a nonprofit forum that convened stakeholders including the hospital association, the medical association, physician groups, and insurance companies.[527] The Task Force has also adopted some of the principles of the Washington HealthCare Forum:

- ***Win-win:*** affects multiple providers and plans
- ***Quick-win:*** can be implemented within three to six months without information-system changes

[526] Washington Healthcare Forum Web site, 2009. As of June 21, 2009: www.wahealthcareforum.org

[527] HealthyMass Compact Participants. *Administrative Simplification Task Force*. in *Office of Health and Human Services, Office of Attorney General Martha Coakley, PowerPoint Presentation*. 2008. May 5, 2008.

- ***Significant relief:*** represents a high-cost, high-volume, and/or high frequency headache
- ***Affordable:*** can be implemented at reasonable cost
- ***Enduring:*** will have a lasting effect
- ***Widely available:*** accessible to a large segment of the health care community
- ***Local effect:*** local health plans can make a difference on the issue[528]

Are There Unintended Consequences That Might Result?

As emphasized by McKay and Lemak, [529] it is important to differentiate good from bad administrative costs in cost containment efforts, since "an across the board reduction in administrative costs could well have adverse consequences because costs associated with some types of administrative activities are essential for hospitals to provide safe, effective, high quality care." The same could be said for other health care entities.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policies to regulate health insurance premiums and hospital payments implicitly aim to reduce unnecessary spending on administration. However, since some administrative requirements are imposed by state and federal regulators, and because both providers and insurers could take steps to reduce waste, a coordinated approach might be more successful.

Those That Might Be Combined with This One

Expanded use of HIT could facilitate a reduction in administrative spending, for example, by reducing the need for multiple providers to collect the same information. HIT systems could also be expanded to improve information sharing between providers and insurers, so that providers would have complete information on patients' benefit design and cost-sharing requirements. Even if a HIT system were not interoperable, the ability to collect and store information in a systematic way could limit redundant information gathering within a single practice or hospital.

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[528] Washington Healthcare Forum, *Administrative Simplification Policies & Guidelines: Introduction and Background.* 2007. As of July 25, 2008: http://www.wahealthcareforum.org/AdminSimp/index.htm

[529] N.L. McKay and C.H. Lemak, *Analyzing Administrative Costs in Hospitals.* Health Care Manage Rev, 2006. 31(4): p. 347-54.

Option #14
Extend Determination of Need Program

I. Nature of the Problem

In the 1970s, Determination of Need (DoN) statutes were enacted in response to the National Health Planning and Resource Development Act of 1974,[530] which explicitly linked resource allocation to health planning and provided funding for state planning efforts.[531] Because hospitals and other health care facilities compete with one another by building new facilities or obtaining expensive technology, the federal government feared that, if states did not intervene, states were likely to witness a "medical arms race" using federal hospital construction monies (e.g., Hill-Burton) and Medicare reimbursement. Owning duplicative facilities might lead hospitals to resort to marketing to increase demand and raise prices to cover their fixed costs. DoN programs were initiated to review and approve capital expenditures according to whether new facilities would meet a community need, would not be duplicative of existing facilities, and that the proposed capital expenditures would be reasonable. Regulation of capital expenditures through DoN was well established until the 1980s, when a more market-oriented philosophy led to the repeal of some parts of the federal statute in 1987.[532] Still, 36 states have retained some form of DoN process.[533] As health care costs continue to rise and as new types of facilities, such as ASCs (ASC), and expensive technologies are making their way into the marketplace, state policymakers are again considering whether DoN processes could be an effective weapon in the ongoing attempt to control health care costs.

II. Proposed Policy Option

What Is It?

Determination of Need (DoN) is a regulatory strategy that requires health care institutions to seek permission to make "substantial" capital expenditures (e.g., build new or expanded facilities, purchase high-cost technologies). This method represents a regulatory strategy for reducing the volume of utilization by constraining the supply of available resources. Beyond the actual effect of constraining supply, the existence of a DoN program might, in theory, deter health care organizations from planning capital projects that could face the prospect of denial. Policy options vary from those that would strengthen or extend the current DoN program,

[530] Public Law 93-641, codified at 42 U.S.C. 241 et seq. In passing the Act, Congress found that (1) infusion of federal funds into the existing health care system has contributed to inflationary increases in the cost of health care and failed to produce an adequate supply or distribution of health resources; (2) the many responses to health problems by the public and private sectors have not resulted in a comprehensive, rational approach to health needs; and (3) health care providers should be encouraged to play an active role in developing health policy at all levels.

[531] W.J. Bicknell and D.C. Walsh, *Critical Experiences in Organizing and Administering a State Certification of Need Program.* Public Health Rep, 1976. 91(1): p. 29-45.

[532] Special Commission on Ambulatory Surgical Centers & Medical Diagnostic Services—State of Massachusetts, *Report of the Special Commission on Ambulatory Surgical Centers & Medical Diagnostic Services.* 2007.

[533] Ibid.

those that would selectively limit the current DoN process, and those that would abolish DoN altogether in favor of other approaches to cost containment.

Strengthen the DoN process: Commentators have complained that state DoN programs have been subject to loopholes. Before the enactment of Chapter 305 in August 2008, the Massachusetts DoN program exempted outpatient construction projects and not all ASCs were subject to the DoN process. However, Chapter 305 extended DoN jurisdiction to two previously exempt types of health care projects: outpatient projects with a capital expenditure in excess of $25 million and physician owned ASCs that are Medicare certified.[534] The new law "levels the playing field" for ASCs, requiring that any ASC that seeks Medicare certification, including those that are wholly physician owned, must now obtain a license from the Department of Public Health and, prior to applying for such a license, receive approval for the ASC from the DoN program.[535] The statute and regulations also address community concerns about the lack of government oversight of very large and costly outpatient projects undertaken by Boston academic medical centers.[536]

Additional policy options that have been suggested for strengthening or extending existing DoN programs include:

- ***Remove dollar thresholds*** (i.e., requiring DoN for all *capital expenditures* for construction or expansion). Removing dollar thresholds would bring all capital projects under scrutiny, rather than limiting review to large projects. This would, however, increase the administrative costs of the DoN program.
- ***Strengthen the criteria for DoN determination.*** The more specific the criteria, the more likely that DoN decisions will be consistent and less open to challenge. For example, the current DoN regulations require applicants to address whether the proposed project will constitute an "unnecessary duplication of resources," but the term is not defined, causing confusion about what the specific threshold or cutoff is for meeting the criteria.[537]

An option for strengthening DoN for innovative technology would be to:

- ***Establish a separate definition and set of DoN regulations*** for innovative technology that would cover all major technology purchases regardless of setting and without dollar thresholds. Limiting DoN to capital intensive equipment does not

[534] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts. Note that Chapter 305 contains so-called grandfathering provisions regarding these two changes.

[535] Public Health Council, *Request for Final Approval of Amendments to 105 Code Mass. Rules §100.000 (Determination of Need)*, January 14, 2009.

[536] Public Health Council, *Request to Promulgate Emergency Amendments to 105 Code Mass. Rules § 100.000 (Determination of Need)*, November 12, 2008.

[537] For example, in a letter to the Commissioner of the Department of Public Health, the Massachusetts Hospital Association Board of Trustees, in response to proposed changes in the DoN regulations to add a new review standard (nonduplication of services) state, "the language as proposed is overly-broad, ambiguous and open-ended. There is no standard for what constitutes an 'unnecessary duplication of services' nor is there any guidance as to what would be a satisfactory 'appropriate and adequate written assurance.'" *See* Letter to John Auerbach, Commissioner, Department of Public Health Regarding Proposed Changes to 105 CMR 100.000, DoN Regulations, June 12, 2008. As of June 24, 2009: http://www.mass.gov/Eeohhs2/docs/dph/legal/don_massachusetts_hospital_association.doc

> fully address the costs of technology proliferation, because even low capital technology increases health care costs in the long run through high operating and indirect costs. Cohen and Cohodes reviewed the various ways that DoN has been employed by states and recommended reducing or eliminating dollar thresholds for review of capital equipment, selecting targeted technologies based on parameters that related to the effects of the technology on service utilization, labor substitution, and health care costs, rather than on capital costs alone; basing DoN approval in part on demonstrated efficacy and not only on cost and need; linking reimbursement for services to DoN approval of the technology; and/or imposing statewide caps for equipment purchase or lease.[538]

In contrast to either expanding or abolishing DoN, some have suggested a middle ground that would retain DoN but limit its reach to situations in which it is likely to be effective in controlling costs.

In its review of cost cutting measures, the National Conference of State Legislature's Standing Committee on Health reviewed the pros and cons of DoN. In their analysis, they report that "the federal government and at least 16 states have tried DoN laws and repealed them because it didn't seem to be making enough difference to pay for the cost and administrative burden [of running the DoN program]."[539] They note that such programs are very expensive to run, both for governments and the institutions that are subject to their provisions, and that some competitors have become adept at using DoN processes and appeals to "impose expensive legal delays" on their competitors, and that these delays serve no real public purpose.[540] As a result, one of their suggestions for cost containment is that states consider limiting the reach of their DoN program to fewer medical functions (i.e., determining and then focusing on the categories within the existing DoN agenda that are most likely to save taxpayer money), and streamlining DoN requirements. However, information from the Department of Public Health (DPH) suggests that these critiques of DoN programs in other states may overstate the problem. According to DPH, third party challenges and appeals are infrequent in Massachusetts (only 3 appeals in 15 years, and none successful). Additionally, DPH reports that few applications are in active review for a year: that large capital expansion applications typically take 9 months, and some smaller applications are reviewed in as little as 4 months.

Critics of DoN have argued that DoN programs are expensive to operate and do not contain costs, so that DoN should be abolished in favor of an unrestrained free market.

Critics of DoN argue that regulation has not constrained costs and is, in fact, making the situation far worse because it "protects existing institutions from competition, enabling them to build monopolies and maintain high rates for services" and that DoN reviews "don't address existing infrastructure imbalances."[541] In addition, they point to delays that could have the "po-

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[538] A.B. Cohen and D.R. Cohodes, *Certificate of Need and Low Capital-Cost Medical Technology.* Milbank Mem Fund Q Health Soc, 1982. 60(2): p. 307-28.

[539] National Conference of State Legislatures, *State Health Care Cost Containment Ideas.* 2003. Prepared by NCSL's Standing Committee on Health: Final Draft.

[540] Ibid.

[541] W. Diller, *States Show New Interest in Regulated Health Planning.* Bus Health, 1993. 11(2): p. 20-4.

tential to delay or block access to new technologies."[542] Critics also argue that DoN regulations limit consumer choice by creating barriers to entry for organizations that might be able and willing to provide services at a lower cost, weakening the market's ability to contain costs.[543] Critics also point out that there are other factors at work in the current health care marketplace, that were not at work in the 1970s, that would deter today's providers from ill-advised expansion, even without government interference.[544]

How Would It Solve the Problem?

This option would strengthen or enhance government's ability to affect health care spending in the private sector by delaying or denying permission for capital expenditures the government believes are not reasonable or are not in the public's interest. To the extent that technology is a major driver of health care cost increases, limiting the entry of new technology to the market could potentially affect future health care spending.

What Has to Happen to Implement a Change?

New legislation would not be required to extend the DoN program. The Department of Public Health can use its new authority under Chapter 305 to require DoN review of large outpatient capital projects and any ASCs, including those that are wholly physician owned.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- There is no evidence from the literature that DoN programs reduce health care spending. In fact, a 2006 study found higher rates of utilization and inpatient spending in states with DoN laws that were similar to states without such laws.
- There is some evidence that DoN programs may have a marginal effect on quality by reducing the number of competitors and thereby increasing the volume of complex medical procedures in existing programs. However, while such an effect might plausibly increase value, it would not necessarily decrease health spending.
- To make DoN programs more effective would likely require larger staffs and more-rigorous review processes, both of which add costs. Whether greater potential savings could justify the costs of undertaking a stronger program remains uncertain.

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[542] Ibid.

[543] For a detailed argument on how DoN laws are "anathema" to free markets, *see* Mark J. Botti, Chief of Litigation I Section, U.S. Department of Justice, Antitrust Division, *Competition in Healthcare and Certificates of Need*, Testimony Before a Joint Session of the Health and Human Services Committee of the State Senate and the CON Special Committee of the State House of Representatives of the General Assembly of the State of Georgia, February 23, 2007.

[544] Botti argues that DoN laws were adopted in an era of cost-based reimbursement that no longer exists because, today, health plans negotiate with health care providers over price. This argument may not be as persuasive in the predominantly fee-for-service environment of Massachusetts, where the leverage of health plans and other purchasers arguably is not as strong. See Botti, 2007.

- Modifying DoN is an unlikely source of savings.

The Evidence

A few studies, most of them from the 1980s and 1990s, addressed whether DoN programs affect overall health care costs. With only one exception, the studies concluded that DoN review does not contain health care costs. For example, Ashby[545] looked for an effect of DoN review on capital investment, utilization, and per capita costs and found none. The single study that did find an effect on spending, found a small effect. According to the authors, "mature [DoN] programs are associated with a modest (5 percent) long term reduction in acute care spending per capita, but not with a significant reduction in total per capita spending." The study also documented a reduction in bed supply, but higher costs of care per day and per admission.[546] An early study developed quantitative estimates of the effect of DoN on hospital investment. Salkever and Bice concluded: "These estimates show that DoN did not reduce the total dollar volume of investment but altered its composition, retarding expansion in bed supplies but increasing investment in new services and equipment."[547] The authors point out that DoN laws at the time emphasized the control of bed supplies and that increases in new services and equipment may have been a substitution by hospitals "in response to financial factors and organizational pressures for expansion."[548]

In a more recent analysis (October 2006), researchers from Georgia State University reviewed the literature on the effectiveness of DoN and conducted their own study comparing costs of care in states with DoN programs and in those that did not have DoN programs, using a measure of health care costs per inpatient stay for private pay patients using MEDSTAT data (data gathered from large, self-insured employers and health plans).[549] The authors reported that inpatient utilization was higher for Medicare and private pay patients and that private inpatient costs were higher in states with DoN programs than in states without DoN programs.[550] They concluded from their own study, and from their review of 37 prior studies, that there is little evidence that states with DoN programs have done better than states without DoN programs at affecting cost, quality, or access.[551]

The theory about the effect of DoN on quality of care comes from the observation that DoN programs might improve quality of care if they tend to limit the number of facilities providing complex medical procedures, for example, open heart surgery, coronary angioplasty or coro-

[545] J.L. Ashby, Jr., *The Impact of Hospital Regulatory Programs on Per Capita Costs, Utilization, and Capital Investment.* Inquiry, 1984. 21(1): p. 45-59.

[546] C.J. Conover and F.A. Sloan, *Does Removing Certificate-of-Need Regulations Lead to a Surge in Health Care Spending?* J Health Polit Policy Law, 1998. 23(3): p. 455-81.

[547] D.S. Salkever and T.W. Bice, *The Impact of Certificate-of Need Controls on Hospital Investment.* Milbank Mem Fund Q Health Soc, 1976. 54(2): p. 185-214.

[548] Ibid. The authors cautioned against concluding from their findings that DoN should be "broadened or tightened" as a response, "because of the practical difficulties involve[d] in reviewing and certifying large numbers of small investment projects."

[549] W.S. Custer, P. Ketsche, B. Sherman, et al., *The Effect of Certificate of Need Laws on Cost, Quality and Access.* 2006. Georgia State University. Massachusetts was one of the 10 states, but, unfortunately, the number of claims from Massachusetts was very small (*N*=123).

[550] Ibid.

[551] Ibid.

nary artery bypass grafting (CABG) surgery. Fewer competitors means increased volume at existing facilities, and studies suggest that volume is associated with lower mortality and better outcomes. Therefore, if DoN programs reduce the number of new facilities providing complex medical procedures and in turn increase the volume at existing facilities, DoN would add value to the health care system through improved outcomes even if it did not reduce spending. Studies that have attempted to associate DoN programs with quality indicators have shown mixed results, however, suggesting that, if there is a quality effect of DoN, it is only a marginal effect.

Direction and Timing of Effect

The literature provides little to no evidence that DoN programs can significantly reduce health expenditures. Studies of states that have repealed their DoN programs have not seen a significant growth in health care costs after repeal. It is unlikely that there would be savings, except through some initial delay in capital expenditures.

The Weight of the Evidence

The studies of DoN vary in the methodological rigor employed, however, the findings are consistent. The empirical studies suggest there will be no savings (at least as DoN programs are now designed and implemented). One caution raised by researchers is the possibility that investigators in some studies may have evaluated DoN too early, before the programs had enough time to mature and show an effect.[552]

The Potential Effect on Stakeholders

Hospitals and health care providers are likely to strongly oppose new or strengthened DoN requirements because of the additional burden it will place on them to justify capital investments and because of the cost of meeting additional regulatory requirements. Manufacturers are likely to resist new requirements related to technology on the basis that regulation will stifle innovation. Public and private payers would possibly save health care dollars if DoN could be shown to affect health care costs. Consumers would stand to benefit if there were health care savings; but, on the other hand, consumers might be concerned about the use of DoN by existing providers to keep new, potentially cheaper providers from getting a foothold or restraining access to innovative technologies.

What Are the Critical Design Features?

David Helms of the Alpha Center for Health Planning was quoted in the early 1990s as saying, "the best approach is to regulate heavily…or not at all." Others have observed, "unless states have the political willpower to adhere over the long term to the regulations they impose, their chances of succeeding will be limited."[553] Most DoN programs have been criticized because they are reactive rather than proactive, are triggered only by large capital expenditures,

[552] See this argument in J.R. Howell, *Evaluating the Impact of Certificate-of-Need Regulation Using Measures of Ultimate Outcome: Some Cautions from Experience in Massachusetts.* Health Serv Res, 1984. 19(5): p. 587-613.

[553] W. Diller, *States Show New Interest in Regulated Health Planning.* Bus Health, 1993. 11(2): p. 20-4.

and are blind to the relationship between capital expenditures in one year and operating costs over the long term.[554] Addressing these critical factors in the design of the DoN program may improve its chances to affect the upward trend of health care costs, but would have practical consequences for the Commonwealth (e.g., the need for a much larger DoN program with additional staffing).

Are There Unintended Consequences That Might Result?

An expanded DoN program would be a burden to any health care organization that would be subject to its regulation. DoN processes are labor intensive, the costs are borne by both the Commonwealth and every applicant, and those costs are large. One might question whether an expanded DoN program would stand up to a cost-effectiveness analysis. Would the benefit outweigh the additional costs, when it is not clear that there is a public good (i.e., savings on health care costs)? Also, practical difficulties are involved in reviewing and certifying large numbers of small investment projects (low capital technology).

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

All-payer rate setting might have an effect on capital construction by limiting payment to hospitals. Policy options that are designed to affect the rate of premium increases may also limit the availability of funds for capital expenditures.

Those That Might Be Combined with This One

All payer rate setting might be combined with DoN to create more planning in the deployment of certain resources and technologies in the community.

[554] A.B. Cohen and D.R. Cohodes, *Certificate of Need and Low Capital-Cost Medical Technology.* Milbank Mem Fund Q Health Soc, 1982. 60(2): p. 307-28.

Option #15

Use Comparative Effectiveness Analysis to Guide Coverage and Payment Rules

I. Nature of the Problem

Rising health care costs, together with evidence of substantial geographic differences in spending on health care (without evidence of better health outcomes),[555] have led some to hypothesize that significant opportunities exist to cut clinical waste from the health care system. Some, including the former director of the Congressional Budget Office (CBO), suggest that variation is perhaps greatest for treatments for which evidence of effectiveness in improving health is lacking.[556] He noted that, "hard evidence is often unavailable about which treatments work best for which patients or whether the added benefits of more effective but more expensive services are sufficient to warrant their added costs;" he concludes that better information, together with aligned incentives, seems likely to eventually reduce health care spending, perhaps substantially, without adversely affecting health.[557] Realizing that goal would require the development and assembly of objective, unbiased information on the effectiveness of various treatment alternatives in improving health, and the use of that information by public and private payers to encourage behavior change by physicians and consumers of health care. The benefit of such an effort for the Commonwealth in cost savings is highly dependent on how the idea of using comparative effectiveness information is conceptualized and implemented. And, as indicated by the former CBO director in his testimony before Congress, the precise effect is "difficult to predict," and cost savings, even if they accrued, "would probably take a decade or more to materialize."[558]

II. Proposed Policy Option

What Is It?

Comparative effectiveness describes a process by which the relative clinical effectiveness (i.e., influence on health) of different treatment options (e.g., drugs, devices, diagnostic tests, medical procedures, surgical interventions) for a particular medical condition is assessed. Comparative effectiveness analysis might focus only on the risks and benefits of a particular treatment option, but studies to determine the relative cost-effectiveness of treatments (i.e., those that

[555] Variations in health spending exist that are unexplained in the literature by population differences or patient needs and that do not result in difference in quality of care. *See*, for example, E.S. Fisher, D.E. Wennberg, T.A. Stukel, et al., *The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care.* Ann Intern Med, 2003. 138(4): p. 288-98.

[556] P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p.

[557] Ibid.

[558] Ibid.

weigh the health benefit of a more expensive treatment against the added costs) can also be included under the rubric of comparative effectiveness.[559] In addition, comparative effectiveness analysis would need to determine whether a treatment was effective for all types of patients or whether only a specific group or groups of patients would benefit.[560] To standardize the outcomes of disparate medical interventions, researchers often utilize quality-adjusted life years (QALYs) as an outcome measure, which incorporates both duration (mortality) and quality of life (morbidity). In this way, the value of different health interventions can be compared with a common measure.[561]

How Would It Solve the Problem?

Comparative effectiveness research includes both new evidence and syntheses of existing evidence. The research can be used in a variety of ways to influence practice, including:

- ***Dissemination and decision aids:*** Comparative effectiveness information could be shared with providers and patients to influence practice patterns.
- ***Benefit design:*** Insurance plans could charge higher co-payments for services that have been shown to be less effective than comparison services.[562] Insurers might also use a "carrot" rather than a "stick" approach with consumers by covering interventions that are more effective without co-payments or deductibles.[563]
- ***Reimbursement changes:*** Insurance plans could pay less for services that are less effective than comparison services. For example, they could use reference pricing (i.e., pay no more than a reference price for all services in a group of therapeutic equivalents). Individuals would be required to pay the balance between the reference price and the price of the service they receive. Another alternative is that doctors and hospitals could receive financial bonuses for practicing effective care as defined through comparative effectiveness studies.[564]
- ***Coverage decisions:*** Insurance plans could base coverage decisions on evidence of comparative effectiveness.

Through these mechanisms, comparative effectiveness research could result in savings through decreased utilization of services that are more effective than alternatives. On the other hand, research showing that more expensive treatment options were also more clinically effective could lead to spending increases.

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[559] Ibid.

[560] Ibid.

[561] A.S. Detsky and A. Laupacis, *Relevance of Cost-Effectiveness Analysis to Clinicians and Policy Makers.* JAMA, 2007. 298(2): p. 221-4.

[562] Throughout this section for ease of exposition we use the terms "less effective" and "more effective" to relate to both clinical effectiveness and cost-effectiveness.

[563] C.C. Denny, E.J. Emanuel, and S.D. Pearson, *Why Well-Insured Patients Should Demand Value-Based Insurance Benefits.* JAMA : the journal of the American Medical Association, 2007. 297(22): p. 3.

[564] P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p. For further discussion of P4P reforms, see *Controlling Health Care Spending in Massachusetts: An Analysis of Options*, Policy Option #9.

What Has to Happen to Implement a Change?

The Commonwealth would need to establish a mechanism for generating comparative- effectiveness information and an approach for translating this evidence into changes in practice.

Evidence Generation

The Commonwealth could create a state center that supports the development of comparative effectiveness research, possibly in collaboration with other states. Section 53 of Chapter 305 of the *Acts of 2008* requires the Secretary of Health and Human Services to report on a potential comparative effectiveness entity, established by interstate compact.

Any activity by the Commonwealth would have to be coordinated with similar initiatives at the federal level and in other states. The federal American Recovery and Reinvestment Act of 2009 includes $1.1 billion for comparative effectiveness research to be distributed between the Agency for Healthcare Research and Quality, the National Institutes of Health, and the Office of the Secretary of the Department of Health and Human Services.[565] Federally funded comparative effectiveness research will be coordinated by a council of federal employees from various agencies with health care responsibilities. The law stipulates that the comparative effectiveness information may not be used to "mandate coverage, reimbursement, or other policies for any public or private payer."[566]

Models for a Massachusetts comparative effectiveness center could be found in other states and other countries. Existing private sector work on comparative effectiveness might also present an opportunity to build a center on an existing foundation of work. Several examples of comparative effectiveness centers are described below.

Washington. The Health Technology Assessment (HTA) Program was set up to review medical technologies[567] to provide information to state agencies for their use in making coverage determinations for state health care programs (state health care authority, Medicaid, workers' compensation, corrections, and veterans' affairs). The rationale for the development of the center was the concern that medical products and treatments were being introduced without scientific evidence about safety, effectiveness, and whether they provided benefits that were better than existing alternatives.[568] State agency physicians identify potential health technologies of concern (e.g., lumbar fusion, pediatric bariatric surgery, upright/positional MRI). HTA contracts with a research firm for peer reviewed evidence-based reports that are then reviewed by an independent clinical committee on health technology made up of 11 practicing physicians and health care providers who make health care coverage determinations based on the evidence. The review process is lengthy: Only 9 reviews were complete as of June 2009.[569]

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[565] American Recovery and Reinvestment Act of 2009, H.R. 1, 111th Congress, 2009.

[566] American Recovery and Reinvestment Act of 2009, 2009, Section 804.

[567] These include medical/surgical devices and procedures, medical equipment and diagnostic tests, but not prescription drugs. See Washington Health Technologies Assessment. *Process for Health Technology Assessment: How Technologies Are Selected for Review*. [Web Page] 2008. Online at http://www.hta.hca.wa.gov/tech_process.html (as of June 26, 2009).

[568] See Washington Health Technologies Assessment. *About the Program*. [Web Page] 2008. Online at http://www.hta.hca.wa.gov/about.html (as of June 26, 2009).

[569] Washington Health Technologies Assessment. *Health Technology Assessment Findings*. [Web Page] 2008. Online at http://www.hta.hca.wa.gov/assessments.html (as of May 29, 2008).

NICE. The National Institute for Health and Clinical Excellence was established within the UK's National Health Service in 1999. Funded by the national government, NICE conducts its own full, systematic reviews of the published literature on various medical interventions, including prescription drugs.[570] The rationale for the development of NICE was to review technologies that were controversial, likely to have a significant budget impact, were associated with known short- and long-term risks to patients, or procedures with wide and unexplained variation (e.g., surgery for low back pain, hysterectomy).[571] The review process is transparent: Work programs are published in advance, and data supporting NICE conclusions are in the public domain.[572] NICE Guidance is developed by independent advisory bodies drawn from stakeholder groups, such as "clinicians, professional groups, researchers, and individuals with experience in patient advocacy."[573] An academic group conducts the assessments, which are then reviewed and published by a Technology Appraisal Committee.[574] Reviews can be appealed. Recommendations are then submitted to NICE (which is not bound by the recommendations). However, once NICE approves a prescription drug or procedure, the NHS is required to provide the drug/procedure to those patients who would benefit. The review process takes a year or more. Perhaps most distinctive, from the U.S. perspective, is the use by NICE of economic evaluation to help judge the value of technologies that provide additional benefit but at an increased cost. The key measure used by NICE is the additional cost per QALY gained,[575] although approval or rejection is not based solely on cost-effectiveness.[576] NICE seems to implicitly use £30,000 ($58,850) per QALY as its threshold for approval;[577] less cost-effective treatments are typically not approved.

Tufts Medical Center. In addition to government, private sector organizations have already developed expertise and could be used as a foundation for, or complement to, a government-sponsored comparative effectiveness center. The Tufts Center for Evaluation of Value and Risk in Health is a federally funded Evidence-based Practice Center that conducts systematic reviews of the cost-effectiveness of health care interventions and also maintains the Tufts Medical Center Cost-Effectiveness Analysis Registry, which provides electronic access to a comprehensive database of cost-effectiveness ratios in the published medical literature.[578]

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[570] See S.D. Pearson and M.D. Rawlins, *Quality, Innovation, and Value for Money: NICE and the British National Health Service.* JAMA, 2005. 294(20): p. 2618-22.

[571] S. Pearson and P. Littlejohns, *Reallocating Resources: How Should the National Institute for Health and Clinical Excellence Guide Disinvestment Efforts in the National Health Service?* J Health Serv Res Policy, 2007. 12(3): p. 160-5.

[572] With the exception of information that manufacturers insist remain confidential. S.D. Pearson and M.D. Rawlins, *Quality, Innovation, and Value for Money: NICE and the British National Health Service.* JAMA, 2005. 294(20): p. 2618-22.

[573] Ibid.

[574] G.R. Wilensky, *Developing a Center for Comparative Effectiveness Information.* Health Aff (Millwood), 2006. 25(6): p. w572-85.

[575] S.D. Pearson and M.D. Rawlins, *Quality, Innovation, and Value for Money: NICE and the British National Health Service.* JAMA, 2005. 294(20): p. 2618-22. 2619.

[576] U.E. Reinhardt, P.S. Hussey, and G.F. Anderson, *U.S. Health Care Spending in an International Context.* Health Aff (Millwood), 2004. 23(3): p. 10-25.

[577] A stated QALY threshold might risk political backlash. Ibid.

[578] For a brief description of the Center and the registry, see Tufts Medical Center Web site, CEA Registry page, n.d. As of June 26, 2009: http://www.research.tufts-nemc.org/cear/default.aspx

Evidence Translation

There are several ways that comparative effectiveness information could be used to encourage behavior change by patients and providers. A state funded comparative effectiveness center could facilitate decisions between treatment alternatives by publishing decision aids for providers and patients. An example of this approach is *Consumer Reports Best Buy Drugs*, which aims to help patients decide between alternative drugs for treatment of certain conditions.[579]

Comparative effectiveness analyses could also be provided to private payers to facilitate decisions on coverage, benefit design, and reimbursement. The Commonwealth could also utilize comparative effectiveness information in its own decisionmaking as a payer, and, by virtue of its position in the market, also influence the behavior of other payers. However, such influence would likely be strongly opposed by stakeholders who view these activities as rationing care. The state government could use its market power as payer for the Medicaid program, purchaser of health insurance for Massachusetts state employees and regulator for other insurance programs (e.g., the Connector), to change benefit design and/or payment policies within its own programs, as well as to provide an example for private sector insurers. Indeed, it has been noted that "private insurers may be reluctant to pursue such methods aggressively if public insurance programs were not adopting similar methods."[580] States have latitude, within federal Medicaid requirements, to decide what health services to cover and to set rates for services. Currently, MassHealth includes cost-effectiveness in its definition for medical necessity for purposes of determining coverage for medical services.[581] There are limitations to the possible savings, however. First, as noted by the CBO, the majority of Medicaid funding goes to providing long-term care, rather than acute medical care. In addition, because Medicaid is a jointly financed program of both the federal and state governments, the Commonwealth would recover only a portion of any savings generated, and "some coordination between state and federal officials might therefore be required to incorporate the results of comparative effectiveness research."[582] However, the Commonwealth would have more latitude in making changes in state insurance programs, subject to statutory or regulatory constraints.

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[579] Consumer Reports. *Safe and Effective Drug Recommendations from Best Buy Drugs*. [Web Page]. Online at http://www.consumerreports.org/health/best-buy-drugs/index.htm (as of June 26, 2009).

[580] P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p. 17.

[581] The Official Website of the Office of Health and Human Services (EOHHS) - Commonwealth of Massachusetts. *Guidelines for Medical Necessity Determination*. [Web Page] 2008. Online at http://www.mass.gov/?pageID=eohhs2subtopic&L=6&L0=Home&L1=Provider&L2=Insurance+(including+MassHealth)&L3=MassHealth&L4=Guidelines+for+Clinical+Treatment&L5=Guidelines+for+Medical+Necessity+Determination&sid=Eeohhs2 (as of September 2008).

[582] P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- There is little direct evidence of the effect of comparative effectiveness on spending
- A Massachusetts comparative effectiveness center would most likely conduct reviews and syntheses of existing evidence, not new evidence generating studies. Average review costs are approximately $300,000–$500,000
- Dissemination of evidence from comparative effectiveness studies often has limited effects on physician behavior
- There is some limited evidence that the use of comparative effectiveness information in patient decision aids could reduce health care costs
- Benefit design, reimbursement, and coverage determination on the basis of comparative- effectiveness information are more likely to decrease utilization of less-effective services. However, these mechanisms are typically strongly opposed by stakeholders

The Evidence

Both public and private sector insurers use clinical effectiveness information in making coverage decisions, but historically the process has been opaque and little is known about the net effect on spending.[583] Some limited evidence comes from studies of NICE in the UK, although these studies may not generalize to Massachusetts because of differences in health care organization and financing. Decisions based on NICE comparative- effectiveness data have increased value (by minimizing cost per unit of health) but have generally not been found to lower cost. Implantable cardiac defibrillators, drug treatments for osteoporosis, and, most controversially, drugs for the treatment of multiple sclerosis (MS) and Alzheimer's disease are examples of technologies that NICE has limited purely on the basis of value for money.[584] NICE has tended to focus on review of new technologies much more than of "disinvestment" (reviewing, for elimination, ineffective or low value services to provide resources that can be reallocated).[585] The consequence of NICE approval may be increased costs for the National Health Service, because approval results in a mandate for funding new treatments. New treatments are approved more frequently than old, ineffective treatments are removed.[586]

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[583] J.W. Rowe, D.A. Cortese, and J.M. McGinnis, *The Emerging Context for Advances in Comparative Effectiveness Assessment.* Health Aff (Millwood), 2006. 25(6): p. w593-5.

[584] S. Pearson and P. Littlejohns, *Reallocating Resources: How Should the National Institute for Health and Clinical Excellence Guide Disinvestment Efforts in the National Health Service?* J Health Serv Res Policy, 2007. 12(3): p. 160-5. 161.

[585] N. Devlin and D. Parkin, *Does Nice Have a Cost-Effectiveness Threshold and What Other Factors Influence Its Decisions? A Binary Choice Analysis.* Health Econ, 2004. 13(5): p. 437-52..

[586] Part of this pattern may stem from the political context in which NICE was introduced. In 1999, there were complaints about underfunding of the National Health Service, so NICE came about just before the start of a deliberate policy to increase health spending, albeit in a controlled way. By September 2006, however, the NHS had formally empowered NICE to focus on reducing health spending. *See* discussion in S.D. Pearson and M.D. Rawlins, *Quality, Innovation, and Value for Money: Nice and the British National Health Service.* JAMA, 2005. 294(20): p. 2618-22.

Although empirical evidence is limited, theory suggests that the use of comparative effectiveness information might decrease overall health spending. This section examines what is known about each step in a theoretical link between establishment of a comparative effectiveness center and cost savings.

Evidence Generation

Funding of the comparative effectiveness center

The level of funding of a comparative effectiveness center determines how much information can be produced which establishes an upper bound on the number of savings opportunities. This funding also adds to total health care costs. The level of funding is discretionary. Table 15.1 lists the levels of funding of several existing or proposed comparative effectiveness centers.

Table 15.1
Funding for Comparative Effectiveness Centers

Name	Funding (Actual or Recommended)
Existing or Enacted Centers	
Washington State Health Technology Assessment[a]	$1.2 million in 2006
Federal funding in the American Recovery and Reinvestment Act of 2009[b]	$1.1 billion in 2009, until expended
Drug Effectiveness Review Program[c]	$1.4 million annually
NICE (UK)[d]	$35–$50 million annually
Proposed Centers	
Commonwealth Fund Bending the Curve Report[e]	$.88–$1.05 billion annually (equal to 0.05% of health insurance spending)
H.R. 3162 (evaluated by CBO)[f]	$375 million annually
2006 Comparative Effectiveness Forum proposal[g]	$4–$6 billion annually

SOURCES:

[a] UW Office of State Relations, *Capitol Update*, March 2006. As of June 26, 2009. Available at http://www.washington.edu/about/staterel/publications/2006%20updates/FINALrevisedMARCH2006CAPITOLUPDATEwmec.pdf

[b] American Recovery and Reinvestment Act of 2009, H.R. 1, 111th Congress, 2009)

[c] MedPAC, *Report to the Congress: Reforming the Delivery System*, Washington, D.C.: MedPAC, June 2008.

[d] MedPAC, 2008.

[e] C. Schoen, S. Guterman, A. Shih, J. Lau, S. Kasimow, A. Gauthier, and K. Davis, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Care Spending*, New York: The Commonwealth Fund, 2007, p. 20.

[f] Congressional Budget Office, *Research on the Comparative Effectiveness of Medical Treatments: Issues and Options for an Expanded Federal Role*, Washington, D.C.: U.S. Congress, December 2007, p. 34.

[g] The Health Industry Forum, *Comparative Effectiveness Forum: Executive Summary*, Washington, D.C., November 30. 2006, pp. 5–6.

A comparative effectiveness center could fund a range of different types of studies. Studies that generate new evidence would be much more expensive than syntheses of existing evidence. For this reason, a state or multistate comparative effectiveness center would likely focus on syntheses of existing evidence, not generation of new evidence through clinical trials. Head-to-head clinical trials conducted recently by the NIH averaged $77.8 million, ranging from

$12 million to $176 million.[587] In contrast, review and synthesis of existing evidence averages approximately $200,000 to $500,000 per study, depending on scope.[588] The Washington State Health Technology Assessment program provides an example of how many review and synthesis studies can be funded by a state center: It conducted 9 reviews in 2 years, or approximately $250,000 per study.

Results of comparative effectiveness studies

The findings of comparative effectiveness studies will determine whether the results could lead to decreased costs. Studies may determine that one treatment is more clinically effective than another, that two treatments are equivalent, or that the evidence is mixed. If costs are also evaluated, the studies may determine that a more effective treatment is also less costly than an alternative. However, if the more- treatment is equally or more costly, the result would not lead to overall cost savings (although value may increase).

The cost saving effect could differ by procedure or patient population. Some procedures might be cost-effective for some populations and not for others, but it would be challenging to do a nuanced analysis specific to segments of the population. For example, total hip replacement for a 55-year-old might add years of productive life, but for an 80-year-old at risk of complications that would mitigate gains in functioning, medication plus physical therapy might be a more cost-effective choice.

It is uncertain how many treatments would be found that have equally or more effective, less costly alternatives. The effectiveness of many treatments has not been proven, and it is possible that comparative effectiveness studies will find some treatments that have no health benefit. Previous cost-effectiveness studies have found that 4–6 percent of health services increase costs and lead to worse health outcomes.[589]

The experience to date of the Washington Health Technology Assessment program provides an example of what type of findings might be expected from a comparative effectiveness center that conducts reviews of existing studies. The center has issued 9 coverage decisions to date (Table 15.2). Of the 9 decisions, 7 denied or limited coverage. Three of the noncoverage determinations were based on findings of uncertain effectiveness and higher cost compared with alternatives. One determination was based on a finding of equivalent effectiveness and higher cost, and one determination was based on a finding of no health benefit and higher costs. Two treatments were found to be more effective than alternatives in certain applications.

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[587] National Institutes of Health - Department of Health and Human Services. *Research into What Works Best (Fact Sheet)*. 2007. Online at http://www.nih.gov/about/researchresultsforthepublic/whatworks.pdf (as of June 26, 2009).

[588] Agency for Healthcare Research and Quality. *Evidence-Based Practice Centers Request for Proposals*. [Web Page] 2007 May 2007. Online at http://www.ahrq.gov/fund/contarchive/rfp0710021.htm (as of April 20, 2009).

[589] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective - Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

Table 15.2
Coverage Decisions by Washington Health Technology Assessment

Service	Description and alternative(s)	Coverage decision	Rationale
Implantable Drug Delivery System	Infusion pumps are surgically implanted devices used to deliver drugs to a specific site in the body, rather than relying on systemic levels of medication(s) that are administered orally or by other routes.	Not covered	Uncertain effectiveness, equivalent cost
Discography	Discography is a diagnostic test for discogenic pain. Controversy in using the discography test exists because the clinical importance of the test results is unknown and there is significant evidence of false-positive test results.	Not covered	Uncertain effectiveness, higher cost
Upright/ Positional MRI	Upright and positional MRI (uMRI) is an imaging test performed with patients in weight-bearing or different positions. Current alternative imaging tests used to diagnose spinal and other joint conditions are a regular MRI (lying down), Computerized Tomography (CT) myelogram, regular or flexion and extension radiographs (x-rays), and discography.	Not covered	Uncertain effectiveness, higher cost
Computed Tomographic Colonography (CTC)	CTC has been proposed as a less invasive alternative to conventional colonoscopy to screen for colorectal cancer, with the potential to induce more individuals to get screened.	Not covered	Equivalent effectiveness, higher cost
Knee Arthroscopy	Surgical procedure to treat pain associated with osteoarthritis. Alternatives include physical and occupational therapy.	Not covered	Not effective, higher cost
Lumbar Fusion	Lumbar fusion reduces back pain by surgically immobilizing the spinal column vertebrae surrounding the disc(s). Nonsurgical treatment alternatives for chronic low back pain include cognitive behavioral therapy, medications, and rehabilitation.	Covered with limitations	More effective than usual care; equivalent to intensive therapy and cognitive behavioral therapy, and higher cost
Pediatric Bariatric Surgery	A surgical intervention intended to induce weight loss and resolve co-morbid conditions linked to obesity. Alternatives to bariatric surgery include dietary modification, increasing physical activity and exercise, behavioral modification, and pharmacotherapy.	Not covered for patients under age 18; covered for patients 18–20 years old	More effective for patients 18–20; uncertain effectiveness for patients <18; uncertain cost overall
Computed Tomographic Angiography (CTA)	A minimally invasive diagnostic test for coronary artery disease. Alternative non-invasive tests include stress echocardiograms and single-photon emission computed tomography (SPECT).	Covered with limitations	More effective than alternatives, uncertain cost for selected populations and care settings

Service	Description and alternative(s)	Coverage decision	Rationale
Cervical and Lumbar Artificial Disc Replacement	Replacement of a disc in the lumbar or cervical spine to treat back pain and related disability. The main alternative is spinal fusion surgery.	Covered with limitations	Equally or more effective, uncertain cost.

SOURCE: Washington Health Technology Assessment, Washington Health Technology Assessment Findings, 2008. As of June 26, 2009: http://www.hta.hca.wa.gov/assessments.html

Evidence Translation

Comparative effectiveness information could be used to influence practice patterns in several potential ways. Key decisions include the following: (1) What type of information will be used: clinical effectiveness only or clinical and cost effectiveness? (2) How strong will the incentives be to use more effective services? Approaches that use stronger incentives such as coverage determinations are more likely to have a significant effect on utilization of services, but are also more likely to engender a backlash from stakeholders. Such stakeholders could be health care providers who could face a financial loss, and they could be patients who could be denied effective but expensive treatment based on cost considerations. In this section, we present available evidence on the effects of different approaches on service utilization.

Dissemination and Shared Decisionmaking

The most basic way to use comparative effectiveness information would be to disseminate information to providers and patients to influence decisions about treatment alternatives. However, many examples can be cited of new information on the effectiveness of treatments having little effect on practice patterns. For example, the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT), a large, randomized trial, compared diuretics, Angiotensin-Converting Enzyme (ACE) inhibitors, calcium channel blockers, and alpha blockers for treatment of hypertension.[590] Diuretics were found to be more effective than the alternatives and less expensive. However, the results had only a small effect on prescribing patterns. The lack of effect may be partly due to changes in standards of practice that occurred during the course of the study, introducing new drugs and drug combinations. Marketing by pharmaceutical companies has also potentially contributed to the lack of effect.

- ***Shared decisionmaking,*** a process through which patients and their care providers are active participants in the process of communication and decisionmaking about their care,[591,592] is one approach that may be more effective in using comparative effectiveness information to affect practice patterns. The information that drives shared decisionmaking could be derived from comparative effectiveness research.

[590] A. Pollack, *The Minimal Impact of a Big Hypertension Study*, in *The New York Times*. 2008, The New York Times Company: New York, NY.

[591] C. Charles, T. Whelan, and A. Gafni, *What Do We Mean by Partnership in Making Decisions About Treatment?* BMJ, 1999. 319(7212): p. 780.

[592] C. Charles, A. Gafni, and T. Whelan, *Decision-Making in the Physician-Patient Encounter: Revisiting the Shared Treatment Decision-Making Model.* Soc Sci Med, 1999. 49(5): p. 651-61.

- ***Decision aids*** are designed to simplify and clarify the decisionmaking process by giving a patient a clearer and more thorough understanding of his or her treatment options. They may take a variety of forms, including boards, booklets, or interactive software programs. Research on patient decision aids yields uncertain results regarding the aids' effects on cost but generally shows improvement in other measures, such as knowledge and decision satisfaction. A 1999 systematic review of 17 studies on patient decision aids showed that the aids' effects on decision outcomes (such as post-decision quality of life) was uncertain and that the largest and most consistent benefit of the aids was improved knowledge of medical options and outcomes among patients.[593] CBO concluded from an evidence review that decision aids reduce use of aggressive surgical procedures without affecting health outcomes, and concluded that use of such aids on a broader scale could reduce health care spending.[594] However, CBO was unable to estimate the effects of greater use of shared decisionmaking on Medicare expenditures.[595]

Benefit Design

Insurance benefits could be designed with the aim of increasing patient demand for more effective services and decreasing demand for services that are less effective. The level of cost-sharing has been shown to affect the demand for services. Designing benefits with higher cost-sharing levels for less effective services is a type of value-based insurance design (VBID). We modeled one approach to VBID in a separate scenario in this report, and estimated that it would decrease utilization of low value services, which would in turn decrease spending.

Reimbursement

Reimbursement policy could be used to encourage use of treatments that are more effective than alternatives. The main options are reference pricing, in which insurers would pay the same price for equivalent treatments, and financial incentives for the use of preferred treatments.

Reference pricing is used in several countries to pay for pharmaceuticals. A reference price, typically the minimum or median, is determined for a class of drugs. A payer then sets reimbursement at the reference price level for all drugs in the class. Individuals are responsible for any difference in the price between the drug they receive and the reference price. Evidence on the effect of reference pricing on costs is limited and mixed, but overall studies have concluded that it reduces spending.[596,597] Many challenges to implementing a reference pricing system may be encountered, however, including the administrative structure for determining reference prices, the definition of therapeutic clusters that would be subject to a single reference

[593] A.M. O'Connor, A. Rostom, V. Fiset, et al., *Decision Aids for Patients Facing Health Treatment or Screening Decisions: Systematic Review.* BMJ, 1999. 319(7212): p. 731-4.

[594] United States Congressional Budget Office, *Budget Options Volume I: Health Care*. CBO Paper. 2008, Washington, D.C.: United States Congressional Budget Office. 236 p.

[595] Ibid.

[596] P. Kanavos and U. Reinhardt, *Reference Pricing for Drugs: Is It Compatible with U.S. Health Care?* Health Aff (Millwood), 2003. 22(3): p. 16-30.

[597] M. Aaserud, A.T. Dahlgren, J.P. Kosters, et al., *Pharmaceutical Policies: Effects of Reference Pricing, Other Pricing, and Purchasing Policies.* Cochrane Database Syst Rev, 2006(2): p. CD005979..

price, and determination of appropriate prices. Critics of reference pricing argue that it could stifle innovation and increase barriers to access for lower income individuals.[598]

Another reimbursement option would be to pay bonuses to providers who deliver evidence-based care. This option would supplement pay-for-performance programs with additional evidence on effective treatments. Pay-for-performance is discussed in a separate scenario in this report, and its effect on total health care costs is uncertain.

Coverage

Coverage determinations would be the strongest way to affect practice patterns. Coverage could be denied for services that are shown to be ineffective. Another possibility is to implement coverage eligibility through "step therapy," in which several treatment options might be covered but the least costly of equivalently effective options must be tried first. However, failing to cover services that have health benefits, particularly services that are more clinically effective but less cost effective than alternatives, could be seen as limiting access to care. For this reason, comparative effectiveness research funded by the American Recovery and Reinvestment Act is prohibited for use in coverage recommendations.[599]

Direction and Timing of Effect

If there are savings, all practical evidence suggests that the savings would occur in the long run as opposed to short run and only after significant financial investments have been made to generate evidence. According to the CBO analysis, taking into account the time required to undertake new activities and the lag time before a substantial body of results is accumulated, "it would probably be a decade or more before new research on comparative effectiveness had the potential to reduce health care spending in any significant way."[600]

The Strength of the Evidence

The evidence is weak. As mentioned above, there are no empirical studies, and rather large gaps currently exist between theory and knowledge. Proponents of these reforms base their argument on logic rather than evidence. We do not know the net effect that providing 100-percent effective care would have on health spending.

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[598] P. Kanavos and U. Reinhardt, *Reference Pricing for Drugs: Is It Compatible with U.S. Health Care?* Health Aff (Millwood), 2003. 22(3): p. 16-30.

[599] American Recovery and Reinvestment Act of 2009, 2009.

[600] P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p. 16. This perhaps overstates the time lag in developing comparative- effectiveness information, because a new comparative effectiveness center could use existing reviews from NICE and from a number of the existing federally funded Evidence-based Practice Centers (such as Tufts and RAND). Reviews funded by AHRQ through the Evidence-based Practice Centers are in the public domain. Still, given the time frame and budget required for reviews, even with many centers producing comparative effectiveness information, many medical interventions (especially older interventions) will not have been reviewed.

The Potential Effect on Stakeholders

Physicians and health care institutions providing medical services that are found through comparative effectiveness analysis to be of low value will be losers under these reforms, except to the extent that they can quickly switch to providing drugs, devices, and procedures that are deemed to be high value.

Drug and device manufacturers may be wary of the influence of a NICE-like entity. On the other hand, the experience in the UK suggests that, although manufacturers routinely appeal NICE determinations, they have also benefited from clarification of the "rules of the game" (i.e., knowing what data they will need from clinical trials to provide acceptable evidence of the clinical and cost-effectiveness of their products), as well as from the transparency of the process.[601]

Consumers of health services will stand to gain under a system that promotes the delivery of high quality, cost-effective care; however, consumers may perceive themselves as losers if they face increased cost sharing for low value services they wish to receive. NICE has at times had to defend itself in the UK press against charges that it is denying "lifesaving" treatments to British citizens.[602]

Insurers may welcome these reforms as providing leeway for them to deny coverage and/or reduce payment for services that are not effective or cost-effective. However, they may feel pressure from employers and/or consumers to continue to pay for services that are effective regardless of cost. And if the comparative effectiveness center is funded with a tax or surcharge on insurance premiums, both insurers and self-insured employers may feel an effect on their revenues and are likely to pass the costs on to consumers. On the other hand, if the center were funded through legislative appropriation, the burden would fall on the administration and legislature to create public support for the "public good" produced by the center's efforts.

Key Design Features

In a paper in the *Journal of the American Medical Association*, Emanuel and his colleagues outline the essential elements of a technology assessment center at the federal level.[603] These would seem to apply as critical features of such a center at a state level:

- ***Administrative independence:*** The ability to pursue a long-term agenda without political interference. The Federal Reserve Board is mentioned as a model agency that sometimes makes controversial choices but avoids the perception of favoritism.
- ***Dedicated funding:*** Not vulnerable to political retaliation for decisions that create winners and losers. Funding by imposing a fee on all health expenditures that

[601] S.D. Pearson and M.D. Rawlins, *Quality, Innovation, and Value for Money: NICE and the British National Health Service.* JAMA, 2005. 294(20): p. 2618-22.

[602] Ibid.

[603] The six essential elements listed here, and the descriptive information on them, are adapted from E.J. Emanuel, V.R. Fuchs, and A.M. Garber, *Essential Elements of a Technology and Outcomes Assessment Initiative.* JAMA, 2007. 298(11): p. 1323-5. 1324-1325.

are not subject to other taxes is offered as a means to provide for stability and fairness.[604]

- ***High impact research:*** A center with a clear mission to review technologies that are "commonly used, of high individual or aggregate cost, subject to rapid change, or for which there are many alternatives and substantial uncertainty about which intervention should be used for which patient population." Priority-setting processes are critical.
- ***Use of trustworthy methods:*** Empanels a permanent advisory board of distinguished methodologists to ensure adherence to validated research methods.
- ***Dissemination:*** Ensures widespread and appropriate implementation of results.
- ***Legitimacy:*** Ensures independence, objectivity, and relevance with a permanent stakeholder advisory board that is involved in a transparent process, even though it may generate results that are "contrary to their interests."

Are There Unintended Consequences That Might Result?

The experience of NICE suggests the need for caution in assuming that significant cost savings are to be gained from eliminating existing, low value practices or products. Ending such practices is likely to face political resistance. On the other hand, once new medical devices and prescription drugs have received the "seal of approval" from such a center, insurers will have difficulty denying coverage for other reasons (e.g., preferences based on discounts from the manufacturer).

Comparative effectiveness data will also inevitably change the standard of care in the community, raising prospects of a change in the standard for negligence in medical malpractice litigation. Once public information is available about the comparative effectiveness and cost-effectiveness of medical practices, such information will inevitably be used as evidence in actions against physicians and hospitals.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

If bundled payment methods are developed to use information about the most cost-effective strategy for treating a condition, information from comparative effectiveness research could establish a basis for pricing bundles.

[604] The former Director of CBO has also suggested that a tax on health insurance premiums could provide stable funding for such a center. See P.R. Orszag, *Research on the Comparative Effectiveness of Medical Treatments, Options for an Expanded Federal Role Statement of Peter R. Orszag, Director, before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives*, in *CBO testimony*. 2007, U.S. Congressional Budget Office: [Washington, D.C.]. p. 20 p.

Those That Might Be Combined with This One

Value-based insurance design and pay-for-performance could encourage the use of treatments demonstrated to be more effective.

Option #16
Increase Use of Pay-for-Performance (P4P) Programs

I. Nature of the Problem

The quality of health care provided to consumers of health care services in the United States has substantial deficiencies. In a landmark study published in 2003, McGlynn and her colleagues found that adult patients receive only about 55 percent of recommended care and that adherence to clinically recommended care varied widely by medical condition.[605] In 2007, Mangione-Smith and colleagues reported that children and adolescents receive just 47 percent of recommended care.[606] These problems persist in spite of the steady rise in spending on health services. Existing payment mechanisms (such as fee-for-service) reward the quantity rather than quality of services, because they do not differentiate payments to health care providers based on their provision of high-quality care. Providers receive the same payment regardless of the quality of care provided. And some have even argued that health care providers, paradoxically, have been rewarded for poor quality by receiving additional payments for avoidable complications and readmissions. Mounting cost pressures, along with evidence of deficits in the quality of care, have led private insurers and policymakers at both the federal and state levels to consider reform options that would better align financial incentives for health care providers with quality goals. Pay-for-performance (P4P) has emerged as a leading reform strategy because it simultaneously encourages improvements in the quality, safety, and efficiency of health care. P4P accomplishes its goals by measuring performance, making quality information transparent, and paying differentially for performance.[607]

II. Proposed Policy Option

What Is It?

Pay-for-performance (P4P) programs use financial incentives to stimulate improvements in the quality of care and, in some cases, reductions in costs. To achieve these goals, P4P programs

[605] E.A. McGlynn, S.M. Asch, J. Adams, et al., *The Quality of Health Care Delivered to Adults in the United States.* N Engl J Med, 2003. 348(26): p. 2635-45.

[606] R. Mangione-Smith, A.H. DeCristofaro, C.M. Setodji, et al., *The Quality of Ambulatory Care Delivered to Children in the United States.* N Engl J Med, 2007. 357(15): p. 1515-23.

[607] See Institute of Medicine (U.S.), *Rewarding Provider Performance: Aligning Incentives in Medicare*. Pathways to Quality Health Care. 2007, Washington, DC: National Academies Press. xxi, 248 p.

use a variety of performance measures, including clinical processes of care and health outcomes, patient safety, patient experience with receiving care, resource use (i.e., efficiency), and structural indicators, such as IT investment and use. For example, if the sponsor (e.g., health plan, Medicaid agency) creates a P4P program with the goal of improving clinical outcomes, the participants might report such measures as risk-adjusted mortality, complication rates, or provision of disease-specific services.[608] If the program sponsor seeks improvement in the efficiency of care, the measures may include readmission rates or risk-adjusted length of stay.[609] The financial incentives are funded either through withholding a portion of current payments (or future payment increases) or adding new money to existing payments. The financial incentives may be an increased payment for each service delivered or a bonus. Payments are based on a provider (i.e., physician, practice site, medical group, hospital) having attained relative or absolute performance thresholds, delivering a targeted service regardless of performance level, having improved over the prior year's performance, or some combination of the three.

In 2006, Massachusetts health care reform legislation included a provision to make Medicaid hospital rate increases contingent on quality measures, including measures of the reduction of racial and ethnic disparities in health care.[610] The Massachusetts Medicaid Policy Institute organized the Massachusetts Medicaid Disparities Policy Roundtable, a multistakeholder effort that presented a series of implementation recommendations in a report published in July 2007.[611] The program was implemented in fiscal year 2008 (beginning October 1, 2007) and represents the first state Medicaid effort to set P4P targets based on the race and ethnicity of patients.[612] Every acute care hospital in the Commonwealth participates in the Medicaid program;[613] so, this program could conceivably be expanded to other insurance programs run by the state. In addition, MassHealth is rolling out a P4P program for the Primary Care Clinicians (PCC) Program this year (FY 2009). Some private insurers in the Commonwealth (e.g., Blue Cross and Blue Shield) also have P4P programs for physicians.

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[608] C.L. Damberg, M.E. Sorbero, A. Mehrotra, et al., *An Environmental Scan of Pay-for-Performance in the Hospital Setting: Final Report.* 2007. Prepared for the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services. RAND Working Paper (WR-474-ASPE/CMS).

[609] Ibid.

[610] Chapter 58 of the Acts of 2006, Section 13B: "Hospital rate increases shall be made contingent upon hospital adherence to quality standards and achievement of performance benchmarks, including the reduction of racial and ethnic disparities in the provision of health care. Such benchmarks shall be developed or adopted by the Executive Office of Health and Human Services so as to advance a common national framework for quality measurement and reporting, drawing on measures that are approved by the National Quality Forum and adopted by the Hospitals Quality Alliance and other national groups concerned with quality, in addition to the Boston Public Health Commission Disparities Project Hospital Working Group Report Guidelines. The office of Medicaid shall consult with the Massachusetts Health Care Quality and Cost Council, established under section 16K of chapter 6A and the MassHealth Payment Policy Advisory Board established under section 16M of said chapter 6A, during the process of developing these quality standards and performance benchmarks."

[611] Massachusetts Medicaid Policy Institute, *Pay-for-Performance to Reduce Racial and Ethnic Disparities in Health Care in the Massachusetts Medicaid Program: Recommendations of the Massachusetts Medicaid Disparities Policy Roundtable.* 2007. Massachusetts Medicaid Disparities Policy Roundtable.

[612] Ibid.

[613] Two hospitals licensed as "long-term acute hospitals" (Kindred Boston and Kindred North Shore) do not participate.

How Would It Solve the Problem?

P4P would solve the problem of rising health care spending if the incentives offered caused providers to change their practice patterns. Two types of changes are related to changes in spending. First, providers could be rewarded for delivering more efficient, less costly care. If enough providers responded to the incentives or enough patients sought care from these providers, total spending on health care in the state might be lower. Second, providers could be rewarded for delivering higher quality care. If higher quality was defined as or led to decreases in inappropriate utilization, prevention of complications, or use of less intensive treatment interventions, then spending on health care might be reduced (similar to the effects of disease management). The level of change depends on the number of providers who change their patterns, the number of patients who shift to providers with improved performance, and the balance between the costs of the program and the reduced spending.

What Has to Happen to Implement a Change?

P4P is being actively pursued in the state by a variety of stakeholders and no legislative or regulatory changes appear necessary for public or private programs to implement a P4P program. Without state action, private health insurers could introduce or increase the use of P4P in their programs. The Commonwealth, as payer for the Medicaid program, purchaser of health insurance for Massachusetts state employees, and regulator for other insurance programs (e.g., the Connector) has already introduced P4P as a part of value-based purchasing in public insurance programs. These activities could be expanded to increase the incentives and/or to expand the metrics used.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- Only one study exists that has examined the relationship between P4P and cost savings. That study reported positive findings for one clinical area (diabetes), but it is uncertain whether those results are generalizable to other conditions or settings.
- Program design features are critical in determining likely effect, including the size of the incentive, how payment is structured, what measures are used, and whether providers understand how to change behavior to obtain rewards.
- In general, programs to date have not made large amounts of money available to pay incentives, and, for many clinicians, greater financial rewards can be achieved at lower cost by seeing additional patients than by meeting performance targets.
- The programs are generally designed to be budget neutral so that there is no net increase (or decrease) in spending; existing spending is redistributed to reward high performers. Money to fund the reward pool may come from forgoing inflation adjustments.

- The administrative costs of the more effective quality improvement programs tend to be high.
- The measures of efficiency are not as mature as the measures of quality and have not yet been demonstrated to be effective in inducing changes in physician or practice behavior.
- It appears likely that experimentation with P4P programs will continue; however, such programs do not appear to be a promising source of savings.

The Evidence

Physician P4P: Although limited, the published studies on physician P4P show mixed results, with either no net improvement or a modest positive effect on the reliability of care.[614] The limited evidence that has been published on the impact of P4P shows modest improvements for some clinical measures,[615,616] and one study that shows cost savings associated with diabetes care improvements.[617] The CMS Physician Group Practice (PGP) Demonstration, the first pay-for-performance initiative for physicians under the Medicare program, found that, at the end of the first performance year, all 10 participating physician groups improved the clinical management of diabetes patients and a number of groups had lower Medicare spending growth rates than their local markets.[618] In the study by Rosenthal and her colleagues, the adoption of a quality improvement program among PacifiCare network physician groups in California resulted in a 3.6-percent increase in cervical cancer screening scores and a 1.7-percent increase in mammography scores.[619]

In the P4P program targeted at primary care physicians in the United Kingdom, there were substantial improvements in clinical processes of care between 2003 (pre-P4P) and 2005 (post-P4P). Mean practice scores increased from 76.2 to 85.0 for coronary heart disease, from 70.4 to 81.4 for diabetes, and from 70.3 to 84.3 for asthma. These increases continued earlier improvement trends resulting from an intensive quality improvement intervention led by the National Health Service. While the increase in the rate of improvement between 2003 and 2005 was significant for asthma ($P<0.001$) and diabetes ($P = 0.002$), scores for coronary heart disease did not improve faster than the rate of improvement observed between 1998 and 2003

[614] M. Sorbero, C. Damberg, R. Shaw, et al., *Assessment of Pay-for-Performance Options for Medicare Physician Services: Final Report.* 2006. Prepared for the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services. WR-391-ASPE.

[615] M.B. Rosenthal, R.G. Frank, Z. Li, et al., *Early Experience with Pay-for-Performance: From Concept to Practice.* JAMA, 2005. 294(14): p. 1788-93.

[616] S. Campbell, D. Reeves, E. Kontopantelis, et al., *Quality of Primary Care in England with the Introduction of Pay-for-performance.* N Engl J Med, 2007. 357(2): p. 181-90.

[617] K. Curtin, H. Beckman, G. Pankow, et al., *Return on Investment in Pay-for-performance: A Diabetes Case Study.* J Healthc Manag, 2006. 51(6): p. 365-74; discussion 375-6.

[618] The PGP Demonstration rewards physicians for improving the quality and cost efficiency of health care services delivered to a Medicare fee-for-service population. Centers for Medicare and Medicaid Services (CMS), *Medicare Physician Group Practice Demonstration Fact Sheet*. 2007: Online at http://www.cms.hhs.gov/DemoProjectsEvalRpts/downloads/PGP_Fact_Sheet.pdf

[619] M.B. Rosenthal, R.G. Frank, Z. Li, et al., *Early Experience with Pay-for-Performance: From Concept to Practice.* JAMA, 2005. 294(14): p. 1788-93. The authors, however, did not look at costs.

(P = 0.07). The P4P program was introduced, along with a 30-percent increase in spending on general practitioner (GP) practices as a way of ensuring high value uses of the new funds.

In the only study to address spending, Curtin and colleagues evaluated a P4P program sponsored by Excellus Health Plan and targeted at the Rochester Independent Physician Association (RIPA). Using data from 2003 and 2004, the authors found an average net savings of $2.4 million per year compared with the projected spending trend for diabetes care. These savings took into account new spending to provide underused services for managing patients with diabetes. The largest savings came from reducing hospitalization; physician costs, pharmacy, and outpatient spending were also reduced.[620] However, the Curtin study has not been replicated, either within the Rochester IPA or in other P4P programs, so we cannot conclude that the results are generalizable.

Hospital P4P: Only a handful of published studies have evaluated the effect of hospital P4P programs. Few P4P programs in operation are being formally evaluated to build an evidence base on what works. A recent RAND review of the literature identified eight published studies that evaluated the effect of three separate hospital inpatient P4P programs: (1) the Hawaii Medical Service Association Hospital Quality Service and Recognition P4P Program; (2) the Blue Cross Blue Shield of Michigan Participating Hospital Agreement Incentive Program; and (3) the CMS-Premier Hospital Quality Incentive Demonstration (PHQID).[621,622] The published studies of P4P in the hospital setting were limited in what they examined, but they generally show a modest positive effect on the reliability of care. There is either no evidence or very limited evidence regarding the effect of P4P on resource use, because most P4P programs have not measured or rewarded improvements in the efficiency or cost of care. The effect of P4P on health care spending could be positive, neutral, or negative, depending on the structure of the P4P program. In practice, P4P programs generally have not been designed to save money; rather, they are designed to be either budget-neutral (no change in spending or in the rate of growth in spending) or to shift future rate increases from all hospitals to only those hospitals that perform well on quality metrics (distributional change).

Direction and Timing of Effect

Whether widespread adoption of physician P4P will affect health care spending depends strongly on program design. The only published study of the effect of physician P4P on spending showed a savings, but this result may not be generalizable to other physician P4P programs. Among the limited number of studies that have been published on hospital P4P, the lack of a control group limits our ability to draw conclusions about the effects of those programs. Absent a comparison group or trend data, it is unclear whether the observed changes resulted from the incentive program or from broader secular trends associated with quality improvement initiatives—such as those by the Joint Commission and Medicare, which are targeting

[620] K. Curtin, H. Beckman, G. Pankow, et al., *Return on Investment in Pay-for-Performance: A Diabetes Case Study.* J Healthc Manag, 2006. 51(6): p. 365-74; discussion 375-6.

[621] C.L. Damberg, M.E. Sorbero, A. Mehrotra, et al., *An Environmental Scan of Pay-for-Performance in the Hospital Setting: Final Report.* 2007. Prepared for the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services. RAND Working Paper (WR-474-ASPE/CMS).

[622] A. Mehrotra, C.L. Damberg, M.E. Sorbero, et al., *Pay-for Performance in the Hospital Setting: What Is the State of the Evidence?* Am J Med Qual, 2009. 24(1): p. 19-28.

many of the same performance measures included in P4P programs. Studies have documented national improvement in both AMI care[623,624] and length of stay[625] in the absence of P4P over this time period.

The relationship between program design features (such as the size of the incentive, how the payment is structured, which measures are selected and how many, and what the target of the incentive is) and the results of P4P have not been studied. It is likely that the design features are related to the likelihood of a P4P program being successful in meeting its goals, including improving the efficiency of health care. If there are savings, all practical evidence suggests that the savings would not accrue in the short term and would depend on the specific design features in the programs (see discussion below). Widespread implementation is likely difficult to accomplish and would require large investments in infrastructure to carry out the many aspects of the program.

The Strength of the Evidence

The evidence is weak. The design of published studies makes it difficult to draw conclusions about the effects of P4P, because the programs evaluated were small and the periods of observation brief, limiting the likelihood that an effect would be observed. The programs also typically occurred in one location with selected characteristics, thus limiting the ability to generalize the study findings. Many of the studies lacked control groups, making it difficult to distinguish the effects of P4P from the effects of other factors in the environment (e.g., quality improvement interventions, public reporting). Finally, the studies provide no information about the design features that may have played a role in the programs' reported success or failure.

The Potential Effect on Stakeholders

Physicians and health care institutions providing medical services may receive incentive payments for providing quality care, and public reporting of P4P results may burnish the image of well performing practices and institutions, resulting in increased market share. On the other hand, providing data for the measures may require considerable infrastructure investment (e.g., for electronic health records to facilitate the collection and reporting of data), and incentives may not cover the costs of such investment. Consumers of health services will stand to gain under a system that promotes the delivery of high quality, cost-effective care, and they stand to gain if P4P results are reported publicly. Insurers may welcome these reforms, because they may present an opportunity to reward excellence in health care as well as to identify low performing health care providers in their networks.

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[623] S.W. Glickman, F.S. Ou, E.R. DeLong, et al., *Pay-for-Performance, Quality of Care, and Outcomes in Acute Myocardial Infarction.* JAMA, 2007. 297(21): p. 2373-80.

[624] P.K. Lindenauer, D. Remus, S. Roman, et al., *Public Reporting and Pay-for-Performance in Hospital Quality Improvement.* N Engl J Med, 2007. 356(5): p. 486-96.

[625] DeFrances, C.J. and M.J. Hall, *2005 National Hospital Discharge Survey.* Adv Data, 2007(385): p. 1-19.

Key Design Features

As noted above, a wide variety of program design and implementation issues potentially influence the outcomes of P4P programs. Key design features include (1) whether the incentive program is budget neutral or adds new money to provider compensation; (2) whether it increases use of underused services; (3) whether it decreases the use of inappropriate services and savings accrue as a result; and (4) whether it shifts the use of pharmaceuticals from brand names to generics. Net costs might decrease if the P4P program leads to improvements in quality of care, which might reduce both hospital admissions and mortality. Gains in efficiency might also reduce costs.

Program effects are strongly influenced by the type of incentives provided to health care providers and the kinds of performance measurements used. For example, spending might increase if incentives are focused on reducing underuse of appropriate treatments and services (e.g., encouraging diabetics to receive annual blood sugar management). In contrast, spending might decrease if incentives are focused on reducing variation or overuse of services (e.g., eliminating unnecessary imaging studies). Other considerations that could influence program effects include, for example, whether a physician or hospital is paid to achieve a certain level of performance or paid to improve quality from the pre-P4P level.

Estimates of the effect on spending must also reflect administrative program costs to the public or private insurer. Administrative costs include developing and field-testing performance measures, data collection and analysis, data warehousing and aggregation, data auditing, appeals management and data correcting, performance feedback, education and support to providers, and payout computation and distribution.[626] These ongoing costs are not trivial; they vary with the size and scope of the P4P program. The success of these programs in meeting quality improvement goals will be affected by implementation—in particular, whether the program has allocated sufficient resources for day-to-day operations, program monitoring and impact evaluation, and ongoing modification. In addition, health care providers face a number of challenges to their ability to successfully participate in these programs, including lack of physician engagement; inadequate information infrastructure, which necessitates the manual collection of data from charts; and potentially conflicting signals from various organizations measuring safety and performance. These implementation challenges must be carefully considered in the design of any P4P program.

Are There Unintended Consequences That Might Result?

It is possible that incentives based on a few quality measures may encourage health care providers to neglect other important aspects of care or provide inappropriate services to improve overall performance. In addition, incentive programs could result in providers' "cherry picking" of patients for more favorable characteristics, leaving providers who traditionally serve large, ethnically diverse populations at a disadvantage. However, currently, no evidence either supports or refutes these arguments.

[626] M. Sorbero, C. Damberg, R. Shaw, et al., *Assessment of Pay-for-Performance Options for Medicare Physician Services: Final Report.* 2006. Prepared for the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services. WR-391-ASPE.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

P4P programs may target some of the same dollars that are saved by eliminating payment for avoidable complications and readmissions (in this case the reward is avoidance of a penalty), medical home (which may include performance incentives in order to receive additional funding), and disease management (which may also require adherence to performance measures).

Those That Might Be Combined with This One

Insurers could, at least in theory, use the evidence base developed for comparative effectiveness to support P4P efforts. Quality information developed in P4P programs would be shared publicly and used by consumers in making health care choices (reference pricing).

Option #17
Regulate Insurance Premium Rates

I. Nature of the Problem

Between 2000 and 2007, health insurance premiums in Massachusetts increased by 82 percent for individuals and by 77 percent for families.[627] More recent reports suggest that these trends have not abated and may have even been exacerbated by the 2006 health care reform legislation.[628] Health insurance premiums in the Massachusetts Connector rose on the order of 10 percent after the first year.[629] One approach to reducing premium increases would be to enact regulation that either limited how premium rates could be set or limited the growth in health insurance premiums over time. In 2007, a state panel in Massachusetts voted to pressure insurers to limit premium growth in unsubsidized plans sold through the Connector.[630] Insurers complied with this rate limit in 2008; nonetheless, unsubsidized plans sold through the Connector represent a small share of the health insurance market in Massachusetts.[631] Below, we consider the evidence on whether premium rate regulation can be used as a tool to curtail growth in health care spending.

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[627] The Commonwealth of Massachusetts Division of Health Care Finance and Policy, *Massachusetts HealthCare Cost Trends: 1991-2004.* 2008. The Division of Health Care Finance and Policy. http://www.mass.gov/Eeohhs2/docs/dhcfp/r/pubs/08/healthcare_cost_trends_01-04.ppt

[628] J. Vennochi, *The Forbidding Arithmetic of Health Reform*, in *The Boston Globe*. 2009.

[629] Editor, *Patrick Makes Tough Choice*, in *Boston Globe*. 2008, Globe Newspaper Company: Boston.

[630] A. Dember, *Panel to Press Insurers on Premiums. Seeks to Hold Increases to 5 Percent for Some Plans*, in *Boston Globe*. 2007, Globe Newspaper Company: Boston, MA.

[631] Commonwealth Connector, *Massachusetts Health Care Reform: 2007/2008 Progress Report.* 2009. As of June 27, 2009: http://www.mahealthconnector.org/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/Health%2520Care%2520Reform/Overview/2007-2008%2520Progress%2520Report.pdf

II. Proposed Policy Option

What Is It?

Premium rate regulations would set restrictions on how much insurers can charge for policies, regulate growth in health insurance premiums, or set a lower bound on the MLR (the amount of revenue that insurers spend on medical care relative to the total premium). For example, in 2008, the California legislature passed, but the Governor vetoed, a bill that would have set a minimum MLR of 85 percent.[632]

The appeal of limits on the MLR or limits on premium growth hinges on the idea that insurers can improve efficiency to wring excess costs out of the system. To better understand how these options would work, it is helpful to consider what goes into an insurer's premium calculation. Generally, premiums are determined by three factors: expected health spending for a given group of individuals, the actuarial value of the plan, and a load factor that captures the cost of administering the plan. Mathematically, the equation for calculating premiums is as follows:

$$\text{Premium} = E(\text{Spending}) * AV * (1 + \text{Load})$$

Insurers must estimate expected spending (E(Spending)), and they can do so using econometric techniques and data on prior health spending in the group. The actuarial value (AV) represents the fraction of health spending paid by the insurer. Plans with high cost-sharing (e.g., co-payments and deductibles), tend to have both lower actuarial values and lower premiums than more generous plans. Load factors are generally expressed as a percentage of expenditures and typically range from 0.1 to 0.35 for private plans. The administrative load factor consists of the following categories of spending:

- Network administration (e.g., costs associated with negotiating contracts and monitoring performance of providers)
- Claims processing (the cost of reviewing, adjudicating, and paying claims filed by providers or enrollees)
- Combating fraud and abuse (an assortment of methods to identify improper payments, including software analyses, record reviews, and inspections)
- Premium taxes imposed by the state and federal governments
- Marketing costs (associated with selling insurance policies to purchasing entities, ranging from individuals to groups of various sizes; the larger the number of different entities to which an insurance company sells, the higher the marketing costs)
- Profit margin (this is the excess of revenue over costs and applies to both for-profit and not-for-profit companies, which may use the margins similarly, such as investment in infrastructure, or differently, such as dividends to shareholders).

Insurer spending aimed at managing patient care, such as disease management programs, is also included in the administrative load.

[632] A. Rojas, *Schwarzenegger Vetoes Universal Health Care*, in *Sacremento Bee*. 2008: Sacramento, CA.

Insurers can potentially reduce premium growth by using market power to pressure providers to accept lower reimbursement rates (which would reduce expected spending), by decreasing the actuarial value of plans, or by reducing administrative costs. Some administrative costs, however, are necessary for insurers to operate. Insurers can also implement policies, such as disease management and more stringent utilization review, to reduce unnecessary spending, but these types of policies often increase administrative costs.

How Would It Solve the Problem?

Policies that would regulate insurance premium growth or limit the MLR could potentially save money by reducing unnecessary administrative spending or by limiting excessive insurer profits. However, insurers could also slow premium growth by reducing the actuarial value of plans, by failing to cover certain services, or by forcing providers to accept lower reimbursement rates. These approaches could all have unintended consequences. Similarly, insurers can reduce the MLR, either by reducing administrative spending or by increasing spending on health care services. The latter approach would increase, rather than decrease, overall health spending.

What Has to Happen to Implement a Change?

Massachusetts would need to decide which agency was responsible for overseeing and regulating health insurance premium growth. Under the new cost containment law, the Massachusetts Division of Health Care Finance and Policy (DHCFP) will require the uniform reporting of information from private and public health care payers that will enable the DHCFP to analyze changes over time in health care premiums.[633] The DHCFP is also empowered to hold annual public hearings based on the cost information submitted by plans, paying particular attention to factors that contribute to cost growth.[634] The Attorney General is empowered to intervene in such hearings and may require testimony under oath. Many believe that increasing the level of transparency around premium increases will lead to slower rates of increases, but this approach has not been tested empirically.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- No empirical literature has evaluated the effect of capping the MLR or of limiting premium growth rates, but some economists have suggested that interpretations of the MLR are problematic and not a good basis for policymaking.
- The likelihood that savings can be realized from premium rate regulation is small and may have unintended consequences, especially if insurers respond by shifting

[633] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

[634] Ibid.

more costs to consumers, eliminating selected covered services, or reducing reimbursement below the costs of delivering certain services.

The Evidence

Restricting the MLR: The MLR is the fraction of insurance premium revenue that is spent on medical services. High loss ratios imply that the insurer spends more of each premium dollar on health care, as opposed to administrative expenses or profits. While many states currently have restrictions on the MLR,[635] we did not find any empirical literature evaluating the effect of these restrictions. Robinson[636] argues that the MLR is an accounting statistic rather than a quality or efficiency measure and that using it to measure health plan performance can be misleading. For example, insurers might be able to meet MLR requirements by encouraging excessive spending on health care, even if this additional care provides little benefit to the consumer. The MLR might not be a particularly useful measure for Massachusetts. Per capita health spending in the state is relatively high, but MLRs for 11 of the 12 largest insurers in the state were all at least 85 percent, based on data from 2007.[637]

Limits on Premium Growth: Many states have a rate review board to oversee premium pricing policies and increases;[638] however, the effect of these review boards has not been studied. Theoretically, it is unclear whether capping the growth in premium prices could reduce health spending without causing adverse consequences for consumers. Insurers could respond either by reducing overhead and profits (the desired effect) or by decreasing the actuarial value of plans, offering lower-quality coverage or exiting the market.[639,640] In an analysis of a legislative proposal to restrict premium growth in California (S.B. 26), Sood et al.[641] found that opportunities are limited to reduce premium growth by cutting insurer profits, and that restrictions on premium increases could lead to adverse, unintended consequences. Many of these unintended consequences would shift costs back to consumers by making it more difficult to find coverage, reducing the quality of care provided, and increasing out-of-pocket spending.

Direction and Timing of Effect

In theory, savings related to premium growth rate regulation could begin to accrue immediately, if premium prices fell and there were no adverse unintended consequences. However, at

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[635] Committee on Banking and Insurance, *Review of Florida's Health Insurance Laws Relating to Rates and Access to Coverage.* 1999. Prepared for the Florida State Senate by the Committee on Banking and Insurance. Report Number 2000-04. As of June 27, 2009: http://www.flsenate.gov/data/publications/2000/senate/reports/interim_reports/pdf/2000_04bilong.pdf

[636] J.C. Robinson, *Marketwatch: Use and Abuse of the Medical Loss Ratio to Measure Health Plan Performance.* Health Aff (Millwood), 1997. 16(4): p. 12.

[637] Massachusetts Division of Health Care Finance and Policy, *Health Care in Massachusetts: Key Indicators.* 2008.

[638] Committee on Banking and Insurance, *Review of Florida's Health Insurance Laws Relating to Rates and Access to Coverage.* 1999. Prepared for the Florida State Senate by the Committee on Banking and Insurance. Report Number 2000-04.As of June 27, 2009: http://www.flsenate.gov/data/publications/2000/senate/reports/interim_reports/pdf/2000_04bilong.pdf

[639] F.A. Sloan and C.J. Conover, *Effects of State Reforms on Health Insurance Coverage of Adults.* Inquiry, 1998. 35(3): p. 280-93.

[640] N. Sood, A. Alpert, D. Goldman, et al., *Health Insurance: Should California Regulate Health Insurance Premiums? (Issue Brief).* 2004. California HealthCare Foundation.

[641] Ibid.

this point, there is no evidence to determine whether premium price regulations or limits on the MLR would have the desired effect.

The Strength of the Evidence

The effects of capping the MLR or limiting the growth of premiums over time have not been tested empirically, so we had no evidence on which to base an estimate of their likely effect on spending growth.

The Potential Effect on Stakeholders

If the policies had the desired effect, premium rate regulations could make insurance less expensive and, therefore, be beneficial for consumers. Insurers would stand to lose because they would have to find a way to limit premiums, which could require a reduction in profit. Providers could also lose if premium rating regulations cause insurers to take a harder line when negotiating reimbursement rates. Premium price and growth restrictions may have a different effect on providers than limits on the MLR. Specifically, a limit on the MLR might provide a disincentive for insurers to drive hard bargains with providers, since lower spending on patient care would reduce the MLR.

However, there is no empirical evidence on the effect of price regulations or restrictions on the MLR, and it is possible that such restrictions could have negative, unintended consequences that would adversely affect consumers. For example, premium price restrictions could reduce the quality of coverage offered or cause insurers to exit the market.[642,643] Limits on the MLR could lead to excessive spending on health care services, with little or no benefit, ultimately driving premiums higher.

Key Design Features

Sood and colleagues suggest that any proposal to restrict the rate of premium growth over time should include monitoring to ensure that health care quality does not suffer, instituting checks to guarantee insurer solvency, and monitoring to make sure that insurers do not respond to the rate restrictions by failing to cover new technology.[644] For establishing a MLR, one potentially important feature would be to allow administrative tasks related to utilization review and disease management to count as medical expenses. Otherwise, tightly managed health maintenance organizations (HMOs) and plans that take aggressive steps to, for example, increase the use of wellness programs might find that administrative costs exceed allowable thresholds. The failed legislation in California allowed administrative functions related to disease management to count as medical costs.[645]

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[642] F.A. Sloan and C.J. Conover, *Effects of State Reforms on Health Insurance Coverage of Adults.* Inquiry, 1998. 35(3): p. 280-93.

[643] N. Sood, A. Alpert, D. Goldman, et al., *Health Insurance: Should California Regulate Health Insurance Premiums? (Issue Brief).* 2004. California HealthCare Foundation.

[644] Ibid.

[645] Kaiser Daily Health Policy Report, *Proposed Medical Loss Ratio Requirement in California Would Not Address Rising Health Care Costs, Insurers Say.* 2008. Henry J. Kaiser Family Foundation.

Are There Unintended Consequences That Might Result?

As discussed above, both mandated MLRs and restrictions on premium growth could cause some insurers to exit the market. Their leaving, in turn, might increase concentration among a small number of insurers who might be able to engage in monopolistic behavior. In addition, MLRs could perversely lead to an increase in spending, if insurers respond by allowing growth in utilization (for example, by dropping management activities designed to control unnecessary spending). Restrictions on premium growth rates could cause insurers to cut the amount of services covered, shift costs back to consumers, or fail to cover new technology.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

If the goal of premium growth rate regulation is to give insurers incentives to cut back on unnecessary administrative spending, policies to reduce insurers' administrative overhead will address the same spending as policies aimed at reducing premium growth rates.

Those That Might Be Combined with This One

Many policies aimed at reducing health care expenditures could be combined with premium rate regulation. For example, policies that encourage consumers to use lower cost providers (e.g., nurse practitioners, physician assistants) could reduce overall health spending and, as a result, help to slow premium growth. There could also be synergies between policies that aim to control hospital costs, such as bundled payment and hospital rate regulation, and policies that attempt to control premium growth. In general, insurance premium regulation might be more feasible if coupled with policies designed to keep the growth of overall medical expenditures in check.

Option #18
Increase Medicaid Reimbursement Rates

I. Nature of the Problem

In July 2008, *The New York Times* ran an article entitled "Trying to Save by Increasing Doctor's Fees," arguing that it may be possible to reduce health care costs by paying doctors more.[646] Although seemingly counterintuitive, the premise of this argument is based on sound logic. If health care providers are reimbursed at below market rates, they may react by declining to accept new patients or by providing hurried, incomplete, or poor-quality care. Such practices could cause some patients to seek care in more expensive settings, such as emergency depart-

[646] M. Freudenheim, *Trying to Save by Increasing Doctors' Fees*, in *New York Times*. 2008: New York.

ments, and could also increase future costs by missing opportunities for disease prevention and early intervention. Low reimbursement rates are particularly concerning for patients enrolled in the Medicaid program. A 2006 study by the Center for Studying Health Systems Change found that, in 2004 and 2005, 21 percent of physicians reported that they were not accepting any new Medicaid patients. Among those not accepting Medicaid patients, 84 percent cited low reimbursement as a moderate or very important factor influencing their decision.[647]

Currently, Medicaid reimbursement rates in Massachusetts and across the country are low relative to rates paid by private payers and Medicare.[648,649] Low Medicaid reimbursement rates could have several undesirable consequences, including cost-shifting from Medicaid to private payers,[650] reduced access to care for Medicaid patients,[651,652,653] and lower quality of care.[654]

II. Proposed Policy Option

What Is It?

Massachusetts could increase Medicaid reimbursement rates for all services or for services thought to be particularly beneficial. The new cost containment law directs the MassHealth Payment Policy Advisory Board to study the need for an increase in Medicaid rates and/or bonuses for primary care physicians, nurse practitioners, and subspecialists who provide primary care.[655]

How Would It Solve the Problem?

Increasing Medicaid reimbursement is intended to increase the number of primary care physicians who accept Medicaid patients, which in turn could contribute to lower prices by substituting visits to primary care physicians for care from urgent care clinics or emergency departments. Over the long run, it might also reduce the volume of hospitalizations by increasing

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[647] P.J. Cunningham and J.H. May, *Medicaid Patients Increasingly Concentrated among Physicians.* 2006. Center for Studying Health Systems Change. Tracking Report #16. As of June 28, 2009: http://www.hschange.com/CONTENT/866/

[648] D.C. Grabowski and J.J. Angelelli, *The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers.* Health Serv Res, 2004. 39(4 Pt 1): p. 793-812.

[649] American Academy of Pediatrics, *Medicaid Reimbursement Survey, 2007/08: Massachusetts.* 2008. As of June 28, 2009: http://www.aap.org/research/medreimpdf0708/ma.pdf

[650] J.A. Meyer and W.R. Johnson, *Cost Shifting in Health Care: An Economic Analysis.* Health Aff (Millwood), 1983. 2(2): p. 20-35.

[651] P.J. Cunningham and L.M. Nichols, *The Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective.* Med Care Res Rev, 2005. 62(6): p. 676-96.

[652] S. Berman, J. Dolins, S.F. Tang, et al., *Factors That Influence the Willingness of Private Primary Care Pediatricians to Accept More Medicaid Patients.* Pediatrics, 2002. 110(2 1): p. 10.

[653] L. Baker and A. Beeson Royalty, *Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population.* J Hum Resour, 2000. 35(3): p. 23.

[654] D.C. Grabowski and J.J. Angelelli, *The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers.* Health Serv Res, 2004. 39(4 Pt 1): p. 793-812.

[655] The Commonwealth of Massachusetts, *An Act to Promote Cost Containment, Transparency and Efficiency in the Delivery of Quality Health Care*, in *Chapter 305 of the Acts of 2008*. 2008, approved by the Governor, August 10, 2008: The Commonwealth of Massachusetts.

the likelihood that problems are identified and addressed early in the course of an illness. An additional advantage of increasing Medicaid reimbursement payment rates is that low reimbursement could lead to cost-shifting, whereby providers charge private payers more to recoup losses from Medicaid. If cost-shifting occurs, it might be possible to reduce health insurance spending for private payers by increasing Medicaid payment rates. Although increasing Medicaid payment rates would initially increase health care spending, there could be future savings if adverse health consequences stemming from reduced quality and lower access to care were averted.

What Has to Happen to Implement a Change?

Provider reimbursement rates are under the control of the state. In October 2008, Governor Patrick reduced Medicaid reimbursement rates to hospitals and other Medicaid providers in an effort to control state spending. It is uncertain whether this policy would be reversed quickly.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- There is evidence that increasing Medicaid reimbursement rates will reduce cost-shifting to private payers, but the effect is likely to be small
- Studies that have evaluated related changes in Medicaid reimbursement policy have found either no effect or short-lived effects on access and spending among Medicaid enrollees
- A relatively new program in North Carolina has shown early savings (11 percent), but it includes many more elements than just increased payment to primary care providers
- The only study looking at improvements in quality was conducted in nursing homes
- Higher rates, which are generally designed to increase access, might also increase spending
- Given the gaps in the research, it is difficult to extrapolate from the studies that have been done to estimate an effect of this specific policy
- The challenge with this policy is finding the balance between a guaranteed increase in costs (due to higher rates) and the potential for saving money in other areas
- It appears unlikely that this policy will reduce spending

The Evidence

Increasing Medicaid reimbursement is hypothesized to have at least three distinct effects on care, all of which could have implications for costs. First, higher Medicaid payment rates might increase access for some patients, leading to reductions in emergency department (ED) use and

improved opportunities for prevention and early intervention. Second, higher Medicaid payment rates might increase the quality of care provided, conditional on accessing the health care system. Third, higher Medicaid payment rates might decrease cost-shifting, leading to lower costs for private payers.

Access to care: Cross-sectional studies suggest that higher Medicaid reimbursement rates increase the probability that physicians will accept Medicaid patients, leading to increased access to care.[656,657,658,659] Studies that have used longitudinal changes in Medicaid reimbursement policies within states to address this question, however, have found mixed results. Coburn, Long, and Marquis[660] used changes in Medicaid reimbursement policies in Maine and Massachusetts to assess physician participation in Medicaid and service utilization, and found that fluctuations in reimbursement rates had no effect on either outcome. In contrast, Baker and Beeson Royalty[661] found that increases in Medicaid reimbursement stemming from the 1984 Deficit Reduction Act increased by 2.5 percent the probability that low income patients would be seen by primary care providers. Using changes in Medicaid reimbursement for obstetrical procedures in Maryland, Fox, Weiner, and Phua[662] found that higher rates were associated with a short term increase in the number of providers who accepted Medicaid patients, but the effect dissipated within 2 years.

Cunningham and Nichols[663] modeled the effect of differences in Medicaid reimbursement levels on specific measures of health care access, and found that higher reimbursement rates were associated with an increased probability of having a usual source of care, a decreased probability of having unmet medical needs, and a decreased probability of ED use. However, these results should be interpreted cautiously because of the cross-sectional nature of the data, which makes it difficult to distinguish the effect of Medicaid reimbursement rates from other, unobserved state-specific factors that might influence access to care (or even to sort out cause and effect). Baker and Beeson Royalty,[664] for example, found that the relationship between Medicaid reimbursement and physician visits was attenuated (although not eliminated) after controlling for state-specific fixed effects.[665]

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[656] P.J. Cunningham and L.M. Nichols, *The Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective.* Med Care Res Rev, 2005. 62(6): p. 676-96.

[657] S. Berman, J. Dolins, S.F. Tang, et al., *Factors That Influence the Willingness of Private Primary Care Pediatricians to Accept More Medicaid Patients.* Pediatrics, 2002. 110(2 1): p. 10.

[658] J.B. Mitchell, *Medicaid Participation by Medical and Surgical Specialists.* Med Care, 1983. 21(9): p. 929-38.

[659] J.D. Perloff, P.R. Kletke, and K.M. Neckerman, *Recent Trends in Pediatrician Participation in Medicaid.* Med Care, 1986. 24(8): p. 749-60.

[660] A.F. Coburn, S.H. Long, and M.S. Marquis, *Effects of Changing Medicaid Fees on Physician Participation and Enrollee Access.* Inquiry, 1999. 36(3): p. 265-79.

[661] L. Baker and A. Beeson Royalty, *Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population.* J Hum Resour 2000. 35(3): p. 23.

[662] M.H. Fox, J.P. Weiner, and K. Phua, *Effect of Medicaid Payment Levels on Access to Obstetrical Care.* Health Aff (Millwood), 1992. 11(4): p. 150-161.

[663] P.J. Cunningham and L.M. Nichols, *The Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective.* Med Care Res Rev, 2005. 62(6): p. 676-96.

[664] L. Baker and A. Beeson Royalty, *Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population.* J Hum Resour, 2000. 35(3): p. 23.

[665] Ibid.

Shen and Zuckerman examined the relationship between Medicaid payment generosity, access, and use compared with a control sample of patients whose utilization patterns were not likely to be affected by Medicaid reimbursement rates.[666] Using a difference-in-differences model, they found that higher reimbursement rates were associated with an increased probability of having a usual source of care other than the ED and of having at least one doctor visit in a year. They found no effect on the probability of receiving select preventive services or on the likelihood of obtaining ED services. Higher payments were associated with patients reporting that doctors were more likely to listen to them and explain things.

Quality of care: There is also evidence to suggest that quality of care is positively associated with Medicaid payment rates, but most of this evidence comes from studies of nursing home populations.[667,668,669] Increasing Medicaid payment rates for nursing home care in Massachusetts may be an unattractive option, given the state's ongoing Community First initiative, which aims to shift utilization out of nursing home facilities and into the community.[670]

Cost-shifting: Much debate has arisen in the health economics literature about whether it is in providers' economic interest to shift costs from one payer to another.[671,672] Economic theory suggests that cost-shifting can occur when providers are able to set prices above the level that would occur in a competitive market (i.e., providers have monopoly power), and when current prices are set below profit-maximizing levels.[673] Initially, it seems counterintuitive that hospitals would ever set prices below profit-maximizing levels; however, experts have pointed out that many hospitals are not-for-profit[674] and that social norms, political pressure, and other factors might keep some providers from charging the profit-maximizing price.[675] Empirically, studies have found evidence that cost-shifting does occur, but that the effect of raising Medicaid prices might be relatively small. Using data from hospitals in California, Zwanziger, Melnick, and Bamezai[676] found a statistically significant, inverse association between Medicare prices and private payer prices, but weaker and statistically insignificant results for Medicaid. In a more

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[666] Y.C. Shen and S. Zuckerman, *The Effect of Medicaid Payment Generosity on Access and Use among Beneficiaries.* Health Serv Res, 2005. 40(3): p. 723-44.

[667] D.C. Grabowski and J.J. Angelelli, *The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers.* Health Serv Res, 2004. 39(4 Pt 1): p. 793-812.

[668] O. Intrator and V. Mor, *Effect of State Medicaid Reimbursement Rates on Hospitalizations from Nursing Homes.* J Am Geriatr Soc, 2004. 52(3): p. 393-8.

[669] J.W. Cohen and L.C. Dubay, *The Effects of Medicaid Reimbursement Method and Ownership on Nursing Home Costs, Case Mix, and Staffing.* Inquiry, 1990. 27(2): p. 183-200.

[670] See Home Community First Grant. *Massachusetts Community First Systems Transformation Grant: Transforming Long-Term Care to Meet the Needs of Elders and People with Disabilities in Their Own Communities*. [Web Page] 2008. Online at http://www.communityfirstgrant.org/index.aspx (as of September 17, 2008).

[671] P.B. Ginsburg, *Can Hospitals and Physicians Shift the Effects of Cuts in Medicare Reimbursement to Private Payers?* Health Aff (Millwood), 2003. Suppl Web Exclusives: p. W3-472-9.

[672] M.A. Morrisey, *Cost Shifting: New Myths, Old Confusion, and Enduring Reality.* Health Aff (Millwood), 2003. Suppl Web Exclusives: p. W3-489-91.

[673] M.A. Morrisey, *Hospital Cost Shifting, a Continuing Debate.* EBRI Issue Brief, 1996(180): p. 1-13.

[674] D. Dranove, *Pricing by Non-Profit Institutions. The Case of Hospital Cost-Shifting.* J Health Econ, 1988. 7(1): p. 47-57.

[675] P.B. Ginsburg, *Can Hospitals and Physicians Shift the Effects of Cuts in Medicare Reimbursement to Private Payers?* Health Aff (Millwood), 2003. Suppl Web Exclusives: p. W3-472-9.

[676] J. Zwanziger, G.A. Melnick, and A. Bamezai, *Can Cost Shifting Continue in a Price Competitive Environment?* Health Econ, 2000. 9(3): p. 211-26.

recent analysis, Zwanziger and Bamezai[677] revisited this question (again, using California data) and found a small but statistically significant association between Medicaid prices and private payer prices. Specifically, they found that a 10-percent decrease in the Medicaid price would be associated with a 0.37-percent increase in prices for private payers. The authors argued that the results are likely to generalize nationally, although the magnitude of the effect would be larger in states with less hospital competition. In addition, they hypothesized that the effect of a change in Medicaid prices would be larger if the share of hospital revenue attributable to Medicaid were higher.

Direction and Timing of Effect

The direction of the effect is unclear. Increasing Medicaid reimbursement will increase government spending on health care because rates are higher and because higher reimbursement rates might lead to greater utilization.[678,679,680] However, these cost increases might be partially offset by reduced cost-shifting to private payers, lower ED use, and reduced spending on complications resulting from poor access and low quality care. To date, we do not have consistent evidence on the magnitude of these competing effects.

Coburn, Long, and Marquis found that Medicaid reimbursement policies affected neither short-term nor long-term outcomes.[681] Fox, Weiner, and Phua[682] found that the effects of higher rates on provider participation were short-lived. Other studies that have found a positive relationship between Medicaid reimbursement rates and health care access have not necessarily evaluated long run versus short-run outcomes. In theory, savings could occur immediately if higher reimbursement rates decreased the probability of seeking care in the ED. However, savings related to improved quality of care might take several months or years to materialize.

The Strength of the Evidence

Studies abound on Medicaid reimbursement policy, but important gaps in the literature make it difficult to extrapolate general conclusions from the findings. The majority of studies on the relationship between Medicaid reimbursement policy and health care access are based on cross-sectional data.[683] Studies using longitudinal data found that, after controlling for state-specific factors, the relationship between Medicaid reimbursement and health care access was either

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[677] J. Zwanziger and A. Bamezai, *Evidence of Cost Shifting in California Hospitals.* Health Aff (Millwood), 2006. 25(1): p. 197-203.

[678] P.J. Cunningham and L.M. Nichols, *The Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective.* Med Care Res Rev, 2005. 62(6): p. 676-96.

[679] S. Berman, J. Dolins, S.F. Tang, et al., *Factors That Influence the Willingness of Private Primary Care Pediatricians to Accept More Medicaid Patients.* Pediatrics, 2002. 110(2 1): p. 10.

[680] L. Baker and A. Beeson Royalty, *Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population.* J Hum Resour, 2000. 35(3): p. 23.

[681] A.F. Coburn, S.H. Long, and M.S. Marquis, *Effects of Changing Medicaid Fees on Physician Participation and Enrollee Access.* Inquiry, 1999. 36(3): p. 265-79.p. 275.

[682] M.H. Fox, J.P. Weiner, and K. Phua, *Effect of Medicaid Payment Levels on Access to Obstetrical Care.* Health Aff (Millwood), 1992. 11(4): p. 150-161.

[683] A.F. Coburn, S.H. Long, and M.S. Marquis, *Effects of Changing Medicaid Fees on Physician Participation and Enrollee Access.* Inquiry, 1999. 36(3): p. 265-79. 266.

attenuated[684] or eliminated.[685] Studies that have considered the relationship between Medicaid reimbursement and health care quality have focused primarily on nursing homes[686,687,688] or pharmaceuticals,[689,690,691] with fewer studies focusing on other aspects of the health care system. Finally, studies that have tested the cost-shifting hypothesis have focused primarily on California data[692,693,694] and have found small and sometimes statistically insignificant results regarding Medicaid cost-shifting.

No study has provided a comprehensive estimate of the potential savings from increased Medicaid reimbursement. Evidence from California suggests that a 10-percent increase in Medicaid prices could lead to a 0.37-percent decline in prices for private payers. This effect might be larger in Massachusetts, given that, in 2006, Medicaid spending per capita was higher in Massachusetts than in California.[695] Yet, there are more hospitals per capita in Massachusetts than in California,[696] suggesting that hospital competition may be higher in Massachusetts.[697] Increased hospital competition may attenuate the relationship found in the California study.

Finally, *The New York Times* article cited above discussed a Medicaid experiment in North Carolina that may have led to an 11-percent savings. In addition to tighter management of chronic conditions, one component of this experiment was higher reimbursement rates for Medicaid providers. While the North Carolina experiment is promising, results from the experiment have not been published in the peer-reviewed literature. At this point, it is premature to conclude that savings might result, particularly in Massachusetts and without the other program

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[684] L. Baker and A. Beeson Royalty, *Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population.* J Hum Resour, 2000. 35(3): p. 23. 498.

[685] A.F. Coburn, S.H. Long, and M.S. Marquis, *Effects of Changing Medicaid Fees on Physician Participation and Enrollee Access.* Inquiry, 1999. 36(3): p. 265-79.

[686] J.W. Cohen and L.C. Dubay, *The Effects of Medicaid Reimbursement Method and Ownership on Nursing Home Costs, Case Mix, and Staffing.* Inquiry, 1990. 27(2): p. 183-200.

[687] D.C. Grabowski and J.J. Angelelli, *The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers.* Health Serv Res, 2004. 39(4 Pt 1): p. 793-812.

[688] O. Intrator and V. Mor, *Effect of State Medicaid Reimbursement Rates on Hospitalizations from Nursing Homes.* J Am Geriatr Soc, 2004. 52(3): p. 393-8.

[689] B.C. Martin and J.A. McMillan, *The Impact of Implementing a More Restrictive Prescription Limit on Medicaid Recipients. Effects on Cost, Therapy, and out-of-Pocket Expenditures.* Med Care, 1996. 34(7): p. 686-701.

[690] D.M. Cromwell, E.B. Bass, E.P. Steinberg, et al., *Changing Treatment Patterns - Can Restrictions on Reimbursement for Anti-Ulcer Drugs Decrease Medicaid Pharmacy Costs without Increasing Hospitalizations?* Health Serv Res, 1999. 33(6): p. 18.

[691] S.B. Soumerai, F. Zhang, D. Ross-Degnan, et al., *Use of Atypical Antipsychotic Drugs for Schizophrenia in Maine Medicaid Following a Policy Change.* Health Aff (Millwood), 2008. 27(3): p. w185-95.

[692] J. Zwanziger and A. Bamezai, *Evidence of Cost Shifting in California Hospitals.* Health Aff (Millwood), 2006. 25(1): p. 197-203.

[693] J. Zwanziger, G.A. Melnick, and A. Bamezai, *Can Cost Shifting Continue in a Price Competitive Environment?* Health Econ, 2000. 9(3): p. 211-26.

[694] J.P. Clement, *Dynamic Cost Shifting in Hospitals: Evidence from the 1980s and 1990s.* Inquiry, 1997. 34(4): p. 340-50.

[695] Calculated from statistics reported in the The Henry J. Kaiser Family Foundation, State Health Facts Database. As of June 28, 2009: www.statehealthfacts.org

[696] Calculated from statistics reported in the The Henry J. Kaiser Family Foundation, State Health Facts Database. As of June 28, 2009: www.statehealthfacts.org

[697] H. Wong, C. Zhan, and R. Mutter, *Do Different Measures of Hospital Competition Matter in Empirical Investigations of Hospital Behavior.* Rev Ind Organ, 2005. 26(1): p. 27-60. The authors evaluated several measures of hospital competition and found that the number of hospitals in a given geographic region is a reasonable measure of competitiveness.

components introduced in North Carolina.[698] For example, we do not yet know how much of the savings might be attributable to higher provider fees, as opposed to better management of chronic conditions.

The Potential Effect on Stakeholders

When Medicaid reimbursement rates are low, providers might recoup operating expenses by shifting costs to private payers[699] and by increasing out-of-pocket charges for patients.[700] As a result, increased Medicaid reimbursement would likely redistribute costs from private payers to state and federal governments. There is also evidence that higher Medicaid reimbursement rates may crowd-out charity care for the uninsured;[701] however, this effect may not be relevant in view of Massachusetts' health insurance mandate.

Regardless of whether increased Medicaid reimbursement leads to cost savings, it might have a beneficial effect on Medicaid enrollees. For example, in several studies using multiple data sources, Grabowski and colleagues have found a positive relationship between Medicaid reimbursement rates and the quality of care provided by nursing home facilities.[702,703,704]

Key Design Features

It is important that Medicaid reimbursement rates are not set so high that they encourage overprovision of care, a significant contributor to rising health care costs.[705] It also may be important to target rate increases to services such as nursing home care, for which higher rates have been associated with improvements in access and quality. In some cases, restrictive reimbursement policies have been implemented without adverse effects. For example, Cromwell et al. found that restrictive reimbursement policies for anti-ulcer medications did not lead to higher hospitalizations,[706] and led to cost savings in the state of Florida.[707]

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[698] R. Bovbjerg and B. Ormand. *Lessons from North Carolina Medicaid on Care Management*. in *AcademyHealth Annual Research Meeting*. 2008. Marriott Wardman Park Hotel, Washington DC. June 10, 2008.

[699] J.A. Meyer and W.R. Johnson, *Cost Shifting in Health Care: An Economic Analysis.* Health Aff (Millwood), 1983. 2(2): p. 20-35.

[700] B.C. Martin and J.A. McMillan, *The Impact of Implementing a More Restrictive Prescription Limit on Medicaid Recipients. Effects on Cost, Therapy, and Out-of-Pocket Expenditures.* Med Care, 1996. 34(7): p. 686-701.

[701] P.J. Cunningham and J. Hadley, *Effects of Changes in Incomes and Practice Circumstances on Physicians' Decisions to Treat Charity and Medicaid Patients.* Milbank Q, 2008. 86(1): p. 91-123.

[702] D.C. Grabowski and J.J. Angelelli, *The Relationship of Medicaid Payment Rates, Bed Constraint Policies, and Risk-Adjusted Pressure Ulcers.* Health Serv Res, 2004. 39(4 Pt 1): p. 793-812.

[703] D.C. Grabowski, *A Longitudinal Study of Medicaid Payment, Private-Pay Price and Nursing Home Quality.* Int J Health Care Finance Econ, 2004. 4(1): p. 5-26.

[704] D.C. Grabowski, J.J. Angelelli, and V. Mor, *Medicaid Payment and Risk-Adjusted Nursing Home Quality Measures.* Health Aff (Millwood), 2004. 23(5): p. 243-52.

[705] P.B. Ginsburg and J.M. Grossman, *When the Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care.* Health Aff (Millwood), 2005. Suppl Web Exclusives: p. W5-376-84.

[706] D.M. Cromwell, E.B. Bass, E.P. Steinberg, et al., *Changing Treatment Patterns - Can Restrictions on Reimbursement for Anti-Ulcer Drugs Decrease Medicaid Pharmacy Costs without Increasing Hospitalizations?* Health Serv Res, 1999. 33(6): p. 18.

[707] Ibid.

Are There Unintended Consequences That Might Result?

Higher reimbursement rates would have the definite effect of increasing state spending per episode of treatment among Medicaid insured individuals, with uncertain future savings stemming from reduced ED use, lower risk of complications, and decreased avoidable hospital admissions. If the anticipated savings never materialize, or if they are too small to outweigh the increase in Medicaid spending, then overall health care costs will increase. In addition, setting rates too high could lead to overprovision of care, which would increase costs with little or no added benefit for Medicaid beneficiaries.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Policy changes that seek to reduce inappropriate use of ED (e.g., retail clinics) or increase access to primary care (e.g., medical home, PA/NP scope of practice), or reduce cost-shifting among payers (e.g., hospital all payer rate setting) all seek to save the same dollars.

Those That Might Be Combined with This One

In view of the North Carolina experience, combining increased Medicaid reimbursement with the medical home concepts (including disease management) might increase the effectiveness of the policy.

Option #19
Increase the Use of Preventive Care

I. Nature of the Problem

The burden of preventable illnesses, particularly chronic diseases, has increased rapidly, representing 40 percent of mortality in the United States.[708] However, the health care delivery system and the majority of health spending are focused on acute care, not preventive care.[709] This situation has led to many proposals to change the focus of health care delivery toward prevention and away from acute care. Currently, rates of use of both primary preventive care (e.g., immunizations, counseling to improve health habits) and secondary preventive care (e.g., early detection of disease through screening) are lower than desirable. Proponents argue that additional preventive services will improve the health of the population while reducing health

[708] A.H. Mokdad, J.S. Marks, D.F. Stroup, et al., *Actual Causes of Death in the United States, 2000.* JAMA, 2004. 291(10): p. 1238-45.

[709] Prevention Institute and the California Endowment with the Urban Institute, *Reducing Health Care Costs through Prevention.* 2007. As of June 28, 2009: http://www.calendow.org/Collection_Publications.aspx?coll_id=44&ItemID=310#

care spending, since the cost of preventive services is typically lower than the cost of treatment. However, the net effect of prevention on health care spending depends on a number of factors, including the number of people who must receive services to prevent disease, the cost of treating the disease, the effect of prevention on years of healthy life lived, the projected health spending during the additional years of life, and the relative cost associated with the substituted reason for death (if the preventive service results in a person's dying of a different cause). The calculations are complex and are built on a number of assumptions.

II. Proposed Policy Option

What Is It?

Preventive care includes both primary prevention (activities to avoid illness, such as immunization) and secondary prevention (early detection and treatment, such as cancer screening tests). Primary prevention includes clinical preventive services as well as health promotion interventions, which may be delivered outside the health care delivery system (e.g., taxes to discourage smoking). Some interventions that seek to promote healthy behaviors are discussed separately, in Option #20. Guidelines on clinical preventive services are developed by the U.S. Preventive Services Task Force and the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices. The rates of use of many of these recommended services are low.[710,711] For example, in Massachusetts, among adults aged 50 years and over, only 57 percent received recommended colorectal cancer screening.[712]

How Would It Solve the Problem?

By definition, effective preventive care has health benefits. Preventive care could also lead to reductions in health care spending, which is the focus of this analysis. The cost of a pneumonia vaccination, for example, is far lower than the cost of a pneumonia hospitalization. However, when applied to the entire Massachusetts population, the cost implications of preventive care are more complicated. The effect on costs will depend on the number of illnesses that can be prevented, the cost of the preventive care relative to the cost of treating the preventable illness, and the lifetime costs of care following successful prevention of an illness.

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[710] E.A. McGlynn, S.M. Asch, J. Adams, et al., *The Quality of Health Care Delivered to Adults in the United States.* N Engl J Med, 2003. 348(26): p. 2635-45.

[711] J.M. Lambrew, *A Wellness Trust to Prioritize Disease Prevention*, in *Discussion paper (Hamilton Project) ; 2007-04*. 2007, Brookings Institution: Washington, D.C. p. 31 p. http://www.brookings.edu/papers/2007/04useconomics_lambrew.aspx

[712] Massachusetts Department of Public Health - Health Survey Program, *Bureau of Health Information, Statistics, Research, and Evaluation, a Profile of Health among Massachusetts Adults, 2006: Results from the Behavioral Risk Factor Surveillance System,* 2008. As of June 28, 2009: http://www.mass.gov?pageID=eohhs2terminal&L=4&L0=Home&L1=Consumer&L2=Community+Health+and+Safety&L3=Behavioral+Risk+Factor+Surveillance&sid=Eeohhs2&b=terminalcontent&f=dph_behavioral_risk_c_statewide_rpt_present&csid=Eeohhs2

What Has to Happen to Implement a Change?

A wide range of policies could be used to increase the utilization of preventive services. Many such policies currently exist in Massachusetts; successful approaches could be reviewed and expanded to further increase use of effective preventive services.

- Mandatory coverage of preventive services in private-sector insurance benefits could be reviewed for potential expansions. Some preventive care benefits are currently mandated, such as Pap smears and preventive care for children up to age six.[713] The Massachusetts Division of Health Care Finance and Policy recently reviewed the cost (and cost-effectiveness) of current mandates.[714] The National Business Group on Health has published guidelines for purchasers on benefit design to encourage health interventions with evidence of medical effectiveness.[715]
- Funding could be provided to support educational campaigns to encourage utilization of effective preventive services. For example, additional resources could be devoted to Massachusetts Department of Public Health Programs,[716] such as prevention and control initiatives for conditions including diabetes, asthma, obesity, cancer, heart disease, and stroke; the Massachusetts Health Promotion Clearinghouse, which provides materials to Massachusetts residents and health and social service providers on a wide range of health topics[717]; and tobacco control.
- A Wellness Trust has been proposed at the federal government level; a similar concept could be pursued at the state level in Massachusetts. The Wellness Trust would be a new government agency that would "set prevention priorities, employ innovative and effective systems for delivering them, and align payments with priorities."[718]
- Add to the preventive coverage already available through MassHealth. Coverage for preventive care in MassHealth could be expanded to cover additional services, or MassHealth programs could be established to promote preventive care utilization.

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[713] Massachusetts Office of Consumer Affairs and Business Regulation, *Mandatory Benefits Guide*, rev. May 11, 2009. As of June 28, 2009: http://www.mass.gov?pageID=ocaterminal&L=5&L0=Home&L1=Consumer&L2=Insurance&L3=Health+Insurance&L4=Health+Care+Consumer+Guides&sid=Eoca&b=terminalcontent&f=doi_Consumer_css_health_Mandates&csid=Eoca

[714] Division of Health Care Finance and Policy, *Comprehensive Review of Mandated Benefits in Massachusetts: Report to the Legislature.* 2008. Commonwealth of Massachusetts.

[715] National Business Group on Health. *Evidence-Based Benefits: A Toolkit for Employers*. [Web Page]. Online at http://www.businessgrouphealth.org/benefitstopics/et_evidencebasedbenefits.cfm (as of June 29, 2009).

[716] Massachusetts Office of Health and Human Services. *Bureaus and Programs Page*. [Web Page] 2009. Online at http://www.mass.gov?pageID=eohhs2modulechunk&L=4&L0=Home&L1=Government&L2=Departments+and+Divisions&L3=Department+of+Public+Health&sid=Eeohhs2&b=terminalcontent&f=dph_g_bureaus&csid=Eeohhs2 (as of June 28, 2009).

[717] *The Massachusetts Health Promotion Clearinghouse Web Site*. [Web Page]. Online at http://www.maclearinghouse.com/ (as of June 28, 2009).

[718] J.M. Lambrew, *A Wellness Trust to Prioritize Disease Prevention*, in *Discussion paper (Hamilton Project) ; 2007-04*. 2007, Brookings Institution: Washington, D.C. p. 31 p.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- There is increasing interest in pursuing preventive strategies—in particular. those that reverse the trends in obesity and related diseases. Defining what is included in "preventive care" is critical to establishing expectations about the effect of investments in this area on spending and over what time period.
- The evidence shows that 19 percent of preventive services that have been evaluated save money, whereas the remaining 81 percent (including screening tests for colon, cervical, and breast cancer; flu shots; pneumococcal vaccines; and cholesterol-lowering medication) increase longevity or the quality of additional years of life, but increase costs. The percentage of services that reduce costs is roughly equal for preventive and nonpreventive services.
- Prior RAND work examining the effect of significant improvements in the management of chronic disease found that reductions in the rate of obesity had the potential to reduce Medicare spending. However, savings in disease-specific spending as a result of improvements in managing other chronic diseases were offset by costs associated with increased longevity.
- Savings, if any, may not accrue to the entity that paid for the preventive service. For example, employers might invest in prevention services, but the long-term savings are likely to accrue to the Medicare program.

The Evidence

Increasing the utilization of some preventive care interventions, but not all, would reduce total health care costs.[719,720] Concluding broadly that preventive care saves money is an overgeneralization, but it could be possible to reduce costs by focusing on the most effective services.[721,722] In addition, current levels of health spending could potentially yield better value if they were allocated to more cost-effective services. Most preventive services are highly cost-effective (i.e., they are worth doing because they are effective at improving health relative to their cost). However, many are not cost-saving. A systematic review of the cost-effectiveness literature found that 19 percent of preventive services that have been evaluated are cost-saving.[723] The remaining 81 percent are cost-increasing, with varying levels of cost-effectiveness. The distribution of cost-effectiveness ratios for preventive care and nonpreventive treatments are similar.[724]

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[719] M.V. Maciosek, A.B. Coffield, N.M. Edwards, et al., *Priorities among Effective Clinical Preventive Services.* Am J Prev Med, 2006. 31(1): p. 10.

[720] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective - Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

[721] Ibid.

[722] L.B. Russell, *Prevention's Potential for Slowing the Growth of Medical Spending.* 2007. National Coalition on Health Care: Washington, D.C. As of June 28, 2009: http://www.nchc.org/documents/nchc_report.pdf

[723] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective - Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

[724] Ibid.

An example of a cost-reducing preventive service is tobacco-use screening and brief intervention,[725] which can have both short-term effects (e.g., lower risk of heart disease) and long-term effects (e.g., lower risk of lung cancer). Another example of a cost-reducing preventive service is HiB vaccination for children.[726] An example of a cost-effective but cost-increasing service is guided self-management for asthma.[727] Compared with traditional treatment, guided self-management reduces acute treatment costs, such as hospital costs, but increases maintenance costs, such as counseling and peak-flow meters.[728] The net effect is an increase in cost—accompanied by improved health outcomes. Even common, effective programs, such as mammography, smoking-cessation programs, and some types of immunizations, have been found to increase spending, although the additional money may be well spent from a population health perspective.

Some health promotion interventions—for example, increased taxes and regulations—are delivered outside the medical care delivery system and have been effective in decreasing smoking rates and alcohol consumption.[729,730,731,732,733] Nationally, cigarette taxes were increased in April 2009 to fund the expansion of the State Children's Health Insurance Program (SCHIP). This policy change should further reduce smoking rates in the U.S.

But not all preventive interventions have been evaluated for cost-effectiveness. The effects of some effective nonmedical interventions, such as improvements in education or environment, can be difficult to assess. For example, while reducing obesity is a prevention priority, large-scale public health interventions have not been evaluated, and there is little information on whether smaller-scale initiatives are cost-effective. Some have advocated taxing sugared beverages as a promising intervention, following successes of taxes on cigarettes in reducing smoking.[734]

Preventive services are less likely to be cost-saving when it is necessary to deliver them to a large population so that relatively few cases of disease can be prevented. For this reason, preventive care that is targeted to high-risk populations is likely to be the most efficient.[735]

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[725] M.V. Maciosek, A.B. Coffield, N.M. Edwards, et al., *Priorities among Effective Clinical Preventive Services.* Am J Prev Med, 2006. 31(1): p. 10.

[726] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective - Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

[727] L.B. Russell, *Preventing Chronic Disease: An Important Investment, but Don't Count on Cost Savings.* Health Aff (Millwood), 2009. 28(1): p. 42-5.

[728] Ibid.

[729] P. DeCicca, D. Kenkel, and A. Mathios, *Cigarette Taxes and the Transition from Youth to Adult Smoking: Smoking Initiation, Cessation, and Participation.* J Health Econ, 2008. 27(4): p. 904-17.

[730] P. DeCicca and L. McLeod, *Cigarette Taxes and Older Adult Smoking: Evidence from Recent Large Tax Increases.* J Health Econ, 2008. 27(4): p. 918-29.

[731] C. Carpenter and P.J. Cook, *Cigarette Taxes and Youth Smoking: New Evidence from National, State, and Local Youth Risk Behavior Surveys.* J Health Econ, 2008. 27(2): p. 287-99.

[732] B.H. Baltagi and R.K. Goel, *Quasi-Experimental Price Elasticity of Liquor Demand in the United States: 1960-83.* Am J Agric Econ, 1990. 72(2): p. 451-454.

[733] P.J. Cook and G. Tauchen, *The Effect of Liquor Taxes on Heavy Drinking.* Bell J Econ, 1982. 13(2): p. 379-390.

[734] Bridges to Excellence, *BTE Medical Home Recognition: Process and Rewards Model.*

[735] J.T. Cohen, P.J. Neumann, and M.C. Weinstein, *Perspective - Does Preventive Care Save Money? Health Economics and the Presidential Candidates.* N Engl J Med, 2008. 358(7): p. 3.

A second consideration is the lifetime cost of health care following successful prevention of an illness. Prevention of an illness could potentially increase lifetime costs due to increased longevity[736] (effective acute care services could also have this result). A RAND simulation of health spending for the elderly found that eliminating any one chronic disease would only modestly reduce lifetime Medicare spending as a result of the increased longevity.[737] A key exception was obesity: Reducing obesity among the elderly was predicted to substantially lower lifetime Medicare spending.[738]

Evidence on the cost-effectiveness of preventive services and other treatments comes from published studies of the costs and health benefits of each treatment. Protocols for cost-effectiveness study methodology exist, but the methods used in specific studies often differ. Costs typically include all economic costs, such as the value of days lost from work, as well as direct health care spending. Health benefits are typically measured using quality-adjusted life years (QALYs), which combine morbidity and mortality measures.

Evidence on the effects of preventive care on lifetime health spending is rarer. The "Future Elderly" model developed by RAND researchers provides evidence for the elderly population.[739] The model uses a representative sample of approximately 100,000 Medicare beneficiaries age 65 and over drawn from the Medicare Current Beneficiary Survey; the base sample is then linked to data from the National Health Interview Survey and the Health and Retirement Survey that ask respondents about chronic conditions, use of health care services, medical care spending, and health insurance coverage. Each beneficiary in the sample is then linked to Medicare claims records to track actual medical care use and costs over time. The model uses Monte Carlo techniques to estimate changes in health and functioning over time.

Direction and Timing of Effect

Savings from cost-reducing preventive care services would likely occur in the long term. Some services could have short-term benefits, however, such as annual influenza vaccinations. However, the benefits of reducing obesity among children, for example, could accrue over their entire lifespan—a time horizon that is one barrier to investment in preventive services. Estimates of the effect of such changes on spending require assumptions about how long a preventive service is effective; for immunizations, the longevity of the intervention is reasonably well established. Less information is available about the sustainability of changes in health behavior.

The Strength of the Evidence

The evidence on the cost-effectiveness of many preventive care services is strong. Cost-effectiveness studies are reviewed frequently for changes in the evidence base and adequacy of study

[736] G.F. Joyce, E.B. Keeler, B. Shang, et al., *The Lifetime Burden of Chronic Disease among the Elderly.* Health Aff (Millwood), 2005. 24 Suppl 2: p. W5R18-29.

[737] Ibid.

[738] D.N. Lakdawalla, D.P. Goldman, and B. Shang, *The Health and Cost Consequences of Obesity among the Future Elderly.* Health Aff (Millwood), 2005. 24 Suppl 2: p. W5R30-41.

[739] D.P. Goldman, B. Shang, J. Bhattacharya, et al., *Consequences of Health Trends and Medical Innovation for the Future Elderly.* Health Aff (Millwood), 2005. 24 Suppl 2: p. W5R5-17.

methodology. The evidence for lifetime effects on health spending is limited in scope; beyond the "Future Elderly" model, strong evidence is sparse.

The Potential Effect on Stakeholders

Increased use of recommended preventive services would benefit patients through better health and possibly lower health care spending. Physicians and health care institutions providing clinical preventive care services may gain if the patients they treat are generally healthier, but providers may lose over the long term if fewer of their health services are needed.

Insurance plans could benefit from reduced health care costs associated with prevention of illnesses. However, people change insurance plans frequently. As a result, an insurance plan that invests in preventive care might not benefit from reduced costs later in a patient's life.[740] Many of the benefits may accrue to the federal government as the primary insurer for the 65-and-over population.

Key Design Features

Effective targeting of preventive services is one critical design feature. Administrative costs are associated with identifying the target population for preventive services. These costs will depend on the number of people covered and the frequency with which the preventive services are delivered. There may be economies of scale if implemented on a large scale.

Utilization of preventive care services is currently low, despite clear recommendations for appropriate services. Effective policies to increase the utilization of recommended preventive services will likely need to be multifaceted and well supported to overcome the various barriers, including individual awareness of the value of preventive care, the structure of the health care delivery system with an acute care focus, lack of adequate financing for preventive services, and limitations in public policy.[741]

Potential Unintended Consequences

Preventive screening tests can lead to false positive results. Increased utilization of preventive care will be accompanied by an increased rate of false positives that require further health care services and cause stress for patients and their families.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Incentives for wellness, disease management, and medical homes are all aimed at improving prevention and early detection. This policy option highlights one of the ways in which other policy options might be effective.

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[740] J.M. Lambrew, *A Wellness Trust to Prioritize Disease Prevention*, in *Discussion paper (Hamilton Project); 2007-04*. 2007, Brookings Institution: Washington, D.C. p. 31 p.

[741] Ibid.

Those That Might Be Combined with This One

The policy options for medical homes and disease management are broader efforts that include prevention.

Option #20
Provide Incentives for Wellness and Healthy Behaviors

I. Nature of the Problem

Making healthy lifestyle choices, including diet, exercise, and avoiding smoking, and getting recommended preventive screenings are generally accepted as vital to maintaining a healthy population. However, according to the Centers for Disease Control and Prevention (CDC), Americans have a long way to go in attaining these goals. For example, the latest data from the CDC indicate that obesity rates continue to rise.[742] Obesity is a known risk factor for diseases such as Type 2 diabetes, hypertension, cancer, and coronary heart disease. The CDC also reports that, after years of reduction in the number of people smoking, progress appears to have "stalled," even though tobacco use is the leading preventable cause of death and disease in the United States. [743,744] By contrast, data from the same study show modest improvement over time in the number of people self-reporting increased levels of physical activity, although there is concern about the accuracy of self-reported exercise.[745] Exercise reduces the risk of some diseases (e.g., heart attack, stroke, diabetes, some cancers) and also reduces the symptoms associated with other conditions (such as arthritis and depression).

While there is a link between poor lifestyle choices and health, and evidence that changing behavior will improve health, there is no consensus about whether these changes would affect health spending. Studies that show savings are often cross-sectional—comparing health expenditures of, for example, smokers and nonsmokers at one point in time. Some studies that have considered the lifetime medical costs of obesity and smoking have concluded that there would be savings in the short term, but that, over a lifetime, health care costs would be higher because people who lose weight and stop smoking will live longer and, therefore, have a greater likelihood of incurring costs for treating other diseases that may be unrelated to smok-

[742] Centers for Disease Control and Prevention Web site and CDC Online Newsroom. *Latest CDC Data Show More Americans Report Being Obese*. [Web Page] 2008 July 17, 2008. Online at http://www.cdc.gov/media/pressrel/2008/r080717.htm (as of June 28, 2009).

[743] Centers for Disease Control and Prevention Web site and CDC Online Newsroom. *Decline in Adult Smoking Rates Stall: Millions of Nonsmoking Americans Remain Exposed to Secondhand Smoke*. [Web Page] 2008 October 26, 2006. Online at http://www.cdc.gov/media/pressrel/r061026a.htm (as of June 28, 2009).

[744] Centers for Disease Control and Prevention Web site and CDC Online Newsroom. *Latest CDC Data Show More Americans Report Being Obese*. [Web Page] 2008 July 17, 2008. Online at http://www.cdc.gov/media/pressrel/2008/r080717.htm (as of June 28, 2009).

[745] M. Stobbe, *Exercise Rates Are Up, C.D.C. Study Says*, in *USA Today*. 2007.

ing or obesity.[746,747] On the other hand, RAND investigators, using a microsimulation model to estimate lifetime health costs, found that there would be savings to Medicare from reducing obesity.[748] This was the only behavior change of those examined that resulted in savings for Medicare. Although a strong link between lifetime health care costs and healthy behaviors has not been established, employers and public insurers have begun to focus attention on assisting consumers in making lifestyle changes. In particular, states and private organizations have looked to the use of incentives in health insurance programs to promote behavior change, and employers have designed worksite health promotion programs to improve the health or well being of workers and their dependents.

II. Proposed Policy Option

This policy area is broad and might include a variety of approaches. We use two specific policy options to focus the discussion: design of insurance incentives and worksite health promotion programs.

What Is It?

Insurance incentives. Currently, most insurance programs contain nothing in their premium structures to encourage or reward healthy behavior.[749] Public and private insurers (including self-insured employers) could opt to provide incentives to get health plan members/employees to enroll or participate in wellness programs, such as smoking-cessation programs. These incentives might be in the form of premium discounts or rebates.

Some have feared that programs that employed premium discounts or rebates would run afoul of the nondiscrimination provisions of the Health Insurance Portability and Accountability Act (HIPAA) of 1996,[750] which prohibits a health plan from charging similarly situated individuals different premiums or contributions or imposing different deductibles, co-payment, or other cost-sharing requirements based on a health factor, such as a medical condition.[751] In spite of this general prohibition, however, the nondiscrimination rules do allow wellness programs that base a reward on satisfying a standard related to a health factor, such as programs that provide a premium differential between smokers and nonsmokers.[752] According to the U.S. Department of Labor, such programs must meet five specific requirements: [753]

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[746] See, for example, J.J. Barendregt, L. Bonneux, and P.J. van der Maas, *The Health Care Costs of Smoking.* N Engl J Med, 1997. 337(15): p. 1052-7.

[747] P.H. van Baal, J.J. Polder, G.A. de Wit, et al., *Lifetime Medical Costs of Obesity: Prevention No Cure for Increasing Health Expenditure.* PLoS Med, 2008. 5(2): p. e29.

[748] D.N. Lakdawalla, D.P. Goldman, and B. Shang, *The Health and Cost Consequences of Obesity among the Future Elderly.* Health Aff (Millwood), 2005. 24 Suppl 2: p. W5R30-41.

[749] K.G. Volpp, M.V. Pauly, G. Loewenstein, et al., *P4P4P: An Agenda for Research on Pay-for-Performance for Patients.* Health Aff (Millwood), 2009. 28(1): p. 206-14.

[750] Health Insurance Portability and Accountability Act of 1996, 110 Stat. 1936, Pub. L. No. 104-191.

[751] U.S. Department of Labor and Employee Benefits Security Administration. *FAQs About the HIPAA Non-Discrimination Requirements*. [Web Page] 2009. Online at http://www.dol.gov/ebsa/faqs/faq_hipaa_ND.html (as of June 29, 2009).

[752] Ibid.

[753] Ibid.

- The premium differential must not exceed 20 percent of the base premium
- The program must be reasonably designed to promote health and prevent disease
- The program must give individuals the opportunity to qualify for the discount at least once a year
- The program must accommodate individuals for whom it is unreasonably difficult to quit using tobacco products due to addiction by providing a reasonable alternative standard (such as a discount in return for attending educational classes or for trying a nicotine patch)
- Plan materials describing the terms of the premium differential must describe the availability of the reasonable alternative standard to qualify for the lower premium

In addition, if none of the conditions for obtaining the reward is based on an individual's satisfying a standard related to a health factor, or if no reward is offered, the program is in compliance with nondiscrimination provisions. For example, programs that reimburse the cost of membership in a fitness center, or programs that reimburse employees for smoking cessation programs whether or not they quit smoking are acceptable under HIPAA.[754] However, state law affecting health coverage would need to be reviewed to discover whether there are state-specific nondiscrimination provisions or any other prohibitions that would negatively affect differential premium programs.

Worksite health promotion. Some worksite health promotion programs are focused on primary prevention, including programs that "encourage exercise and fitness, healthy eating, weight management, stress management, use of safety belts in cars, moderate alcohol consumption, recommended adult immunizations, and safe sex."[755] According to one analyst, over the past 20 years, the workplace has been a major setting for innovation in health promotion,[756] and surveys suggest that worksite health promotion programs are widespread: 90 percent of worksites offer at least one type of health promotion activity, but only 6.9 percent of employers offer a comprehensive program.[757] However, wellness programs operated by private employers with 15 or more employees, state and local governments, employment agencies, and unions may also run afoul of the nondiscrimination provisions of the Americans with Disabilities Act (ADA) if they withhold a reward or impose a penalty on the basis of a disability.[758] Note, however, that the ADA's protection extends only to health conditions that constitute a disability, which may include morbid obesity but not moderate obesity, smoking, or alcohol consumption.[759]

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[754] Ibid.

[755] R.Z. Goetzel and R.J. Ozminkowski, *The Health and Cost Benefits of Work Site Health-Promotion Programs.* Annu Rev Publ Health, 2008. 29: p. 22.

[756] R.Z. Goetzel, *Do Prevention or Treatment Services Save Money? The Wrong Debate.* Health Aff (Millwood), 2009. 28(1): p. 5.

[757] Findings from a 1999 survey by the U.S. Office of Disease Prevention and Health Promotion. See Goetzel and Ozminkowski, 2008.

[758] M.M. Mello and M.B. Rosenthal, *Wellness Programs and Lifestyle Discrimination—the Legal Limits.* N Engl J Med, 2008. 359(2): p. 192-9.

[759] Ibid.

How Would It Solve the Problem?

This policy could save money through reducing premium prices (assuming that the improved health profile of the population eventually led to experience-related discounts) or reducing overall spending through a reduced volume of services used. It is hypothesized that long-term costs could decrease if differential pricing adequately promotes healthy behaviors that reduce the likelihood of hospitalization and emergency department (ED) use. However, if premium adjustments successfully improve health and extend lives, we would expect total health care spending to continue to increase as these patients utilize medical services at a lower rate but for a greater number of years.

The rationale for providing access to health promotion services at work is that the employer bears costs associated with employees in ill health—including low work productivity, absenteeism, and employee turnover, as well as high medical, disability, and workers' compensation costs. Studies that have examined the relationship between modifiable risk factors and medical claims for employees have found that 10 modifiable risk factors accounted for about 25 percent of total employer health care expenditures and that employees with seven risk factors (including tobacco use, obesity, and lack of exercise) cost employers 228 percent more in health care costs than employees who did not have these risk factors.[760]

What Has to Happen to Implement a Change?

Insurance incentives. Within the framework allowed by HIPAA and state nondiscrimination law, public and private insurers could provide premium discounts or rebates to promote enrollment in wellness programs designed to promote healthy behaviors (smoking cessation, exercise, weight loss).

Workplace health promotion. To reduce health spending, in addition to increasing value, employers would have to develop comprehensive programs for which there is evidence of cost savings.

III. What Level of Savings Can Be Expected from This Policy Change?

Summary of Findings from the Literature Review

- There is little empirical evidence on the effect of insurance incentives; proponents tend to refer to generalized observations of response to price incentives and penalties.
- No evidence exists to inform the size of the incentive or penalty that would be required to change different health habits. For example, do smoking cessation and weight loss require higher financial incentives than exercise?
- The effect of insurance incentives on savings is uncertain but is unlikely to produce noticeable savings.

[760] Findings reported in Goetzel and Ozminkowski, 2008.

- Systematic reviews of the literature suggest that certain types of worksite health promotion programs, when carefully targeted to high-risk individuals, are likely to produce a positive return on investment. However, some of this return involves nonmedical costs (e.g., reduced employee absenteeism) that would not directly affect premium prices.
- A systematic review of the financial effect of health promotion programs on health care costs reported an average return on investment (ROI) of $3.48 for every dollar expended.

The Evidence

Insurance incentives. Differential premium pricing is a relatively new proposal, and there is little or no evidence of its effect on spending in isolation. There is evidence that wellness programs can produce savings. Aldana's literature review finds that health promotion programs tend to reduce health care expenditures with ROIs estimated at $3.48–5.90 for every dollar spent.[761] We can estimate the costs and potential savings that would be associated with linking wellness programs to this reform from existing employer programs. In a study of a prenatal smoking self-help class offered to women enrolled in an HMO, Ershoff et al. found that the treatment group's costs were $46 lower, on average, than the control group's.[762] In addition, while acknowledging the limited evidence base, Volpp and colleagues argue that "pay-for-performance-for-patients" programs that provide rewards for good health behavior have the potential for the greatest gains if they can "supercharge" the incentives based on a set of principles drawn from the psychology and behavioral economics literature.[763]

There is little evidence on the effect of differential premium pricing on public financing in particular. Several state Medicaid programs have recently implemented measures to encourage healthy behaviors. They utilize mechanisms that may offer some sort of reward or penalty, such as enhanced or reduced health benefits, to encourage healthy behaviors. These efforts are too recent to make any conclusions about the effects of these programs on spending.[764]

Worksite health promotion programs. A recent comprehensive review of the literature reported that workplace health promotion programs "grounded in behavior change theory and that utilize tailored communications and individualized counseling for high risk individuals are likely to produce a positive return on the dollars invested."[765] The authors report that, despite inconsistencies in design, a number of studies with the strongest research designs (undertaken by large corporate employers and involving large numbers of subjects) produced positive ROI

[761] S.G. Aldana, *Financial Impact of Health Promotion Programs: A Comprehensive Review of the Literature.* Am J Health Promot, 2001. 15(5): p. 296-320.

[762] D.H. Ershoff, V.P. Quinn, P.D. Mullen, et al., *Pregnancy and Medical Cost Outcomes of a Self-Help Prenatal Smoking Cessation Program in a HMO.* Public Health Rep, 1990. 105(4): p. 340-7.

[763] K.G. Volpp, M.V. Pauly, G. Loewenstein, et al., *P4p4p: An Agenda for Research on Pay-for-Performance for Patients.* Health Aff (Millwood), 2009. 28(1): p. 206-14.

[764] C. Mann, S. Artiga, Kaiser Commission on Medicaid and the Uninsured, et al., *New Developments in Medicaid Coverage: Who Bears Financial Risk and Responsibility?* Issue Paper (Kaiser Commission on Medicaid and the Uninsured). 2006, [Washington, D.C.]: Henry J. Kaiser Family Foundation. 22 p.

[765] R.Z. Goetzel and R.J. Ozminkowski, *The Health and Cost Benefits of Work Site Health-Promotion Programs.* Annu Rev Publ Health, 2008. 29: p. 22.

results.[766] They cited a 2001 systematic review of the literature on the financial effect of health promotion programs that took into account the rigor of the studies. In that study, Aldana reported an average ROI for the seven studies that reported both costs and benefits to be $3.48 for every dollar expended.[767]

Direction and Timing of Effect

The effect on premium spending is unclear. Theory suggests that, if everyone is healthier, premiums for everyone should decrease to reflect lower health care utilization. The overall effect may depend on the number of people who take advantage of these programs.

The effect of changes in insurance premiums on overall health spending will be a function of the administrative costs of this policy option, the health profile of the population, and how people change their behavior in response to these incentives. Administrative costs include the cost of profiling individuals for health risk behaviors and the frequency with which these behaviors are assessed. Per capita spending could decrease if changes in behaviors lead to decreases in utilization. If differential premiums successfully improve health and extend lives, we would expect lifetime costs to increase as patients utilize fewer services for a greater number of years. The behavioral response will depend, in part, on the size of the premium differential.

The effect of worksite health promotion programs on overall health spending appears to be more promising. A review by Chapman in 2005 concluded that participants in worksite health promotion programs had 25–30 percent lower medical costs over an average study period of 3.6 years when compared with employees who did not participate in the program. Experts caution, however, that these estimates may be inflated because the review did not adequately take into account the rigor of the studies.[768]

Evidence suggests that savings from either insurance incentives or workplace health promotion programs are more likely to accrue over the long term, because it would take time for changes related to a healthier diet, exercise, and smoking cessation to affect the utilization of health services—especially if consumers were already in poor health before the initiation of the premium changes. Changes in spending may also vary by subgroup, depending on health behaviors.

The Strength of the Evidence

The insurance incentives option is based on logic and limited evidence about how people respond to prices. But we do not know, for example, how large the premium differential will need to be to have the desired effect. For example, will the 20-percent HIPAA limit undermine the effectiveness of the incentive? Assuming an average premium price for an individual of $6,000, a 20-percent difference in premium would be $1,200, but the employee would typically pay just 16 percent of that on average, or $192. We do not know how responsive health behaviors

[766] These studies include those performed at Johnson & Johnson, Citibank, Dupont, Bank of America, Tenneco, Duke University, and Procter and Gamble, among others. See Goetzel and Ozminkowski, 2008, p. 309.

[767] S.G. Aldana, *Financial Impact of Health Promotion Programs: A Comprehensive Review of the Literature.* Am J Health Promot, 2001. 15(5): p. 296-320.

[768] L.S. Chapman, *Meta-Evaluation of Worksite Health Promotion Economic Return Studies: 2005 Update.* Am J Health Promot, 2005. 19(6): p. 1-11. Goetzel and Ozminkowski (2008, p. 310) note, however, that some of the studies reviewed by Chapman were cross-sectional studies and that, therefore, the cost-savings estimates might be inflated.

will be to changes in premium prices of this amount. We do not know what the administrative costs to public and private programs will be or whether these costs will outweigh any savings down the line. We do not know the extent of any adverse selection that will be experienced by plans offering premium differentials. We also do not know how this policy option might improve life expectancy or how increases in life expectancy will affect long-term health spending. The long-term effects of differential premiums on spending are unclear and will depend on the size of the differential, the number of enrollees, the frequency with which health-risk behaviors are identified, and how successful these incentives and any linked programs are at reducing health risk behaviors.

The worksite health promotion option is based on more compelling evidence that programs that are comprehensive, well-designed, and targeted to at-risk populations are effective and likely to produce a positive return on investment.

The Potential Effect on Stakeholders

Differential premium pricing may lead to lower premiums and reduced spending for consumers of health services who do not engage in risky behaviors. However, these options would lead to higher premiums (greater spending) for patients engaging in unhealthy behaviors if they do not participate in rebate programs. Higher premiums are potentially regressive, since less educated and poor patients have a higher prevalence of risky health behaviors and any increase in their premiums constitutes a larger proportion of their income. Physicians and health care institutions providing medical services may gain if the patients they treat are generally healthier, but providers may lose over the long term if fewer health services are needed. Insurers may be able to use financial incentives to lower the costs of insuring "high risk" consumers over the long term. However, as mentioned previously, some of the savings may need to be redeployed to providing wellness programs.

The introduction of comprehensive workplace health promotion programs may be costly for employers, but employers will also potentially reap the benefits of healthier employees in reduced health care costs and reduced absenteeism. Employees may benefit if such programs are effective in improving health and helping to prevent disease. Physicians, health care institutions, and health plans all stand to gain if their patients/enrollees are generally healthier.

Key Design Features

Administrative and enforcement costs are associated with insurance incentives. They include costs related to identifying consumers who engage in health risk behaviors, enrolling them in wellness programs, and monitoring their compliance over time. These costs will depend on the number of people covered and the frequency with which their behaviors are evaluated. There may be economies of scale if implemented on a large scale.

The recent comprehensive review on workplace health promotion identified a number of elements of "promising practices," including: (1) developing programs that are grounded in behavior therapy; (2) implementing programs effectively using evidence-based principles; and (3) documenting and measuring outcomes accurately. In addition, the authors noted that programs are more effective when they have the support of senior management, worksite "cham-

pions," alignment of the program with broader organizational goals, and a culture of health in the organization. Practical components frequently found in successful programs include: (1) a needs assessment; (2) activities designed to achieve high participation rates; (3) the use of "tailored behavior-change messages;" (4) support for "self-management"; (5) addressing multiple risk factors; (6) offering a variety of modalities; (7) providing easy access and effective follow-up; (8) providing social support; (9) using incentives; and (10) offering a program of sufficient duration.[769]

Are There Unintended Consequences That Might Result?

One of the primary concerns with differential premiums is that certain consumers (in particular, those from lower socioeconomic groups) have a higher prevalence of health risk behaviors and would also be the most affected by increases in cost-sharing.

Employer efforts to encourage their workers to engage in workplace promotion programs may be perceived as interference in employees' private lives or attempts to subtly coerce behavior change. Employees may also be concerned that the health information they provide within a workplace-program needs assessment may be misused. For this reason, some employers have been reluctant to conduct or fund such activities.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Increasing health behaviors would result in saving dollars that are targeted by policy options in prevention, disease management, and medical homes.

Those That Might Be Combined with This One

Both the insurance incentives and workplace health promotion programs might be combined with value-based benefit design to align financial incentives for insured workers and their families.

[769] R.Z. Goetzel and R.J. Ozminkowski, *The Health and Cost Benefits of Work Site Health-Promotion Programs.* Annu Rev Publ Health, 2008. 29: p. 22.

Option #21

Change Laws Related to the Non-Economic Damages Cap and Expert Witnesses

I. Nature of the Problem

Medical error in the U.S. health care system is widely recognized to be prevalent, costly, and largely preventable. In 1999, the Institute of Medicine (IOM) reported that between 44,000 and 98,000 people die in hospitals each year in the United States as a result of medical errors.[770] The report galvanized national efforts to improve the safety of hospitals by reengineering medical workplaces to reduce the number of errors, reduce the impact effect of errors on patients, and promote rehabilitation when injuries occur.[771] There is debate about what portion of medical error can be appropriately characterized as negligent practice. The IOM panel concluded that 90 percent of the reported deaths were the result of system failures rather than negligence of individual practitioners.[772] Even when negligence is implicated, however, epidemiological studies suggest that only 2–3 percent of injuries become claims.[773,774] Still, a number of patients do seek compensation through the courts. In principle, the medical malpractice (MM) system strives to fulfill two main objectives: to compensate sometimes catastrophic injuries to patients, when those injuries have resulted from sub-standard care or malfeasance on the part of medical providers, and to deter negligence. However, medical liability and related insurance costs are widely viewed as contributing to rising rates of health care spending, in part due to rising malpractice insurance premiums, higher average damage awards, and the practice of "defensive medicine." (i.e., ordering unnecessary medical tests and medical procedures intended to avoid liability rather than to benefit patients).

II. Proposed Policy Option

What Is It?

In general, proposals for medical malpractice (MM) reform call for statutory intervention in the tort system. Two reforms have been proposed for Massachusetts: strengthening the exist-

[770] IOM Committee on Quality of Care in America, *To Err Is Human: Building a Safer Health System*, ed. L. Kohn, J. Corrigan, and M. Donaldson. 1999, Washington, DC: National Academies Press.

[771] R.R. Bovbjerg, R.A. Berenson, and Urban Institute, *Surmounting Myths and Mindsets in Medical Malpractice*. Health Policy Briefs. 2005, Washington, D.C.: Urban Institute. 12 p.

[772] IOM Committee on Quality of Care in America, *To Err Is Human: Building a Safer Health System*, ed. L. Kohn, J. Corrigan, and M. Donaldson. 1999, Washington, DC: National Academies Press.

[773] A.R. Localio, A.G. Lawthers, J.M. Bengtson, et al., *Relationship between Malpractice Claims and Cesarean Delivery.* JAMA, 1993. 269(3): p. 366.

[774] D.M. Studdert, E.J. Thomas, H.R. Burstin, et al., *Original Articles - Negligent Care and Malpractice Claiming Behavior in Utah and Colorado.* Med Care, 2000. 38(3): p. 11.

ing non-economic damages cap and implementing new rules regarding the qualification of experts.[775]

Strengthening the non-economic damages cap. Massachusetts, like many other states, has enacted statutory MM reforms, including a non-economic damages cap. Such a cap limits the amount of non-economic damages that a plaintiff can recover at trial. The cap does not affect any award to the plaintiff for economic damages (such as the cost of medical treatment and lost wages), but it does affect losses that are more difficult to quantify, such as pain and suffering, loss of consortium, emotional distress, and mental anguish. The Massachusetts Medical Society has suggested that the Massachusetts non-economic damages cap is ineffective and should be replaced with a "hard" cap indexed to inflation.[776] The current non-economic damages cap is considered a "'soft" cap because the statute limits the award to $500,000 unless the jury determines that there is "a substantial or permanent loss or impairment of a bodily function or substantial disfigurement, or other special circumstances in the case which warrant a finding that imposition of such a limitation would deprive the plaintiff of just compensation for the injuries sustained."[777] Critics have pointed out that this standard can often be met and therefore the cap is ineffective at limiting non-economic damage awards. The General Court of the Commonwealth of Massachusetts could revisit the non-economic damages cap and modify the statutory language to eliminate exceptions to the cap.

Rules regarding the qualification of experts. Massachusetts currently has no special rules pertaining to expert witnesses. Partners HealthCare has argued for a statute that would require that expert witnesses in a malpractice action be certified in the same specialty as the defendant physician.[778] While a number of states have rules pertaining to expert witnesses in MM cases, according to the National Conference of State Legislatures, as of 2002 only three states (Alabama, Alaska, and Michigan) had established rules by statute that require expert witnesses to

[775] Note that in a December 2008 report by the Massachusetts Division of Insurance to the Massachusetts General Court and the Secretary of the Commonwealth, the Division identified a number of additional reform options to address the frequency (number) and severity (size) of medical malpractice claims. The Division grouped the options into four categories: (1) improving communication between patients and health care professionals; (2) shifting malpractice risk to enterprises (such as hospitals and health plans): (3) changing the tort system, including both a provision to lower the non-economic damages cap and to create new standards for expert witnesses; and (4) preventing medical errors. The Division noted the pros and cons of each option without taking a position, pointing out the complexity of the issue and the lack of easy solutions, and recommended that more research is needed to evaluate the best course of action. See Massachusetts. Division of Insurance., *Medical Malpractice Insurance in the Massachusetts Market : A Report to the Joint Committee on Financial Services, Joint Committee on Health Care Financing, the Senate Committee on Ways and Means, and House Committee on Ways and Means of the Massachusetts General Court, and the Secretary of the Commonwealth*. 2008, [Boston, MA: Massachusetts Division of Insurance, Commissioner of Insurance].

[776] The Medical Society has also advocated a series of other reforms that would "tighten" various aspects of the current law, including increasing the standard of proof for the tribunal, changing the collateral-source rules, further reducing attorney fees, and making apologies by physicians inadmissible. See Massachusetts Medical Society. *Massachusetts Medical Society Supports Proposals for Medical Malpractice Reform*. Press Release [Web Page] 2008 May 23, 2006. Online at http://www.massmed.org/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=14914 (as of. http://www.massmed.org/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=14914

[777] Annotated Laws of Massachusetts, Ch. 231, § 60H (Law. Co-op. Supp. 1997).

[778] A bill to that effect has been introduced. See House Bill 1445, "An Act Relative to Expert Witnesses in Actions for Medical Malpractice," n.d. As of June 28, 2009: http://www.mass.gov/legis/bills/house/185/ht01/ht01445.htm

be certified in the same specialty as the defendant.[779] In at least one state, such a statute has been ruled unconstitutional. The Arizona Court of Appeals recently found a state statute that set stricter limits on expert testimony in MM cases unconstitutional as a violation of the separation of powers. Under the statute, expert witnesses in MM cases were required to practice in the same specialty. Under the Arizona Rules of Evidence, an expert witness need not be of the same specialty as the defendant. The General Court of the Commonwealth of Massachusetts may be able to set stricter limits on expert witness testimony in MM actions, as long as such a statute does not impermissibly infringe on the Supreme Judicial Court's power to make procedural rules.[780]

How Would it It Solve the Problem?

The aim of MM reform is to create a disincentive to sue by making at least some MM claims less attractive to pursue. By imposing additional requirements on expert witnesses, it will be more difficult for plaintiffs to bring cases to court; and by limiting the scope of available damages, there will be less financial incentive for some plaintiffs to sue, making it more difficult for them to obtain counsel. Limiting the scope of non-economic damages would also likely decrease the average payout of claims. Reducing the number of claims and the average payout of claims, would, theoretically, reduce MM premiums. Overall health care spending might also be reduced if concerns about being sued were alleviated so that physicians would not engage in the practice of defensive medicine (i.e., ordering unnecessary medical tests and medical procedures intended to avoid liability rather than to benefit patients).

What Has to Happen to Implement a Change?

Changes in medical liability rules have commonly been implemented through state statutes. Although specific interventions in some states have been ruled unconstitutional, there is no general legal impediment against enacting laws to modify the contours of MM tort liability. However, any proposed change in the requirements pertaining to expert witnesses in a medical malpractice action would need to be assessed for any potential conflict with the Supreme Judicial Court's rules of evidence.

III. What Level of Savings Can Be Expected from this This Policy Change?

Summary of Findings from the Literature Review

- The empirical evidence on the effect of changing medical liability laws on spending is mixed, likely because of differences in study methodologies

[779] Alabama Code §6.5.548 (1997); Alaska Statute §09.20.185 (1997); Michigan Compensation Laws §600.2912. In addition, other states require that an expert witness be a licensed physician in the same practice, have an active clinical practice in the same field, or that the qualifications of the expert "must directly relate to the problem at issue." See National Conference of State Legislatures, *NCSL State Medical Liability Laws Table.* As of July 15, 2008: http://www.ncsl.org/programs/insur/medliability.pdf

[780] *See* American Health Lawyers Association, *Arizona Appeals Court Finds Statute Governing Expert Witness Qualifications Unconstitutional.* 2008. Health Lawyers Weekly.

- Caps on non-economic damages have been studied most frequently and, in one study, were shown to reduce the average payout per claim by $15,000
- No evidence exists on the relationship between expert expert-witness qualifications and the outcomes of legal action
- The costs of defensive medicine have been difficult to estimate, and changes in defensive medicine practices in response to changes in malpractice laws have also not been documented
- The direct effect would be on malpractice premiums, and the effect is likely to be small. To observe reductions in health spending, reductions in malpractice payouts would have to be translated into reductions in premiums, which, in turn, would have to be translated into reductions in per unit charges and/or a reduction in the volume of defensive medicine practices
- Given that Massachusetts already has a non-economic damages cap, the marginal effect of strengthening the law is uncertain but unlikely to produce significant savings

The Evidence

Researchers have actively studied the effect of MM liability on the health care system for a long time. Most of the empirical work in this area has focused on the effect of tort interventions on MM claims, the typical size of MM damage awards, and/or various measures of MM insurance costs. In general, non-economic damage caps have been the most frequently studied tort intervention, and these caps have also been the intervention most commonly associated with reductions in MM claims values and insurance premiums.[781] From our review of the literature, we were not able to identify any studies that had looked specifically at the effectiveness of modifying the rules pertaining to expert witnesses as a MM reform measure.

A number of recent scholarly reviews have summarized different aspects of the empirical literature on the effect of MM tort interventions.[782] For purposes of reviewing the relevant empirical literature here, we relied on an earlier, comprehensive review of MM tort intervention studies conducted by Mello and colleagues.[783] The Mello review is noteworthy for not only summarizing the empirical studies conducted between the mid-1980s and mid-2005, but also for describing the relative strength of the methods used in those studies.[784] We updated Mello's findings by conducting our own search for relevant studies published between mid-2005 and the end of 2007.

[781] M.M. Mello and Robert Wood Johnson Foundation, *Medical Malpractice: Impact of the Crisis and Effect of State Tort Reforms*. 2006, Princeton, NJ: Robert Wood Johnson Foundation. 26 p.

[782] *See*, for example, Nelson et al., 2007, concerning the effect of tort damage caps.

[783] M.M. Mello and Robert Wood Johnson Foundation, *Medical Malpractice: Impact of the Crisis and Effect of State Tort Reforms*. 2006, Princeton, NJ: Robert Wood Johnson Foundation. 26 p.

[784] Mello explains her distinction between "strong" studies and "weak" studies as involving a series of methodological considerations, including use of appropriate data sources, low potential for bias, use of appropriate analytic methods, adequate control for confounding variables, and adequacy of sample size (see Mello, 2006). We applied similar criteria in reviewing the strength of more-recent, 2005–2007, empirical studies.

The effect of non-economic damages caps on number and size of claims. Mello's review of the literature through 2005, identified 3 strong studies and 2 weak studies that suggested that the existence of caps was associated with decreased average payout per claim, although 1 strong study and 1 weak study failed to show that effect.[785,786,787,788,789,790] Mello found far less evidence of a negative association between caps and the number of MM claims. Only 1 strong study had looked at this issue, and it did not find an association.[791] Finally, Mello also reviewed studies concerning whether the existence of caps is associated with lower MM insurance premiums. She found the literature through 2005 to be divided, with 4 studies showing such an effect (2 of them strong) and 4 studies (1 of them strong) failing to show the effect. Note that Mello's review did not distinguish between studies looking at different types of caps on damages (e.g., non-economic damage caps versus total damage caps).[792,793]

Our review of studies on non-economic damages caps from 2005 through 2007 is somewhat consistent with the above. Among 4 newer studies we identified that looked at the association between non-economic damages caps and decreased MM claims severity, all 4 showed that the relationship existed (3 of these studies were methodologically strong).[794,795,796,797] Guirguis-Blake et al. found that average payout per claim was 22 percent less in states with non-economic damages caps than in states without the caps. Waters et al. found that non-economic damages caps were associated with a reduction in average payout per claim of almost $15,000. Avraham found that non-economic damages caps reduced average payouts by 65 to 74 percent, across several different regression models.

Three of these studies (2 strong and 1 weak) also looked at the relationship between non-economic damages caps and decreased frequency of paid claims, and all 3 studies found evidence for a negative relationship as well. However, another newer (strong) study that looked at the re-

[785] P. Danzon, *The Frequency and Severity of Medical Malpractice Claims.* J Law Econ, 1984. 27(1): p. 115-48.

[786] P.M. Danzon, *The Frequency and Severity of Medical Malpractice Claims: New Evidence.* Law Contemp Probl, 1986. 49(2): p. 57-84.

[787] F.A. Sloan, P.M. Mergenhagen, and R.R. Bovbjerg, *Effects of Tort Reforms on the Value of Closed Medical Malpractice Claims: A Microanalysis.* J Health Polit Policy Law, 1989. 14(4): p. 663-89.

[788] Ibid.

[789] M.M. Mello and Robert Wood Johnson Foundation., *Medical Malpractice : Impact of the Crisis and Effect of State Tort Reforms*. 2006, Princeton, NJ.: Robert Wood Johnson Foundation. 26 p.

[790] S. Zuckerman, R.R. Bovbjerg, and F. Sloan, *Effects of Tort Reforms and Other Factors on Medical Malpractice Insurance Premiums.* Inquiry, 1990. 27(2): p. 167-82.

[791] Ibid.

[792] K.E. Thorpe, *The Medical Malpractice 'Crisis': Recent Trends and the Impact of State Tort Reforms.* Health Aff (Millwood), 2004. Suppl Web Exclusives: p. W4-20-30.

[793] S. Zuckerman, R.R. Bovbjerg, and F. Sloan, *Effects of Tort Reforms and Other Factors on Medical Malpractice Insurance Premiums.* Inquiry, 1990. 27(2): p. 167-82.

[794] R. Avraham, *An Empirical Study of the Impact of Tort Reforms on Medical Malpractice Settlement Payments.* The Journal of legal studies, 2007. 36(2 2): p. S183.

[795] J. Guirguis-Blake, G.E. Fryer, R.L. Phillips, Jr., et al., *The Us Medical Liability System: Evidence for Legislative Reform.* Ann Fam Med, 2006. 4(3): p. 240-6.

[796] T.M. Waters, P.P. Budetti, G. Claxton, et al., *Impact of State Tort Reforms on Physician Malpractice Payments.* Health Aff (Millwood), 2007. 26(2): p. 500-9.

[797] H.E. Frech, 3rd, W.G. Hamm, and C.P. Wazzan, *An Economic Assessment of Damage Caps in Medical Malpractice Litigation Imposed by State Laws and the Implications for Federal Policy and Law.* Health Matrix Clevel, 2006. 16(2): p. 693-722.

lationship between non-economic damages caps and decreased frequency of paid claims failed to find evidence supporting an association.[798] Taken together with the earlier studies reviewed by Mello, the literature suggests that non-economic damages caps are associated with lower levels of MM claims severity. The literature is equivocal with regard to a relationship between non-economic damages caps and any diminution in the frequency of paid claims.

One concern raised in the literature is the possibility that non-economic damages caps disproportionately affect those who are most seriously injured by malpractice. A RAND study on the California Medical Injury Compensation Reform Act (MICRA) non-economic damages cap examined 257 plaintiff malpractice verdicts in California from 1995 through 1999. The researchers found that the cap did reduce awards, but the awards most likely to be capped (and therefore reduced) involved death, the severest non-fatal injuries (i.e., brain damage, paralysis, or other catastrophic loss), and/or cases involving newborns or young children.[799] Without taking a position on what might be proper compensation for such losses, the researchers stated, "if such differences are believed to result in an inequitable application of the cap, policymakers favoring award limits might consider 'carve-outs' that would exempt exceptionally tragic or egregious cases from the proposed cap."

The effect of non-economic damages caps on insurance premiums. Mello also reviewed studies of whether caps are associated with lower MM insurance premiums. She found the conclusions in the empirical literature through 2005 to be divided, with 4 studies showing such an effect (2 of them strong: Zuckerman et al., 1990; Thorpe, 2004), and 4 studies failing to show the effect (1 of them strong: Zuckerman et al., 1990). Two other newer studies (1 strong and 1 weak) examined the effects of non-economic damage caps on MM insurance premiums. Both studies found that caps were associated with reduced premiums.[800,801] Another newer, strong study looked at long-run MM insurance losses as a function of several sorts of tort interventions, and found that non-economic damage caps were associated with reduced long-run term losses for some, but not all, insurers.[802]

Notably, one recent study examined the direct relationship between MM damage caps and a measure of aggregate health care expenditures. Hellinger and Encinosa looked at the association between state non-economic damage caps and per capita state-level health care expenditures between 1984 and 1998.[803] They found that the presence of a cap was significantly associated with states' having lower average per capita health care expenditures during a specified

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[798] J.J. Donohue and D.E. Ho, *The Impact of Damage Caps on Malpractice Claims: Randomization Inference with Difference-in-Differences.* J Emp Leg Stud, 2007. 4(1): p. 69-102.

[799] N.M. Pace, D. Golinelli, L. Zakaras, et al., *Capping Non-Economic Awards in Medical Malpractice Trials: California Jury Verdicts under MICRA.* RAND Corporation Monograph Series. 2004, Santa Monica, CA: RAND Institute for Civil Justice. xxix, 83 p. As of June 28, 2009: http://www.rand.org/pubs/monographs/MG234/

[800] M.L. Kilgore, M.A. Morrisey, and L.J. Nelson, *Tort Law and Medical Malpractice Insurance Premiums.* Inquiry, 2006. 43(3): p. 255-70.

[801] J.S. Resneck, Jr., *Trends in Malpractice Premiums for Dermatologists: Results of a National Survey.* Arch Dermatol, 2006. 142(3): p. 337-40.

[802] P. Born, W.K. Viscusi, and T. Baker, *The Effects of Tort Reform on Medical Malpractice Insurers' Ultimate Losses.* Working paper series, 2006(12086): p. 22. As of May 28, 2009: http://www.law.harvard.edu/programs/olin_center/papers/554_Viscusi_et%20al.php.

[803] F.J. Hellinger and W.E. Encinosa, *The Impact of State Laws Limiting Malpractice Damage Awards on Health Care Expenditures.* Am J Public Health, 2006. 96(8): p. 1375-81.

time period. However, owing to ambiguities in descriptions of the data and analyses used in that study, we are unable to classify the study methodology as strong.

Although Massachusetts is reported to have had the nation's second-highest median malpractice settlement payments between 1990 and 2006,[804] a recent study published in *Health Affairs*, using data from the state-regulated mutual insurer, found that most physicians in Massachusetts paid lower inflation-adjusted premiums in 2005 than they did in 1990.[805] Mean premiums were only higher in 2005 for three high-risk specialties (obstetrics, neurology, and orthopedics-spinal surgery). According to the Division of Insurance, these three specialties represent 4 percent of physicians, and there is some evidence that the number of obstetricians and gynecologists (OB-GYNs) licensed to practice in the state decreased between 2001 and 2007.[806] Still, were there to be any savings in premiums related to the imposition of a stronger non-economic damages cap, the upper bound of savings appears to be less than 1 percent of overall health care spending.

The effect of "malpractice pressure" on costs related to defensive medicine. In her review of empirical literature through 2005, Mello[807] identified 7 studies that looked for a relationship between "malpractice pressure risk" (i.e. amount or frequency of premiums claims in an area) and rates of performance for medical procedures deemed vulnerable to defensive medicine, in particular, Cesarean sections. According to Mello, 3 strong studies (Dubay et al., 1999; Localio et al., 1993; Tussing & Wojtowycz, 1997) and 1 weak study found evidence of small but significant associations between Cesarean-section rates and malpractice pressure, while 3 other weak studies did not find that association.[808,809,810] Mello also cited 3 additional empirical studies looking at clinical indicators of defensive medicine apart from Cesarean-section rates, concluding that research "consistently find[s] that assurance [defensive medicine] behaviors are widespread, and become even more so during malpractice crises."[811]

In our own search of the 2005–2007 literature, we uncovered only two new studies that investigated defensive-medicine effects (Dhankhar, Khan, and & Bagga, 2007; Meurthay et al.,

[804] Massachusetts Division of Insurance, *Medical Malpractice Insurance in the Massachusetts Market.* 2008. Available at: http://www.mass.gov/Eoca/docs/doi/Commercial/MedMal_Report.pdf (as of June 29, 2009).

[805] M.A. Rodwin, H.J. Chang, M.M. Ozaeta, et al., *Malpractice Premiums in Massachusetts, a High-Risk State: 1975 to 2005.* Health Aff (Millwood), 2008. 27(3): p. 10.

[806] The Division of Insurance report (December 2008) outlines a separate series of options to address high premiums for high-risk specialties, including cross-subsidizing premiums, assessing insurance carriers to subsidize premiums, and creating limited no-fault compensation programs.

[807] M.M. Mello and Robert Wood Johnson Foundation, *Medical Malpractice: Impact of the Crisis and Effect of State Tort Reforms*. 2006, Princeton, NJ: Robert Wood Johnson Foundation. 26 p.

[808] L. Dubay, R. Kaestner, and T. Waidmann, *The Impact of Malpractice Fears on Cesarean Section Rates.* J Health Econ, 1999. 18(4): p. 491-522.

[809] A.R. Localio, A.G. Lawthers, J.M. Bengtson, et al., *Relationship between Malpractice Claims and Cesarean Delivery.* JAMA, 1993. 269(3): p. 366.

[810] A.D. Tussing and M.A. Wojtowycz, *Malpractice, Defensive Medicine, and Obstetric Behavior.* Med Care, 1997. 35(2): p. 172-91.

[811] M.M. Mello and Robert Wood Johnson Foundation., *Medical Malpractice: Impact of the Crisis and Effect of State Tort Reforms*. 2006, Princeton, NJ: Robert Wood Johnson Foundation. 26 p.

2007).[812,813] Dhankar and colleagues looked at the relationship between malpractice pressure, health outcomes, and resource use in treatment for AMI patients, and generated the surprising finding that increased malpractice pressure was actually associated with lower resource use and better clinical outcomes, for at least some AMI patients (Dhankhar, Kahn, & and Bagga, 2007). This result is seemingly at odds with the widely cited work on defensive medicine by Kessler and McClellan (1996, 2002), which found the opposite effect.[814,815] On a very different note, Meurthy et al. (2007) found a positive association between increasing county level cesarean Cesarean-section rates and MM insurance premiums for obstetricians-gynecologists (OB-GYNs), for an Illinois dataset from 1998 to 2003: a result that is suggestive of a defensive medicine effect.[816]

There is also an empirical literature that has attempted to quantify the costs associated with defensive defensive-medicine practices (without regard specifically to any connections to MM tort interventions). Baicker, Fisher, and Chandra et al. (2007)[817] offers a good recent example, in suggesting an association between higher MM costs and premiums, patterns in Medicare service usage, and, ultimately, in increased Medicare spending. As Mello has observed, however, establishing the costs of defensive medicine has been methodologically very difficult to achieve, at least in a robust and comprehensive way. For example, the Massachusetts Medical Society recently released a report on defensive medicine in Massachusetts that relied on a physician survey.[818] The response rate for the survey was too low (23.6 percent) for the results to be considered generalizable, the validity and reliability of the self-report measures had not been established, and the authors acknowledged that confirmation from more objective measures (such as medical record review) were warranted to uphold the validity of the survey results. Notwithstanding these significant methodological concerns, the Society went on to provide an estimate of the annual costs of defensive medicine based on data from the survey.

Direction and Timing of Effect

To the extent that tort interventions reduce overall health care costs by curtailing the frequency and/or severity of MM claims, the ultimate effect on costs would depend on a host of collateral factors, including: (1) the degree to which interventions reduce MM insurance premiums; (2) the degree to which premium savings are passed through to medical providers, and, in turn, to the payers for medical services; and, (3) the degree to which interventions reduce defensive medicine practices. The relationship between savings in MM tort costs and savings in total

[812] P. Dhankhar, M.M. Khan, and S. Bagga, *Effect of Medical Malpractice on Resource Use and Mortality of Ami Patients.* J Emp Leg Stud, 2007. 4(1): p. 163-183.

[813] K. Murthy, W.A. Grobman, T.A. Lee, et al., *Association between Rising Professional Liability Insurance Premiums and Primary Cesarean Delivery Rates.* Obstet Gynecol, 2007. 110(6): p. 6.

[814] D.P. Kessler and M.B. McClellan, *Do Doctors Practice Defensive Medicine?* Q J Econ, 1996. 111(2): p. 38.

[815] D.P. Kessler and M.B. McClellan, *How Liability Law Affects Medical Productivity.* J Health Econ, 2002. 21(6): p. 26.

[816] K. Murthy, W.A. Grobman, T.A. Lee, et al., *Association between Rising Professional Liability Insurance Premiums and Primary Cesarean Delivery Rates.* Obstet Gynecol, 2007. 110(6): p. 6.

[817] K. Baicker, E.S. Fisher, and A. Chandra, *Malpractice Liability Costs and the Practice of Medicine in the Medicare Program.* Health Aff (Millwood), 2007. 26(3): p. 841-52.

[818] Massachusetts Medical Society, *Investigation of Defensive Medicine in Massachusetts.* 2008.

health care expenditures is complex, but is likely to be bounded by the fact that tort costs represent less than 1 percent of total health care expenditures.[819]

Whether or not reductions in MM claims affect premiums and those savings are passed through, reductions in MM costs plausibly could contribute to savings in broader health expenditures to the extent that tort interventions reduce the extent and cost of defensive medicine. Several studies have endeavored to look at the effects of MM tort interventions on costs across different medical specialties (e.g., surgery, OB-GYN, emergency medicine). Findings have varied from study to study, but associations between non-economic damages caps and reduced MM costs have been documented for several medical specialties, including such specialties like OB-GYN and surgery, in which liability exposure is presumably relatively high. The evidence base is not yet sufficient to predict the effect of tort interventions on MM costs among specific medical specialties.

The Weight of the Evidence

Perhaps the most important observation we can offer concerning this empirical literature is that it is methodologically complex. Even the best studies of MM tort interventions are observational, rather than experimental. These studies vary in terms of data, statistical methods, law-coding strategies, degree to which they control for confounding factors (i.e., other things going on in the environment that are unrelated to the intervention but could affect the outcome), and their efforts to look at multiple types of tort interventions simultaneously. The variation in methods likely contributes to the inconsistency of findings across studies. In light of these types of methods issues, conservatism is appropriate in interpreting and drawing conclusions from the literature. Even when empirical studies have documented statistically significant associations between MM tort interventions and outcome variables of interest (e.g., between damage caps and decreased MM claims severity), this does not necessarily imply that the magnitude of those associations is large.

It is also important to note that some of the most fundamental questions about MM tort interventions have not yet been subjected to empirical scrutiny. In particular, the question of whether any of the various tort interventions are well targeted in reducing non-meritorious litigation, as distinct from meritorious litigation, has not, to our knowledge, been investigated. In sum, the available empirical literature can be helpful to policymakers in understanding MM tort interventions, but the literature is incomplete in addressing the full range of relevant policy questions. And even with regard to many of the policy questions that have been empirically studied (e.g., the effect of damage caps on insurance premiums), a degree of uncertainty remains around the magnitude of the effects observed.

The Potential Effect on Stakeholders

Physicians and health care institutions providing medical services would gain if changes in MM law lowered malpractice premiums. Consumers of health services might be perceived to be gaining if a trend toward physicians' limiting practice in high risk specialties or leaving

[819] P.M. Danzon, M.V. Pauly, R.S. Kington RS. *Incentive Effects of Medical Malpractice: The Effects of Malpractice Litigation on Physicians' Fees and Incomes.* Am Econ Rev, 1990. 80(2): pp. 122-7.

medical practice altogether were to be altered by changes in MM law. On the other hand, consumers with meritorious claims might lose if access to justice were impeded by changes to MM law that would have an identical (and negative) effect on meritorious and non-meritorious claims. Insurers may welcome these reforms if savings were to accrue from a reduction in the practice of defensive medicine.

Key Design Features

The key design feature that we consider is converting the current cap on non-economic damages from a "soft" cap to a "hard" cap. For the expert witness option, the key design feature is creating a standard that passes constitutional law considerations.

Are There Unintended Consequences That Might Result?

Perhaps the most important assumption connected with costs and MM tort interventions is that the interventions themselves do not weaken the deterrence effect on physicians—that is, by reducing the threat of liability to the point that there is an increased likelihood of patients' experiencing iatrogenic injuries (i.e., injuries as a result of medical treatment). To the extent that reduced MM liability gives rise to a greater incidence of preventable medical errors, the result could be to generate new, indirect health care costs. At present, there is little empirical evidence to support or refute this effect.

IV. What Other Policy Changes Are Related to This One?

Those That Seek to Save the Same Dollars

Some have suggested that the real costs of medical malpractice are not in lawsuits or premiums but in the health care costs related to the injuries caused by preventable medical error. Such injuries may result in chronic medical problems or severe, permanent disability that requires a lifetime of expensive medical care. Policy options focused on identifying specific serious, avoidable medical errors (and other indicators of poor care) and denying or reducing payment for the costs associated with such care might be expected to reduce these costs. Pressuring hospitals to implement known safe practices could reduce the frequency of error and thus the frequency of malpractice claims.

Those That Might Be Combined with This One

Other policy options that we considered that address different parts of health care spending but are consistent with targeting wasteful spending on avoidable medical errors include eliminating payment for serious reportable events, avoidable readmissions, and preventable complications.

Technical Appendix

We used Massachusetts-specific data from the Medical Expenditure Panel Survey (MEPS) to estimate health care spending in the absence of policy intervention. Because sample sizes in the MEPS became small when we limited our analysis to a single state, we pooled data from 2000 through 2005, yielding 2,537 observations. We then calculated per capita spending and projected these figures over time, accounting for both population change and health care cost inflation. Population projections for Massachusetts, which were adjusted for changes in gender and age, came from the U.S. Census Bureau.[820]

To project health care cost inflation in Massachusetts, we used spending trends derived from the Centers for Medicare and Medicaid Services (CMS) State Health Expenditure Accounts (SHEA). We assumed that—without policy intervention to reduce costs—per capita health care spending in Massachusetts would increase at a rate of 7.42 percent annually through 2010, an estimate based on the average rate of health care cost growth in Massachusetts from 2000 to 2004 (the most recent year available in the CMS data). After 2010, we assumed that the rate of health care cost growth would revert to 5.72 percent annually, based on the average annual rate of health care cost growth in Massachusetts since 1991. We also allowed for a small increase in spending in 2007 to account for health care reform, and we applied a 16-percent adjustment to account for potential undercounting in the MEPS.[821] To derive the spending increase due to health reform, we assumed 340,000 people became newly insured following health care reform and that health spending increased by 40 percent when a person gained insurance. [822,823]

Table A.1 shows projected spending in Massachusetts in 2010 and cumulatively from 2010 to 2015 and 2010 to 2020. We estimated that spending will be $43 billion in 2010, and that cumulative spending between 2010 and 2020 will be $670 billion. These projections account only for spending captured in the MEPS; they omit several additional sources of health care spending included in the SHEA, including spending on long-term care, over-the-counter medications, and hospital revenue for non-health services (e.g., gift shops and parking).[824] We used MEPS data for our analysis despite these omissions, because we could disaggregate spending into categories based on both type of care (e.g., inpatient, office-based) and type of consumer (e.g., chronically ill, over 65). In general, the reforms that we consider in our analysis are unlikely to affect spending in the omitted categories.

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[820] U.S. Bureau of the Census, *U.S. Population Projections*, various dates. As of June 28, 2009: http://www.census.gov/population/www/projections/statepyramid.html

[821] M. Sing et al. (*Reconciling Medical Expenditure Estimates from the Meps and Nhea, 2002.* Health Care Financ Rev, 2006. 28(1): p. 25-40) show that NHEA spending is 13.8 percent higher than MEPS spending after adjusting for differences in scope. We corrected for this undercount by multiplying MEPS spending by a factor of 1/(1–0.138), or 16 percent.

[822] K. Sack, *Universal Coverage Strains MA Care*, in *The New York Times*. 2008, The New York Times Company: New York, NY. p. A1.

[823] Our estimates are very insensitive to the change in spending per newly insured person, since the baseline population of newly insured individuals is so low. We experimented with other values, such as allowing spending to increase by 100 percent after an individual becomes insured, and the change in results was negligible.

[824] M. Sing, J.S. Banthin, T.M. Selden, et al., *Reconciling Medical Expenditure Estimates from the Meps and Nhea, 2002.* Health Care Financ Rev, 2006. 28(1): p. 25-40.

Figure A.1 compares projected health spending based on the MEPS expenditure categories to projected health spending based on the SHEA categories. We inflate the SHEA data over time, accounting for changes in population and using the same inflation factors applied to the MEPS. Because the SHEA data are reported at a relatively aggregate level, we cannot account for expected changes in the age and gender distribution of the Massachusetts population. Following the Congressional Budget Office (CBO) and others who have estimated health care cost growth (e.g., Schoen et al., 2007),[825] we did not discount costs to assess the present value. Undiscounted costs may be more useful to policymakers than the current value of projected expenditures because they must project the amount of revenue they will need to raise in the future to cover health expenditures.

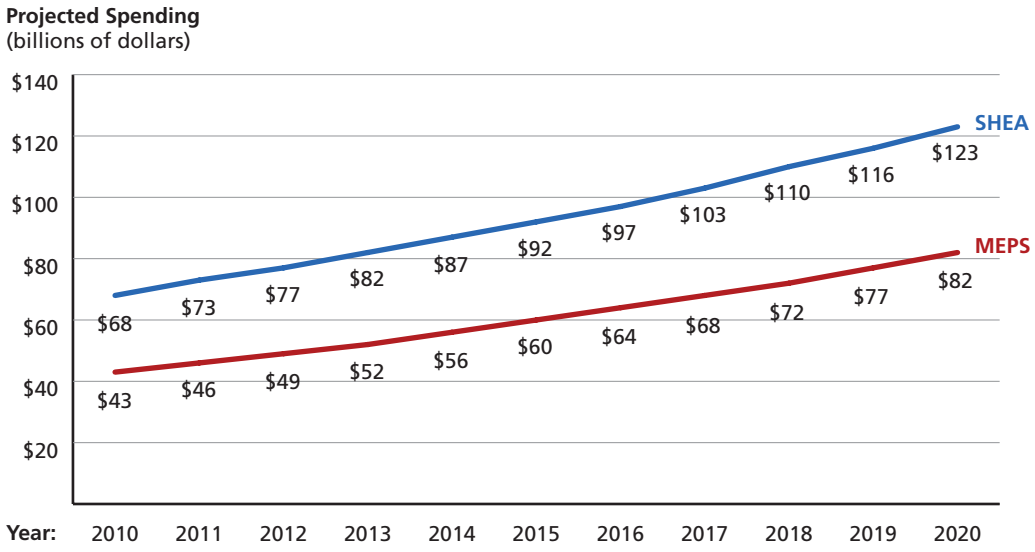
To model the effects of each reform, we used data from the Massachusetts-specific MEPS or other sources to estimate the change in spending that could be expected in the upper- and lower-bound model scenarios. All of our modeling was done using Microsoft Excel. Specific details on data sources and assumptions for savings estimates are included in the main body of the report.

[825] C. Schoen and Commonwealth Fund, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*. 2007, New York, N.Y.: Commonwealth Fund. xxii, 89 p.

Table A.1
Projected Spending in Massachusetts

Year	Projected Spending, in millions
2010	$43,222
2010–2015	$306,563
2015–2020	$669,617

Figure A.1
Projected Massachusetts Health Care Spending in the SHEA and in the MEPS



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Glossary

Budget neutral (Budget neutrality) – With respect to government programs like Medicare and Medicaid, budget neutrality means that a change to the government program should not increase costs over the costs of the existing program. For example, payment rates under new rules should be adjusted to ensure that total spending remains constant, within a certain spending threshold.

Bundled payment (Also referred to as case-rate or episode-based payment) – Use of a single payment for all services related to a treatment or condition, possibly spanning multiple providers in multiple settings. For example, a single payment could be made for coronary artery bypass graft (CABG) surgery, including pre-surgical services, facility and physician fees, and follow-up care.

Care management – Coordinating, facilitating, and tracking a patient's use of health and social services over time. May involve assessing patients' adherence to treatment plans, conducting patient education on self-care, coordinating referrals, and communicating with health care providers.

Chronic disease – A condition with one or more of the following characteristics: it is permanent; it leaves residual disability; it is caused by nonreversible pathological alteration; it requires special rehabilitative training for the patient; and it may be expected to require a long period of supervision, observation, or care.

CMS – Centers for Medicare and Medicaid Services, an agency within the U.S. Department of Health and Human Services that is responsible for administering the Medicare and Medicaid programs.

Connector – The Commonwealth Connector is an independent state agency, authorized under the Massachusetts Health Reform Law of 2006, that helps Massachusetts residents find health insurance coverage and avoid penalties under the individual mandate.

Cost containment Law – Chapter 305 of the Acts of 2008, "An Act to Promote Cost Containment, Transparency, and Efficiency in the Delivery of Quality Health Care," enacted by the Massachusetts legislature on August 10, 2008. According to the Speaker of the House, "Chapter 305 makes good on the promise for sustainable health reform, by establishing policy priorities for containing health care costs, increasing transparency of what we get for our well spent health care dollars, and improving quality and creating efficiencies in our health care delivery system."

Defensive medicine – Diagnostic or therapeutic measures conducted primarily as a safeguard against possible subsequent malpractice liability.

ERISA (Employee Retirement Income Security Act of 1974) is a federal law that sets minimum standards for most voluntarily established pension and health plans in private industry to provide protection for individuals in these plans. Most self-insured employer health plans (so-called ERISA plans) are exempt from state health insurance regulation.

Environmental scan – A method employed to systematically search for and synthesize existing knowledge on a particular topic. Depending on its purpose, a scan may involve a formal literature review, a review of the "grey" literature, an extensive web search, and/or discussion with experts.

Health Safety Net (Free Care) – A public program that pays for medically necessary services at Massachusetts community health centers and hospitals for uninsured or underinsured Massachusetts residents who have no access to affordable health insurance. The Health Safety Net replaced the Uncompensated Care Pool (also called Free Care) on October 1, 2007. The goal of the Safety Net is to make sure that all Massachusetts residents can get health care when they need it, regardless of income.

Healthy Massachusetts (HealthyMass) Compact – HealthyMass is an historic cross-agency initiative to build on health care reform in Massachusetts. Representatives of nine diverse state entities came together—in their roles as purchasers; providers; regulators; insurers; stewards of public health; and potential sources for health care financing—to sign the HealthyMass Compact, an agreement demonstrating their commitment to collaborative initiatives focused on five key areas: ensuring access to care; containing health care costs; advancing health care quality; promoting individual wellness; and developing healthy communities.

HIPAA (Health Insurance Portability and Accountability Act of 1996) is a federal law enacted by Congress to improve the portability and continuity of health insurance coverage in the group and individual markets; to combat waste, fraud, and abuse in health insurance and health care delivery; to promote the use of medical savings accounts (MSA); to improve access to long-term care services and coverage; to simplify the administration of health insurance; and for other purposes

Medical malpractice "pressure" – In a geographic area, the combined effects of a significant number of large damage awards, rising malpractice insurance premiums, contractions in the supply of malpractice insurers, and deterioration in the financial health of malpractice insurers.

Medical home – A medical practice arrangement that is designed to facilitate the delivery of comprehensive care and promote strong relationships between patients and their primary care team. There is much variability in practice and no widely agreed-upon definition, but some key components include: convenient access to care; care coordination by physician-led practice teams; active patient participation; the use of evidence-based guidelines; and increased use of electronic health records.

Partners HealthCare – An integrated health care system in Massachusetts, founded in 1994 by Brigham and Women's Hospital and Massachusetts General Hospital. In addition to the founding academic medical centers, the system includes physicians, community hospitals, specialty facilities, community health centers, and other health-related entities.

QCC – Massachusetts Health Care Quality and Cost Council was established under Chapter 58 of the Acts of 2006 (health reform law), to pursue health care quality improvement and cost containment goals.

Reliability – The consistency with which the health care system delivers evidence-based care to everyone in the population. A reliable health care entity is one that provides the right care, to the right patient, at the right time, every time. The concept of reliability falls within the broader, more commonly used concept of health care "quality" but is a more operational, narrowly focused definition of the attribute.

Risk-adjusted mortality – A common measure of hospital quality that takes into account the impact of risk factors—such as age, severity of illness, and co-morbid medical problems—on the likelihood that a patient will die during a hospitalization (or within a short time following discharge). This is contrasted with a non-adjusted or raw mortality rate, which is simply the number of patients who die in the hospital divided by the number of patients admitted to the hospital during the same time period.

Shared-accountability approach – The use of financial incentives to encourage hospitals and physicians to coordinate and collaborate on the delivery of health services, particularly at the point of transitions in care (e.g., from hospital discharge to management in the ambulatory setting).

Value-based choices – Choices made with a concern for clinical benefit achieved for the price of the service.

Value-Based Purchasing (VBP) – The concept of value-based health care purchasing is that buyers should hold providers accountable for both cost and quality. It brings together information on quality, including patient outcomes and health status, with data on the dollar outlays. It focuses on managing the use of the health care system to reduce inappropriate care and to identify and reward the best-performing providers.

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