



MASSACHUSETTS MEDICAL SOCIETY

Every physician matters, each patient counts.

The Ballooning Cost Of Health Care

*The impact of mandated benefits,
provider consolidation, medical technology,
and patient behavior on cost*

Commissioned by Massachusetts Medical Society

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Introduction and Background

This report was commissioned by the Massachusetts Medical Society (MMS) in accordance with MMS Resolution 108, A-07 (A) stating:

“That the MMS conduct further research to determine the degree of importance of the following additional cost drivers of health care:

- When considering the contention that mandated services, such as mental health services, increase costs, it should be recognized that such mandated services often have the effect of reducing other costs. Mental health services may represent a cost center but such services often reduce the costs of other medical services. These effects should be considered.
- The effect of provider group consolidation on competition and service prices.
- The long-term costs and/or savings attributed to medical technology.
- The short- and long-term costs to the health care system due to patient lifestyle as well as the impact of social stigma and other barriers to care which influence lifestyle.”

The resolution was referred to the Task Force on Medical Cost Control for report back at I-08.

The pace of growth in health care spending in the United States is unsustainable. As the rate of increase in health care expenditures consistently outpaces that of the economy, the percentage of spending on health care as a percent of gross domestic product (GDP) continues to rise. Health care spending currently represents about 16 percent of GDP and is projected to reach 25 percent in 2025, 37 percent in 2050 and 49 percent by 2082 (Figure 1).¹

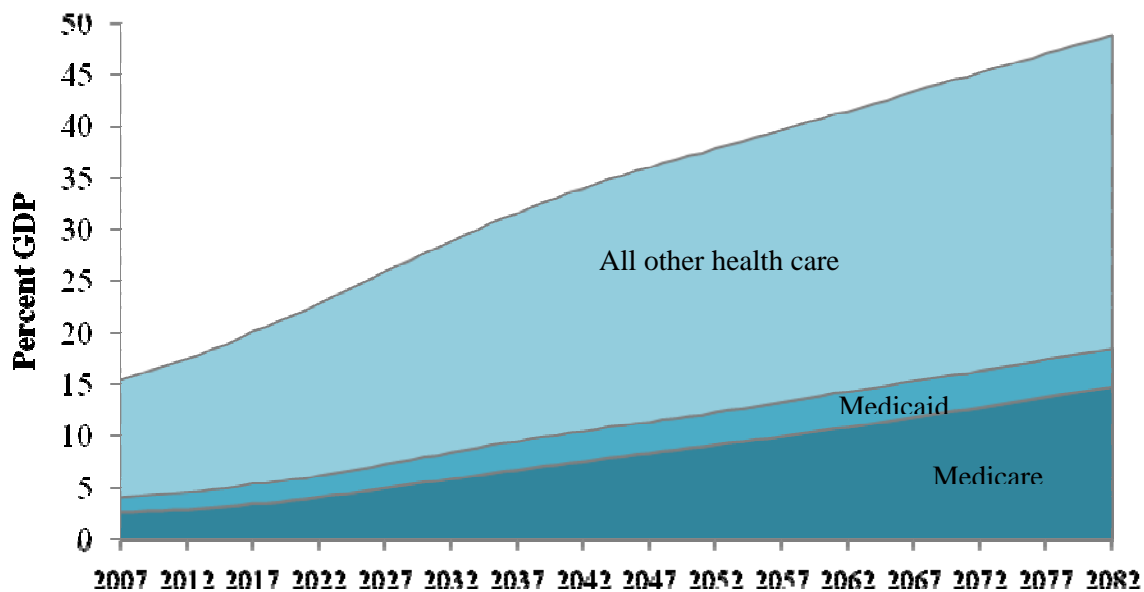
Spending growth is not inherently bad. For example, if such growth occurs with proportionate gains in health and/or quality of care, most would agree to spend it. However, the *National Scorecard on U.S. Health System Performance, 2008* awards the U.S. a score of 65 out of 100 when compared to top performance levels internationally and within the U.S.² Indeed, the “quality of care is highly variable, and opportunities are routinely missed to prevent disease, disability, hospitalization, and mortality.”³ This is perplexing when approximately two times as much is spent per capita on health care in the U.S. compared with other industrialized nations (Figure 2).

¹ Congressional Budget Office. “The Long-Term Outlook for Health Care Spending.” November 2007.

² The Commonwealth Fund. “Why Not the Best? Results from the National Scorecard on U.S. Health Care Performance, 2008.” July 2008.

³ Ibid.

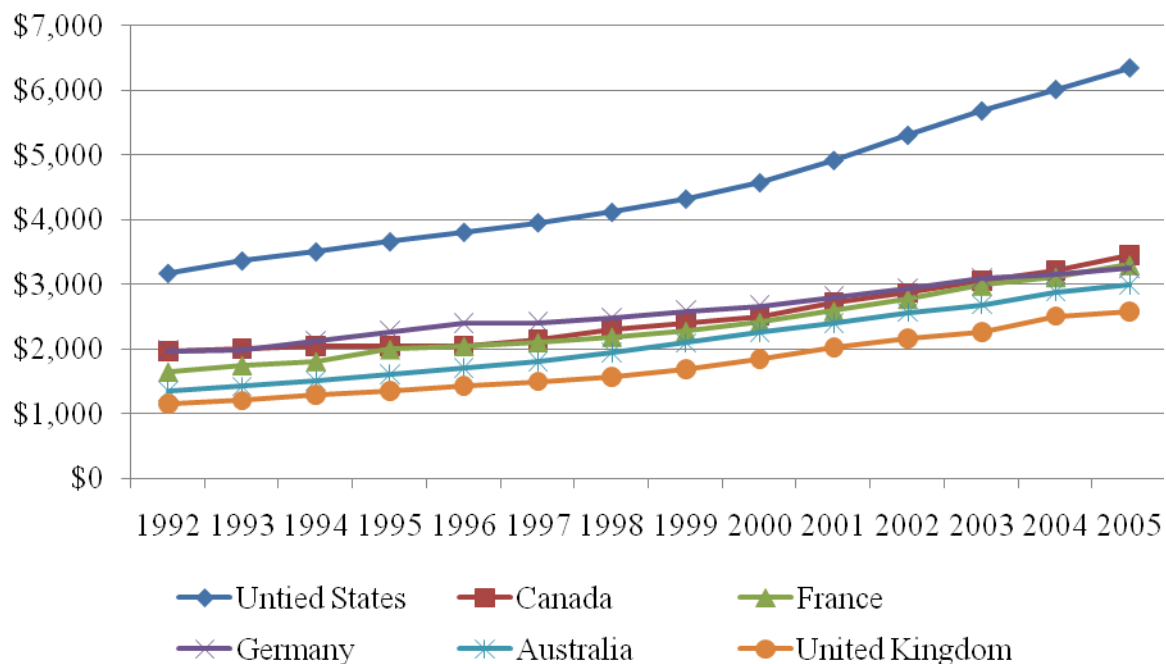
Figure 1. Projected Spending on Health Care as a Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Note: Amounts for Medicare are net of beneficiaries' premiums. Amounts for Medicaid are federal spending only.

Figure 2. Average Spending on Health Care Per Capita, 1992-2005



Source: Organization for Economic Cooperation and Development, Key Health Statistics 2008.

Excessive growth in health care spending is attributable to many factors. In order to develop strategies to address the high costs of our health care system, a more thorough understanding of health care cost drivers is needed. In this report, we examine the impact and relative importance of four specific cost drivers—(I) mandated benefits, (II) provider consolidation, (III) medical technology, and (IV) patient behavior—that are thought to contribute to the overall rise in health care expenditures.

The report begins with an overview of the cost of mandated benefits and a review of the cost impact of provider consolidation, including the effect on competition and service prices in the marketplace. Next, the role of medical technology on the cost of health care, accounting for the long-term costs and savings attributable to advances in medical care, is examined. This is followed by a review of the impact of patient behavior, including the effect of health disparities and barriers to care, on the cost of health care. The report examines national trends in cost and provides state-level detail when available. The report concludes with a discussion of the relative degree of importance of each of the above cost drivers on overall health care spending.

Methodology

This report is based upon a review of publicly available Federal and State reports pertaining to the above four cost drivers, including national reports from the Congressional Budget Office (CBO), Centers for Disease Control and Prevention (CDC), and National Institutes of Health (NIH). State-level data, when available, was drawn from the Massachusetts Division of Health Care Finance and Policy (DHCFP). Publicly available reports from private organizations and consulting firms, including PricewaterhouseCoopers, Center for Studying Health System Change, The Commonwealth Fund, and Kaiser Family Foundation, were also used in order to provide background research and context for the report. A Medline literature review of key articles on mandated benefits, provider consolidation, medical technology, and patient behavior was also conducted.

I. Mandated Benefits

Mandated health insurance benefit laws—or mandated benefits—are passed by legislatures at the state and federal level to require licensed health insurance plans to include specific health care benefits within their coverage products.^{4,5} Mandated benefits may require coverage of a certain group of people (e.g. individual with specific medical condition), type of provider (e.g. chiropractor), specific medical treatments, services, drugs, or medical nondurables (e.g. mammograms or diabetes related supplies), or specify the delivery of care (e.g. minimum length of stay).⁶ While federal mandates apply to all health plans, state-mandated benefits only apply to fully-insured plans and, thus, impact mostly small group (50 or fewer employees) or individual health insurance products since these plans are regulated by each state's health insurance laws. Larger employers, who self-insure, are able to avoid state mandates as they are governed by the Employee Retirement Income Security Act (ERISA) and do not need to comply with state mandates.⁷

The number of mandates nationally grew to 1,961 in 2008 according to a review by the Council for Affordable Health Insurance.⁸ Certain state-level mandates are popular nationwide, including coverage of mammography (50 states), maternity stays (50 states), mental health parity (47 states), and alcoholism treatment (45 states); while others are present in fewer states such as bone marrow transplants (11), autism (11) or ovarian cancer screening (3).⁹ Mandated benefits are designed to make health insurance more comprehensive, but they are viewed by some as an unnecessary intrusion into health insurance and health care decision-making. Accordingly, mandated benefits are a contentious matter among legislators, insurers, providers, employers and consumer advocacy groups. The primary concern arises over the potential impact of mandates on health insurance costs, employer coverage and uninsured rates, and the inequity in the system

⁴ Monheit, A.C. and Rizzo, J. "Mandated Health Insurance Benefits: A Critical Review of the Literature." New Jersey Department of Human Services. January 2007.

⁵ "Comprehensive Review of Mandated Benefits in Massachusetts." Massachusetts Division of Health Care Finance and Policy, July 2008.

⁶ Bellows, N.M. et al. "State-Mandated Benefit Review Laws." *Health Services Research*. 2006; 41:1104-1123.

⁷ National Center for Policy Analysis. "The Cost of Health Insurance Mandates." 1997; No.237.

⁸ Bunce, V.C. and Wieske, J.P. "Health Insurance Mandates in the States 2008." Council for Affordable Health Insurance, 2008.

⁹ Ibid.

because larger employers are exempt from state mandates while smaller employers must abide by them.¹⁰

Proponents of mandates argue that they are necessary to protect consumers and to ensure access to comprehensive benefits that offer useful preventive, screening, or other important components of health care delivery. Many argue for the enhanced social welfare offered by mandates and the equity of care that comes along with such legislation. However, opponents of mandates argue that they increase the cost of health insurance premiums, since health plans must include the increased costs associated with these mandates. Moreover, increases in premium rates may cause some employers or individuals to opt-out of coverage altogether, thus increasing the number of uninsured. Opponents believe that mandated benefits prevent insurers (and employers) from tailoring their benefits to their population, thus unnecessarily raising the cost of coverage.¹¹

It is a complicated endeavor to reach consensus on the impact of mandates. An examination of the effect of state mandated benefits on cost and coverage validates arguments from both sides.

Assessing the impact of mandates

Assessing the cost-benefit of mandates requires an analysis which includes both the total costs of providing the benefit and the incremental added value of such a benefit. Monheit and Rizzo duly note that “while few would dispute that mandates can raise the *value* of coverage to an individual, additional conditions are required for the new benefits to raise the *costs* of coverage.”¹² In essence, simply mandating a benefit is not enough to raise the cost of coverage. If a mandated benefit is identical or similar to existing coverage provided by a health plan or offered by an employer, then no additional actuarial risk has been taken on by the health plan and rates should not be expected to rise. On the other hand, when a mandate provides coverage above and beyond what exists under ‘typical’ coverage plans or affects a large group of individuals who previously did not have that coverage, then premiums will certainly increase in order to reflect the additional actuarial value of a particular benefit.

¹⁰ Cubanski, J. and Schauffler, H.H. “Mandated Health Insurance Benefits: Tradeoffs Among Benefits, Coverage, and Costs?” California Health Policy Roundtable, Issue Brief. July 2002.

¹¹ Ibid.

¹² Ibid.

Incrementally, the additional cost of most individual mandates is relatively small compared to the overall premium rate. Reflecting the complexity of the analysis, existing estimates of the additional annual cost of all mandates combined as a percentage of health insurance premiums vary dramatically. The U.S. General Accounting Office (GAO) published a report on the cost impact of health insurance regulation in 1996 that reported varied estimates by state. Estimates ranged from 5.4 percent of premiums in Iowa up to 22 percent of premiums in Maryland; notably, the cost of mandates in Massachusetts for 1990 as a percent of premiums was 18 percent.¹³ A 1997 analysis of the twelve most common mandates by Milliman & Robertson for The National Center for Policy Analysis estimated the additional cost of the mandates to be \$525-1,050 or 15-30 percent of a \$3,500 family premium.¹⁴ Mandates such as speech therapy and podiatry were estimated to add less than 1 percent to the premium, while more costly benefits such as infertility treatments (3-5 percent) and mental health care (5-10 percent) contributed significantly more. In another analysis for the Texas Department of Insurance in 2000, Milliman & Robertson estimated the percent of premium cost for thirteen mandates to be 7.6 percent for large groups and 7.2 percent for small groups.

Due to the nature of mandates, cost impact analyses vary by state, number of benefits, type of benefit, and methodology used. Thus, it is difficult to translate an estimate for any single mandate or collection of mandates across states. Furthermore, the majority of existing studies are limited by examining the cost of only the number of claims associated with a particular mandated benefit. Accordingly, the incremental cost of the benefit compared to existing coverage costs is not accurately reflected. Therefore, estimates may over-represent the true cost of mandates.

In assessing the impact of state mandated benefits, it is important to not only measure costs but clinical efficacy as well. What constitutes “best practice” in medicine is continually evolving, thus the relevance of a mandated benefit analysis must be updated to ensure that it is clinically germane. Other factors such as the social impact or political nature of the mandate may be addressed in a mandated benefit review as well.

¹³ U.S. General Accounting Office. “Health Insurance Regulation: Varying State Requirements Affect Cost of Insurance.” August 1996.

¹⁴ National Center for Policy Analysis. “The Cost of Health Insurance Mandates.” 1997; No.237.

Mandates in Massachusetts

On July 7, 2008, the Massachusetts Division of Health Care Finance and Policy (DHCFP) published a report entitled “Comprehensive Review of Mandated Benefits in Massachusetts,” assessing the cost and clinical efficacy of Massachusetts mandated benefits. The report, with cost estimates produced by Compass Health Analytics, stems from a provision of the 2006 Massachusetts Health Reform Legislation (Chapter 58) which placed a moratorium on mandated benefit legislation pending the publication of an analysis of the cost and efficacy of existing mandated benefit laws in Massachusetts.¹⁵ The report includes a thorough analysis of the 26 existing mandates in Massachusetts as of January 1, 2006.

As seen in Table 1, the DHCFP report categorizes the 26 Massachusetts mandates into primary and secondary analysis subsets. Mandates in the primary data analysis group were analyzed using claims data from four major Massachusetts health plans (Blue Cross Blue Shield of Massachusetts, Fallon Community Health Plan, Harvard Pilgrim Health Care, and Tufts Health Plan) representing about 70 percent of the fully-insured commercial market. The benefits in this group were selected for analysis because they met one or more of the following criteria: clinically relevant and potentially controversial, judged to be likely reduced or removed without

Table 1. Massachusetts Mandates as of January 1, 2006

Mandates in Primary Data Analysis	Mandates in Secondary Data Analysis
Chiropractic services	Alcoholism rehabilitation
Contraceptive services	Bone marrow transplants for treatment of breast cancer
Diabetes-related services and supplies	Cardiac rehabilitation
Early intervention services	Clinical trials for treatment of cancer
Home health care	Cytologic screening (Pap smear)
Hormone replacement therapy (HRT)	Hearing screening for newborns
Human leukocyte antigen testing (HLA)	Hospice care
Infertility treatment	Lead poisoning screening
Low protein food products for inherited amino acid and organic acid diseases (PKU)	Mammography
Mental health care	Maternity health care (including minimum maternity stay)
Nonprescription enteral formulas	Preventive care for children up to age six (including specific newborn testing)
Scalp hair prostheses for cancer patients	Off-label uses of prescription drugs to treat cancer
Speech, hearing, and language disorders	Off-label uses of prescription drugs to treat HIV/AIDS

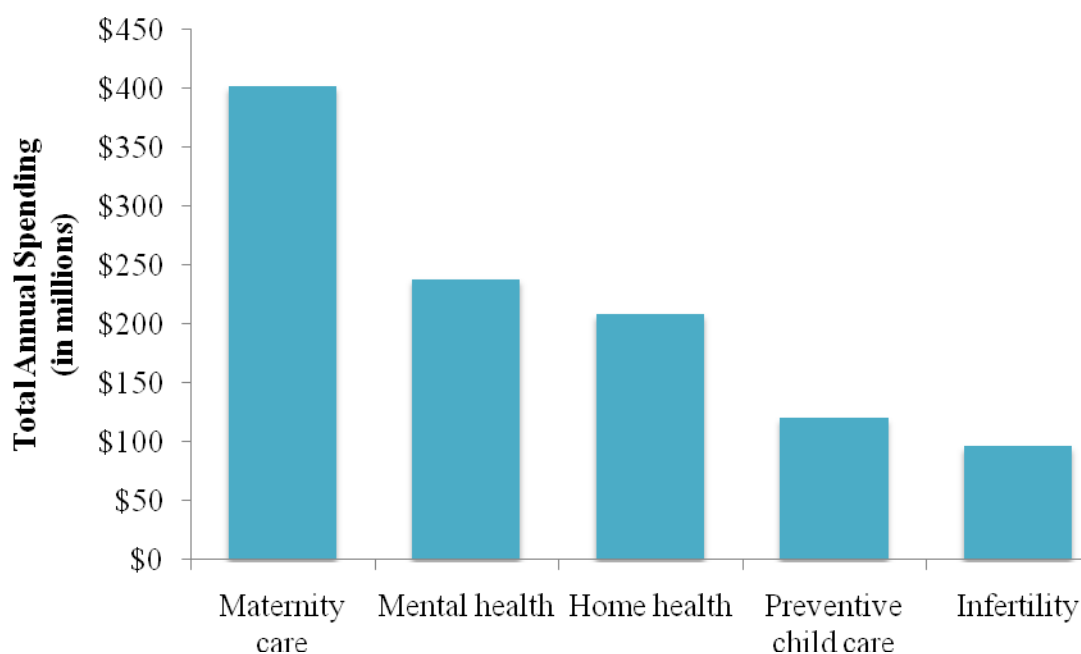
Source: “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

¹⁵“Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

the mandate in place, and claims data specific to the mandates were identifiable and extractable.¹⁶ The mandates included in the secondary data analysis group were assessed using available research literature, and were selected if they met one or more of the following criteria: benefit likely to be provided if the mandate were repealed, clinically obsolete, or difficult to measure utilization information.¹⁷

The DHCFP analysis revealed that total annual spending on mandated benefits in Massachusetts for the 2004-2005 period totaled 12 percent of premiums or \$1.32 billion. The five mandates contributing the most to premiums in Massachusetts were: maternity care, mental health, home health, preventive care for children, and infertility (Figure 3). Collectively, these mandates accounted for 80 percent of the total annual spending attributable to mandated benefits in Massachusetts. Table 2 provides a complete breakdown of the spending attributable to each of the 26 mandates in Massachusetts. The claims cost per member per month (PMPM) plus the administrative expenses for all mandates were \$36.62 PMPM or \$439.44 annually.

Figure 3. Annual Spending on Five Costliest Mandated Benefits in MA, 2004-2005



Source: "Comprehensive Review of Mandated Benefits in Massachusetts." Massachusetts Division of Health Care Finance and Policy, July 2008.

¹⁶ "Comprehensive Review of Mandated Benefits in Massachusetts." Massachusetts Division of Health Care Finance and Policy, July 2008.

¹⁷ Ibid.

Table 2. Estimated Annual Spending on Mandated Benefits, 2004-2005

Mandate	Claims costs PMPM (Required Direct Cost Claims)	Claims + Administration PMPM (Required Direct Cost PMPM w/Admin)	Percent of Premium	Total Annual Spending (000s) (Required Direct Annual Cost Total)
Maternity care (including minimum maternity stay)	\$9.61	\$11.18	3.73%	\$402,071
Mental health	\$5.70	\$6.63	2.21%	\$238,576
Home health	\$4.98	\$5.80	1.93%	\$208,536
Preventive care for children up to age six (including specific newborn testing)	\$2.89	\$3.36	1.12%	\$120,745
Infertility	\$2.31	\$2.68	0.89%	\$96,469
Diabetes supplies and services	\$1.28	\$1.49	0.50%	\$53,507
Contraception	\$1.14	\$1.33	0.44%	\$47,756
Cytologic screening (Pap smear)	\$1.07	\$1.25	0.42%	\$44,923
Mammography	\$0.99	\$1.15	0.38%	\$41,262
Early intervention	\$0.98	\$1.14	0.38%	\$41,033
Chiropractic services	\$0.31	\$0.36	0.12%	\$12,806
Hospice care	\$0.16	\$0.18	0.06%	\$6,648
Lead poisoning screening	\$0.14	\$0.16	0.05%	\$5,894
HRT	\$0.14	\$0.16	0.05%	\$5,824
Cardiac rehabilitation	\$0.10	\$0.11	0.04%	\$4,099
Clinical trials for treatment of cancer	\$0.07	\$0.08	0.03%	\$2,907
HLA	\$0.09	\$0.10	0.03%	\$3,633
Hearing screening for newborns	\$0.05	\$0.06	0.02%	\$2,152
Speech/Hearing	\$0.03	\$0.03	0.01%	\$1,160
Nonprescription	\$0.02	\$0.02	0.01%	\$814
Low protein	\$0.01	\$0.01	0.00%	\$336
Scalp hair prostheses	\$0.01	\$0.01	0.00%	\$263
Alcoholism rehabilitation	-	-	0.00%	-
Bone marrow transplants for treatment of breast cancer	-	-	0.00%	-
Off-label uses of prescription drugs to treat cancer	-	-	0.00%	-
Off-label uses of prescription drugs to treat HIV/AIDS	-	-	0.00%	-
GRAND TOTAL*	\$31.50	\$36.62	12.2%	\$1,320,000

*Overlapping coverage between mandates has been removed from the total.

Source: "Comprehensive Review of Mandated Benefits in Massachusetts." Massachusetts Division of Health Care Finance and Policy, July 2008.

The DHCFP report points out that “the true *net* cost impact of mandated benefits is likely significantly lower (in the range of 3-4% of premiums) because of federal laws and the likely behavior of insurers and employers in the absence of state mandates.”¹⁸ The DHCFP report offers a lower-bound estimate of \$132 million (1.2 percent of premiums) and upper-bound estimate of \$687 million (6.4 percent of premiums) for the marginal cost of the primary mandated benefits analyzed.

There are existing federal mandates for maternity and mental health care, thus in the absence of the state-level mandates, coverage would still need to be included in the plans. Combined, maternity and mental health care represent nearly 50 percent of the annual spending on mandated benefits in Massachusetts. Although the federal mental health mandate is less comprehensive than the state mandate, DHCFP concludes that the marginal costs of the maternity and mental health mandates would approach zero and the percent of premiums spent on mandates would drop to around 6 percent. Furthermore, in the absence of state or federal mandates, health plans would be likely to cover certain benefits. Popular benefits and those that are preventive in nature, thus potentially cost saving to the health plan, would likely be maintained.¹⁹ As Monheit and Rizzo point out in their review of the mandated benefit literature, “perhaps most daunting is the difficult challenge of disentangling the marginal contribution of a mandate over the impact of similar benefits that may have already been present in health insurance plans prior to the implementation of the mandated benefits.”²⁰

Aside from the increased cost of mandates in Massachusetts, the DHCFP report notes that “the primary mandates appear to be cost-effective” in regard to their clinical efficacy.²¹ For example, the report cites a recent Institute of Medicine report that concludes that “Overall, research is increasingly demonstrating that [appropriate, high-quality] care for M/SU [mental and substance use] problems and illness is both effective (it works) and cost-effective (it is a good value).”²² Monheit and Rizzo note that “cost savings may arise from mandates since specific

¹⁸ “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

¹⁹ Ibid.

²⁰ Monheit, A.C. and Rizzo, J. “Mandated Health Insurance Benefits: A Critical Review of the Literature.” New Jersey Department of Human Services. January 2007.

²¹ “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy. July 2008.

²² Cited by DHCFP report, “Comprehensive Review of Mandated Benefits in Massachusetts.” National Institute of Mental Health. *NIH Publication No. 06-4584 –The Numbers Count: Mental Disorders in America*. Bethesda, MD: National Institutes of Health, 26 Dec. 2006.

types of mandates may reduce costs in other areas (e.g., mandating ambulatory surgery may reduce the need for inpatient surgery).”²³ They cite a study by Henderson et al. which found that certain mandates increase premiums (e.g. in vitro fertilization and home health care), while others lower premiums (e.g. alcoholism treatment and mental health services).²⁴ The DHCFP report further notes that “it may be appropriate to consider removing mandates for benefits that are no longer the standard of care, such as bone marrow transplants for breast cancer.”^{25,26} The potential benefits to public health in screening and prevention laid out by certain mandates as well as potential cost savings in other areas must be weighed against the overall cost impact of mandated benefits.

Mandated Benefit Review Laws

From the analysis above, it is clear that mandated benefits do increase costs. Yet, the increase in costs must be examined in parallel with the overall benefits of the mandate including its utilization, demand, medical efficacy, public health impact, and the like, in order to determine the overall value of the mandate to the public. There has been a recent growth in the number of states with mandated benefit review (MBR) laws aimed at addressing these very issues.²⁷ As of 2008, the Council for Affordable Health Insurance has identified at least 30 states with laws requiring mandate review prior to their implementation, including Massachusetts.

A recent study by Bellows et al. provides a comprehensive review of state MBR laws. As of 2004, they identified 26 states with MBR laws. The study found considerable variation in the criteria used to review mandated benefits, however seven major categories of review criteria were identified: cost impacts, social impacts, medical efficacy, public health impacts, political considerations, provider impacts, and quality of care impacts.²⁸ Other potential criteria included the use of actuaries in cost analyses, identifying who pays for reviews, and the use of a data collection system. Bellows et al. explain that “by examining criteria in addition to cost, state

²³ Monheit, A.C. and Rizzo, J. “Mandated Health Insurance Benefits: A Critical Review of the Literature.” New Jersey Department of Human Services. January 2007.

²⁴ Ibid.

²⁵ “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

²⁶ Henderson, J.H. et al. “State-Level Health Insurance Mandates and Premium Costs.” Unpublished manuscript. Baylor University. 2005.

²⁷ Bellows, N.M. et al. “State-Mandated Benefit Review Laws.” Health Services Research. 2006; 41:1104-1123.

²⁸ Ibid.

decision makers position themselves to mandate only those benefits that add real value to the state's health care system measured by benefits that are relatively cost-effective and contribute to the overall health of the state's population."²⁹

The review of mandated benefits can only be beneficial in deciding whether or not to implement legislation. Indeed, the general effect of mandated benefits is to increase cost. However, the rise in premiums attributable to mandates must be examined at the marginal level in order to determine the net impact of a mandate on cost. Furthermore, additional criteria, as laid out by many states' MBR laws, must be considered in addition to cost. The majority of mandates contain a certain degree of politics, yet a thorough and objective review can serve to reduce the overall clamor surrounding the imposition of such legislation.

²⁹ Bellows, N.M. et al. "State-Mandated Benefit Review Laws." *Health Services Research*. 2006; 41:1104-1123.

II. Provider Consolidation

During the growth and subsequent decline of the tightly managed care model of the 1980s and 1990s, hospitals and physicians specifically altered their practice patterns and strategic alliances to respond appropriately to the payer market. Under managed care, capitation and utilization management were used to tightly regulate costs. In response, many hospitals sought to partner with or purchase physician groups, particularly primary care physicians, in an effort to gain market share and increase efficiencies. Physician-hospital organizations (PHOs) formed to generate better leverage with health plans, and management services organizations (MSOs) offered practice management services to physician groups.³⁰ Smaller hospitals feared exclusion from large health plan networks and were pressured to reach agreements on payment terms. Hospitals were also concerned about being acquired in the era of Columbia/HCA (now Hospital Corporation of America)—“the acquisition-minded for-profit hospital system”—that was rapidly buying up hospitals and gaining market footholds.³¹ In an effort to combat these market pressures, many hospitals were involved in mergers during this period—176 mergers occurred during the first seven years of the 1990s.³² In Massachusetts, there were 15 hospital mergers and the formation of 6 larger hospital systems from 1988 to 1996.³³

Physicians were also increasingly pressured under managed care. Many responded by forming independent practice associations (IPAs) to gain negotiating clout with health plans.³⁴ On the whole, individual physicians held even less negotiating power than hospitals. However, the number of large, single- and multi-specialty groups was expected to grow under managed care in an overall effort to increase risk sharing and improve negotiating power.³⁵ Physician practice management (PPM) organizations—for-profit, publicly traded organizations—were highly touted and expected to grow rapidly.³⁶ In his 1998 *Health Affairs* article, James Robinson highlighted the potential of PPMs to provide short-term capital and noted that “PPMs have the

³⁰ Ginsburg, P.B. “Competition in Health Care: Its Evolution Over the Past Decade.” *Health Affairs*. 2005; 24:1512-1522.

³¹ Ibid.

³² Spang, H.R. et al. “Hospital Mergers and Savings For Consumers: Exploring New Evidence.” *Health Affairs*. 2001; 20: 150-158.

³³ Healthpoint Vol 2 No. 3 March 1997, Division of Health Care Finance and Policy.

³⁴ Spang, H.R. et al. “Hospital Mergers and Savings For Consumers: Exploring New Evidence.” *Health Affairs*. 2001; 20: 150-158.

³⁵ Liebhaber, A. & Grossman, J.M. “Physicians Moving to Mid-Sized, Single-Specialty Practices.” Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

³⁶ Robinson, J.C. “Financial Capital and Intellectual Capital in Physician Practice Management.” *Health Affairs*. 1998; 17: 53-74.

potential to nurture the intellectual capital of leading physician groups and diffuse it throughout the health care system.”³⁷ However, the rapid rise in PPMs was followed by a tumultuous fall. In 2000, Uwe Reinhardt published a paper on the PPM industry’s demise, noting that “between December 1997 and September 1998 Wall Street’s valuation of the fifteen largest PPM firms fell by 64 percent, and the entire industry lost as much as half of its commercial value.”³⁸ In the end, growth by acquisition was an unsustainable model for PPMs, physicians felt overly constrained and the sought after value to be generated by PPMs simply was not there.

Ultimately, consumer backlash and physician disgruntlement led to a shift away from the restrictive cost containment efforts and service utilization limitations under managed care. Accordingly, provider networks broadened and preferred provider organizations (PPOs) populated the commercial market. As health plans moved away from capitation and hospital mergers and acquisitions took affect, some hospitals gained negotiating power with health plans. Furthermore, consumers demanded access to the best hospitals in their area, and so health plans were forced to negotiate higher payment rates with certain hospitals. However, physicians were unable to realize the same gain since “no single medical practice has the market leverage that many individual hospitals have.”³⁹ One exception remained—large, single-specialty groups who had substantial market share could garner the attention of health plans. The divergence in pricing power between hospitals and physicians post managed care is evidenced by the difference in price trends between the two. In 1995, hospital prices grew 3.7 percent relative to 3.1 percent for physicians; in 2004, hospital prices grew 7 percent relative to 2.2 percent for physicians.⁴⁰

Impact of hospital mergers and acquisitions

In the post managed care era, it appears that hospitals wield the majority of pricing power over health plans. In a study of the effect of hospital mergers (occurring from 1995-1996) on prices in California, Krishnan and Krishnan found that hospital acquisitions resulted in higher revenues per privately insured patient and increased operating margins over non-merging

³⁷ Robinson, J.C. “Financial Capital and Intellectual Capital in Physician Practice Management.” *Health Affairs*. 1998; 17: 53-74.

³⁸ Reinhardt, U.E. “The Rise and Fall of the Physician Practice Management Industry.” *Health Affairs*. 2000; 19: 42-55.

³⁹ Ginsburg, P.B. “Competition in Health Care: Its Evolution Over the Past Decade.” *Health Affairs*. 2005; 24:1512-1522.

⁴⁰ Ibid.

hospitals.⁴¹ Interestingly, merged hospitals did not experience reduced operating costs after three years, indicating that expected efficiencies may not be gained from mergers or may occur over the longer-term. In a larger study examining American Hospital Association member hospitals across the U.S. from 1989-1997, Spang et al. found that merging hospitals typically had lower growth in costs (total expense per admission) and prices (net patient revenues per adjusted admission) than non-merging rival and non-rival hospitals.⁴² The authors suggest that “this likely reflects growing pressure on the hospital industry to contain costs and prices due to growth in managed care, selective contracting, and tougher payer negotiations on price discounts and contract terms.”⁴³ Yet, “merger-related cost savings exceeded price savings, which suggests that hospitals retained a greater portion of merger cost savings in the form of higher profits.”⁴⁴ The cost and price savings were less, however, between merging and non-merging rival hospitals. The authors suggest that “merging and rival hospitals might engage in coordinated or oligopolistic behavior in highly concentrated markets.”⁴⁵ Thus, while cost and price savings may occur from mergers and acquisitions among hospitals, various local market forces (such as intense competition) are likely to play a role in the amount of savings overall, if any.

The health care market in Massachusetts is unique due to its high density of teaching hospitals. Over the past decade, teaching hospitals have expanded their market share. From 1993-2003, teaching hospitals realized a 10 percent increase in total inpatient days over non-teaching hospitals.⁴⁶ The higher costs associated with teaching hospitals versus non-teaching hospitals and the high number of inpatient admissions to teaching hospitals (about half of inpatient admissions) results in higher health care spending per capita than any other state.^{47,48} In addition to the growth in market share, teaching hospitals, on the whole, have experienced better financial performance than non-teaching hospitals. In 2007, the median total margin for a teaching hospital was 6.6 percent compared to 2.8 percent for a non-teaching hospital; the

⁴¹ Krishnan, R.A. & Krishnan, H. “Effects of hospital mergers and acquisitions on prices.” *Journal of Business Research*. 2003; 56: 647-656.

⁴² Spang, H.R. et al. “Hospital Mergers and Savings For Consumers: Exploring New Evidence.” *Health Affairs*. 2001; 20: 150-158.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ MedPharma Partners. “Impact of Tertiary Hospital Growth and Expansion.” Massachusetts Medical Society, 2008.

⁴⁷ Ibid.

⁴⁸ Lischko, A.M. et al. “Health Care Premium Expenditures in Massachusetts: Where Does Your Health Care Dollar Go?” Massachusetts Medical Society, 2008.

median operating margin for teaching hospitals was 3 percent compared to 1.6 percent for non-teaching hospitals.⁴⁹ The higher margins of teaching hospitals are likely reflective of the increased negotiating power that they have acquired in recent years. This leveraged position is likely resultant of gains in market share over community hospitals via branding, effective management and increased demand.

Trends in provider group consolidation

The relative size of physician groups, even large groups, in comparison with hospitals has almost certainly precluded them from achieving the same negotiating leverage with health plans. Exceptions, such as very large groups or groups with substantial market share, do exist though. As a result, physician-hospital relations have experienced both adversarial and synergistic relations in recent years as both compete for higher paying specialty services and overall consumer demand.⁵⁰ In some cases, hospitals have formed tightly linked relationships with physician specialists in order to expand their service lines; in other instances, physician specialists have sought to directly compete with hospitals through the formation of physician owned facilities.^{51,52}

In order to track changes in health care costs, delivery and availability across the country, the Center for Studying Health System Change (HSC) conducts the Community Tracking Survey (CTS)—a survey and site visit study of 12 nationally representative metropolitan areas, including Boston—every two years. In its 2007 round of site visits, HSC found that “in some markets, physicians increasingly are organizing into larger, single-specialty practices to attain the scale needed to add profitable services to their practices and to gain leverage in health plan negotiations.”⁵³

Overall, the number of solo and two physician group practices is declining. From the time of its first CTS Physician Survey in 1996 through its most recent survey in 2004, HSC has found that the number of physicians in solo or two-physician practices has decreased

⁴⁹ “Health Care in Massachusetts: Key Indicators.” Massachusetts Division of Health Care Finance and Policy, June 2008.

⁵⁰ Berenson, R.A. et al. “Hospital-Physician Relations: Cooperation, Competition, Or Separation?” *Health Affairs*. 2007; 26: w31-w43 (published online December 5, 2006; 10.1377/hlthaff.26.1.w31).

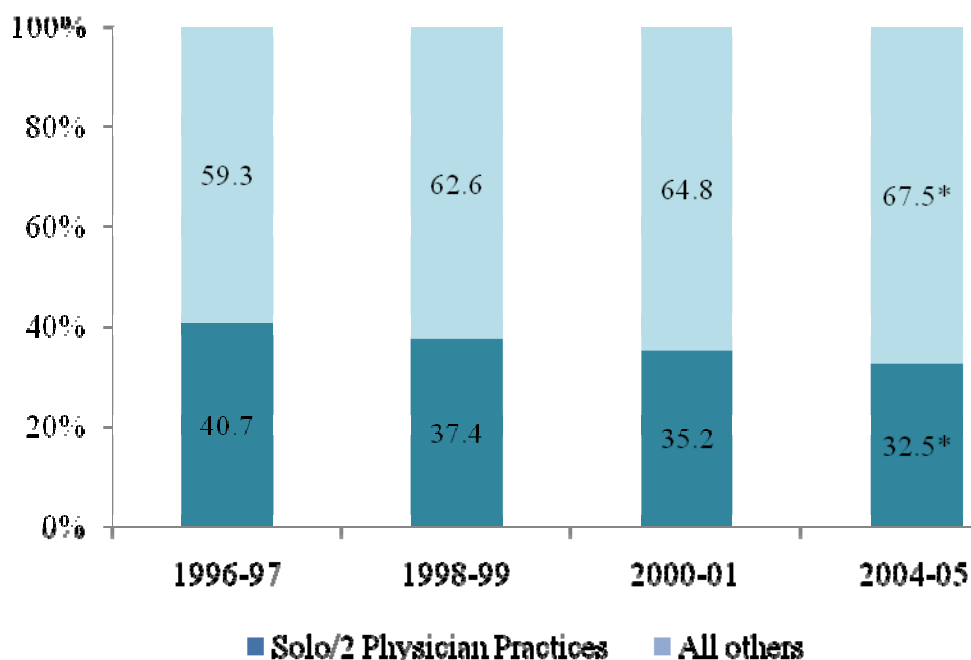
⁵¹ Ibid.

⁵² Draper, D.A. & Ginsburg, P.B. “Health Care Cost and Access Challenges Persist: Initial Findings from HSC’s 2007 Site Visits.” Issue Brief No.114. Center for Studying Health System Change, Washington, D.C. October 2007.

⁵³ Ibid.

significantly from 40.7 percent to 32.5 percent (Figure 4).⁵⁴ During this time, the percentage of physicians with a full or partial ownership stake in their practice fell from 61.6 percent to 54.4 percent.⁵⁵ The greatest shift in physician practice size during this time occurred for the 6-50 physician practice size which grew from 13.1 percent of physicians in 1996-97 to 17.6 percent of

Figure 4. Physicians in Solo/Two-Physician Practices vs. All Other Practice Settings, 1996-1997 to 2004-2005



*Change from 1996-97 is statistically significant at $p < .001$.

Source: HSC Community Tracking Study Physician Survey

Reproduced from: Liebhaber, A. & Grossman, J.M. "Physicians Moving to Mid-Sized, Single-Specialty Practices." Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

physicians in 2004-05.⁵⁶ While these trends were observed across all physicians, the micro-trends by physician type vary. An increasing number of surgical and medical specialists have moved to the mid-sized, single-specialty group practice setting, whereas primary care physicians in solo or two-physician practices has stayed relatively steady (Figure 5). In addressing this trend, Liebhaber and Grossman point out that "some subspecialists may have more motivation to form larger practices since they have more opportunities to provide profitable procedures and

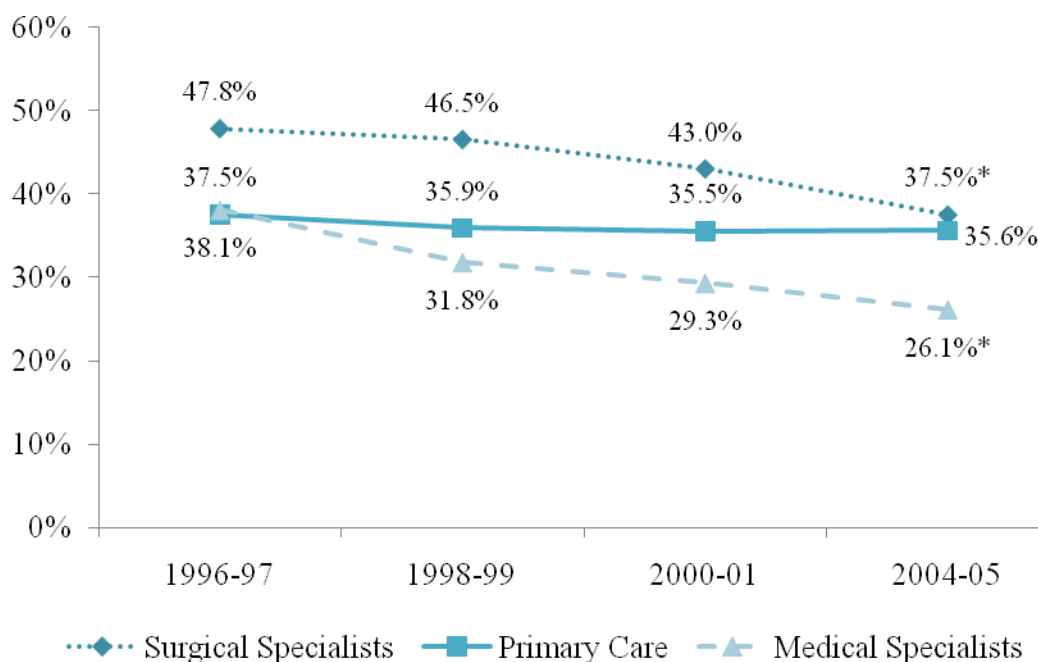
⁵⁴ Liebhaber, A. & Grossman, J.M. "Physicians Moving to Mid-Sized, Single-Specialty Practices." Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

⁵⁵ Ibid.

⁵⁶ Ibid.

diagnostics services in outpatient settings.”⁵⁷ The once expected shift to large, multispecialty group practices under managed care did not materialize; and, in fact, the number of physicians in multispecialty group practices declined 3.4 percent from 1998-99 to 2004-05.⁵⁸ In a 2004 *Modern Healthcare* article, Kenneth Paulus, then president and chief executive officer of Harvard Vanguard Medical Associates, proclaimed: “I think the days of solo practice and small group practices are numbered. Every single physician will have to be part of something larger. The cost trends have just been too steep to overcome alone.”⁵⁹ Indeed, the trend has been away from solo/two-physician practices to larger groups.

Figure 5. Physicians in Solo/Two-Physician Practices by Specialty, 1996-1997 to 2004-2005



*Change from 1996-97 is statistically significant at $p < .001$.

Source: HSC Community Tracking Study Physician Survey

Reproduced from: Liebhaber, A. & Grossman, J.M. “Physicians Moving to Mid-Sized, Single-Specialty Practices.” Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

The reasons that physicians, in particular specialists, are moving toward larger group practices include increased operating efficiency, capital investment in health information

⁵⁷ Liebhaber, A. & Grossman, J.M. “Physicians Moving to Mid-Sized, Single-Specialty Practices.” Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

⁵⁸ Ibid.

⁵⁹ Romano, M. “More docs say : Super-size it.” *Modern Healthcare*. 2004; 34: 24-35.

technology and imaging or surgical equipment, cost containment, and quality improvement (see Table 3).^{60,61} However, the most oft cited reason is leveraged negotiations with health plans.⁶² The general idea behind provider group consolidation is to spread overhead, increase administrative efficiencies and increase profitability. The current reimbursement system, although shifting towards more bundled payment schemes, continues to reward physician specialists under its fee-for-service model. In particular, imaging and surgical subspecialties stand to profit.⁶³ Casalino et al. conclude that “the limited data available on [medical group] performance, although far from conclusive, suggest that groups have the potential to increase physicians’ negotiating leverage with health plans, operate more efficiently, contain medical care costs, and improve quality, but that this potential does not appear to be fulfilled in many cases.”⁶⁴

Table 3. Potential Benefits of Medical Group Practice

Benefits	
Traditional	Additional With Managed Care
Quality	
Consultation/mutual education Oversight by peers	Support organized processes for Increasing patient safety Quality improvement Care of chronic illnesses Preventive services
Efficiency	
Scale economies in purchasing and management	Scale economies in information systems Spread financial risk of capitation Appropriate unit of analysis for cost and quality measures
Physician lifestyle and income	
Call and vacation coverage Less business responsibility Profit from ancillary services	Increase negotiating leverage with health plans Reduce administrative burden of dealing with health plans Profit from risk contracting

Adapted from: Casalino, L.P. et al. “Benefits of and Barriers to Large Medical Group Practice in the United States.” *Arch Intern Med.* 2003; 163: 1958-1964.

⁶⁰ Casalino, L.P. et al. “Benefits of and Barriers to Large Medical Group Practice in the United States.” *Arch Intern Med.* 2003; 163: 1958-1964.

⁶¹ Casalino, L.P. et al. “Growth of Single-Specialty Medical Groups.” *Health Affairs.* 2004; 23: 82-90.

⁶² Casalino, L.P. et al. “Benefits of and Barriers to Large Medical Group Practice in the United States.” *Arch Intern Med.* 2003; 163: 1958-1964.

⁶³ Liebhaber, A. & Grossman, J.M. “Physicians Moving to Mid-Sized, Single-Specialty Practices.” Tracking Report No.18. Center for Studying Health System Change. Washington, D.C. August 2007.

⁶⁴ Casalino, L.P. et al. “Benefits of and Barriers to Large Medical Group Practice in the United States.” *Arch Intern Med.* 2003; 163: 1958-1964.

Despite the benefits of group practice, “most physicians still do not practice in large groups, perhaps because of the costs (in money, time, and loss of independence) involved in creating such groups.”⁶⁵ Physician autonomy, lack of physician cooperation and lack of leadership continue to be inhibitory to the formation of large medical groups.⁶⁶ As discussed above, the current payment incentives are aligned with the formation of larger, single-specialty physician groups. Competition between hospitals and physicians for patients and specialty services has almost certainly contributed to rising costs and represents a “major source of wasted spending.”⁶⁷ Liebhaber and Grossman note that “increased consolidation in single-specialty practices raises the potential in some markets that certain specialties can drive up prices in negotiation with health plans.” However, the capacity of many small and mid-sized physician groups to substantially impact payer fee schedules is presumably minimal in the current marketplace.

⁶⁵ Casalino, L.P. et al. “Growth of Single-Specialty Medical Groups.” *Health Affairs*. 2004; 23: 82-90.

⁶⁶ Casalino, L.P. et al. “Benefits of and Barriers to Large Medical Group Practice in the United States.” *Arch Intern Med*. 2003; 163: 1958-1964.

⁶⁷ Berenson, R.A. et al. “Hospital-Physician Relations: Cooperation, Competition, Or Separation?” *Health Affairs*. 2007; 26: w31-w43 (published online December 5, 2006; 10.1377/hlthaff.26.1.w31).

III. Technology

The past several decades have witnessed a rapid revolution in medical technology. New and innovative treatments, diagnostics and procedures have transformed medical care, and extended and improved the quality of life. However, the “increased capabilities of medicine” have no doubt had a major impact on the cost of health care.⁶⁸ A recent report examining the impact of technological innovation on health care spending by the Congressional Budget Office (CBO) estimates that approximately half of the increase in health care spending over the past decade is attributable to advances in medicine brought on by technological innovation.⁶⁹ Indeed, most health economists agree that advances in medical technology have been the primary driver of increased health care spending over the years.^{70,71}

Broadly speaking, technological innovation in medicine is defined as “changes in clinical practice that enhance the ability of providers to diagnose, treat, or prevent health problems.”⁷² This includes drugs, medical devices, medical and surgical procedures, as well as service delivery.⁷³ Some advances in medicine represent breakthroughs and constitute an entirely new line of spending, such as a new drug classes (e.g. SSRIs) or new disease treatments (e.g. angioplasty for coronary artery disease). Many advances in technology, however, represent incremental advances that modify existing treatments or practices, what Cutler and McClellan call the “treatment substitution effect.”⁷⁴ Other advances have broadened the scope of an existing process or service to a greater portion of the patient population: the “treatment expansion effect.”⁷⁵

Medical innovations have the potential to reduce overall health care costs, however, this is often not the net effect. A report by the Project HOPE Center for Health Affairs explains that

⁶⁸ Congressional Budget Office. “Technological Change and the Growth of Health Care Spending.” January 2008.

⁶⁹ Ibid.

⁷⁰ Ibid.

⁷¹ Bodenheimer, T. “High and Rising Health Care Costs. Part 2: Technologic Innovation.” *Ann Intern Med.* 2005; 142: 932-937.

⁷² Ibid.

⁷³ Changes in service delivery might include electronic medical records or electronic prescribing services. While such technological advances contribute to the cost of health care, the focus of this report will be on advances in direct clinical technologies (drugs, devices and procedures).

⁷⁴ Cutler, D.M. & McClellan, M. “Is Technological Change in Medicine Worth It?” *Health Affairs.* 2001; 20: 11-29.

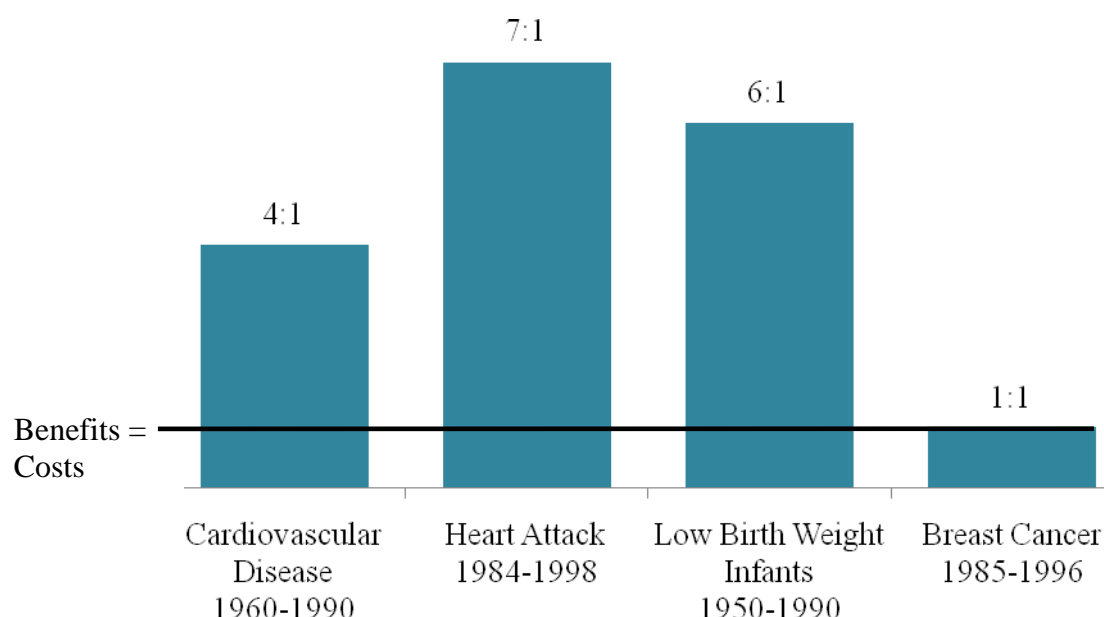
⁷⁵ Ibid.

“even where a new technology can reduce unit costs for particular patients, it often increases net health expenditures by increasing overall volume.”⁷⁶

While the increased cost of medical technology is high, Cutler and McClellan argue that “technological advances have proved to be worth far more than their costs” when the benefits of medical advancement are considered.⁷⁷ Indeed, they have shown that the benefits in additional life expectancy of select diseases outweigh the additional costs of treatment (Figure 6).

However, the economic impact of increased utilization across the population has a burgeoning effect on overall health care spending.

Figure 6. Benefits of Increased Life Expectancy vs. Increased Treatment Costs



Note: An additional year of life is valued at \$100,000.

Adapted from: Keenan, P.S. “What’s Driving Health Care Costs?” The Commonwealth Fund. Issue Brief 707. November 2004.

Source: Cutler, D.M. & McClellan, M. “Is Technological Change in Medicine Worth It?” *Health Affairs*. 2001; 20: 11-29.; Cutler, D.M. *Your Money or Your Life? Strong Medicine For America’s Health Care System*.

Booz Allen Hamilton estimated the impact of medical technologies on health care spending for the Blue Cross and Blue Shield Association and found that diagnostic imaging had

⁷⁶ Project HOPE, Center for Health Affairs. “The Impact of Medical Technology on Future Health Care Costs.” February 28, 2001.

⁷⁷ Cutler, D.M. & McClellan, M. “Is Technological Change in Medicine Worth It?” *Health Affairs*. 2001; 20: 11-29.

the greatest impact on medical technology expenditures, representing \$65-75 billion.⁷⁸ Their estimates of other medical technology expenditures for 2000 included cardiovascular procedures (\$30-40 billion), diagnostic in vitro lab tests (\$30-40 billion), and minimally invasive surgery (\$6-9 billion).⁷⁹ In a separate analysis of nine medical technologies, including coronary stents, immunotherapy, and inhaled insulin, prepared by Project HOPE Center for Health Affairs, it was estimated that these technologies have the potential to add between \$700 million and \$1.9 billion to health care expenditures annually.⁸⁰

Generally speaking, the U.S. has been a rapid adopter of new technology over the years and consumers have grown to expect the latest in medical science. The number of magnetic resonance imaging (MRI) units per 1 million population is a prime example of the sweeping use of technology in the U.S. health care system. The U.S. has over four times the number of MRI units per million than the average units in Canada, France, Germany, and the United Kingdom (Figure 7). The high rate of utilization of technology in the U.S. is predicated on the public's interest in and desire for innovative treatments. Kim et al. found that Americans have a much greater interest in new medical technologies compared to Europeans (Figure 8). Yet, in a 2005 Kaiser Family Foundation health care costs survey, only 8 percent of Americans chose "use of expensive, high-tech medical equipment and drugs" as the "most important factor" in rising health care costs.⁸¹ Kim et al. conclude that to address rising health care costs in the U.S. due to increased use of new technology, either public expectations need to change or policymakers will have to take a stronger stand against public preferences.⁸²

Technology assessment

One way to assess the impact of medical technology on health care spending is through formal technology assessment. The CBO report on technological change and health care

⁷⁸ Rothenberg, B. "Medical Technology as a Driver of Healthcare Costs: Diagnostic Imaging." Blue Cross and Blue Shield Association. October 14, 2003.

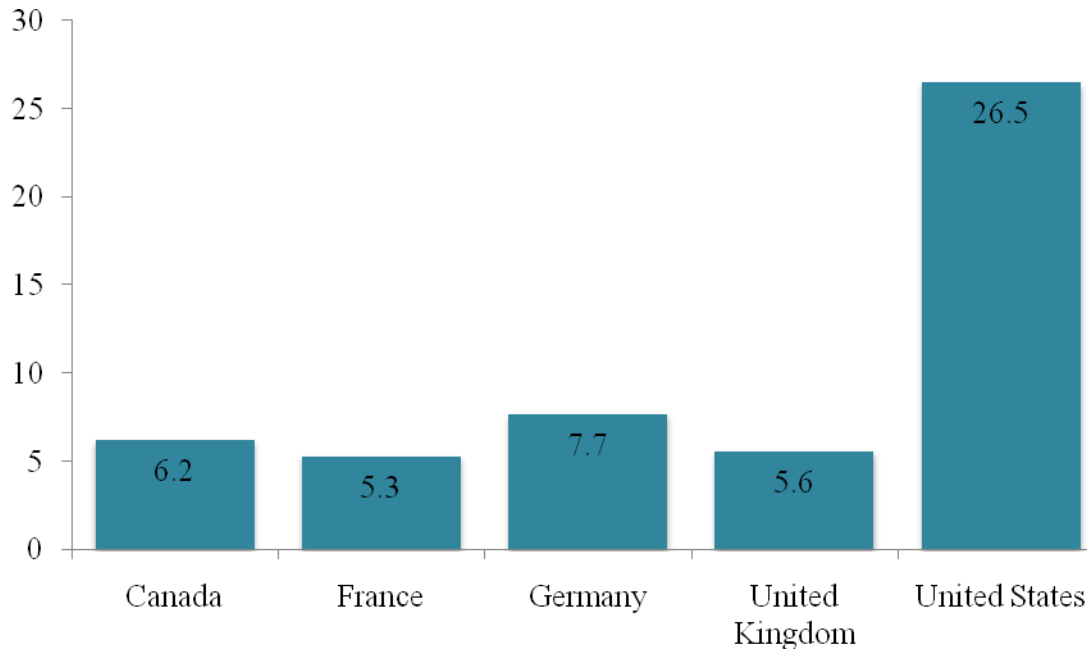
⁷⁹ Ibid.

⁸⁰ Mohr, P.E. et al. "The Impact of Medical Technology on Future Health Care Costs." Project HOPE Center for Health Affairs. February 28, 2001.

⁸¹ Henry J. Kaiser Family Foundation. USA Today/KFF/HSPH Health Care Costs Survey (conducted April 25 – June 9, 2005). <http://www.kff.org/spotlight/healthcosts/4.cfm>

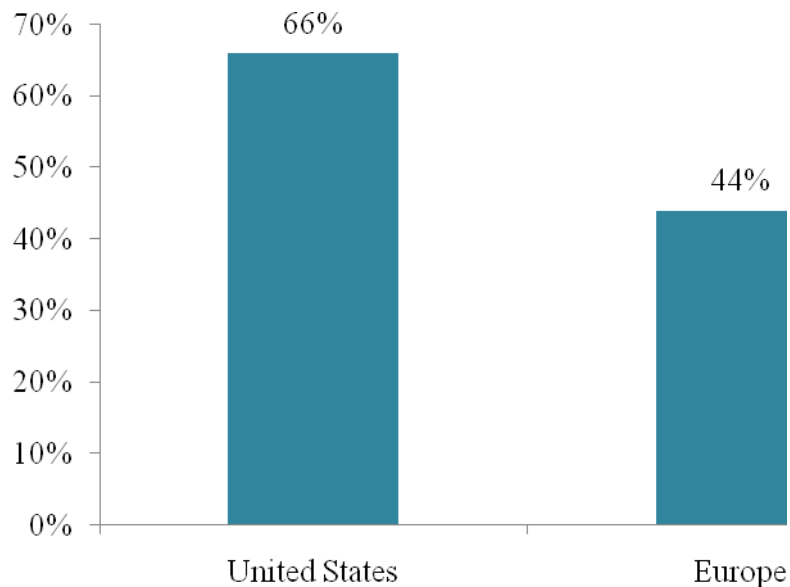
⁸² Kim et al. "How Interested Are Americans In New Medical Technologies? A Multicountry Comparison." *Health Affairs*. 2001; 20: 194-201.

Figure 7. Magnetic Resonance Imaging (MRI) Units per Million Population, 2006



Source: OECD Health Data, 2008.

Figure 8. Percent of Population “Very Interested” in New Medical Technologies, 1992



Source: Kim et al. “How Interested Are Americans In New Medical Technologies? A Multicountry Comparison.” *Health Affairs*. 2001; 20: 194-201.

spending found that newer, more expensive services are frequently used for people with conditions that could be treated with older, less expensive alternatives offering comparable outcomes. In addition, expensive services that are known to be highly effective in a select patient cohort are sometimes provided to a broader base of patients for whom the benefit has not been shown to be clinically effective.⁸³

The Food and Drug Administration (FDA) is responsible for determining the safety and efficacy of new drugs, biologics and medical devices; however, their approval recommendations do not need to meet certain cost-effectiveness standards. The Agency for Healthcare Research and Quality (AHRQ), under the U.S. Department of Health and Human Services, conducts technology assessments for the Centers for Medicare and Medicaid Services (CMS).⁸⁴ Yet, AHRQ's technology assessment program is limited in scope and does not provide broad national standards for utilization based upon both clinical and economic efficacy reviews. In effect, the U.S. has no formal body tasked with assessing the cost-benefit of new medical technologies.

The need for formal technology assessment has been highlighted over the past few decades as variations in medical practice across the U.S. (including medical technology, surgical procedures and medical resources) have been documented in the literature.^{85,86} Despite an awareness of widespread utilization and practice pattern variation that have no relationship with outcomes, conflicting interests of policymakers, payers, pharmaceutical companies, device makers, and physicians have complicated any formal attempts at systematic review of new medical technology in the U.S.

The U.S. has made a number of attempts at formal medical technology assessment over the years, including the Office of Technology Assessment (OTA),⁸⁷ the National Center for Health Care Technology (NCHCT),⁸⁸ and the Council on Health Care Technology (CHCT)⁸⁹,

⁸³ Congressional Budget Office. "Technological Change and the Growth of Health Care Spending." January 2008.

⁸⁴ Agency for Healthcare Research and Quality (AHRQ) "technology assessments" available at: <http://www.ahrq.gov/clinic/techix.htm#progress>

⁸⁵ John E. Wennberg. "Dealing With Medical Practice Variations: A Proposal for Action," *Health Affairs* (Summer 1984): 6-32.

⁸⁶ Pilote, L. et al. "Regional Variation Across the United States in the Management of Acute Myocardial Infarction." *NEJM*. 1995; 333: 565-572.

⁸⁷ The Congressional Office of Technology Assessment (OTA) closed on September 29, 1995 after 25 years of providing nonpartisan analytical technology assessment to the U.S. Congress. <http://www.gpo.gov/ota/>

⁸⁸ The National Center for Health Care Technology (NCHCT) was created by the U.S. Congress in 1978. The NCHCT closed three years later.

⁸⁹ The Council on Health Care Technology (CHCT) was dissolved in 1989, after only a few years of service, due to lack of funding.

established by the Institute of Medicine (IOM).⁹⁰ While clinical practice guidelines and evidence-based medicine increasingly serve to guide treatments and technology utilization in the U.S., the information tends to be slowly disseminated and the sources of evidence on clinical and cost effectiveness are numerous and not coordinated, making it difficult to integrate into clinical practice.

A number of other countries have established formal medical technology review bodies to address the growing implications of technology on health care costs. The United Kingdom has the National Institute for Health and Clinical Excellence (NICE) which provides recommendations on the use of medical technologies based on a review of clinical and economic evidence.⁹¹ Germany's formal technology assessment body is the Federal Joint Committee (FJC) which provides care directives as to what treatments and technologies the German health system will cover.⁹² It is probably somewhat easier to organize such formal review bodies in countries with a national health system, but formal medical technology assessment could be established in the U.S. as well.

⁹⁰ U.S. Congress, Office of Technology Assessment, *Health Care Technology and Its Assessment in Eight Countries*, OTA-BP-H-140 (Washington, DC:U.S. Government Printing Office, February 1995).

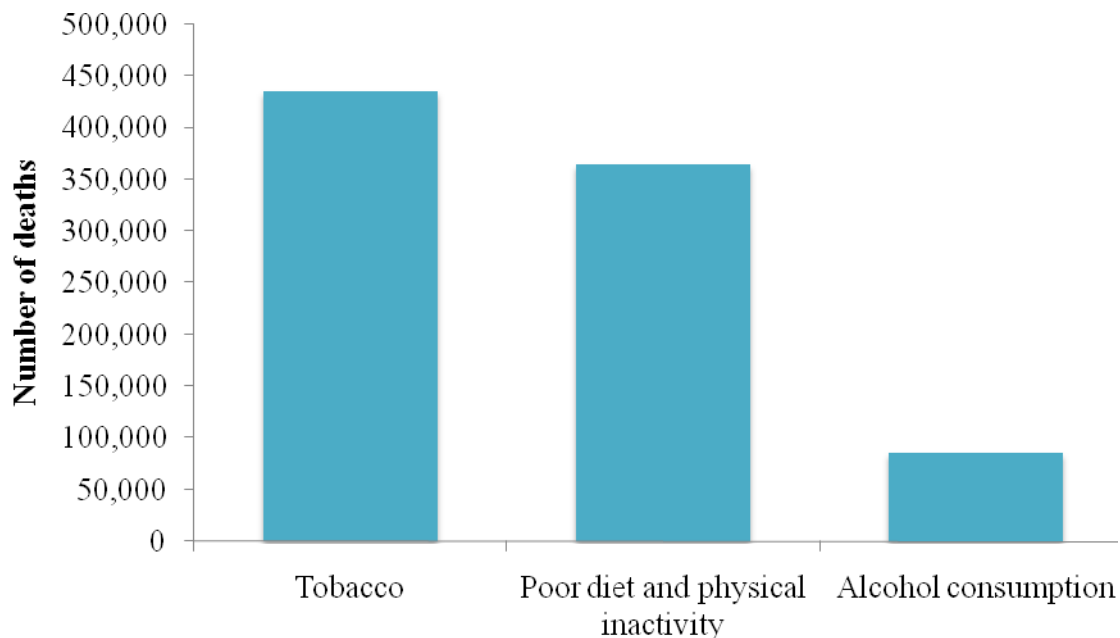
⁹¹ National Institute for Health and Clinical Excellence. "A Guide to NICE." April 2005. Online at: http://www.nice.org.uk/media/EE5/AF/A_Guide_to_NICE_April2005.pdf

⁹² "The Federal Joint Committee—About Us." G-BA, Department of Communication, 2007. Online at: http://www.g-ba.de/downloads/17-98-2507/2007-12-20-Flyer_GBA_engl.pdf

IV. Patient Behavior

Unhealthy lifestyles generate a major financial and health burden on the U.S. health care system. Nearly 50 percent of all deaths in the U.S. are attributable to modifiable behavioral risk factors—poor health behaviors that contribute to an unhealthy lifestyle.⁹³ Among the leading causes of preventable death are tobacco, poor diet and physical inactivity, alcohol consumption, illicit drug use, and accidents.^{94,95} The number of deaths attributable to the three leading risk factors—tobacco, poor diet and physical inactivity, and alcohol consumption—are shown in Figure 9. Collectively, they accounted for 37 percent of U.S. deaths in 2000.⁹⁶ While such behavioral risk factors are believed to be preventable causes of death, all are linked to the six leading causes of death in the U.S.—heart disease, cancer, stroke, respiratory diseases, accidents, and diabetes—which account for over 70 percent of the all deaths annually.⁹⁷

Figure 9. Number of Deaths Attributable to Leading Risk Factors in 2000



Source: Mokdad, A.H. et al. Actual Causes of Death in the United States, 2000. *JAMA*. 2004; 291: 1238-1245.

⁹³ Mokdad, A.H. et al. Actual Causes of Death in the United States, 2000. *JAMA*. 2004; 291: 1238-1245.

⁹⁴ Ibid.

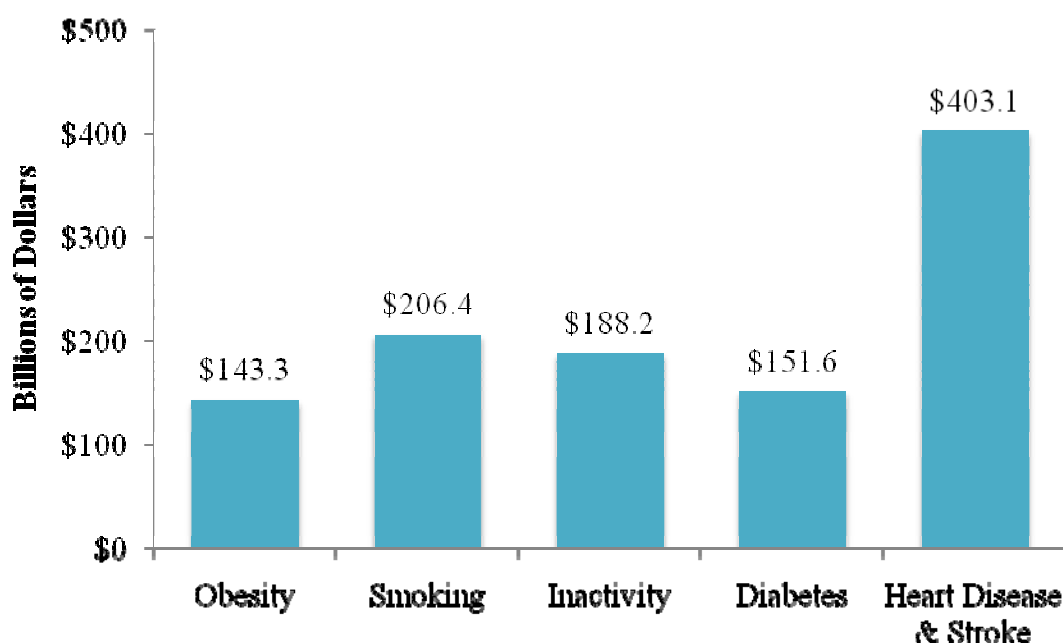
⁹⁵ McGinnis, J.M. The Case For More Active Policy Attention To Health Promotion. *Health Affairs*. 2000; 21:78-93.

⁹⁶ Mokdad, A.H. et al. Actual Causes of Death in the United States, 2000. *JAMA*. 2004; 291: 1238-1245.

⁹⁷ Ibid.

The influence of lifestyle on health translates into a large economic impact. A recent report quantified the costs of health care related to behaviors and found estimates of between \$303 and 493 billion per year.⁹⁸ This report characterized these behaviors and health problems as being amenable to changes in behavior and non-medical intervention. A recent estimate of the cost of lifestyle-related chronic disease is that it comprises nearly 70 percent of all health spending in the U.S.—over \$1.5 trillion.⁹⁹ Figure 10 provides cost estimates for the annual costs of a number of unhealthy lifestyles and related chronic diseases. Overlap in these estimates likely exists due to the well-established link between these behavioral risk factors and subsequent chronic diseases; however, these risk factors and diseases still represent hundreds of billions of dollars in annual spending.

Figure 10. Annual Costs of Unhealthy Lifestyles and Chronic Diseases, 2006 Estimates



Source: Health Promotion Advocates. "The Health and Economic Case for Health Promotion."

⁹⁸ "The Price of Excess: Identifying Waste in Healthcare Spending." PricewaterhouseCoopers, 2008.

⁹⁹ Fries, J.F. et al. "Beyond Health Promotion: Reducing Need and Demand For Medical Care." *Health Affairs*. 1998; 17: 70-84.

Tobacco

Tobacco use (primarily cigarette smoking) remains the single greatest cause of preventable death in the U.S. In Massachusetts, 16 percent of adults are smokers.¹⁰⁰ The health effects of cigarette smoking are numerous and include cardiovascular disease, cancer, respiratory disease, and birth defects.¹⁰¹ The cost impact of smoking is substantial, although estimates vary. PricewaterhouseCoopers' estimates the annual cost of treating smoking-related illnesses to be between \$567 million to \$191 billion, while the Centers for Disease Control and Prevention estimate the annual cost of cigarette smoking at \$167 billion—\$75 billion in direct medical expenses and \$92 billion in lost productivity.^{102,103} Public awareness campaigns, higher taxes and second-hand smoking legislation have all helped to reduce cigarette consumption by Americans by nearly one-third between 1990-2007, however, the economic and health impact of cigarette smoking remains high.¹⁰⁴

Poor diet and physical inactivity

The impact of poor diet and physical inactivity is reflected by the growing prevalence of overweight and obese Americans, which now total 67 percent of the adult population combined.¹⁰⁵ Figure 11 shows the prevalence of obesity in U.S. adults in 2007, with the majority of states at 25 percent or higher. In 2007, the prevalence of overweight individuals in Massachusetts was 37 percent and 22 percent were obese; thus, 59 percent of Massachusetts residents are either overweight or obese.¹⁰⁶ As overweight and obesity levels have increased, a body of research on the health effects of excess weight has amassed. Research has identified many deleterious effects of excess weight including hypertension, type 2 diabetes, coronary heart disease, stroke, cancer, and reduced lifespan.^{107,108}

¹⁰⁰ Behavioral Risk Factor Surveillance System, CDC. Massachusetts Prevalence Data, 2007.

¹⁰¹ "The health consequences of smoking: a report of the Surgeon General." Atlanta, GA: US Department of Health and Human Services, CDC; 2004.

¹⁰² "The Price of Excess: Identifying Waste in Healthcare Spending." PricewaterhouseCoopers, 2008.

¹⁰³ "Economic Facts about U.S. Tobacco Use and Tobacco Production." CDC.

¹⁰⁴ "Cigarette Production, Exports, and Domestic Consumption—United States, 1990–2007." CDC.

¹⁰⁵ Organization for Economic Cooperation and Development, 2008 data.

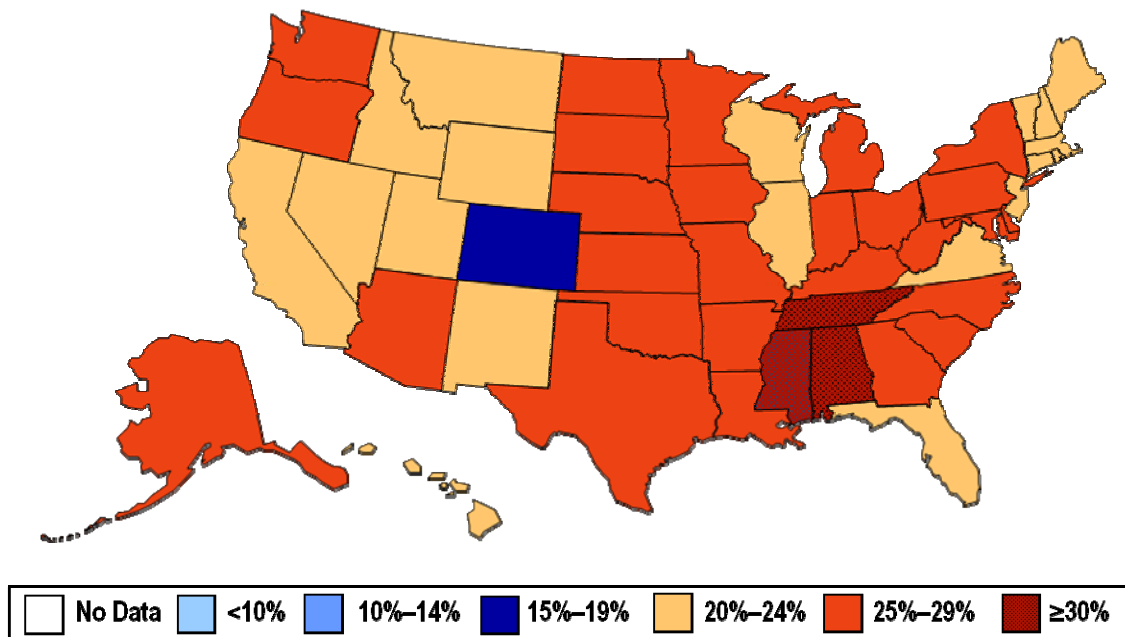
¹⁰⁶ Behavioral Risk Factor Surveillance System, CDC. Massachusetts Prevalence Data, 2007.

¹⁰⁷ American Obesity Association.

¹⁰⁸ "Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults." National Institutes of Health, September 1998.

Estimates of the annual economic impact of obesity and associated conditions range from \$75-200 billion.^{109,110} Thorpe et al. conducted a study examining the impact of obesity on medical spending and found that spending for obese individuals is 37 percent higher than normal weight individuals and accounted for \$301 of the \$1,100 rise in inflation-adjusted per capita health care spending between 1987 and 2001.¹¹¹ Moreover, per capita health care spending for obese individuals grew 63 percent during this time, while spending grew 37 percent for normal weight individuals. Thorpe et al. also showed that 22 percent of the increase in per capita health care spending between 1987 and 2001 that was attributable to obesity was related to three obesity-related diseases—heart disease, diabetes, and hyperlipidemia.

Figure 11. Obesity Trends Among U.S. Adults, 2007



Source: Behavioral Risk Factor Surveillance System, CDC.

Concern over obesity and its health effects is not new. For over a half a century, various governmental and organizational guidelines have been published in regard to obesity, diet and

¹⁰⁹ Finkelstein, E.A. et al. "State-level Estimates of Annual Medical Expenditures Attributable to Obesity." *Obesity Research*. 2004; 12:18-24.

¹¹⁰ "The Price of Excess: Identifying Waste in Healthcare Spending." PricewaterhouseCoopers, 2008.

¹¹¹ Thorpe, K.E. et al. "The Impact of Obesity on Rising Medical Spending." *Health Affairs*. 2004; 23: 480-486.

exercise.¹¹² While the long-standing focus has been on changing behavior to curb rising overweight and obesity trends, Nestle and Jacobson point out that the “unintended consequences of our post-industrial society are deeply rooted [in] cultural, social, and economic factors that actively encourage overeating and sedentary behavior and discourage alterations in these patterns.”¹¹³ While the constraints around ameliorating the problems of fighting overweight and obesity in America are beyond the scope of this report, the importance of understanding their increasing burden on health care spending is critical.

Alcohol consumption

The health risks associated with alcohol range from short-term risks such as impaired judgment and alcohol poisoning to longer-term effects like liver cirrhosis and neurological problems.¹¹⁴ There are also a number of public health risks associated with alcohol abuse including motor vehicle crashes, domestic violence, fire destruction, and crime, all of which contribute to the economic impact of alcohol. Cook and Moore note that “the deleterious effects of alcohol consumption on health and safety constitute a substantial economic burden, reducing our overall standard of living.”¹¹⁵ The many external costs of alcohol abuse make the determination of the overall health and economic costs of alcohol abuse difficult. However, the most recent analysis estimated the economic costs of alcohol abuse in 1998 at \$184.6 billion, with \$26.3 billion in direct health care expenditures.¹¹⁶

In 2004, over 19,000 people received treatment for alcohol abuse alone or in combination with other drugs in Massachusetts.¹¹⁷ Treatment for alcoholism in Massachusetts is covered under a mandate for treatment of biologically-based mental health conditions. While determination of specific alcohol-related treatment costs in Massachusetts is not possible, the

¹¹² Nestle, M. & Jacobson, M.F. “Halting the Obesity Epidemic: A Public Health Policy Approach.” *Obesity*. 2000; 115: 12-24.

¹¹³ Ibid.

¹¹⁴ “General Information on Alcohol Use and Health.” CDC.

¹¹⁵ Cook, P.J. & Moore, M.J. “The Economics of Alcohol Abuse and Alcohol-Control Policies.” *Health Affairs*. 2002; 21:120-133.

¹¹⁶ Harwood, H. *Updating Estimates of the Economic Costs of Alcohol Abuse in the United States: Estimates, Update Methods, and Data*. Report prepared by The Lewin Group for the National Institute on Alcohol Abuse and Alcoholism, 2000.

¹¹⁷ “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

cost of mental health services accounted for over \$238 million in spending in Massachusetts for 2004-2005.¹¹⁸

Health disparities and barriers to care

A growing body of research points to health disparities as a major contributor to negatively associated lifestyle risks. *Healthy People 2010*, a Department of Health and Human Services health promotion and disease prevention report released in 2000, defines health disparities as “differences that occur by gender, race or ethnicity, education or income, disability, geographic location, or sexual orientation.”¹¹⁹ While some biological differences may exist between racial/ethnic groups, “the contribution of unavoidable biological differences to overall disparities by race/ethnicity is relatively small.”¹²⁰ The impact of social disparities is far greater and such disparities are also amenable to change; hence, a majority of the research in this area has examined the impact of socioeconomic status and/or race/ethnicity on health outcomes.

Socioeconomic status—encompassing income, education and occupation—plays a major role in determining health outcomes and is “linked to a wide range of health problems, including low birth weight, cardiovascular disease, hypertension, arthritis, diabetes, and cancer.”¹²¹

Inequalities in the delivery of health care services due to race and ethnicity also result in health disparities.^{122,123} *Health, United States, 2007*, a National Center for Health Statistics report, notes that “in 2004, age-adjusted death rates for the black population exceeded those for the white population by 46% for stroke (cerebrovascular disease), 32% for heart disease, 23% for cancer (malignant neoplasms), and 787% for HIV disease.”¹²⁴ The percentage of whites, African Americans and Mexican Americans with diabetes differs markedly as well (Figure 12).

¹¹⁸ “Comprehensive Review of Mandated Benefits in Massachusetts.” Massachusetts Division of Health Care Finance and Policy, July 2008.

¹¹⁹ U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

¹²⁰ Adler, N.E. & Rehkopf, D.H. “U.S. Disparities in Health: Descriptions, Causes, and Mechanisms.” *Annu. Rev. Public Health*. 2008; 29:235–252.

¹²¹ Adler, N.E. & Newman, K. “Socioeconomic Disparities in Health: Pathways and Policies.” *Health Affairs*. 2002; 21:60-76.

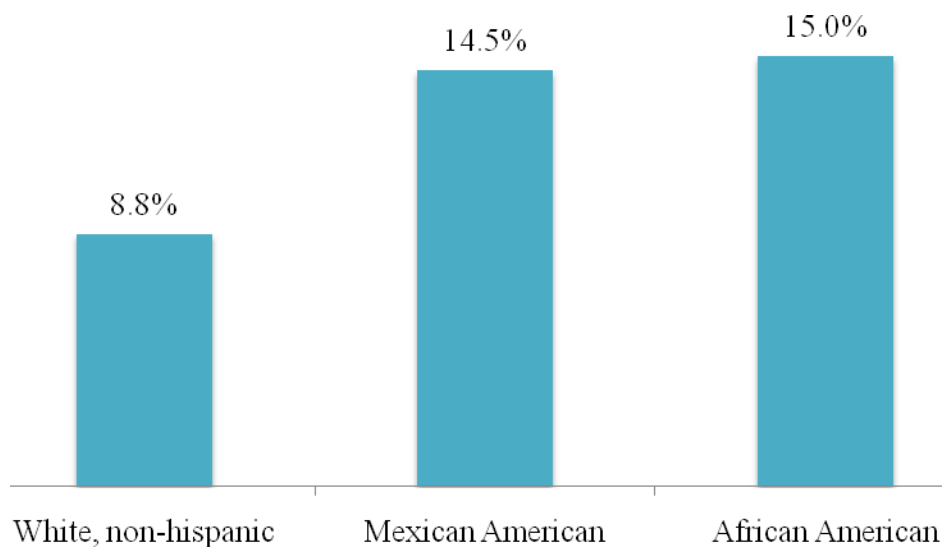
¹²² National Center for Health Statistics. *Health, United States, 2007 With Chartbook on Trends in the Health of Americans*. Hyattsville, MD: 2007.

¹²³ Adler, N.E. & Rehkopf, D.H. “U.S. Disparities in Health: Descriptions, Causes, and Mechanisms.” *Annu. Rev. Public Health*. 2008; 29:235–252.

¹²⁴ National Center for Health Statistics. *Health, United States, 2007 With Chartbook on Trends in the Health of Americans*. Hyattsville, MD: 2007.

Patient behavior has a strong effect on health outcomes and medical expenditures. In 2000, *Healthy People 2010* set two primary goals for overall health improvement in the U.S.—(1) increase quality and years of healthy life, and (2) eliminate health disparities.¹²⁵ Now approaching 2010, the U.S. appears to still be struggling on these fronts. As the U.S. continues to spend more and more of its dollars on health care services, serious consideration of disease prevention and overall health promotion is needed. While high-quality treatment of disease is imperative, targeting preventable disease in the U.S. remains an under-valued proposition.

Figure 12. Diabetes Among Adults 20 Years and Older By Race, 2001-2004



Source: *Health, United States, 2007*, Table 55.

Note: Data include both physician-diagnosed (self-reported) and undiagnosed diabetes (fasting blood glucose of at least 126 mg/dL).

¹²⁵ U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

Conclusion

This report examined the cost impact of four specific cost drivers—mandated benefits, provider consolidation, medical technology, and patient behavior—on health care. Each of these cost drivers contributes to the cost of health care in the U.S., however the relative contribution of each differs significantly. Based upon analysis in this report, the relative contribution of each cost driver to health care costs, from most to least, is: 1) medical technology, 2) patient behavior, 3) mandated benefits, and 4) provider consolidation.

Medical technology has had a clear-cut impact on health care cost growth over the years. While advances in medicine are attributable to increased lifespan and quality of life, careful assessment of technology utilization is needed in order to curb the high cost growth associated with increased use of medical technology. Patient behavior has also contributed significantly to the rise in health care costs via associated disease processes and increased utilization of services. With the sizeable contribution of patient behavior and lifestyle to health care costs, health promotion and disease prevention are deserved of more attention.

It is difficult to parse apart the cost impact of medical technology and patient behavior independent of one another since the two are heavily interrelated. Many of the medical technologies developed over the years have been aimed at treating chronic diseases attributable to unhealthy lifestyles. Thus, the root cause of rising health care costs may well be patient behavior.

The cost impact of mandated benefits is much less substantial than medical technology or patient behavior. Yet, mandated benefits do contribute to rising costs and so the cost-benefit analyses currently conducted in Massachusetts should be continued in order to help guide policy and implementation. It is also important to consider the potential coverage inequities that exist in regard to mandated benefits considering their limited reach to the small group and individual markets.

Of the cost drivers examined in this report, the impact of provider consolidation on the cost of health care is the least understood. The impact of provider consolidation on price and cost has been poorly studied and remains undetermined. Empirical study of the cost impact of provider consolidation is needed in order to understand the capacity of provider consolidation to drive the cost of health care.

This report examined only four specific cost drivers behind the rising cost of health care. In reality, there are many cost drivers associated with rising health care costs. Many of these cost drivers are complexly intertwined. However, attempts to isolate the contributions of individual cost drivers allow for the development of more strategic efforts to rein in rising costs.