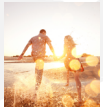


2014

COST TRENDS REPORT

HEALTH POLICY COMMISSION

2014 COST TRENDS REPORT

Pursuant to M.G.L. c. 6D, § 8(g)

ANNUAL REPORT

Table of Contents

Index of Figures and Tables ii
Index of Acronyms iv
Executive Summary 6
Introduction 10
Trends in Spending and Care Delivery 12
Opportunities to Increase Quality and Efficiency
- Hospital-Level Variation in Spending Per Episode of Care 22
- Maximizing Value in Post-Acute Care 27
- Wasteful Spending: Readmissions and Emergency Department Use 34
- High-Cost Patients 42
- Behavioral Health 48

Progress in Aligning Incentives
- Alternative Payment Methods 54
- Demand-Side Incentives 62

Recommendations 70
Appendix A: Acute Hospitals in MA, by Type of Hospital, FY 2014 76
List of Technical Appendices 77
Acknowledgments 78

Index of Figures and Tables

Table 1.1: Real growth rate in state budgets for health care coverage and other priorities, FY2004-FY2014, FY2014-FY2015 10
Figure 1.1: State budgets for health care coverage and other priorities, FY2004- FY2014 11
Figure 2.1: Annual per-capita spending growth, 2012-2013, by payer type 13
Figure 2.2: Role of price and utilization in per-capita spending growth, major commercial payers 13
Figure 2.3: Annual growth in per-capita healthcare spending: Massachusetts versus the U.S. 14
Figure 2.4: Per-capita spending growth in MA and the U.S., commercial payers 14
Figure 2.5: Per-capita spending growth in MA and the U.S., Medicare FFS 14
Figure 2.6: Per-capita spending growth in MA and the U.S., MassHealth PCC and MCOs combined 14
Figure 2.7: Out-of-pocket spending as a percentage of total commercial spending, by type of condition 16
Figure 2.8: Out-of-pocket spending per member by number of chronic conditions† 16
Figure 2.9: Frequency of provider alignment types for which the HPC received Material Change Notices 17
Figure 2.10: Concentration of commercial inpatient care in Massachusetts 17
Table 2.1: Condition and procedure quality measures, MA and U.S. 18
Figure 3.1: Average spending for hip replacement episodes by hospital type and by hospital 23
Figure 3.2: Average spending for knee replacement episodes by hospital type and by hospital 23
Figure 3.3: Average spending for PCI episodes by hospital type and by hospital 23
Figure 3.4: Readmission rate for total joint replacement and episode cost, hip replacement 25
Figure 3.5: Readmission rate for total joint replacement and episode cost, knee replacement 25
Figure 3.6: Mortality rate and episode cost, low-severity PCI episodes 25
Figure 4.1: Medicare spending on post-acute care, U.S., 2001-2012 27
Table 4.1: Comparison of post-acute care settings 28
Table 4.2: Massachusetts and U.S. discharge destination by payer 29
Figure 4.2: Probability of discharge to any PAC, by hospital, all DRGs 30
Table 4.3: Medicare spending in Massachusetts by post-acute care facility type 30
Figure 4.3: Probability of discharge to institutional PAC, by hospital, all DRGs 30
Figure 4.4: Probability of discharge to institutional PAC, by hospital, after joint replacement surgery 30
Table 4.4: Distribution of discharge destination following joint replacement by hospital type 31
Table 4.5: Distribution of discharge destination following coronary bypass by hospital type 31
Table 5.1: Selected examples of wasteful spending in Massachusetts 34
Figure 5.1: Medicare condition-specific readmission rates, MA and U.S. 35
Figure 5.2: ED visits by type 36
Figure 5.3: Outpatient ED visits per capita, by region 37
Figure 5.4: ED visits by payer 38

Figure 6.1: Key clinical conditions, commercial patients with persistently high total costs 43
Figure 6.2: Key clinical conditions, Medicare patients with persistently high total costs 43
Figure 6.3: Key clinical conditions, commercial patients with persistently high ED costs 44
Figure 6.4: Key clinical conditions, Medicare patients with persistently high ED costs 44
Figure 7.1: Medical conditions with large spending difference between patients with and without BH conditions 49
Figure 7.2: Selected activities related to behavioral health by Massachusetts state government agency 50
Figure 7.3: Percentage of members covered by managed behavioral health organizations (MBHOs), by payer 51
Figure 8.1: Alternative payment method (APM) coverage, by payer type 55
Figure 8.2: Alternative payment method (APM) coverage, by major commercial payer 55
Table 8.1: Health Maintenance Organization (HMO) members covered by Alternative Payment Methods (APMs) 55
Figure 8.3: Statewide use of APMs and projected growth under four scenarios 57
Figure 8.4: Plans to extend APMs, by payer 58
Figure 8.5: Number of quality measures used for payment and public reporting in Massachusetts 59
Figure 9.1: Enrollment in tiered and limited network and high deductible plans 64
Figure 9.2: Distribution of networks by breadth for plans available 65
Figure 9.3: Premium differences between broad and narrow network products 66

Index of Acronyms

Acronym	Full Name
ACA	Affordable Care Act
ACO	Accountable Care Organization
ADT	Admissions, Discharge, Transfer
AGO	Office of the Attorney General
AMC	Academic Medical Center
APCD	All-Payer Claims Database
APM	Alternative Payment Method
AQC	Alternative Quality Contract
BCBS	Blue Cross Blue Shield of Massachusetts
BH	Behavioral Health
BPCI	Bundled Payments for Care Improvement
BSAS	Bureau of Substance Abuse Services
CABG	Coronary Artery Bypass Graft Surgery
CCO	Coordinated Care Organization
CHART	Community Hospital Acceleration, Revitalization, and Transformation
CHIA	Center for Health Information and Analysis
CMS	Centers for Medicare & Medicaid Services
DMH	Department of Mental Health
DOI	Division of Insurance
DPH	Massachusetts Department of Public Health
DRG	Diagnosis-Related Group
DSI	Demand-Side Incentives
DSTI	Delivery Systems Transformation Initiatives
ED	Emergency Department
EHR	Electronic Health Record
EOHHS	Executive Office of Health and Human Services
FFS	Fee-For-Service
FQHC	Federally Qualified Health Center
GDP	Gross Domestic Product
GIC	Group Insurance Commission
GLFHC	Greater Lawrence Family Health Center
HCCI	Health Care Cost Institute
HCP	High-Cost Patient
HDHP	High Deductible Health Plan
HHA	Home Health Agency
HIT	Health Information Technology
HMO	Health Maintenance Organization
HPC	Health Policy Commission
HPHC	Harvard Pilgrim Health Care
HRRP	Medicare Hospital Readmissions Reduction Program
ICB	Infrastructure and Capacity Building
IMPACT	Improving Massachusetts Post-Acute Care Transfers
INTERACT	Interventions to Reduce Acute Care Transfers
IRBO	Integrated Risk-Bearing Organizations
IRF	Inpatient Rehabilitation Facility
LTCH	Long-Term Care Hospital
MassDAC	Massachusetts Data Analysis Center
Mass HIway	Massachusetts Health Information Highway
MBHO	Managed Behavioral Health Organization
MBHP	Massachusetts Behavioral Health Partnership
MCO	Managed Care Organization
MedPAC	Medicare Payment Advisory Commission
MeHI	Massachusetts eHealth Institute
MHA	Massachusetts Hospital Association
MSSP	Medicare Shared Savings Program
MTH	Major Teaching Hospital
NHE	National Health Expenditure
OPP	Office of Patient Protection
PAC	Post-Acute Care
PCC	Primary Care Clinician
PCI	Percutaneous Coronary Intervention
PCMH	Patient Centered Medical Home
PCMHi	Patient-Centered Medical Home Initiative
PCP	Primary Care Provider or Primary Care Physician
PCPRI	Primary Care Payment Reform Initiative
PGSP	Potential Gross State Product
PMP	Prescription Monitoring Program
PPO	Preferred Provider Organization
PRC	Patients Requiring Coordination
RED	Re-Engineered Discharge
RPO	Registration of Provider Organizations
SAMHSA	Substance Abuse and Mental Health Services Administration
SHEA	State Health Expenditure Accounts
SIM	State Innovation Model
SNF	Skilled Nursing Facility
SPMI	Serious and Persistent Mental Illness
STAAR	State Action on Avoidable Rehospitalizations
TCOC	Total Cost of Care
THCE	Total Health Care Expenditures
THP	Tufts Health Plan
TJR	Total Joint Replacement
VBID	Value-Based Insurance Design
VBPD	Value-Based Purchasing Design

Executive Summary

Consistent with the statutory mandate of the Health Policy Commission (HPC), this 2014 Cost Trends Report presents an overview of healthcare spending and delivery in Massachusetts, opportunities to improve quality and efficiency, and progress in key areas and contains recommendations for strategies to increase quality and efficiency in the Commonwealth.

Past HPC reports have identified four areas of opportunity: fostering a value-based market; promoting an efficient, high-quality healthcare delivery system; advancing alternative payment methods (APMs); and advancing transparency and data availability. The HPC continues to emphasize these four areas in its analysis and recommendations.

This Executive Summary presents a concise overview of our findings and recommendations, which are described more fully in the chapters of the report.

Trends in spending and care delivery

- In September 2014 the Center for Health Information and Analysis (CHIA) formally measured for the first time the growth of total healthcare expenditures in Massachusetts relative to the state's cost containment benchmark. Between 2012 and 2013, total healthcare expenditures grew at a rate of 2.3 percent per capita, a rate that is lower than the statutory benchmark of 3.6 percent, a significant development. Growth was below the benchmark in all sectors (commercial, Medicare, MassHealth); among commercial payers, growth was driven more by prices than utilization.
- 2013 does not appear to be an aberration. Spending growth for Medicare and Medicaid in Massachusetts over the last few years is comparable to or lower than the rest of the U.S., while growth in the commercial sector has been slower since 2011, particularly for hospital spending.
- The amount and percentage of out-of-pocket spending by commercially-insured individuals was stable from 2012 to 2013, after growing steadily in 2010 and 2011. At the same time, based on 2013 survey data, the percentage of adults paying off medical bills over time or with trouble paying medical bills was at its highest level since 2006. As a percentage of total spending, out-of-pocket spending was relatively high for behavioral health conditions and total out-of-pocket spending may reach high levels for patients with chronic conditions.
- The Massachusetts market is characterized by a high share of discharges from academic medical centers (AMCs) and a growing concentration of inpatient care. Five hospital systems accounted for 51 percent of commercial discharges in 2012 but 56 percent in 2014. That figure could rise to 61 percent if the Partners/South Shore/Hallmark merger was completed. The share of discharges from community hospitals without AMC affiliations dropped between 2009 and 2012.
- Massachusetts performs well relative to the rest of the U.S. on most measures of quality and access to care and had the highest rate in the nation of insurance coverage in 2013. However, rates of ambulatory-care-sensitive hospital admissions are higher than average, and considerable opportunities remain to further improve quality and access as well as population health.
- The Center for Medicare and Medicaid Services (CMS) projects higher growth rates in healthcare spending (>5%) in 2014 and beyond, based on population aging, economic recovery, and additional utilization among the newly covered under the Affordable Care Act (ACA). Massachusetts may be on a lower spending growth trajectory than the nation,

however, and will not face increased spending from the ACA coverage expansion.

- Future spending trends in Massachusetts will be affected by a number of factors. Some factors, such as demographic trends, cannot be controlled. However, policy and action can have a significant impact on other important drivers of healthcare spending, including market consolidation, the dissemination of alternative payment methods (APMs), and consumer incentives to make efficient care choices.

Opportunities to improve quality and efficiency

- Hospitals vary widely in prices charged for an episode of care with similar quality outcomes. For hip and knee replacements, AMCs are 23 and 15 percent more expensive than New England Baptist, respectively, without substantial differences in quality outcomes measured. For percutaneous coronary intervention (PCI), AMCs are 11 percent more expensive than teaching hospitals, without differences in quality outcomes measured.
- In Massachusetts, 39 percent of patients receive post-acute care following a hospital discharge, compared to 27 percent nationwide, and there is wide variation in discharge practice patterns among Massachusetts hospitals. For hip and knee replacements, most hospitals discharge patients to institutional care more frequently than New England Baptist, a recognized orthopedic specialty hospital. Use of standardized discharge planning tools, sharing of best practices, and development and use of better data among hospitals and PAC providers, as well as aligned financial incentives, could help hospitals optimize care for patients following discharge.
- Rates of hospital readmissions and visits to emergency departments (EDs) highlight areas for improvement in care delivery throughout the system. The state's readmission rates are higher than the national average, and CMS will penalize approximately 80 percent of all hospitals in Massachusetts for higher-than-expected Medicare readmission rates in fiscal year 2015. Almost half of ED visits were avoidable in 2012, and rates of overall ED use varied by a factor of two across regions of the state. Collaborations between providers, community-based services and other local partners represent a particularly important strategy for reducing avoidable ED use.
- The HPC's new work highlights key conditions that characterize patients with persistently high costs within the commercial and Medicare population and reinforces the need for continued focus on behavioral health and managing chronic conditions, as well as efficient care, prevention, and innovation, including for catastrophic conditions.
- Effective treatment for behavioral health is a critical factor in the Commonwealth's strategy to promote population health and contain costs. Our work indicates that the spending differential between patients with and without behavioral health conditions is pronounced for many medical conditions. State agencies should develop a coordinated behavioral health strategy, and improving behavioral health data will be critical to support this strategy.

Progress in aligning incentives

- While fee-for-service (FFS) payment creates perverse financial incentives that reinforce health system tendencies towards waste and fragmentation, well-designed APMs offer incentives that support value and patient-centered care.
- Between 2012 and 2013, APM coverage in Massachusetts did not increase substantially in the commercial sector, but did grow substantially in Medicare due to participation in the Medicare Shared Savings Program (MSSP). APM coverage also increased in the commercial managed care organizations (MCOs) that serve MassHealth members.
- In order to expand APMs in the commercial sector, a coalition of payers and providers has agreed on a set of shared principles for attributing preferred provider organization (PPO) enrollees to physicians, a necessary condition for assigning accountability and global budgets.
- MassHealth has been engaged in an intensive stakeholder input process to design a proposed Accountable Care Organization (ACO) model in early 2015 and aims to launch in early 2016.
- Bundled payments for discrete episodes or procedures offer the potential to further extend the incentives of APMs to hospitals and specialists, whether or not a patient is covered by an APM for care they receive from their primary care provider (PCP).
- Coverage by comprehensive APMs (defined as APMs designed to affect the full spectrum of a pa-

tient's care) could grow by 7 percentage points if all commercial payers increased APM coverage in their health maintenance organization (HMO) population to close two-thirds of the gap between their 2013 coverage rate and 90 percent; by 11 percentage points if all commercial payers achieved half the APM coverage rate in their PPO population that is projected in their HMO population; and by 2 percentage points if MassHealth closed one-third of the gap between their 2014 coverage rate and 100 percent. Taken together, progress in these three areas could increase the statewide coverage rate from 35 percent in 2013 to 55 percent in 2016.

- Well-designed insurance products offer incentives to employers and consumers to support value and patient-centered care. For demand-side incentives to be successful, consumers must receive adequate information on their network limits and cost-sharing requirements ahead of time. If used to support other efforts toward efficiency such as increasing APMs, the impact of demand-side incentives could be felt throughout the delivery system.
- In the individual insurance market, consumers are able to reduce premiums substantially— about 20 percent— by selecting a limited network plan.
- Take-up of high-deductible health plans and tiered and limited network plans has remained relatively low, but the enrollment patterns in some markets (Group Insurance Commission, the Connector) suggest that consumers do choose low-cost plans when presented with choice, incentives, and comparative information. The greatest near-term opportunity for demand-driven cost containment may reside in enhancing the availability and take-up of value-oriented products in the employer market.

Transparency and data availability

- The importance of transparency and data availability surface throughout the discussions of spending trends, care delivery, APMs, and demand-side incentives.
- Improved data is especially important for behavioral health, given the diversity of providers and services involved across the care continuum. Better behavioral health data capabilities will be necessary for any state strategy to successfully improve care.
- APMs are most effective when providers have the data needed to manage care, including real-time data for care coordination and regular reports on spending and utilization, and when the methods used in reporting and payment are transparent.
- Chapter 224 requires payers to make available consumer-oriented, web-based pricing tools that display out-of-pocket costs for particular services from specific providers or pre-set treatment pathways. These tools are in their early stages and, together with the mandate that providers make their prices transparent, have the potential to encourage consumers to make value-based choices.

Recommendations

In light of these findings, as well as our other analytic and policy work throughout the year, the HPC makes the following recommendations and commitments to promote the goals of Chapter 224:

Recommendations to foster a value-based market

1. Massachusetts should lead the nation in direct-to-consumer transparency, enabling access to detailed information on the prospective cost and quality of services.
2. Payers should continue to develop and promote value-oriented products and enhance information provided to employers.
3. Employers, including the state, should offer their employees plan choices that include value-oriented products, or embed value-based concepts into their chosen plan offering.
4. Providers should present measurable indicators of how proposed material changes, such as mergers, acquisitions, or other contracting or clinical alignments, are likely to result in improved performance and demonstrate that benefits outweigh potential detriments to the Commonwealth.
5. The HPC will examine past transactions to assess their impacts.

Recommendations to promote an efficient, high-quality care delivery system

1. Providers should adopt appropriate tools and share best practices to improve quality and efficiency in specific priority areas, namely:
   - addressing variation among providers in spend-

ing per episode and use of post-acute care
  - reducing readmission rates and ED utilization
  - coordinating care and advancing clinical integration across settings
  - identifying and managing high-cost patients
  - caring for patients in community settings
  - treating behavioral health conditions, especially via integrated models.

  In particular, hospitals and PAC providers should improve discharge planning and the collection and use of assessment data.
2. To support providers and complement efforts elsewhere in the market, the HPC will convene providers and offer technical assistance in these priority areas and will emphasize these areas in our investment programs and model payment approaches.
3. The Commonwealth should develop a coordinated behavioral health strategy that is aligned across agencies. The Center for Health Information and Analysis (CHIA) should begin collecting data in priority areas.

Recommendations to advance alternative payment methods

1. Payers and providers should continue to focus on increasing adoption of APMs and on increasing the effectiveness of APMs in promoting high quality, efficient care. In 2016, all payers should use APMs for 60 percent of HMO lives and 33 percent of PPO lives.
2. The state should prioritize efforts to define a standard set of provider quality measures to be used for purposes of public and private payer contracts, provider tiering, and establishing goals for statewide improvement.
3. The HPC will convene stakeholders to explore episode-based payment models.
4. MassHealth should continue progress towards developing and launching an ACO.

Recommendations to enhance transparency and data availability

1. The HPC will develop a set of measures to track health system performance.
2. CHIA should improve All-Payer Claims Database (APCD) capabilities and transparency and develop key spending measures.
3. Government agencies should coordinate on APM data collection and continue health resource planning.

In the coming year, the HPC will pursue the activities noted above and work collaboratively with the Baker/Polito Administration, the Massachusetts health care industry, employers, consumers, and other stakeholders on advancing the goals of a more affordable, effective, accountable, and transparent healthcare system in Massachusetts.

1. Introduction

The Health Policy Commission (HPC), created in 2012, is charged with monitoring healthcare spending growth in Massachusetts and providing data-driven policy recommendations to contain it (see **Sidebar: "What is the role of the Health Policy Commission?"**) In this year's Report, the HPC is able for the first time to compare healthcare cost growth to the healthcare cost-containment benchmark set by Chapter 224.

The HPC's work is driven by the following principles:

1. **Fostering a value-based market** in which payers and providers openly compete to provide services and in which consumers and employers have the appropriate information and incentives to make high-value choices for their care and coverage options
2. **Promoting an efficient, high quality, healthcare delivery system** in which providers efficiently deliver coordinated, patient-centered, high quality health care that integrates behavioral and physical health and produces better outcomes and improved health status
3. **Advancing alternative payment methods** (APMs) that support and equitably reward providers for delivering high quality care while holding them accountable for slowing increases in future healthcare spending
4. **Enhancing transparency and data availability** necessary for providers, payers, purchasers and policymakers to successfully implement reforms and evaluate performance over time

The rising cost of health care has resulted in increasing government dollars going to health care and away from other priorities. This phenomenon does not solely apply to government; businesses and consumers have to squeeze their budgets to pay for health care. From Fiscal Year 2004 to Fiscal Year 2014, government spending on health care has crowded out other government priorities, a trend that continued into FY 2015 (see **Figure 1.1 and Table 1.1**). With the exception of direct spending on health services for individuals, every other area of government spending was cut or grew more slowly than Gross Domestic Product (GDP).

Table 1.1: Real growth rate in state budgets for health care coverage and other priorities, FY2004-FY2014, FY2014-FY2015

Percentage growth (annualized and year over year), fiscal year 2004 to fiscal year 2015

	FY04 - FY14 Compound Annual Growth Rate (%)	FY14 - FY15 Growth Rate (%)
GIC, MassHealth, & Other Coverage	1.9%	0.9%
Other Priorities	-0.7%	-2.7%
Mental Health	-1.9%	-1.8%
Public Health	0.5%	-10.0%
Education	-0.4%	-2.2%
Human Services	-1.2%	-0.3%
Infrastructure, Housing & Economic Development	2.4%	-6.0%
Law & Public Safety	-1.0%	-2.4%
Local Aid	-4.7%	-5.7%

Notes: Figures adjusted for Gross Domestic Product (GDP) growth
Source: Massachusetts Budget and Policy Center

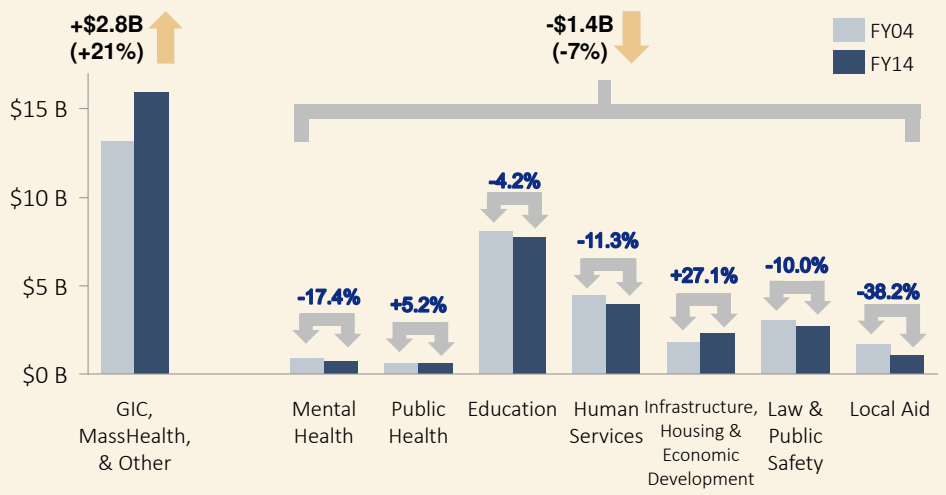
How this Report is organized

The HPC's second annual report is informed by annual reports of the Attorney General's Office (AGO) and the Center for Health Information and Analysis (CHIA), as well as by testimony submitted during the HPC's 2014 Annual Cost Trends Hearing.

In this Report, Section 1 (**Chapter 2)** compares healthcare cost growth against the Chapter 224 benchmark, examines spending levels and trends, examines out-of-pocket spending areas, reviews delivery system trends and discusses the future outlook.

Section 2 (**Chapters 3 through 7**) looks at opportunities to improve quality and efficiency—including variation in hospital-level spending per episode of care, variation in provider use of post-acute care (PAC); systemic waste and

Figure 1.1: State budgets for health care coverage and other priorities, FY2004- FY2014
Total budget (dollars in billions) and total real growth percentage, FY2004 – FY2014



NOTE: Figures all adjusted for Gross Domestic Product (GDP) growth; GIC = Group Insurance Commission
SOURCE: Massachusetts Budget and Policy Center

inefficiency; spending on high-cost patients (HCPs); and spending, care and data for patients with behavioral health conditions.

Section 3 (**Chapters 8 and 9**) illustrates the progress made in two key areas, APMs and demand-side incentives, defined as opportunities for consumers and employers to share in the savings when they make less costly choices for health care and health coverage.

This report builds on the HPC's previous work to promote public policies that work toward efficient patient-centered care, and strengthen and accelerate ongoing reform efforts.

What Is the Role of the Health Policy Commission?

The HPC, established by Chapter 224 of the Acts of 2012, is an independent state agency governed by an 11-member board with diverse experience in health care. The HPC is leading efforts to advance Chapter 224's ambitious goal of healthcare cost containment. The agency works to promote informed dialogue, evidence-based policy, and innovative delivery and payment models that will accelerate transformation of the Massachusetts healthcare system.

The HPC's staff and various policy committees engage in healthcare market research through publication of annual reports on cost trends; market monitoring through Notices of Material Change and Cost and Market Impact Reviews; market regulation through the creation of criteria for Accountable Care Organizations (ACOs) and the Registration of Provider Organizations (RPO) Program; and market investment through the $120 million Community Hospital Acceleration, Revitalization, and Transformation Investment Program (CHART). As part of Chapter 224, the HPC operates the Office of Patient Protection, which administers healthcare consumer protections and monitors access to care. Through these and other activities, the HPC strives to monitor and support progress towards meeting the healthcare cost growth benchmark, while improving quality and access in patient care.

2. Trends in Spending and Care Delivery

A key element of the 2012 Massachusetts healthcare cost containment law, Chapter 224 of the Acts of 2012, was to establish a benchmark against which annual growth in healthcare spending can be evaluated (see **Sidebar: "What is the cost growth benchmark and what costs are included?"**). As Massachu setts has among the highest per-capita healthcare costs in the nation, Chapter 224 recognized that keeping future spending growth under control was key to easing this burden on households, businesses and the state economy.[1,2] In keeping with that mandate, Chapter 224 directs the Health Policy Commission (HPC) and the Center for Health Information and Analysis (CHIA) to annually monitor healthcare spending growth relative to economic growth.

Spending growth relative to the 2013 benchmark

In September 2014, CHIA reported that the state's per-capita healthcare expenditures in 2013 grew by 2.3 percent, from $7,378 to $7,550 (in total, from $49.0 billion to $50.5 billion). That rate of growth was 1.3 percentage points below the 3.6 percent benchmark, and slightly below Massachusetts' actual per-capita economic growth of 2.6 percent in 2013. Thus, the share of the state economy devoted to healthcare spending dropped slightly.[3]

Components of 2012-2013 spending growth

The groups that comprise a higher share of spending in Massachusetts have a larger impact on the benchmark (see **Figure 2.1**). For example, growth rates for Medicare beneficiaries (who comprise 40 percent of spending)[i] have a larger impact on total healthcare spending than growth rates for enrollees of the MassHealth Managed Care Organization (MCO) and Primary Care Clinician (PCC) programs.[ii]

[i] Not all spending included in THCE is accounted for in Figure 2.1.

[ii] The MCO and PCC programs are MassHealth's managed care health insurance programs for most non-elderly enrollees. MCOs are private-sector organizations and the PCC program is Masshealth's state-run managed care program.

What is the cost growth benchmark and what costs are included?

The cost growth benchmark is a target, or upper limit, for the growth of per-capita healthcare spending growth based on per-capita economic growth. Chapter 224 tied the Cost Growth Benchmark to potential gross state product (PGSP), a projection of the long-term average growth rate of the Commonwealth's economy, adjusted to exclude impacts of business cycle fluctuations. This measure reflects the underlying health of the state economy, while offering predictability and stability from year to year.

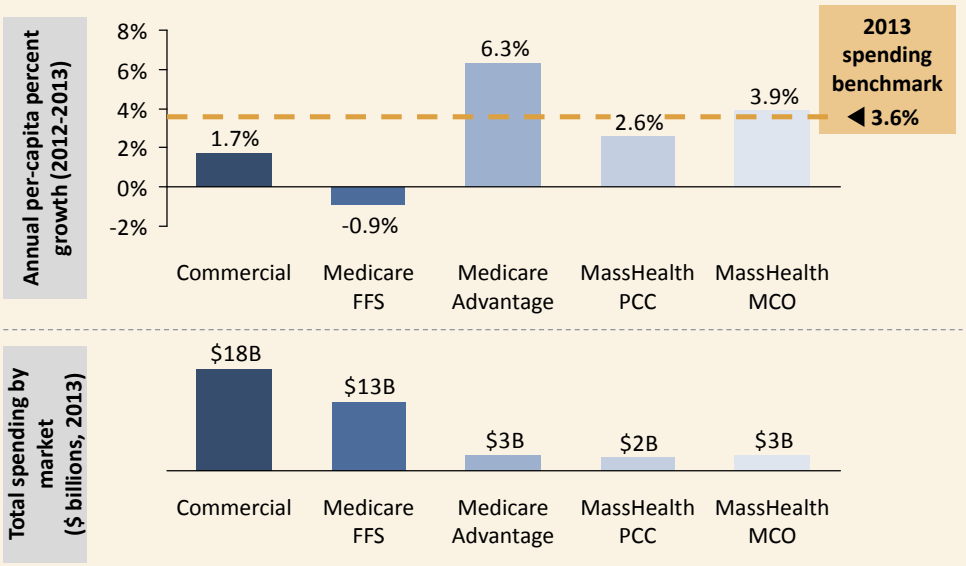
Each January the HPC establishes the benchmark based on annual PGSP projections set by the Secretary of Administration of Finance in consultation with the Legislature. For calendar years 2013 to 2017, the HPC must set the benchmark to be equal to PGSP. For years 2018 to 2022, the HPC may set the benchmark between PGSP and 0.5 percentage points below PGSP, and the HPC may modify the benchmark between 2023 and 2032.

The measure of healthcare cost growth used to assess whether the benchmark is met is defined as the annual per-capita change in Total Health Care Expenditures (THCE), as defined by CHIA. THCE is derived primarily from health insurance claims, and thus includes nearly all spending on services covered by health insurance, including out-of-pocket portions paid by individuals and administrative costs, in addition to spending by MassHealth and Medicare.

THCE captures a smaller share of healthcare and related spending than does the National Health Expenditure (NHE) accounts as compiled by the Center for Medicare and Medicaid Services (CMS). CMS last reported (2009) Massachusetts' total healthcare spending at more than $60 billion, much higher than THCE's total of $49.3 billion in 2012.[4] CMS surveys healthcare facilities and a broader multitude of payers. For example, most spending on dental and vision services, privately-paid long-term care, and hospital revenues from gift shops, cafes and personal care, are typically not captured in THCE but are by CMS. THCE also does not capture payments made by third-party sources that are not conventional health insurers, such as worker's compensation, the Department of Defense and private philanthropic sources.

Figure 2.1: Annual per-capita spending growth, 2012-2013, by payer type

Per-enrollee annual percent growth (%), 2012-2013, and total spending by market ($ billions), 2013



NOTE: The figures above represent spending for defined population coverage subgroups. Some spending that is included in Total Health Care Expenditures (THCE) is omitted in the figure, such as MassHealth fee-for-service spending (for example, cost-sharing for low-income Medicare beneficiaries), CommCare, and spending under the Veterans Administration. FFS = Fee for service; MCO = Managed care organizations; PCC = Primary Care Clinician

SOURCE: Center for Health Information and Analysis, U.S. Center for Medicare and Medicaid Services; MassHealth

When 2012-2013 commercial spending growth is analyzed by geographic area, we find the highest growth in Central Massachusetts, Berkshires, and East Merrimack (all of which had low spending in 2012) and the lowest growth in New Bedford, the Upper North Shore, and the Cape and the Islands (all of which had high spending in 2012). Thus, spending converged somewhat across regions.

Analysis of the payers' filed testimony in advance of the HPC's Annual 2014 Cost Trends Hearing indicates that commercial healthcare spending growth in 2013 was more price-driven than utilization-driven, as has also been the case for the last several years (see **Figure 2.2**).[5]

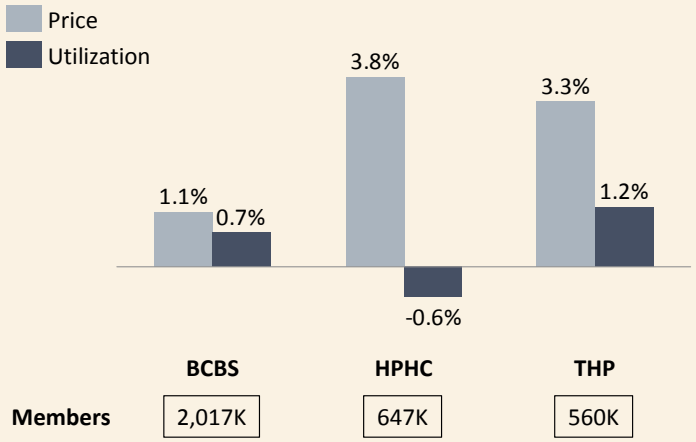
Low and negative spending growth among the two largest population segments—commercial and Medicare fee-for-service (FFS)—all but ensured that spending growth would be below the benchmark. Spending per enrollee in the commercial sector grew by 1.7 percent from 2012-2013; Medicare spending per enrollee grew 0.3 percent overall—with 6.3 percent growth in Medicare Advantage offset by a 0.9 percent reduction in spending among those receiving the traditional Medicare FFS benefit. MassHealth spending grew 3.9 percent per enrollee for those enrolled in MCOs and 2.6 percent per enrollee for those in the PCC program—a combined per-enrollee growth rate of 2.7 percent.[iii]

Examination of commercial spending growth by category of service shows highest growth in hospital outpatient services (3.8 percent) and lowest growth in hospital inpatient services (1.2 percent), physician services (1.2 percent) and prescription drugs (1.0 percent).

[iii] The combined growth rate is lower than might be expected due to a compositional shift in membership toward MCOs in 2013, which have lower spending per enrollee.

Figure 2.2: Role of price and utilization in per-capita spending growth, major commercial payers

Percent growth in per-enrollee per year spending, decomposed into price and utilization for commercial payers in Massachusetts, 2012- 2013

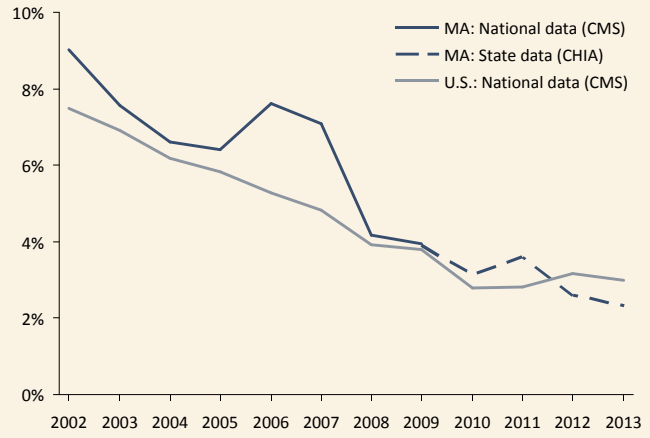


NOTE: Price and utilization calculations are submitted by payers with no health status adjustment and no analysis performed by the HPC. Some payers also broke down spending growth into provider and service mix components (not shown).

BCBS = Blue Cross Blue Shield; HPHC = Harvard Pilgrim Health Care; THP = Tufts Health Plan

SOURCE: Pre-filed Testimony submitted to the HPC for the 2014 Cost Trends Hearings

Figure 2.3: Annual growth in per-capita healthcare spending: Massachusetts versus the U.S.
Percentage growth from previous year, 2002- 2013



NOTE: Solid lines indicate CMS data; dashed line indicates Massachusetts-specific data. Specifically; CMS NHE & SHEA 2002-2009,US NHE 2009 – 2013, MA TME 2009 – 2012, MA THCE 2012-2013

SOURCE: Centers for Medicare & Medicaid Services, Massachusetts Center for Health Information and Analysis, United States Census Bureau

2009 – 2013 spending trends in Massachusetts and the U.S.

While the relatively slow growth in healthcare spending in Massachusetts in 2013 is a positive sign, the driver of such moderated cost growth is not yet clear, nor is it clear that the trend will be sustained. Historically, healthcare spending has grown faster than the overall economy, both in the Commonwealth and the nation. To put 2013 spending in context, we analyzed the trajectory of health-spending growth in both Massachusetts and in the U.S. over the past several years.

The HPC's 2013 Annual Cost Trends Report noted that Massachusetts' health expenditures, as reported by CMS as part of the NHE accounting, grew by 6.5 percent annually from 2001 to 2009.[5] That growth was somewhat higher than that for the rest of the U.S. (5.5 percent) over the same time period, though both gradually declined over these years (see **Figure 2.3**). Since 2009, spending has grown at historically low rates in both Massachusetts and the nation.

Figure 2.4: Per-capita spending growth in MA and the U.S., commercial payers
Percentage growth in per member per year spending for commercial enrollees in Massachusetts and in the U.S., 2010 - 2013

Figure 2.5: Per-capita spending growth in MA and the U.S., Medicare FFS
Percentage growth in per beneficiary per year spending for Medicare FFS beneficiaries in Massachusetts and in the U.S., 2010- 2013

Figure 2.6: Per-capita spending growth in MA and the U.S., MassHealth PCC and MCOs combined
Percentage growth in per enrollee per year spending for MassHealth in Massachusetts and in the U.S., 2009- 2013

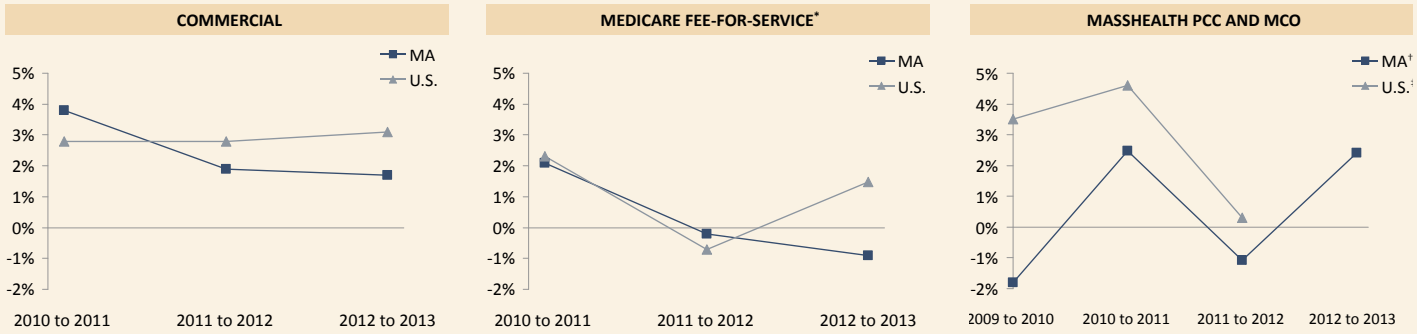


*Figure reports spending on traditional Medicare parts A and B, and includes part D prescription drug coverage.

† Massachusetts: Data includes Primary Care Clinician plan (PCC), managed care organizations (MCOs) and CommCare, but excludes other programs. Spending does not include third party, Medicare, or other agency payments. Year-over-year variation may be attributable to a variety of factors, including changes in the population's acuity, changes in fee-for-service rates, mid-year (9C) budget reductions and changes in managed care enrollment patterns

‡U.S.: Populations include adult and child populations ("family"), and exclude aged, disabled, and special populations. See Technical Appendix B2 for details.

SOURCE: Center for Health Information and Analysis; Centers for Medicare & Medicaid Services, National health expenditure accounts ("private health insurance" for commercial payers); Kaiser Family Foundation's analysis of Medicaid Statistical Information System

Researchers have extensively analyzed the national decline in healthcare spending growth, without drawing definitive conclusions.[6] Most agree that the recent recession played a role, likely limiting individuals' willingness and ability to pay for health care via annual premiums or out-of-pocket copayments or non-reimbursed expenses. However, noting spending-growth reductions even among those with Medicare and employer-based insurance (holding benefits levels constant), analysts have also attributed the slower spending growth to growing administrative efficiency from health information technology (HIT), fewer expensive new technologies and drugs (although this may be beginning to change), and Affordable Care Act (ACA) measures such as reductions in prices paid to hospitals under Medicare.

In **Figures 2.4-2.6**, we focus in greater detail on recent trends in healthcare spending growth in Massachusetts and the U.S.

Though total commercial spending grew faster in Massachusetts in 2011 compared to the U.S. average (3.8 percent versus 2.8 percent), it was slower in 2012 (1.9 percent versus 2.8 percent) and even more so in 2013 (1.7 percent versus 3.1 percent) (see **Figure 2.4**). The trends suggest that commercial spending in Massachusetts may be on a lower growth trajectory than that of the nation (though the dollar amount of spending is still higher than average) and that 2013 was not an unusual year. Using a sample of commercial claims, the Health Care Cost Institute (HCCI) recently reported U.S. overall commercial spending growth of 3.9 percent from 2012 to 2013 (4.8 percent within the Northeast region), notably higher than the 1.7 percent per-enrollee commercial spending growth in Massachusetts. Massachusetts' lower rate of commercial spending growth relative to the U.S. was primarily driven by lower growth in hospital spending. Annual percentage growth in commercial per-capita hospital spending from 2010 to 2013 was about half the rate of the U.S. (2.3 percent versus 4.5 percent).

Massachusetts spending growth for Medicare beneficiaries has slowed in recent years, even more so than in the nation as a whole in 2013, partly due to slower growth in prescription-drug spending compared to the U.S. (which accounted for a third of the lower Massachusetts growth rate) (see **Figure 2.5**).

Spending among MassHealth recipients (combining spending on behalf of those in both managed care and the PCC program) has also grown relatively slowly for several years, while growth in national spending for comparable populations has been slightly higher for the same years (see **Figure 2.6**).

Generally, these data suggest comparable or slower growth in Massachusetts than in the U.S. for Medicare and Medicaid (Medicaid is more difficult to compare directly due to the varying nature of state Medicaid programs), and slower growth in spending for those with private insurance. Because healthcare spending tends to be correlated with economic activity in the long run, we assessed whether the recent slower growth in Massachusetts could be due to slower overall economic growth compared to the rest of the U.S. This does not appear to be the case: Massachusetts' economic growth was slightly higher than that of the nation during this period.

In conclusion, while we find overall slower healthcare spending growth in Massachusetts compared to the U.S., the drivers and dynamics contributing to such moderated cost growth are not yet clear. Whether Massachusetts can sustain this lower trend if growth in U.S. healthcare spending continues to accelerate is also unknown.

Other key system trends

We next discuss several additional key features of healthcare spending in the Commonwealth and the performance of the healthcare system.

Out-of-pocket spending

Out-of-pocket spending on health care is important to track separately in accounting for total spending growth in the state.[iv] Though spending growth (among commercial enrollees) was low in 2013, average spending growth may mask trends that increase the financial burden on vulnerable segments of the population. The HPC observed in its July 2014 report that both the percentage of healthcare spending paid out-of-pocket by individuals insured through commercial plans and the share of commercial members with more than $2,000 in out-of-pocket spending had increased between 2010 and 2012. More recently, CHIA reported that the percentage paid out-of-pocket remained stable from 2012 to 2013.[7]

However, other data suggest that cost sharing may be rising for the economically and/or medically vulnerable (among the privately insured). A survey conducted by

[iv] Out-of-pocket spending refers to spending for services within the insurance plan (mainly in the form of co-payments and deductibles), as opposed to spending on services not covered within the plan, such as for over-the-counter medications or for providers not in the network, for whom no coverage is available. Note that THCE accounts for the former, but not the latter.

the Blue Cross Blue Shield Foundation of Massachusetts reported that in 2013, 20 percent of adults are paying off medical bills over time, and 20 percent are having trouble keeping up with payments. This represents the highest level of deferred payments since 2006, before Massachusetts expanded coverage with its landmark health reform legislation (Chapter 58).[8] In other analyses, CHIA found that individuals insured through individual-market products paid twice the amount of cost-sharing as people insured through very large employer groups – and that roughly 45 percent of such individuals were enrolled in high-deductible health plans (i.e. those with annual deductibles in excess of $1,250).

We further analyzed the distribution of cost sharing among commercially-insured residents in 2012 using the Massachusetts All-Payer Claims Database (APCD).[v] The sample comprised 2.8 million individuals insured through the state's three largest payers (Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan), for whom out-of-pocket expenditures averaged 7.7 percent of total spending (excluding pharmacy spending).

First, when we analyzed the percentage of spending paid out-of-pocket by type of condition (type of episode),[vi] we found that patients pay a greater percentage out-of-pocket for behavioral health conditions than for other types of conditions (see **Figure 2.7**). In addition, when we analyzed the level of out-of-pocket spending, we found higher total annual out-of-pocket spending for patients with more chronic conditions (see **Figure 2.8**). In 2012, those with three or more chronic conditions paid roughly $758 per year out-of-pocket on average, and 10 percent of that population paid more than $1,797.

Figure 2.7: Out-of-pocket spending as a percentage of total commercial spending, by type of condition*

Out of pocket spending as a percentage of total allowed spending, 2012

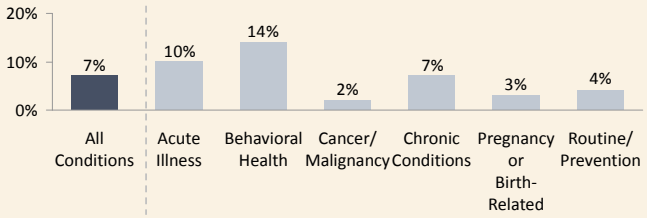
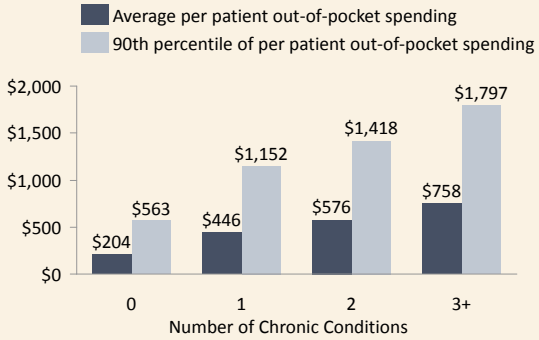


Figure 2.8: Out-of-pocket spending per member by number of chronic conditions†

Dollars per person, 2012



*Spending by condition is determined using Optum's ETG episode grouper.

† The presence of a chronic condition is determined using Optum's ERG episode risk groups.

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan), 2012

Trends in provider markets

From 2001 to 2009, a primary driver of commercial healthcare spending growth in Massachusetts was higher growth in commercial prices paid to providers—both in unit prices (the price paid per service or set of services) and a shift toward use of higher-priced providers ("provider mix" or "site-of-care" effects)—which are largely determined by provider market dynamics. Those dynamics in Massachusetts are somewhat unique; Massachusetts' healthcare marketplace is characterized by a relatively high level of consolidation into a small number of systems centered on academic medical centers (AMCs) and teaching hospitals (see **Appendix A**). In 2013, we reported that 40 percent of Massachusetts' spending above the national average was attributable to higher hospital spending, with larger consolidated systems drawing volume from lower-priced community based providers.

Acknowledging the impact that provider system alignments (such as affiliations and acquisitions) can have on healthcare spending, quality and access, Chapter 224 directs the HPC to monitor this aspect of the Massachusetts' healthcare system. Through the filing of notices of material change by provider organizations, the HPC tracks the frequency, type, and nature of changes in the Commonwealth's healthcare market. The HPC may also engage in a more comprehensive review of particular transactions anticipated to have a significant impact on healthcare costs or market functioning through its "cost and market impact reviews." From April 2013 through December 2014, the HPC has received material change notices for 33 transac-

[v] We analyzed out-of-pocket and total amounts paid for each claim among a sample consisting of all non-pharmacy claims for members covered by the three largest state insurers.

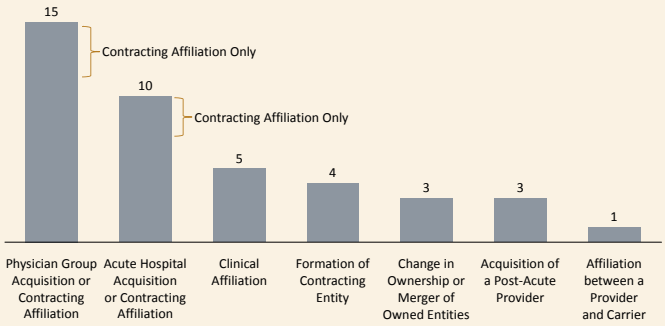
[vi] Episodes of care represent one or more interactions with the formal health care system for the same ailment (such as an initial physician visit, subsequent lab testing, and a final visit). These are described more formally later in this report.

tions, representing a wide variety of provider alignments (see **Figure 2.9**), and has issued cost and market impact review reports on four of these transactions.

Although provider alignments may take a range of forms, and may promote more patient-centered, accountable care, many such alignments involve acquisitions and contracting affiliations that increase overall market consolidation. As we have described in past reports, these affiliations have resulted in increasing concentration of care in Massachusetts. Specifically, we found that the percentage of commercial discharges from the top five hospital systems grew from 48 percent in 2009 to an estimated 56 percent in 2014, subsequent to Lahey's recent acquisition of Winchester Hospital and Partners' recent acquisition of Cooley Dickinson Hospital.[9] That figure could further increase to 61 percent if two pending Partners' transactions currently under review—the acquisitions of South Shore Hospital and Hallmark Health System—are approved (see **Figure 2.10**).

Figure 2.9: Frequency of provider alignment types for which the HPC received Material Change Notices

Number of transactions received April 2013 through December 2014

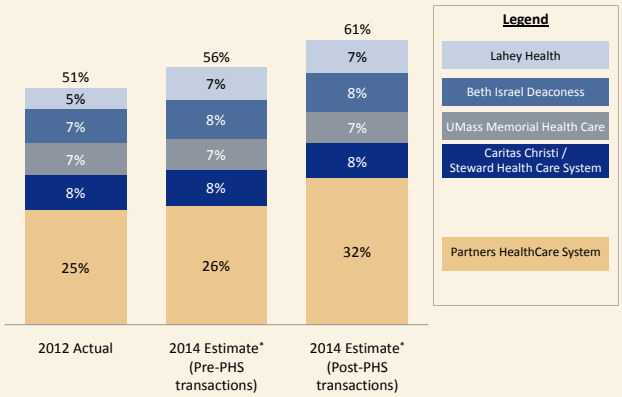


NOTE: HPC received notice of 33 transactions, in total, between April 2013 and December 2014. Some transactions involve more than one type of provider alignment.

SOURCE: Material Change Notice Filings, Health Policy Commission

Figure 2.10: Concentration of commercial inpatient care in Massachusetts

Percentage of total inpatient discharges



*PHS = Partners HealthCare System. Pre-PHS transactions are based on applying systems established by 2014 (including 2013 Partners HealthCare acquisition of Cooley Dickinson and 2014 Lahey Health acquisition of Winchester hospital) to 2012 inpatient discharge data. Post-PHS transactions estimate includes South Shore Hospital and Hallmark Health hospitals joining Partners HealthCare System.

NOTE: Figures may not add to totals due to rounding.

SOURCE: Center for Health Information and Analysis; HPC analysis

In addition to the above analysis of the portion of commercial inpatient discharges accounted for by the largest systems of care, we analyzed all inpatient discharges between 2009 and 2012, building on our previous finding that 40 percent of Medicare beneficiaries' hospital discharges were from AMCs and teaching hospitals, compared to a nationwide average of 16 percent.[5] Consistent with **Figure 2.10**, we found that that the proportion of inpatient discharges (excluding emergency visits and transfers) from AMCs grew slightly from 36 percent in 2009 to 37 percent in 2012, while the percentage of discharges from community hospitals dropped from 47 to 46 percent. Further, among community hospital discharges, the percentage of those that were from independent community hospitals (as opposed to being part of a system) dropped from 61 to 53 percent from 2009 to 2012, suggesting increased consolidation of discharges into larger systems.[vii] Over the same time period, average occupancy rates of staffed beds in all community hospitals dropped from 64 to 62 percent. Later sections of this Report provide more in-depth comparisons of spending for certain routine categories of care and suggest higher prices for comparable care provided in AMCs compared to community hospitals.

Quality of care

Massachusetts continues to be a national leader in providing high quality healthcare services as compared with the nation. The Commonwealth Fund's State Health System Ranking 2014 Score Card categorizes Massachusetts in the top quartile for access to services, prevention and treatment, equity, and healthy lives (see **Table 2.1**).[10] The only domain of substandard performance in the Commonwealth was avoidable hospital use, in which Massachusetts landed in the third quartile among states, suggesting there may be opportunities to improve in the future. Since 2009, the Commonwealth has improved its rank on 12 of the 34 quality indicators (while declining in five); overall, Massachusetts ranks second in the nation.

[vii] Part of the reason for the drop is that between 2009 and 2012, three community hospitals switched from independent to an alliance with an academic medical center, and one community hospital closed.

Table 2.1: Condition and procedure quality measures, MA and U.S.

Units vary by measure, 2009-2013

	MA	U.S.	90th percentile	Year
Prevention and population health				
Childhood immunization status	80%	75%	81%	2010
Low birth weight rate	8%	8%	6%	2010-2012
Rate of older adults receiving flu shots	66%	63%	70%	2013
Rate of female adolescents receiving HPV vaccine	41%	24%	42%	2010
Chronic care				
Rate of cholesterol management for patients with cardiovascular conditions	92%	89%	94%	2010
Rate of controlling high blood pressure	71%	63%	74%	2010
Rate of diabetes short-term complications admissions (adult)	51 per 100,000	69 per 100,000	46 per 100,000	2010
Number of admissions for CHF	349 per 100,000	333 per 100,000	211 per 100,000	2010
Number of adults admitted for asthma*	137 per 100,000	119 per 100,000	61 per 100,000	2010
Number of COPD admissions	240 per 100,000	212 per 100,000	130 per 100,000	2010
Hospital readmission rates†				
Acute myocardial infarction readmission rate	20%	20%	N/A	2011
Pneumonia readmission rate	19%	18%	N/A	2011
Heart failure readmission rate	26%	25%	N/A	2011
Hospital mortality rates†				
Acute myocardial infarction mortality rate	15%	16%	N/A	2011
Pneumonia mortality rate	11%	12%	N/A	2011
Heart failure mortality rate	10%	11%	N/A	2011
Patient safety				
Rate of iatrogenic pneumothorax (risk-adjusted)	0.41 per 1,000	0.42 per 1,000	N/A	2009-2011
Rate of postoperative respiratory failure	6.6 per 1,000	8.3 per 1,000	N/A	2009-2011
Rate of central venous catheter-related blood stream infections	0.28 per 1,000	0.39 per 1,000	N/A	2009-2011
Patient experience				
Patients at each hospital who reported that "yes" they were given information about what to do during recovery	87%	85%	88%	April 2012-March 2013
Patients who reported that staff "always" explained about medicines before giving it to them	64%	64%	67%	April 2012-March 2013
Patients who reported that their pain was "always" well controlled	70%	71%	73%	April 2012-March 2013
Patients who reported that their nurses "always" communicated well	79%	78%	81%	April 2012-March 2013

* Admissions for asthma per 100,000 population, age 18 and over. NQF measure counts all discharges of age greater than 18 and less than 40 years old.

† Readmission and mortality rates are for Medicare population only.

SOURCE: Massachusetts Health Quality Partners, Clinical Quality report 2009-2012, Patient Experiences survey data 2011; Kaiser Family Foundation, State Health Facts; Agency for Healthcare Research and Quality; Massachusetts Immunization Action Partnership; Centers for Disease Control and Prevention; Centers for Medicare & Medicaid Services; Center for Health Information and Analysis, Annual Quality Report; National Immunization Survey; HPC analysis

Similarly, CHIA's 2014 Annual Quality Report finds healthcare quality in Massachusetts to be strong and improving (see **Table 2.1**).[11] Overall, the Commonwealth scored well across a number of quality measures in hospital care, primary care and post-acute care. Notably, there was a significant drop in the rate of early elective deliveries between 2011 and 2013. In measures of potentially avoidable resource utilization, 20 percent of Massachusetts residents diagnosed in 2012 with lower back pain received advanced diagnostic imaging (which is not usually recommended), better than the national average of 26 percent but worse than the national 90th percentile of 18 percent for this measure. Moreover, wide variation exists between the best (5.7 percent) and worst scores (32.4 percent) among providers, which suggests opportunities for improvement.

Access to care

Massachusetts has the highest rate of insurance coverage in the country, with more than 95 percent of residents insured, compared with a national average of 87 percent in 2013.[12,13] In addition, the Massachusetts 2014 Health Reform Survey (reporting on data collected in 2013) indicated that nearly nine out of ten nonelderly adults (87.5 percent) have a place they usually go when they are sick or need advice about their health, other than a hospital emergency department (ED).[8] That figure represents a slight decline from previous years (the measure reached 91.4% in 2008), but far exceeds the national average of 80.7 percent.[10]

With respect to wait times for new patients, a recent Massachusetts Medical Society survey[viii] found new patients must wait an average of 50 days for an appointment with an internal medicine physician and an average of 39 days for an appointment with a family medicine physician.[14] That study further highlighted that the percentage of physicians accepting new patients was 45 percent for internists and 51 percent for family medicine physicians. The report also listed family medicine physicians as the only physician specialty facing a critical shortage in the state.

Future outlook and trends to monitor

Sustaining lower growth rates in healthcare spending over the long term will require a concerted effort to advance a more value-based healthcare market and an efficient delivery system. While CMS forecasts a return to more than 5 percent annual per-capita increases in healthcare spending beginning in 2014, driven by ACA coverage expansions, economic growth, and an aging population, Massachusetts may be embarking on a lower spending growth trajectory (and has already expanded coverage to most of the population). Nevertheless, there are a number of trends that could threaten the state's future ability to constrain healthcare cost growth.

Medical technology, notably specialty drugs

Advances in medical technology, such as new prescription drugs, can improve health and quality of life, but can also measurably increase healthcare costs. With many such technologies and prescription drugs under development, breakthroughs are unpredictable and could impact spending growth in any year. For example, 2013 saw the release of new specialty drugs in the areas of cancer, hepatitis C, and multiple sclerosis.[15] One such drug, Sovaldi (sofosbuvir), has been identified by insurers as a threat to their financial sustainability, and its impact on healthcare costs should continue to be monitored.[16] Under development for more than a decade, Sovaldi represents one of several new treatments for hepatitis C, and is currently offered at $1,000 per pill, with a full treatment regimen of 12 weeks costing approximately $84,000.[17] Future growth in prescription-drug spending could also rise due to the FDA's new fast-track acceptance designation, Breakthrough Therapy, which allows for faster release of drugs for less common diseases. As previously discussed, while growth in prescription-drug spending was low in Massachusetts from 2012-2013, some data suggest that U.S. prescription drug spending in 2014 is growing faster than other categories of spending (10 percent versus less than 5 percent for all other categories).[18]

In the future, it will be important for the HPC and all stakeholders to consider pharmaceutical costs and the impact of such drugs, including the consideration of benefits and potential long-term savings of these medical innovations.

Market consolidation

Another key trend that will require close monitoring is consolidation among healthcare providers. Although provider alignments may improve an organization's ability to promote more efficient, coordinated care, increased healthcare market concentration has widely been shown to result in higher prices. For example, a Department of Justice and Federal Trade Commission report on competition in health care found that most studies of the relationship between competition and hospital prices generally associ-

[viii] The response rate for the survey is quite low; roughly 10 percent.

ated increased hospital concentration with higher prices.[19] Similarly, a meta-analysis of the impact of hospital acquisitions on prices concluded that hospital consolidation in the 1990s raised prices by at least 5 percent, and likely by much more, with consolidation among hospitals that are geographically close to one another consistently leading to price increases of 40 percent or more.[20] The Massachusetts Attorney General's office also found correlation between market leverage and higher prices among Massachusetts hospitals.[21]

This and other evidence suggests that efficiencies gained from such provider consolidation have generally not outweighed spending increases.[22] However, we also note that multiple forms of provider alignment and clinical relationships outside of traditional joint-contracting arrangements and corporate acquisitions are being explored by Massachusetts providers (see **Figure 2.9**). These other forms of alignment can prove successful in improving the quality and efficiency of care, while raising less threat of increased prices or other cost increases.[23]

Recognizing both this transformative potential of provider changes that may drive efficiencies and facilitate higher quality health care, as well as the risks of increased consolidation, the HPC should continue to closely monitor and evaluate provider dynamics.

Conclusion

Growth in per-capita healthcare spending in Massachusetts from 2012 to 2013 was 2.3 percent, significantly below the 3.6 percent benchmark set by Chapter 224. This lower rate of growth was consistent with relatively low growth nationally in recent years, but may also be related to unique forces within Massachusetts; healthcare spending in the state has grown more slowly than it has in the U.S. for the last two years. The drivers and dynamics contributing to such moderated cost growth are not yet clear. Further, whether Massachusetts can sustain this lower trend if growth in U.S. healthcare spending continues to accelerate is also unknown.

Key trends to monitor include out-of-pocket spending, delivery system dynamics, quality and access performance, and the introduction of new technologies and specialty drugs. Further, many other key trends in the economy, the characteristics of the population, market structure, care delivery, payment, product design and consumer incentives also play a powerful role in determining spending, topics discussed in the following chapters.

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Opportunities to Increase Quality and Efficiency

3. Hospital-Level Variation in Spending Per Episode of Care

Variation in the amounts paid to different providers for the same service or set of services without measurable differences in quality indicates a potential opportunity to decrease healthcare spending, either by shifting care to more efficient settings or by increasing efficiency and decreasing payments within a given setting. Substantial variation in prices among hospitals and physician organizations in Massachusetts has been documented by the Center for Health Information and Analysis (CHIA) and the Attorney General's Office (AGO).[1,2] However, some providers argue that, despite higher unit prices, they provide higher quality or more efficient care which results in lower total spending across an episode of care. For example, a lower complication rate could reduce the need for additional services following the procedure.

In this chapter, we consider the variation among providers in total spending per episode of care, which includes all services across settings (professional, hospital, post-acute and others) associated with a procedure. We calculated average payments for three common, elective procedures: hip replacements, knee replacements and percutaneous coronary intervention (PCI) (see **Sidebar: "What is Percutaneous Coronary Intervention?"**).

What is Percutaneous Coronary Intervention?

Coronary artery disease is a condition that decreases blood flow, and therefore oxygen, to the heart. If blood flow is completely blocked, a heart attack can result. PCI is a non-surgical intervention that can improve blood flow and lower the likelihood of a heart attack. A balloon catheter or a stent is inserted through a peripheral blood vessel and is guided up to the blocked artery. Once there, a balloon will open up the vessel and a stent is inserted to prevent the artery from closing in the future.

We selected these three procedures for analysis because they are high volume, high cost, planned in advance, relevant to both public and private payers, common across all hospital types, and have reasonably well-established protocols for clinical care. Moreover, clinicians generally agree that a broad set of hospitals are qualified to perform these procedures for low-risk patients.

This study is based on 2012 data from the Massachusetts All-Payer Claims Database (APCD) and includes patients with commercial insurance from the state's three largest commercial payers: Tufts, Harvard Pilgrim, and Blue Cross Blue Shield. The sample was limited to low-risk adult patients and to patients who received the study procedure as an inpatient (see **Technical Appendix B3** for more detail). Using data on medical spending, but not pharmacy spending or payments outside the claims system, we calculated average payments for the episode and procedure at the hospital level, and compared payments to a hospital or set of hospitals with a high standard of care. For joint replacements, we calculated payments at academic medical centers (AMCs), hospitals that have a corporate affiliation with an AMC, and hospitals with no corporate affiliation to an AMC and compared results to payments for New England Baptist Hospital—a hospital that specializes in orthopedic surgery and the treatment of musculoskeletal diseases and disorders.[i,ii]

For PCI, we compared payments at AMCs, teaching hospitals, and community hospitals and also compared payments at AMCs, hospitals that have a corporate affiliation with an AMC, and hospitals with no corporate affiliation to AMC.

[i] See the Technical Appendix B3 for a full description of methods.
[ii] While these analyses are based on corporate affiliations, the HPC recognizes that relationships among providers take a variety of forms (including contracting relationships and clinical affiliations) that may influence practice and spending; future work may examine such relationships.

Figure 3.1: Average spending for hip replacement episodes by hospital type and by hospital*

Average spending, in dollars

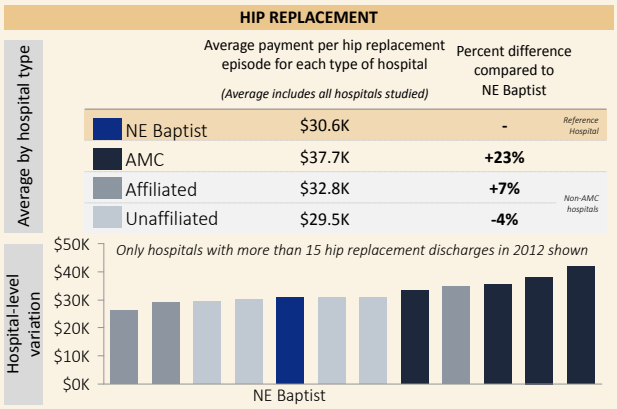


Figure 3.2: Average spending for knee replacement episodes by hospital type and by hospital*

Average spending, in dollars

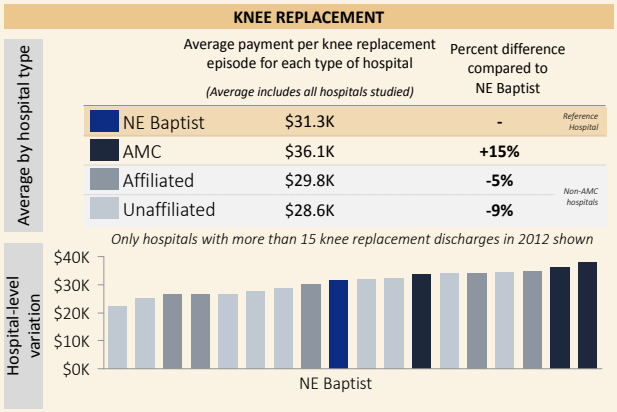
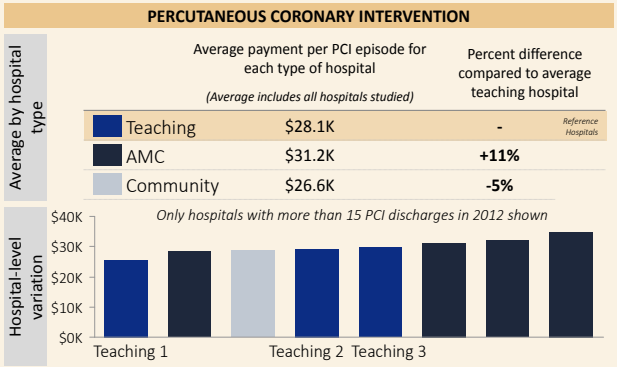


Figure 3.3: Average spending for PCI episodes by hospital type and by hospital*

Average spending, in dollars



*Only hospitals with greater than 15 discharges are displayed as bars; average payment shown in table includes all hospitals studied

NOTE: NE Baptist = New England Baptist; AMC = Academic Medical Center (see Appendix A)

In this context, affiliated hospital means a non-AMC hospital that has a corporate affiliation with an AMC; unaffiliated hospital means a non-AMC hospital that does not have a corporate affiliation with an AMC. AMCs, teaching, and community hospitals defined by the Center for Health Information and Analysis. See Appendix A and Technical Appendix B3 for more details.

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan), 2012

Variation in spending

For low-risk patients that received the intervention at a hospital, the average spending for an episode of care was $32,000 for hip replacements, $31,200 for knee replacements, and $28,900 for PCI. However, examining the results at the hospital level reveals substantial variation between individual hospitals and between different hospital classifications.

At acute-care facilities with greater than 15 discharges,[iii] the average episode spending for hip replacements ranged from $26,200 at the least expensive hospital to $41,700 at the most expensive hospital (see **Figure 3.1**). For knee replacements the range was $22,300 to $38,000. For PCIs, the range was $25,600 to $34,800 (see **Figure 3.2**).[iv]

When grouping all discharges into different hospital classifications,[v] we found that episodes of all three types were more expensive at AMCs than at the comparator hospitals.[vi] Episodes for hip and knee replacements at AMCs were 23 and 15 percent more expensive, respectively, than at New England Baptist.

For PCIs, the average payment at AMCs was 11 percent higher than the mean teaching hospital payment (see **Figure 3.3**). The relationship between AMC corporate affiliation and spending was not consistent for the different episode types. For joint replacements, hospitals that had a corporate affiliation to an AMC had higher average payments than hospitals without such an affiliation (11 and 4 percent higher for hip and knee replacements, respectively, **Figures 3.1 and 3.2**). For PCIs, hospitals that did not have a corporate affiliation were 7 percent more expensive than hospitals with a corporate affiliation (affiliated: $25,600, unaffiliated: $27,400, not shown).

For a clinically similar patient population, variation in episode-level payments could be driven by variation in 1) procedure payments, or 2) the use and cost of care before and after the procedure, or 3) a combination of the two factors. For the low-severity commercial population that we studied, we found that procedure payments were the primary driver of episode-level payments, and that the use of care before and after the procedure played a small role.[vii]

[iii] We used a threshold of 15 discharges to represent an accurate estimate of a single hospital's mean payment. For power calculations, see Technical Appendix B3.

[iv] An analysis that adjusted for payer mix obtained similar results.

[v] AMCs, teaching, and community hospitals were defined by CHIA. See Appendix A in this report and Technical Appendix B3 for more information.

[vi] Technical Appendix B3 contains complete data on average episode and procedure-level spending for each episode and hospital type.

[vii] In contrast, when all patients and all payers are considered, the analysis detailed in the next chapter indicates substantial variation

In fact, we found that increases in procedure payments were matched with almost one-to-one increases in overall episode spending.[viii] Therefore, higher payments for the procedure do not appear to be associated with a level of inpatient care that results in a lower need for care outside the hospital stay and lower overall episode spending.

Variation in quality

Joint replacement

Higher spending per episode may represent good value if a procedure performed at a particular hospital is associated with better outcomes or better care. However, for joint replacements, available data do not demonstrate that care is better at higher-paid hospitals. Using the Centers for Medicare and Medicaid Services (CMS) readmission and complication rates[ix] for joint replacements for Medicare fee-for-service (FFS) beneficiaries at acute-care facilities, which includes both high and low-risk patients, we found similar quality among all hospitals studied.[3] All hospitals in the analysis had a readmission and complication rate that was no different statistically from the national average (5.4 and 3.4 percent respectively—except for New England Baptist. New England Baptist had a statistically better readmission (4.1 percent) and complication (2 percent) rate, but the difference was relatively small (see **Figures 3.4 and 3.5**). The modest variation in quality among the acute-care facilities, and no evidence showing that AMCs have better quality than New England Baptist, suggests that higher average payments are not an indicator of better care in the Commonwealth for joint replacements, particularly between New England Baptist and the highest priced AMCs.[x]

among hospitals in the use of post-acute care (PAC) for joint replacements. Such variation may be a worthwhile areas of focus for providers under alternative-payment methods (APMs), despite the finding in this chapter that the practice variation does not drive differences in episode spending for a low-severity, commercial population.

[viii] A linear regression model showed that approximately 97% of the variation in episode expenditures could be explained by the procedure price for joint replacements, 89% for PCI. See Technical Appendix B3.

[ix] Complications measured include heart attack (acute myocardial infarction), pneumonia, or sepsis/septicemia/shock during the index admission or within seven days of admission; surgical site bleeding, pulmonary embolism, or death during the index admission or within 30 days of admission; or mechanical complications or periprosthetic joint infection/wound infection during the index admission or within 90 days of admission.

[x] We also looked at surgical site infection data for hip and knee replacements collected from the MA Department of Public Health for the 2011 calendar year. Results were consistent with CMS Hospital Compare's hip and knee readmission rates—all hospitals were statistically similar to each other except for New England Baptist, which had a better surgical site infection rate.

Percutaneous coronary intervention (PCI)

The PCI quality analysis used Massachusetts Data Analysis Center's (MassDAC) measurement of mortality rate for high- and low-severity PCI interventions (**Figure 3.6**).[xi,4] All hospitals in the analysis had a mortality rate that was statistically the same as the state average—0.52 percent for low-severity cases and 4 percent for high-severity cases. We also looked at CMS data on PCI readmissions for Medicare FFS patients and found that there was no difference in the readmission rate for hospitals in the study.[xii] Thus, the AMCs had higher average payment for joint replacements and PCIs, compared to New England Baptist or the Commonwealth's teaching hospitals, but not higher quality based on available quality measures.

Savings estimates and policy options

Given that joint replacements and elective PCIs are non-emergent procedures with reasonably well-established protocols for clinical care, many consumers could reasonably evaluate costs and quality outcomes at different hospitals before deciding where to have the procedure performed. If low-severity joint replacements conducted at AMCs received the same payments as at New England Baptist, total medical spending for these episodes would decline by almost 6 percent. Similarly, if PCI payments were benchmarked to the mean teaching hospital payment, healthcare spending on elective PCI episodes would decline by over 7 percent.[5]

High-severity cases—which may require more innovative or specialized care—may require admission to a facility specializing in treating clinically-complicated cases, such AMCs or New England Baptist (for joint replacements) or teaching hospitals (for PCIs). For low-risk patients, a community hospital setting generally offers a safe, high-quality and high-value setting.

One market-based option to achieve these results is for payers to introduce reference pricing for joint replacements and PCIs. Reference pricing would incentivize patients to compare hospitals on the basis of cost and quality. Patients could choose higher-priced hospitals but would be responsible for some or all of the difference in price between that of the chosen hospital and the reference price

[xi] High Severity: Shock or STEMI PCI; Low Severity: No shock or no STEMI PCI.

[xii] We also considered all CMS quality measures related to general cardiac care, such as timely and effective care for cardiac patients, and mortality and readmission rates for heart failure and acute myocardial infarction. Overall, while these measures did show variation, no hospital or hospital cohort performed better than another.

Figure 3.4: Readmission rate for total joint replacement and episode cost, hip replacement

Readmission rate for hip and knee replacement compared to average total spending per episode of care by hospital for top three commercial payers, 2012

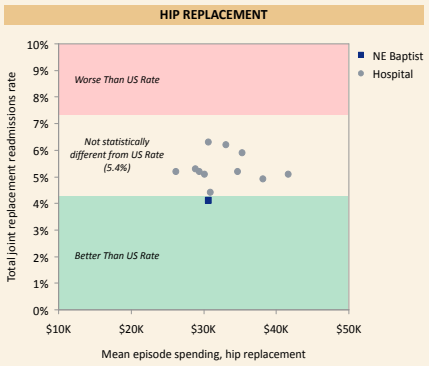


Figure 3.5: Readmission rate for total joint replacement and episode cost, knee replacement

Readmission rate for knee replacement compared to average total spending per episode of care by hospital for top three commercial payers, 2012

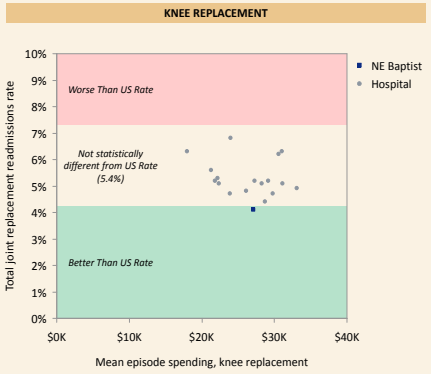
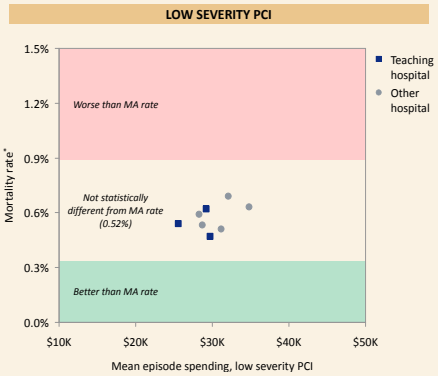


Figure 3.6: Mortality rate and episode cost, low-severity PCI episodes

Mortality rate for low severity PCI compared to average total spending per episode of care by hospital, for top three commercial payers, 2012



*None of the acute care facilities in the sample have mortality rates statistically different from the statewide average mortality rate.

NOTE: Mortality rate is for PCI admissions with no shock and no segment elevation myocardial infarction (STEMI)

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan), 2012; Center for Medicare & Medicaid Services, Hospital Compare 2010-2012

(See Chapter 9: "Demand-Side Incentives" for more on reference pricing). Acute-care facilities that already offer an optimal price and maintain quality outcomes would likely be rewarded with higher volume.

Episode-based payments may be another effective mechanism to promote efficient care. Incentives from global budget contracts alone may not be sufficient to impact specialist pricing differentials and change specialist behavior, because care delivery incentives under global contracts tend to focus on primary care physicians (PCPs) and may not reach specialty care practices. Therefore, increasing the use of episode-based payments in the Commonwealth, either nested within global payment structures or independently implemented, could be an effective mechanism for reducing the pricing differential across providers for specialty services.

The HPC plans to explore the opportunity to increase the use of episode-based payment models across payers in Massachusetts, through working with a coalition of payers, providers, purchasers and researchers to conceptualize, design and describe opportunities to implement episode-based payment models for relevant conditions and specialties.

Conclusion

Payments for certain common procedures are, on average, much higher at AMCs, even though there appears to be no measurable difference on specific quality measures. If payments were lowered to rates similar to New England Baptist for elective joint replacements, or to teaching hospital rates for elective PCI, then the Commonwealth could save between 6 and 7 percent for these diagnoses. Payment policies such as reference pricing and episode-based payments may encourage value and improve efficiency of care.

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3 Hospital compare, hip/knee readmission and complication rates for the 2013 reporting period [Internet]. Baltimore (MD): Centers for Medicare and Medicaid Services; 2013 [cited 2015 Jan 07]. Available from: https://data.medicare.gov/data/archives/hospital-compare.

4 Massachusetts Data Analysis Center. Adult percutaneous coronary intervention in the Commonwealth of Massachusetts: fiscal year 2012 report [Internet]. Boston (MA): Massachusetts Data Analysis Center; 2014 Feb [cited 2015 Jan 07]. Available from: http://www.massdac.org/wp-content/uploads/PCI-FY2012.pdf.

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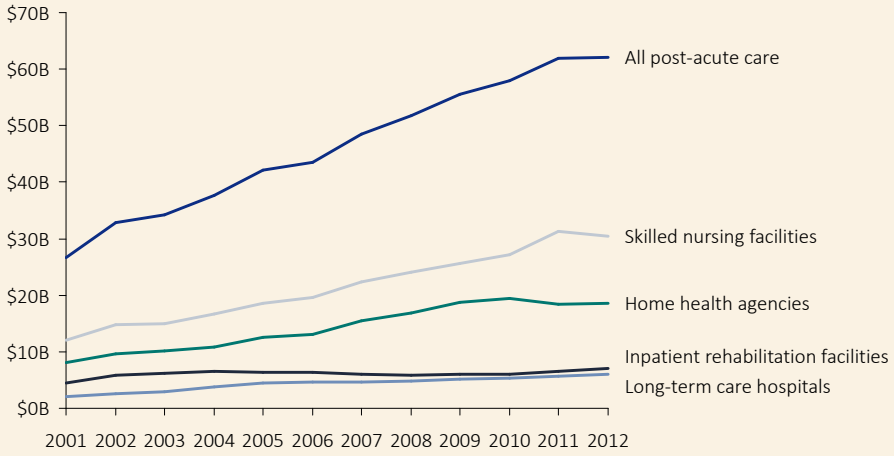
Opportunities to Increase Quality and Efficiency

4. Maximizing Value in Post-Acute Care

Following discharge from an inpatient hospital, a variety of post-acute care (PAC) settings are available to patients needing nursing or rehabilitative care. Previous Health Policy Commission (HPC) research found that the rate of discharge to PAC services in Massachusetts is more than double the U.S. average, even adjusting for differences in patient characteristics.[1] In this chapter, we further explore differences in discharge patterns between Massachusetts and the nation overall, as well as variation between hospitals in the Commonwealth, by focusing on patterns associated with specific conditions.[i] We also analyze differences in quality outcomes and in Medicare spending.

Figure 4.1: Medicare spending on post-acute care, U.S., 2001-2012
Billions of dollars



Note: Figures represent program spending only and do not include beneficiary copayments.
Source: Dixon Hughes Goodman Healthcare analysis of Centers for Medicare & Medicaid Services Office of the Actuary data, 2012

Among Medicare patients, PAC represents one of the fastest growing categories of spending. Nationwide, in 2012, 12.6 percent of fee-for-service Medicare beneficiaries used some form of PAC, totaling $62.1 billion in Medicare spending, almost a 90 percent increase from $32.8 billion in 2002 (see **Figure 4.1**).[2] Controlling for population factors, a recent Institute of Medicine report found that differences in PAC spending account for 73 percent of all regional differences in Medicare spending, highlighting the influence of practice patterns on service use and the influence of PAC on total spending.[3]

PAC settings include home-health care and a spectrum of institutional settings that vary in clinical capabilities and requirements, including skilled nursing facilities (SNFs), inpatient rehabilitation facilities (IRFs) and long-term acute care hospitals (LTCHs) (see **Table 4.1**). SNFs are the most commonly used institutional setting. While SNFs provide nursing care, they typically have limited capability to provide care for complex medical needs, in contrast to the more costly IRFs and LTCHs, which must meet the same conditions of participation as acute-care hospitals. IRFs are required to provide patients with daily intensive rehabilitation and are equipped to care for patients with intensive clinical needs, such as traumatic brain injury. LTCHs specialize in treating patients with serious conditions requiring intensive medical care for extended periods. The institutional settings are distinct and must be considered separately for matching patients with the most appropriate setting for care. However, some of the datasets used for this analysis have limitations in discharge coding accuracy between different institutional settings, making it difficult to distinguish discharges between these institutional settings. Therefore, for this analysis, we have grouped together SNFs, IRFs, and LTCHs into one "institutional" category.

Patients who can safely recover at home may require services provided in the home by home health agencies (HHAs), which provide ongoing followup nursing or

[i] Not all use of post-acute services directly follows discharge from an acute hospital. While skilled-nursing facility (SNF) eligibility for Medicare patients requires a three-day hospital stay, other settings have no such requirement. While most IRF and LTCH admissions have a directly preceding hospital stay, many home health episodes are not directly preceded by a hospitalization.

Table 4.1: Comparison of post-acute care settings

	HHAs	SNFs	IRFs	LTCHs
Patient selection	Treats patients who are unable to leave home without considerable effort	Treats patients after an acute inpatient stay of three or more days	Treats patients who can tolerate and benefit from three hours of therapy per day at least five days per week	Treats patients with chronic critical illness
Scope of services	Provides skilled nursing, therapy (physical, occupational, speech language), aide services, and medical social work in the patient's home	Provides skilled nursing or rehabilitation services on a daily basis in an inpatient setting	Provides inpatient hospital-level care; uses multi-disciplinary team; at least 60 percent of patients have one of several medical conditions that require intensive therapy	Provides inpatient hospital-level care; must have average Medicare length of stay greater than 25 days
Common conditions treated	Skin ulcer, heart failure, osteoarthrosis, joint replacements	Septicemia, stroke, kidney and urinary tract infections, joint replacements	Stroke, brain and spinal cord injuries, hip fracture, joint replacements	Respiratory diagnosis with prolonged mechanical ventilation; severe septicemia or sepsis
Average LOS (FY2010)	2 episodes	27 days	13.1 days	26.6 days
Medicare payment unit	Per 60-day episode	Per day	Per discharge	Per discharge
Medicare (FFS) spending (FY2010)	$2,839 per episode	$10,808 per stay	$17,085 per discharge	$38,582 per discharge

SOURCE: National Health Policy Forum; DHG Healthcare; Medicare Payment Advisory Commission

rehabilitative services. Some patients can be discharged home with no PAC services outside of outpatient physical therapy or office visits (routine discharge). While each of these PAC settings has distinct clinical capacities, they often treat a large overlap of patients.[4] Given the large difference in costs between settings, as well as the implications for patient experience of being treated at home versus in an institution, it is important to optimize patient discharge to the most appropriate and high-value setting.

PAC use in Massachusetts versus the U.S.

PAC use in Massachusetts is higher than in the U.S. across all payer types, for both home health use and institutional setting use. Overall, in 2011, only 58 percent of patients in Massachusetts had a routine home discharge following an inpatient stay, compared to 70 percent of patients nationwide (see **Table 4.2**). This trend of lower rates of routine home discharge following an inpatient stay was consistent across all payers in Massachusetts.

For commercial and Medicaid patients in Massachusetts, the lower rates of routine discharge overall are mostly due to higher rates of discharge with home health. One noteworthy factor is the Commonwealth's use of home health for postpartum and newborn care following delivery. For example, for vaginal delivery without complicating diagnosis, around 10.5 percent of patients in Massachusetts were discharged to home health in 2011, almost 10 times higher than the U.S. average of 1.7 percent. Home health use following childbirth represented at least 15 percent of all commercial home health discharges in 2011.[ii]

Massachusetts has mandated coverage of home health services for post-partum and newborn care following delivery, which in conjunction with practice patterns, may influence the higher rate of home health use in Massachusetts following normal deliveries, compared to the rate in U.S. overall.[5] While home health following deliveries may impact rates of PAC use in Massachusetts, the relative low cost of the service for this condition suggests that home health use following deliveries is not a major cost driver for healthcare spending.[iii] In contrast, the Commonwealth's higher use of institutional settings may have a larger impact on both costs and patient experience.

For Medicare patients, rates of discharge were higher for both home health care and institutional care. Annual Medicare spending in Massachusetts for PAC totaled an estimated $1.85 billion in 2012 (**Table 4.3**). Medicare spending averaged $4,900 per home health discharge and $15,500 per institutional PAC discharge.[iv] If Medicare patients in Massachusetts had the same PAC use distribution

[ii] The top four childbirth-related DRGs analyzed were "Vaginal delivery without complicating diagnoses" (DRG 775); "Normal newborn" (DRG 795); "C-section without complications and comorbidities" (DRG 766); and "Neonate with other significant problems" (DRG 794).

[iii] Average spending on home health services following normal delivery is $250, based on analysis of All-Payer Claims Database (APCD)claims.

[iv] See Technical Appendix for details on estimates.

Table 4.2: Massachusetts and U.S. discharge destination by payer

Percent of discharges by discharge destination, by payer, 2011

	Commercial			Medicare			Medicaid			Total		
	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference
For all discharges												
Routine	75.5%	83.9%	-8.4%	36.4%	48.2%	-11.8%	74.7%	85.8%	-11.1%	58.4%	70.1%	-11.6%
Home Health	15.4%	7.9%	7.5%	24.7%	17.4%	7.3%	13.7%	5.1%	8.5%	18.9%	10.9%	8.0%
Institutional	7.6%	6.5%	1.1%	35.0%	30.3%	4.7%	8.1%	6.6%	1.6%	19.6%	16.0%	3.6%
Other*	1.5%	1.7%	-0.2%	4.0%	4.1%	-0.1%	3.4%	2.5%	0.9%	3.1%	3.1%	0.0%
For DRG 470 (Joint replacement)												
	Commercial			Medicare			Medicaid			Total		
	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference
Routine	4.1%	33.0%	-28.8%	2.4%	17.0%	-14.7%	10.1%	28.3%	-18.2%	3.6%	24.1%	-20.6%
Home Health	65.8%	49.3%	16.5%	27.4%	32.8%	-5.4%	49.9%	38.2%	11.7%	44.8%	39.5%	5.4%
Institutional	30.1%	17.6%	12.5%	70.2%	49.8%	20.4%	39.8%	33.3%	6.4%	51.5%	36.1%	15.4%
Other*	0.0%	0.2%	-0.2%	0.1%	0.4%	-0.3%	0.2%	0.2%	0.1%	0.1%	0.3%	-0.2%
For DRG 236 (Coronary bypass)												
	Commercial			Medicare			Medicaid			Total		
	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference	MA	US	% Difference
Routine	12.8%	61.5%	-48.7%	9.0%	44.3%	-35.3%	13.0%	57.4%	-44.4%	11.5%	53.6%	-42.0%
Home Health	80.0%	34.7%	45.4%	55.9%	39.2%	16.7%	75.9%	33.9%	42.1%	67.4%	36.0%	31.4%
Institutional	7.2%	3.3%	3.9%	34.7%	16.1%	18.6%	9.3%	8.1%	1.2%	20.8%	10.0%	10.8%
Other*	0.0%	0.5%	-0.5%	0.4%	0.4%	0.0%	1.9%	0.6%	1.2%	0.3%	0.5%	-0.2%

*Other includes Against Medical Advice (AMA); died; alive destination unknown; and not recorded.

NOTE: Institutional includes HCUP categories of Skilled Nursing Facility (SNF); Short-term hospital; Intermediate Care Facility (ICF); and Another Type of Facility.

SOURCE: HPC analysis of Healthcare Cost and Utlization Project (HCUPs), Massachusetts SID (State Inpatient Databases) & Nationwide Inpatient Sample survey, 2011

as in the U.S. overall, health care savings in Massachusetts would total almost $400 million a year, or about 22 percent of total Medicare PAC spending in Massachusetts.[v]

Analysis of PAC use following specific procedures

While some conditions, such as a traumatic brain injury or severe stroke, almost always require intensive PAC, other conditions typically rely on more clinical discretion to determine the need for PAC. Differences in practice patterns may be seen more clearly by examining trends following specific procedures that require more clinical judgment. Therefore, the HPC analyzed PAC use in Massachusetts following (1) joint replacements without major complications or comorbidities (DRG 470), and (2) coronary bypass without cardiac catheter without major complications or comorbidities (DRG 236). These diagnoses have high patient volume and are frequently referred to some type of PAC.

For both procedures, compared to the U.S. overall, rates of discharge to PAC in Massachusetts were orders of magnitude larger. For joint replacements, 24 percent of all patients in the U.S. had a routine home discharge compared to just 4 percent of patients in Massachusetts in 2011 (see **Table 4.2**). Differences in use of institutional settings following joint replacement were particularly noteworthy, with 36 percent of patients in the U.S. discharged to institutional PAC versus 52 percent in Massachusetts. Among

[v] While this estimate does not account for offsetting factors in the scenario of a shift in discharge distribution in Massachusetts, such as spending associated with outpatient services for routine discharges or possible higher marginal case mix among post-acute care settings, our upper bound estimate with the basic model suggests the potential for considerable savings.

Figure 4.2: Probability of discharge to any PAC, by hospital, all DRGs

Adjusted share of all discharges to any PAC setting versus routine discharge, 2012

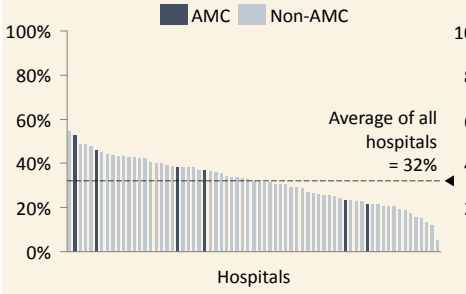


Figure 4.3: Probability of discharge to institutional PAC, by hospital, all DRGs

Adjusted share of discharge to an institutional setting versus home health for post-acute care†, 2012

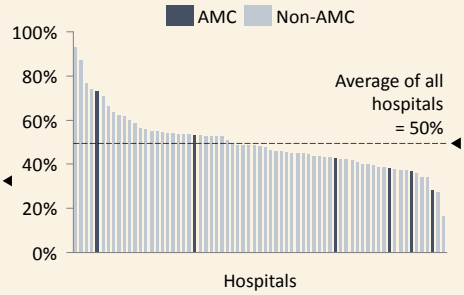
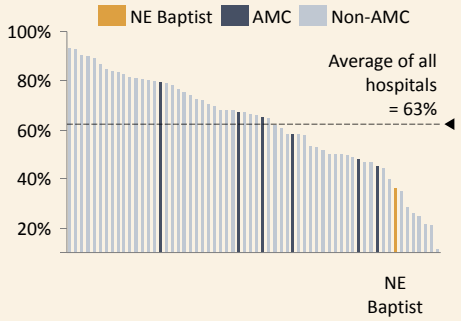


Figure 4.4: Probability of discharge to institutional PAC, by hospital, after joint replacement surgery

Adjusted share of PAC discharges sent to an institutional setting versus home health† for DRG 470 (joint replacement)



† Discharge to an institutional facility (long-term care hospital, inpatient rehabilitation facility, or skilled nursing facility) as a proportion of discharges to either an institutional facility or home health.

NOTE: Probabilities for each hospital were calculated after adjusting for the following: age, sex, payer group, income, admit source of the patient, length of stay, and DRG. Our sample included patients who had a routine discharge, a discharge to a long-term care hospital, inpatient rehabilitation facility, skilled nursing facility, or to a home healthcare provider. Specialty hospitals, except for New England Baptist in Figure 4.4, were excluded from the display table and the average hospital rate. DRG = diagnosis-related group; PAC = post-acute care. NE Baptist = New England Baptist. AMC = Academic Medical Center (see Appendix A)

SOURCE: HPC analysis of Massachusetts Health Data Consortium, inpatient discharge database, 2012

commercially insured patients, 18 percent of patients in the U.S. were discharged to an institution following a joint replacement, compared to 30 percent in Massachusetts. The difference was largest among Medicare patients: 50 percent of patients in U.S. were discharged to an institutional setting, compared to 70 percent in Massachusetts. Among Medicare patients in Massachusetts with a joint replacement, spending averaged $2,900 per home health discharge and $8,000 per institutional PAC discharge.[vi] If Massachusetts Medicare patients had the PAC use patterns following joint replacement seen in the U.S. overall, annual healthcare savings would total almost $17 million.

Table 4.3: Medicare spending in Massachusetts by post-acute care facility type

Total spending by fee-for-service Medicare in Massachusetts, 2012

Facility type	Spending (in millions)
Home health	$510
Institutional	$1,342
Skilled nursing facility	$959
Inpatient rehabilitation facility	$183
Long-term care hospital	$200
Total	$1,852

SOURCE: HPC and Oliver Wyman analysis of Medicare claims data, 2012

For discharge following coronary bypass, data suggests that home health is a standard practice in Massachusetts, a contrast to practice patterns in the U.S. overall (see **Table 4.2**). For example, 67 percent of patients in Massachusetts are discharged to home health following coronary bypass, compared to only 36 percent of patients in the U.S. overall. Finally, as discussed further below, available data does not show that these Massachusetts practice patterns for PAC result in consistently higher quality outcomes.

Hospital-level variation in PAC use

Even among Massachusetts' hospitals, PAC discharge patterns vary substantially, with little relationship to quality of outcomes, based on available measures. Adjusting for multiple factors, **Figure 4.2** shows the probability of discharge to PAC compared to routine home discharge, and **Figure 4.3** shows, among PAC discharges, the probability of discharge to an institutional setting compared to home health. For joint replacement cases discharged to PAC, **Figure 4.4** shows the probability of discharge to an institutional setting compared to home health, adjusting for multiple factors.

As we compared Massachusetts to the U.S. for condi-

[vi] See technical appendix for details on estimates.

Table 4.4: Distribution of discharge destination following joint replacement by hospital type

Percentage of total discharges for DRG 470 by post-acute care settings, by hospital type, 2012

	Length of stay (days)	Routine/ Home	Home Health Agency	Institutional
Academic Medical Centers	3.3	11.3%	34.2%	54.1%
Teaching Hospitals	3.4	5.7%	36.4%	55.1%
Community Hospitals	3.5	5.7%	31.9%	61.6%
New England Baptist Hospital	3.1	0.8%	69.9%	29.2%

SOURCE: HPC analysis of Massachusetts Health Data Consortium inpatient discharge database; 2012

tions requiring clinical discretion, we also analyzed variation by hospital type within Massachusetts for the same procedures: joint replacements without major complications or comorbidities, and coronary bypass surgeries without major complications or comorbidities.

Overall, for joint replacements, most patients receive some post-acute care, the main differences lie in the choice between home health versus institutional care. We analyzed variation in discharge patterns by categories of hospitals: academic medical centers (AMCs), teaching hospitals and community hospitals.[vii] AMCs discharge a larger share of patients to routine care and a smaller share of patients to an institutional setting, compared to community hospitals and teaching hospitals (see **Table 4.4**). However, practice patterns among all hospital types differ markedly from practice at New England Baptist, a hospital that specializes in orthopedic surgery and the treatment of musculoskeletal diseases and disorders. New England Baptist discharges a substantially smaller share of patients to an institutional setting—about 29 percent compared to 62 percent at community hospitals.

Table 4.5: Distribution of discharge destination following coronary bypass by hospital type

Percentage of total discharges for DRG 236 by post-acute care setting and by hospital type, 2012

	Length of stay (days)	Routine/ Home	Home Health Agency	Institutional
Academic Medical Centers	6.8	26.8%	55.7%	17.0%
Teaching Hospitals	6.3	6.8%	75.2%	17.9%

SOURCE: HPC analysis of Massachusetts Health Data Consortium inpatient discharge database; 2012

[vii] AMCs, teaching, and community hospitals were defined by CHIA. See Appendix A in this report for more information.

Length of stay in the inpatient setting can impact the need for PAC, although little evidence has been published quantifying the relationship. Evaluating joint replacement cases in Massachusetts, we did not find that shorter length of stay resulted in higher rates of discharge to an institutional setting across hospital types. While the results in **Table 4.4** do not adjust for age or severity of cases, it is unlikely that the average severity of these cases at New England Baptist, AMCs or teaching hospitals would be lower than that of cases at community hospitals.

For coronary bypass surgery in Massachusetts (few of which are performed in community hospitals), use of institutional care following the procedure is relatively uncommon. Instead, we found dramatic differences between AMCs and teaching hospitals in the use of home health versus routine home discharge, with AMCs using home health less often (see **Table 4.5**). AMCs had a longer average length of stay for the procedure, unadjusted for patient age or severity, which may factor in PAC discharge patterns. However, the difference seems unlikely to account for the magnitude of the difference in PAC discharge patterns (see **Table 4.5**).

Quality

The practice patterns of discharging patients at higher rates to PAC result in higher costs, which could be justified if patients had lower readmissions or improved quality outcomes. However, overall higher rates of PAC do not appear to result in higher measured quality outcomes.

We used Medicare data to compare readmissions outcomes in Massachusetts to other states, due to a lack of comparable data for other payers. As detailed in earlier chapters of this report (see **Chapter 3: "Hospital-Level Variation in Spending Per Episode of Care" and Chapter 5: "Wasteful Spending: Readmissions and Avoidable Emergency Department Use"**), despite substantially higher use of PAC (and particularly institutional PAC) in Massachusetts, Medicare readmissions rates in the Commonwealth are slightly higher than in the U.S. overall. For CMS' hospital-wide, all-cause readmissions measure, Massachusetts' readmission rate for Medicare patients was 16.3 percent in 2013 versus 16.0 percent overall in the U.S. overall. For hip and knee replacements in Medicare

patients, procedures commonly requiring some form of PAC, readmission rates in Massachusetts were 5.5 percent in 2013, compared to 5.4 percent in the U.S. overall (not statistically different), and complication rates were also not statistically different from the national average of 3.4 percent.

Similarly, between hospitals in Massachusetts, variation in PAC discharge patterns does not appear to result in differences in outcomes. We compared CMS data on readmission and complication[viii] rates among Medicare beneficiaries for joint replacements, including both high- and low-risk patients. All hospitals in the analysis had a readmission and complication rate that was statistically the same as the national average, except for New England Baptist.

Data and evidence-based practice

Some portion of higher PAC utilization in Massachusetts is a function of differences in population demographics and trends in other healthcare sectors in the Commonwealth.[1] For example, even adjusting for age, Massachusetts has higher rates of people living in nursing homes, which would also impact PAC discharge patterns, in that a nursing home resident with a hospitalization would have to be discharged back to an institutional setting.[6] However, rates are higher among Medicare, Medicaid, and commercial payers, and PAC use rates in Massachusetts are still twice as high as in the U.S. overall, adjusting for multiple risk factors (see **Table 4.2**). Therefore, differences in practice patterns appear to play a driving role. Factors influencing providers' referral decisions and practice patterns include institutional culture and individual provider practice, the availability of PAC facilities or open beds in a given market, the hospital's or family's proximity to PAC providers, patient preference and ability to self care, availability of family caregiver support, and relationships among providers, such as when a hospital prefers to discharge its patients to PAC providers with whom it has system affiliation or contractual relationships.[4] In order to optimize use of post-acute care, providers need information and evidence-based policies.

Ideally, providers would continue to exercise sound clinical judgment but could also draw upon a strong evidence base; rehabilitative and other outcomes could be compared between different PAC facilities and different facility types, as improvement in function is a key outcome for patients. However, each PAC setting currently uses a different measurement tool and scales to assess rehabilitation and other outcomes for patients. This lack of standardized data makes it very difficult for hospitals, providers, payers and, ultimately, patients to assess what type of PAC setting would optimize patient outcomes and value, for treating patients with conditions that are commonly treated in multiple types of settings.

A recently enacted federal law will require PAC providers to report standardized patient assessment data, data on quality measures, and data on resource use and other measures by 2019 or earlier. [ix] This requirement will allow for data to be more easily exchanged among acute and PAC providers, in order to facilitate coordinated care and improved patient outcomes. Sharing data for these purposes should be an important goal for providers. The Medicare Payment Advisory Commission (MedPAC) has long called for these requirements, and has also recently noted that items from the standard assessment tool could be required at discharge from the hospital to inform placement decisions.[7]

While the federal law does not require use of standard tools in the hospital, capturing this information in the acute setting could be a next step. Introducing a common tool to be used by hospitals for discharge planning would require upfront investment in training staff and ongoing resources in staff time, but could ultimately provide valuable assistance in improving discharge patterns to optimize patient outcomes, patient satisfaction and value of care. These new requirements present an important opportunity to improve discharge planning and patient care. Providers should use the new data to innovate on improving discharge planning and patient outcomes, as well as evaluating and sharing best practices. These tools and standardized approaches should be applied to all populations in Massachusetts, not only Medicare, particularly given the relatively higher rate of PAC use across all payers in the Commonwealth.

Developments in PAC

Changes in the healthcare market in Massachusetts, including the expansion of alternative payment models (APMs), have increased the focus on PAC as an area of

[viii] Complications measured include heart attack (acute myocardial infarction), pneumonia, or sepsis/septicemia/shock during the index admission or within seven days of admission; surgical site bleeding, pulmonary embolism, or death during the index admission or within 30 days of admission; or mechanical complications or periprosthetic joint infection/wound infection during the index admission or within 90 days of admission.

[ix] Improving Medicare Post-Acute Care Transformation Act of 2014 (IMPACT Act of 2014)

opportunity. For example, some systems participating in Pioneer Accountable Care Organizations (ACOs) are evaluating PAC partners on the basis of quality and value.[8] Additionally, some providers participating in the Bundled Payments for Care Improvement (BPCI) demonstration program are using innovative data-based tools and services to optimize PAC placement and care coordination.[9] While we do not have access to data recent enough to accurately evaluate changes in PAC use since ACOs and BCPI went into effect, ongoing monitoring will be crucial. Efforts to develop episode-based payments for commercial patients in Massachusetts could increase the incentives to provide high value, high quality PAC for a wider range of patients. Furthermore, determining episode payment levels requires consideration of appropriate spending levels for PAC. Therefore, as the HPC works with stakeholders to explore developing episode-based payments in Massachusetts, we will consider opportunities to convene providers around sharing best practices and discussing PAC use patterns for episodes of care.

Conclusion

The combination of high PAC spending and practice pattern variation among hospitals, with no measureable impact on quality, suggests potential opportunities for improved efficiency. Moreover, the ability to manage PAC well may be crucial for providers to succeed under APMs. Payers and providers may wish to evaluate whether home health services have sufficient value at their current use rates and may want to consider targeting home-health care use to the most appropriate patients. For a particular patient, discharge to a SNF, IRF, or LTCH might be the right option for the patient's needs. However, given the relatively high cost of institutional PAC services (SNFs, IRFs, LTCHs) and the goal of ensuring that patients are in the least restrictive setting necessary for the desired outcome, payers and providers should strongly consider adopting evidence-based tools to improve discharge planning, especially to target use of institutional settings to only the most appropriate patients. The growth of APMs in the Commonwealth, including global payments, shared savings and episode payments, will help provide aligned financial incentives that encourage the use of evidence-based practices that provide value. As APMs grow, using metrics, collecting better data and sharing best practices will be crucial to creating change.

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Opportunities to Increase Quality and Efficiency

5. Wasteful Spending: Readmissions and Emergency Department Use

The Health Policy Commission (HPC) has estimated that 21 to 39 percent of healthcare spending in Massachusetts ($14.7 to $26.9 billion based on 2012 spending) can be considered wasteful, based on national estimates of spending that could be eliminated without reducing the quality of care patients receive.[1] Many opportunities for waste reduction exist, including reducing overuse of unnecessary tests and diagnostics and enhancing administrative simplification efforts on the provider and payer side. This chapter focuses on two opportunities to reduce wasteful healthcare spending: excess hospital readmissions and avoidable emergency department (ED) visits (see **Table 5.1**). Both require coordinated action across multiple care settings and may be impacted by improving care delivery through alternative-payment methods (APMs) and other changes to incentives (see **Chapter 8: "Alternative Payment Methods" and Chapter 9: "Demand-Side Incentives"**).

Table 5.1: Selected examples of wasteful spending in Massachusetts

Dollars, 2009 and 2010

	Estimate of wasteful spending (MA)	Definition of category
Opportunities for coordinated action across care settings		
Excess hospital readmissions*	$700 M	Hospital readmissions that could be prevented through higher quality care during the initial hospitalization, adequate discharge planning, adequate post-discharge follow up, and/or improved coordination between inpatient and outpatient healthcare teams
Avoidable Emergency Department (ED) visits†	$550 M	Visits to the emergency room that are either non-emergent, treatable in a primary care setting, or preventable given timely and effective primary care

* Estimated costs associated with "potentially preventable readmissions" (PPR) in FY 2009 and established through 3M's PPR attribution methodology.

† The data for this report include all outpatient emergency department visits, including Satellite Emergency Facility visits, by patients whose visits result in neither an outpatient observation stay nor an inpatient admission at the reporting facility from FY 2006 to FY 2010.

Source: Division of Health Care Finance and Policy, 2010 and 2011

Hospital readmissions

Excess hospital readmission rates may indicate incomplete treatment, poor care, or poor coordination. The Centers for Medicare & Medicaid (CMS) has developed a measure of hospital readmissions that reflects the percentage of patients readmitted to the hospital within 30 days, adjusted for age and clinical risk, and can be calculated at the regional or hospital level.[i] The CMS measure is hospital-wide (all-condition) and all-cause, meaning that all readmissions are included whether they could be considered potentially preventable or not. This risk-adjusted measure[ii] for Medicare patients shows that Massachusetts' readmission rate is slightly higher than the U.S. rate (16.3 percent to 16.0 percent, respectively).[2] Further, for CMS' condition specific measures (heart failure, heart attack, and

[i] This measure differs in concept from the measure used by MassPro, the MA Quality Improvement Organization, which reflects readmissions per-1,000 population and is not risk-adjusted.

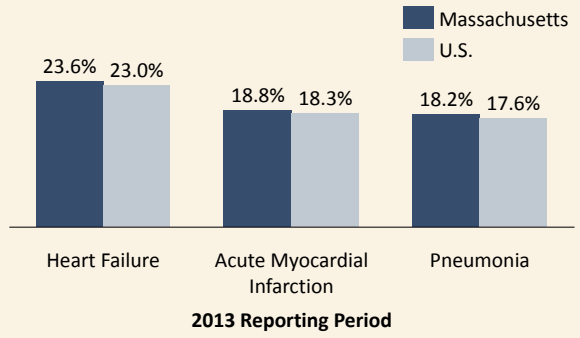
[ii] The measure reports a single composite risk-standardized readmission rate (RSRR), derived from the volume-weighted results of five different models, one for each of the following specialty cohorts (groups of related discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardio-respiratory, cardiovascular and neurology. This measure is not adjusted for patients' socioeconomic status. As a result, the measure may be used to track disparities by socioeconomic status, but, at the same time, comparisons across hospitals and readmissions penalties may disadvantage hospitals that serve low-income patients, to the extent that socio-economic characteristics have a direct influence on the likelihood of readmissions.

pneumonia), Massachusetts has higher readmission rates than neighboring states and the U.S.[3] Looking at a CMS composite average readmissions rate for the three conditions noted above, Massachusetts' rate of 20.8 percent is higher than in Vermont (18.7 percent), New Hampshire (19.2 percent), Maine (19.3 percent) and Connecticut (20.3 percent). However, the rate in Massachusetts is lower than in New York (21.3).[3] Readmission rates for hip and knee replacements, reported for the first time in CMS' 2013 reporting period, are roughly similar in Massachusetts and the U.S. (5.5 percent to 5.4 percent, respectively).

Overall, Massachusetts' Medicare readmissions rates are higher than the national average (see **Figure 5.1**), and the Commonwealth ranks ahead of just four states and the District of Columbia on readmission rates (the composite average of the 30-day readmission rates for heart attack, heart failure and pneumonia). While average readmission rates in Massachusetts and the U.S. overall appear to be decreasing slightly over time, additional data is needed to track relative progress in the Commonwealth compared to the nation over time.[iii]

Figure 5.1: Medicare condition-specific readmission rates, MA and U.S.

Risk-adjusted readmission rates, 2013 CMS reporting period (average of 2009 – 2012)



NOTE: 30-day unplanned readmission measures adjust for patient characteristics, including the patient's age, past medical history, and comorbidities.

SOURCE: Centers for Medicare & Medicaid Services, Hospital Compare 2013

The Center for Health Information and Analysis (CHIA) has recently calculated a preliminary all-payer, hospital-wide readmission measure, using the same approach that is used for the CMS Medicare measure. The average readmissions rate in Massachusetts was 13.8 percent from October, 2011 to September, 2012. Risk-adjusted readmission rates by hospital had a relatively narrow range, from 13.2 percent at the 25th percentile to 14.3 percent at the 75th percentile (12.6 percent at the 10th percentile to 14.9 percent at the 90th percentile).

Reducing readmissions rates

Recent policies have aimed to improve care after discharge and reduce readmissions through financial incentives for providers that are tied to outcomes. The most notable initiative is CMS' Medicare Hospital Readmissions Reduction Program (HRRP), which began reducing Medicare payments for hospitals with excess readmissions for certain conditions on October 1, 2012.[iv]

The magnitude of the penalty is based on the extent to which a hospital's readmission rate exceeds the national average, after an adjustment for patients' clinical characteristics. The maximum penalty is a 3 percent cut in Medicare payments for all patients of a given hospital, not just those readmitted. This year, the penalty will apply to payments from October, 2014 through September, 2015. In Massachusetts, 55 hospitals, representing 80 percent of all hospitals in the Commonwealth, will be penalized.[4] Nationally, the average hospital penalty ranges from 0.1 to 1.2 percent deducted from normal Medicare payment rates per discharge—with an average hospital penalty of 0.8 percent, Massachusetts has the eighth-highest average hospital penalty percentage in the nation, suggesting the potential to improve clinical performance.

In addition to HRRP, Massachusetts' hospitals have been participating in many intervention programs. These programs include the Project Re-Engineered Discharge (Project RED) built to develop and test strategies to improve the hospital discharge process in a way that promotes patient safety; the "Interventions to Reduce Acute Care Transfers" (INTERACT) initiative to improve care and reduce the frequency of potentially avoidable readmissions from skilled nursing facilities back to an acute hospital; and the Improving Massachusetts Post-Acute Care Transfers (IMPACT) project designed to improve care transitions using an enhanced electronic health information exchange through the Massachusetts Health Information Highway (Mass HIway).[5,6] MassHealth also has a potentially avoidable readmissions program, which includes financial penalties for hospitals with higher than average risk-adjusted readmission rates. In 2013, MassHealth up-

[iii] To obtain stable estimates, CMS bases annual estimates for its composite measure on a four-year rolling average. Therefore, longer time trends are necessary for evaluating relative progress over time on this measure.

[iv] The conditions evaluated are heart attack, heart failure, and pneumonia. For its evaluation in FY 2015, CMS added two new categories for evaluation: patients initially admitted for hip or knee replacements, and patients admitted for an acute exacerbation of COPD.

dated the methodology for the penalty calculation, including incorporating year-over-year hospital improvement into the calculation to incent continued performance improvement. Furthermore, Massachusetts is one of three states nationwide (along with Michigan and Washington) that has participated in the State Action on Avoidable Rehospitalizations (STAAR) program, which focuses on multi-stakeholder collaboration and best practice sharing to facilitate readmission reduction efforts.[v] Lastly, in 2014, the Massachusetts Hospital Association (MHA) defined a statewide target of a 20 percent reduction in preventable readmissions by 2015, in line with the goals of the national Partnership for Patients.[7]

However, despite participation in these promising intervention programs, risk-adjusted readmission rates in Massachusetts remain relatively high, as evidenced by the Commonwealth's penalties and rankings. One challenge in motivating significant change is that when seeking to reduce readmissions, hospitals face conflicting financial incentives; as readmissions increase revenue for the hospital, and training staff and implementing new programs incur costs to the hospital. While avoiding the HRRP penalty may offset the lost revenue for some hospitals, the financial trade-offs likely vary by hospital.

These considerations suggest that other incentives for change are needed besides penalties. The healthcare system needs further adoption and enhancement of payment and care-delivery reforms that promote care coordination and high-quality patient outcomes. Promising approaches combine integrated care delivery — such as patient-centered medical homes (PCMHs) and Accountable Care Organization (ACOs) — with aligned payment incentives, such as global or episode-based payments (see **Chapter 8: Alternative Payment Methods**). In addition to payment incentives, public health interventions and social support services are necessary components for addressing drivers of readmissions. Patients living in low-income neighborhoods are 24 percent more likely than others to be readmitted, after demographic characteristics and clinical conditions were adjusted for.[8] Research documenting socioeconomic and environmental disparities in readmission rates indicates the importance of including investment in community drivers as part of any comprehensive solution for reducing readmissions.[9,10]

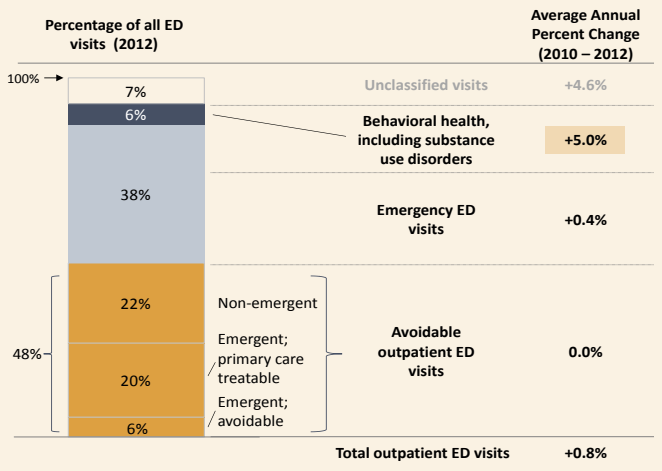
[v] Looking at a composite average readmission rate for heart failure, heart attack, and pneumonia, Massachusetts' rate is approximately 1 percentage point higher than that of Michigan, and approximately 1.9 percentage points higher than that of Washington State.

ED use

High rates of ED use may be an indicator of both sub-optimal care and inefficient delivery. When patients seek care at the ED for conditions that are non-emergent, treatable in primary care settings, or avoidable, healthcare resources are inefficiently and inappropriately utilized. Based on national data, Massachusetts ranks 20th in the U.S. for the highest rate of ED visits per 1,000 residents, and Massachusetts residents use the ED 12 percent more than the U.S. average.[11,vi]

Patients use the ED for non-emergent care for many reasons. For example, a recent study also found that urban patients with low socioeconomic status perceive hospital care as less expensive, more accessible and of higher quality than ambulatory care.[12] These factors suggest that patient education and addressing community barriers are important components of any ED avoidance strategy, in addition to incentives.

Figure 5.2: ED visits by type



NOTE: Definition for avoidable ED visits based on NYU Billings Algorithm
SOURCE: NYU Center for Health and Public Service Research; HPC analysis of Centers for Health Information and Analysis outpatient ED database, FY2010-FY2012

Avoidable ED visits have a significant impact on healthcare spending. Reflecting 2007 Blue Cross Blue Shield of Massachusetts Health Maintenance Oragnization (HMO) cost data trended to Q3 2009, the average cost of a visit to the ED ranged from $580 to $700, while the average cost of an office-based visit ranged from $130 to $180.[13] In addition, relative to office-based care, especially with a patient's own

[vi] Both the rate of ED use and the rate of low-acuity non-emergent ED use (discussed later) are typically deemed measures of inefficient or suboptimal care.

PCP, the potential for lack of coordination, communication and continuity between EDs and other providers can lead to redundant testing, complicate follow-up care and increase the risk of medical errors.[14]

To examine the direction and magnitude of inefficient ED utilization in Massachusetts, we evaluated ED visits which resulted in neither an outpatient observation stay nor an inpatient admission, and characterized them into one of three avoidable ED visit categories:[vii] (1) non-emergent (such as back problems, upper-respiratory infections and eye infections); (2) an emergency that required care within 12 hours but could be treated in a primary care setting (such as skin infection and abdominal pain); and (3) an emergency that could not be treated in a primary care setting but could have been avoided with earlier and/or better care (such as UTI and diabetes complications).[15]

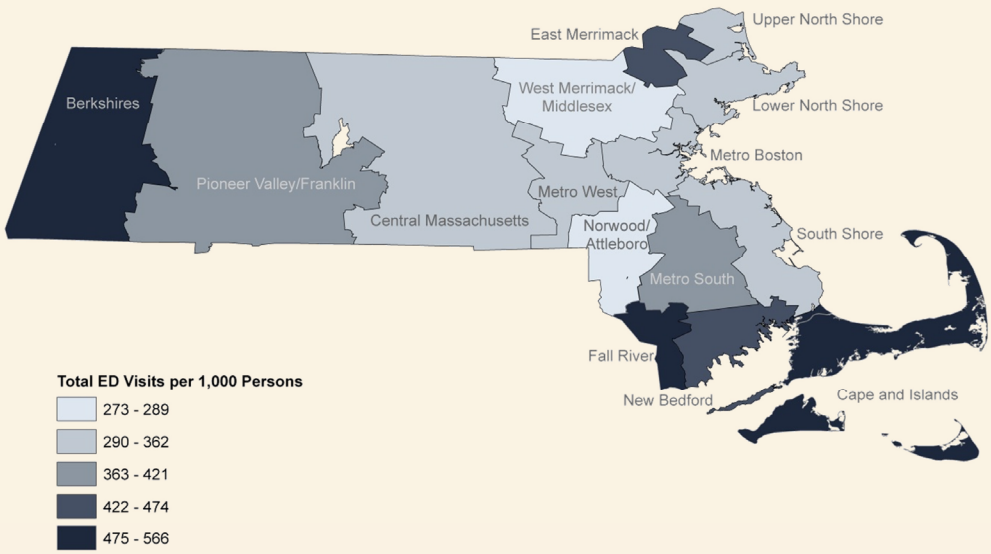
In 2012, avoidable outpatient ED visits accounted for almost half (48%) of total ED visits (see **Figure 5.2**). While growth in visits for most categories of ED use remained relatively flat between 2010 and 2012, visits for behavioral health conditions (including mental health and substance use disorders)[viii] grew sharply, at about 5 percent a year, totaling about 6 percent of all ED visits in 2012.

Adults were the primary users of the ED (roughly 80%) in 2012, which is proportional to the share of adults versus children in the Commonwealth. People living in lower income communities had higher rates of ED use, adjusted for age and sex. Adjusted ED rates also varied widely by region, adjusted for age and sex. Rates were higher in the Berkshires, Cape Cod and the Islands, and Fall River regions (see **Figure 5.3**).[ix]

The share of all ED visits that were avoidable also varied slightly by region, ranging from 46 to 52 percent of all ED visits in a given region (see **Technical Appendix B5**).

While comprising the smallest proportion of the state population, uninsured patients have the highest rate of adjusted ED visits (883 per 1,000 persons). Medicaid patients have the second highest rate of ED visits (522 per 1,000), followed by Medicare (381 per 1,000), while commercial patients, which make up the largest population segment, have the lowest rate of ED visits (216 per 1,000) (see **Figure 5.4**). However, Massachusetts differs from national trends in relative rates of ED visits among the uninsured. Nationally, rates of ED visits among the uninsured are lower than among Medicaid and Medicare populations.[x] This difference may be due in part to the Commonwealth's higher rate of insurance coverage in the population compared to the U.S. overall, resulting in a different composition of the uninsured. These rates of utilization may differ by payer

Figure 5.3: Outpatient ED visits per capita, by region
Total ED visits per 1,000 persons, 2012

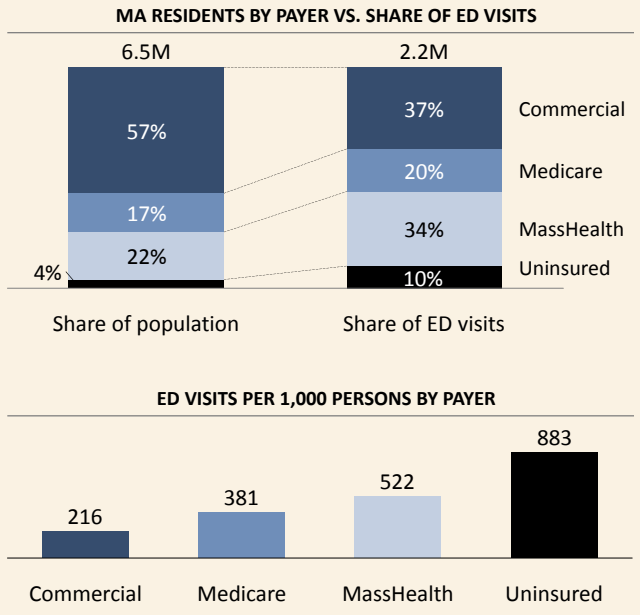


NOTE: All rates are adjusted for age and sex.
SOURCE: NYU Center for Health and Public Service Research; HPC analysis of Centers for Health Information and Analysis outpatient ED database, 2012

[vii] The analysis uses the NYU Billings Algorithm. Since few diagnoses are clear-cut in all cases, the algorithm assigns cases according to probability, reflecting this potential uncertainty and variation (see Technical Appendix B5).
[viii] Categories of behavioral health and substance use based on NYU Billings algorithm.
[ix] Because rates are based on the patient's home region, the higher rates in the resort areas of the Berkshires and Cape Cod are not due to medical incidents, while on vacation. The data do not include visits to hospitals outside of Massachusetts, so rates may be understated in border regions.
[x] Rates of ED visits were calculated as the ratio of ED visits for each payer category to the number of people in each payer category. ED visits data was from the 2011 National Hospital Ambulatory Medical Care Survey. Membership by payer category were from the US Census report, Income, Poverty, and Health Insurance Coverage in the United States: 2011.

Figure 5.4: ED visits by payer

Percentage of Massachusetts population, percentage of ED visits, and ED visits per 1,000 persons, by payer, 2012



NOTE: Approximately 100,000 Massachusetts residents and 200,000 ED visits not attributable to the coverage categories shown are excluded from the data.

SOURCE: U.S. Census Bureau, ACS 2012; Kaiser Family Foundation; HPC analysis of Centers for Health Information and Analysis Outpatient ED database, FY2012

because the populations tend to have different clinical profiles, with different access to personal and community resources as well as because of differences in benefit design. Nevertheless, these patterns are relevant to developing strategies targeting each population.

Reducing ED use

Avoidable ED use stems from a number of factors, including provider availability, patient incentives, and social and community factors. Effective solutions require addressing all of these factors, as well as the explicit acknowledgement that high rates of ED use are a system-wide issue.

Community collaborations

Community collaborations represent an important area of focus, with many examples of successful partnerships. For example, Vinfen Corporation is a Massachusetts provider of community-based services to people living with intellectual and developmental disabilities, brain injuries, and behavioral health conditions. In conjunction with local community partners, Vinfen has developed its "Community Based Health Homes for Individuals with Serious Mental Illness" program to better integrate primary and behavioral health care in the metropolitan Boston area.[16] The project embeds nurse practitioners, backed by a primary care physician (PCP) and enhanced telehealth technology, into existing community-based psychiatric rehabilitation and recovery teams. Vinfen has begun to report the program's results, finding that participants are accessing care, engaging with the telehealth system, and working towards health self-management goals. Further, Vinfen has observed a reduction in inpatient admissions, and a reduction in the average number of ER visits per participant per year.

Linkages with clinical and community partners are a key area of interest for the HPC's Community Hospital Acceleration, Revitalization and Transformation (CHART) initiative. Through the program's Phase 1 investments, pilots aimed at reducing unnecessary ED utilization include the formation of multidisciplinary high-risk care teams, behavioral health navigators in the ED, and school-based mental health counseling and care coordination.

MassHealth has adopted a number of innovative programs that strengthen the outpatient care system, including by strengthening care management in the Primary Care Clinician (PCC) plan (particularly for members with behavioral health conditions), launching Patient Centered Medical Home (PCMH) and Primary Care Payment Reform initiatives (PCPRI), and implementing the One Care program, which provides patients with an independent long term services coordinator who can coordinate a broad array of services needed by the most vulnerable members. MassHealth has also worked to address this issue in its Infrastructure and Capacity Building (ICB) grant program and its Delivery Systems Transformation Initiatives (DSTI) program for safety net hospitals, both of which support providers in the implementation of innovative efforts to improve care and reduce cost growth (see **Sidebar: "Lawrence General Hospital's effort to reduce ED overutilization by developing a federally-qualified health center"**).

Initiatives in other states can also be informative for efforts in Massachusetts. One example is Hennepin Health, a county-based, safety net ACO in Minnesota that connects the state's Medicaid program, interdisciplinary providers, and a health plan to coordinate the physical, behavioral, social and economic dimensions of care for Medicaid beneficiaries. Hennepin Health identifies high utilizing ED patients and connects them with wide-ranging care services. It also supports the extension of the traditional clinic-based care to

include non-clinical services believed to be important social determinants of health, including housing and vocational-support services. Between 2012 and 2013, ED visits decreased by 9.1 percent, making Hennepin Health a model for applying public funds to serve communities and populations with high needs.[17] Washington State has recently launched an ED partnership including physicians, hospitals, and state Medicaid representatives to help reduce avoidable ED visits and redirect care to the most appropriate setting for Medicaid beneficiaries (see **Sidebar: "Washington State's ER Is for Emergencies campaign"**).

It is important to remember that intervention programs have costs for the healthcare system, including hospitals and payers. Factoring these costs is important for evaluating the savings impact of interventions.

Considerations to improve care delivery

In addition to community collaborations, a range of other tools and tactics may be useful to shift care out of the ED and into lower intensity settings. One aspect of avoidable ED use is lack of access to timely appropriate alternate care. Solutions could include primary-care practices offering weekend hours; access to PCP and/or nurse-staffed telephone consultation or triage services; and the promotion of alternative approaches to primary care, such as the development of free-standing, urgent-care clinics and use of retail clinics, which provide less expensive and less intensive services for certain acute medical conditions.[18] The HPC's development of standards for patient-centered medical homes and ACOs will also aim to advance timely access to care. Further investment in health information technology (HIT) innovation could also be beneficial, including tele-health capacities to diagnose and treat routine symptoms, and global data-sharing tools to enable providers to share coordination strategies that follow patients to all points of care. For many initiatives, real-time exchange of information is a critical enabling factor. For example, when a patient is admitted to a hospital or visits an ED, the information should go to the managing PCP in real time.

Conclusion

Readmissions and avoidable ED visits represent areas for improvement in Massachusetts. Both require multi-faceted solutions, likely involving a combination of aligned financial incentives, provider commitment to change, and effective patient engagement. Community collaborations are particularly important for reducing avoidable ED visits, as discussed in the examples in this chapter. Given the growing rate of ED visits for behavioral health conditions, focusing on behavioral health is important in any strategy to increase the efficiency of ED use. Decreased ED spending may offset some of the costs of improvements elsewhere in the system. At the same time, such changes may further strain hospital budgets, arguing for ongoing attention to transformation and revitalization in this sector.

Lawrence General Hospital's effort to reduce ED overutilization by developing a federally-qualified health center:

The Greater Lawrence Family Health Center (GLFHC) is a Joint Commission-accredited Federally Qualified Health Center (FQHC), a community-based organization that provides comprehensive primary care and preventive care to underserved areas or populations, regardless of patients' ability to pay or health insurance status. Under a grant from the Blue Cross Blue Shield of Massachusetts Foundation, and with support from incentive funding through MassHealth's Delivery System Transformation Initiative, GLFHC is testing whether the center can deliver better care to the high ED utilizers among its 52,000 patients.

Located 26 miles north of Boston, Lawrence has high poverty and unemployment rates, along with a historical trend of Lawrence physicians relocating their medical practices to more affluent neighboring communities, which have left the city's largely indigent and minority residents without sufficient access to PCPs.[19] Language barriers, social isolation, and inadequate housing have further exacerbated poor health outcomes. As a result, the EDs of the two area hospitals—Lawrence General Hospital and the Holy Family Hospital in neighboring Methuen—have treated increasing numbers of patients in need of primary-care services.

In an effort to reduce this use of the ED, the two hospitals worked with the local Community Action Council to establish the GLFHC almost 30 years ago. With six separate office locations, including a Lawrence General Hospital site, the GLFHC is seeking to cut ED usage by 30 percent among its patients, and has implemented a program to identify and care for those who are high utilizers of the ED. MassHealth's Delivery System Transformation Initiatives program provides incentive funding to Lawrence General Hospital, as one of seven participating safety net hospitals, that has helped to support Lawrence General Hospital's collaboration with the GLFHC in examining the root causes of avoidable ED utilization among its patients, as well as developing and implementing strategies to redirect patients to more appropriate and ongoing care.

Washington State's "ER Is for Emergencies" campaign:

"ER Is for Emergencies" is a campaign in Washington State to help reduce avoidable ED visits within the state's Medicaid population and redirect care to the most appropriate setting. The program attempts to address roots of the problem of ED overuse - chronic medical conditions, substance-abuse issues, and lack of primary care access - by focusing on high-frequency users with targeted strategies. Joining the Washington State Medical Association in this ER initiative is a coalition of partners including the Washington State Hospital Association, the Washington Chapter of the American College of Emergency Physicians, and the Washington State Health Care Authority.

The campaign centers on adoption of its "Seven Best Practices Program"

1. Adopt a system to exchange patient information electronically among emergency departments to reduce "ED shopping"
2. Implement patient education efforts to re-direct care to the most appropriate setting
3. Institute an extensive case-management program to reduce inappropriate ED utilization by frequent users
4. Reduce inappropriate ED visits by implementing processes to assist frequent users with their care plans, and to make appointments for these patients to see their primary care provider within 72-96 hours of their emergency room visit
5. Implement narcotic guidelines in EDs that will discourage narcotic-seeking behavior
6. Track data on patients' prescribed controlled substances by widespread participation in the state's Prescription Monitoring Program (PMP)
7. Evaluate program results through designation of hospital personnel to review feedback reports regarding ED utilization

Further, an electronic-health information exchange allows hospitals and physicians to track in real-time when a patient checks into an ED. When high-frequency ED users are identified, they are put into a "Patients Requiring Coordination" (PRC) group, and subsequently, PRC client care plans are developed, and are centered around the connection to a PRC client's PCP. By one year after implementation of the program, all metrics showed improvement: in FY 2013, the rate of ED visits declined by 9.9 percent, the rate of visits by frequent users (who visited five or more times a year) decreased by 10.7 percent, the rate of visits resulting in a scheduled drug prescription decreased by 24.0 percent, and the rate of visits with a low-acuity diagnosis decreased by 14.2 percent. Estimated savings to the Medicaid program in FY 2013 totaled $33.6 million.

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Opportunities to Increase Quality and Efficiency

6. High-Cost Patients

The healthcare system in Massachusetts, like the U.S. overall, is characterized by a high concentration of spending on a small percentage of patients, where one-fourth of all patients represent close to 85 percent of total medical expenditures.[1] In fact, because of the concentration of spending, reducing spending by 3.5 percent in the top 25 percent most costly patients would produce equivalent savings to a 20 percent reduction for the bottom 75 percent of the population.

In its 2013 Annual Cost Trends Report, the Health Policy Commission (HPC) noted that in both the commercial and Medicare populations, five percent of patients represent over 40 percent of spending. Additionally, in both populations, 29 percent of these costly patients remained in the top five percent from one year to the next. Patients who have high medical spending over multiple years are a particularly important group to understand, since their persistently high costs may present opportunities for targeted interventions and investments that will drive savings, quality and improved patient experience.

For this Report, the HPC expanded its previous study of high-cost patients (HCPs). First, using three years from the All-Payer Claims Database (APCD), we performed a systematic study of clinical, regional, and demographic predictors and characteristics of persistent HCPs with either: (a) high total medical costs for three consecutive years (2010-2012); or (b) high costs specifically in emergency departments (EDs) for three consecutive years.[i] This was done for both commercially-insured adults (aged 19 to 64) and Medicare beneficiaries (aged 65 years or older).[ii] Second, we identified discrete segments of similar patients within the broader population of commercially-insured, persistent HCPs, using cluster analysis.

Persistently high-cost patients

In the commercial adult and Medicare populations, persistent HCPs—defined as patients who are in the top 5 percent in total medical spending for three consecutive years—represent less than one percent of their populations, but account for roughly 10 percent of commercial spending from the top three commercial payers (average total spending of $66,635 per patient) and nearly six percent of total Medicare spending (average total spending of $93,759 per patient) over the three years.

Controlling for clinical, regional, and demographic characteristics, several clinical conditions were found to predict persistently high total costs among commercial adults and Medicare populations.[iii] Some were "catastrophic" illnesses, like cancer, while others were chronic conditions such as arthritis, asthma, and diabetes,[iv] along with behavioral health conditions, including serious and persistent mental illness (SPMI), substance use disorder, and other mental health conditions.[v,vi] While catastrophic illnesses tend to be most predictive of persistently high costs, chronic medical conditions and behavioral health conditions tended to be the most prevalent among HCPs.

For example, among commercial patients, the combined condition of multiple sclerosis (MS) and ALS was highly predictive of high costs with an odds ratio of 11.4, meaning that if a patient had MS or ALS in the base year,

[i] Analyses of commercial spending included patients with coverage from the three largest commercial carriers, while analyses of Medicare spending included patients over 65 with fee-for-service Medicare. In both cases, spending included medical spending but not pharmacy spending or payments outside the claims system. The study period was 2010-2012. See Technical Appendix B6 for details on the data, sample, and methods used throughout this chapter. The technical appendix also includes additional results, including an analysis of patients with intermittently high spending (defined as high cost in years one and three, but not year two).

[ii] The HPC was not able to include MassHealth patients in the current analysis due to data limitations. When possible, the HPC will expand its HCP analysis to include such patients.

[iii] See Technical Appendix B6 for definitions of medical conditions, chronic conditions and behavioral health conditions.

[iv] "Catastrophic" illnesses in this report are defined as: cancer, HIV/AIDS, transplants, coronary artery disease (CAD)/heart failure, neonatal conditions and renal failure. See Technical Appendix for details of the derivation of this definition.

[v] Clinical conditions in this section were analyzed using the Optum's episode risk groups (ERGs). The terms used to describe such conditions and their definitions may differ from those used elsewhere in the report.

[vi] Other mental health conditions refer to non-SPMI conditions in Figure 6.1-6.4.

Figure 6.1: Key clinical conditions, commercial* patients with persistently high total costs

Prevalence (%) of high cost patients with a given medical condition versus predictive ability of the medical condition (Odds Ratio), base year 2010

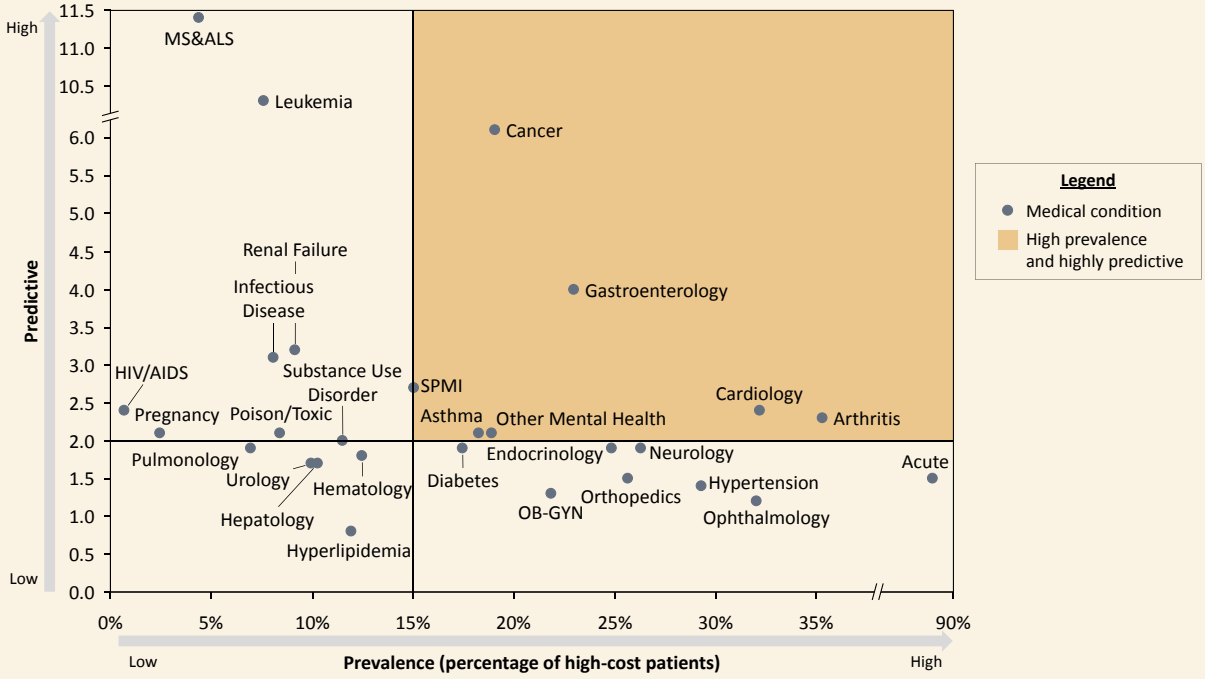
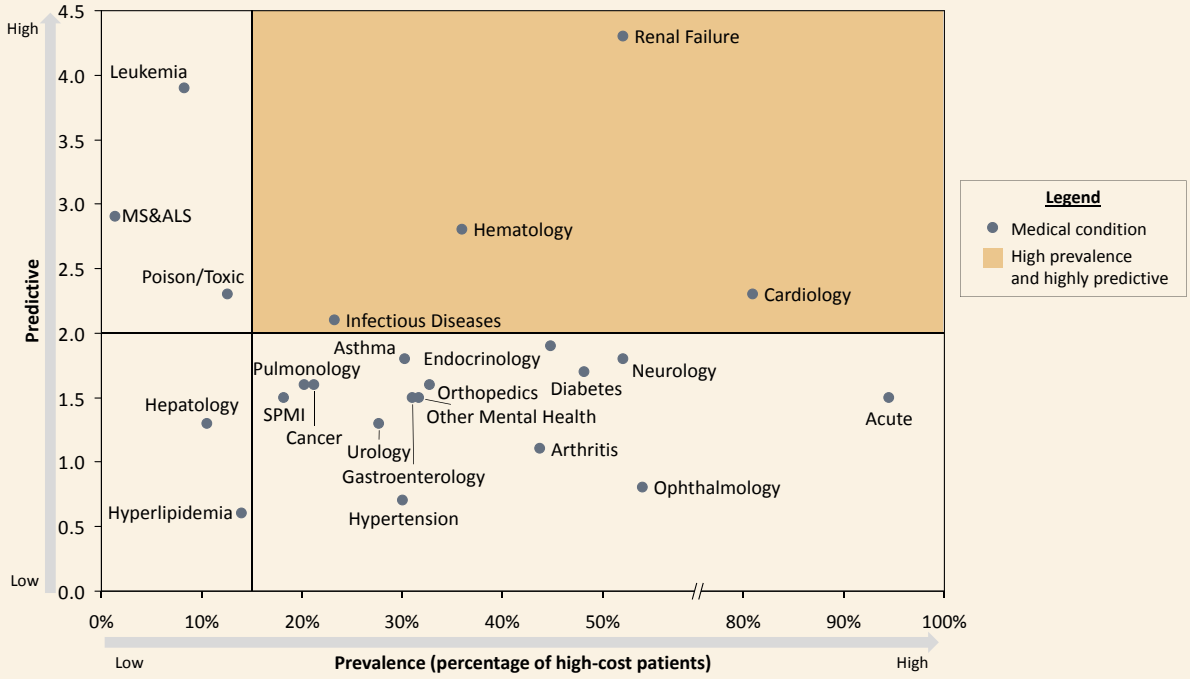


Figure 6.2: Key clinical conditions, Medicare† patients with persistently high total costs

Prevalence (%) of high cost patients with a given medical condition versus predictive ability of the medical condition (Odds Ratio), base year 2010



*Commercial adult population is limited to ages 19-64 in 2010 base year.

†Medicare population is limited to ages >=65 in 2010 base year.

NOTE: Persistently high cost patients (HCP) are defined as the 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) over three consecutive years (2010-2012). The sample was limited to patients who had full years of enrollment for 2010-2012 and costs greater than or equal to $0 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died during the study period. All medical conditions presented are statistically significant; SPMI=Severe and Persistent Mental Illness.

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, Tufts Health Plan and Medicare fee-for-service), 2010-2012

Figure 6.3: Key clinical conditions, commercial* patients with persistently high ED costs

Prevalence (%) of high cost patients with a given medical condition versus predictive ability of the medical condition (Odds Ratio), base year 2010

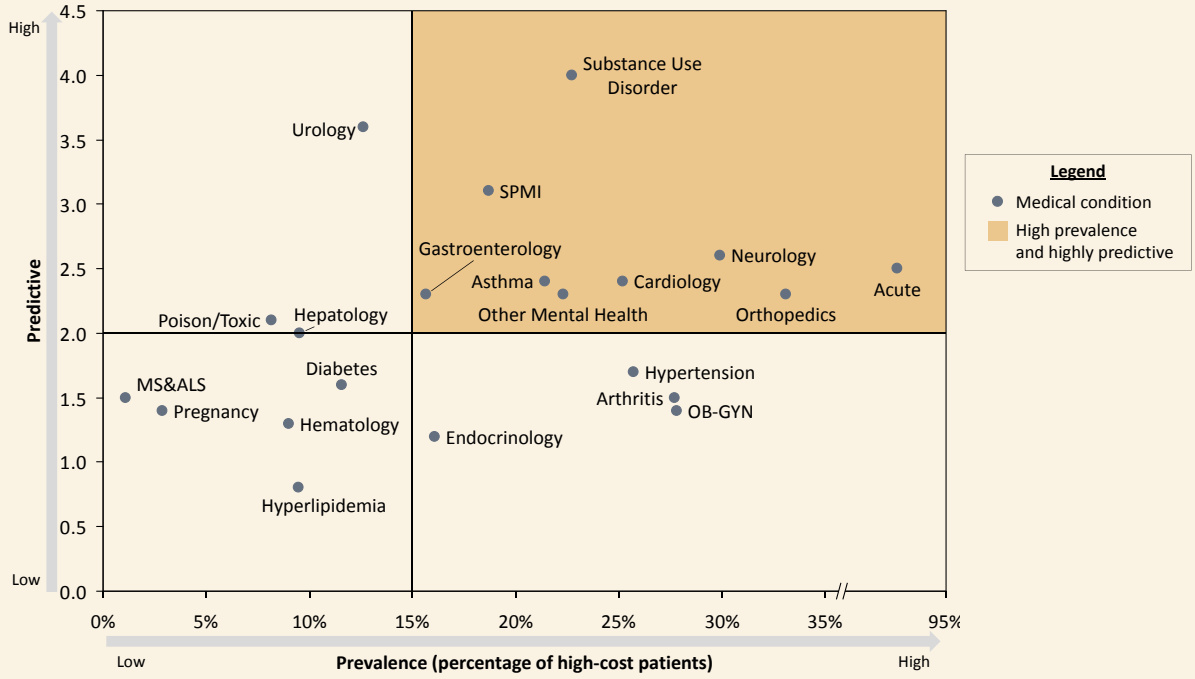
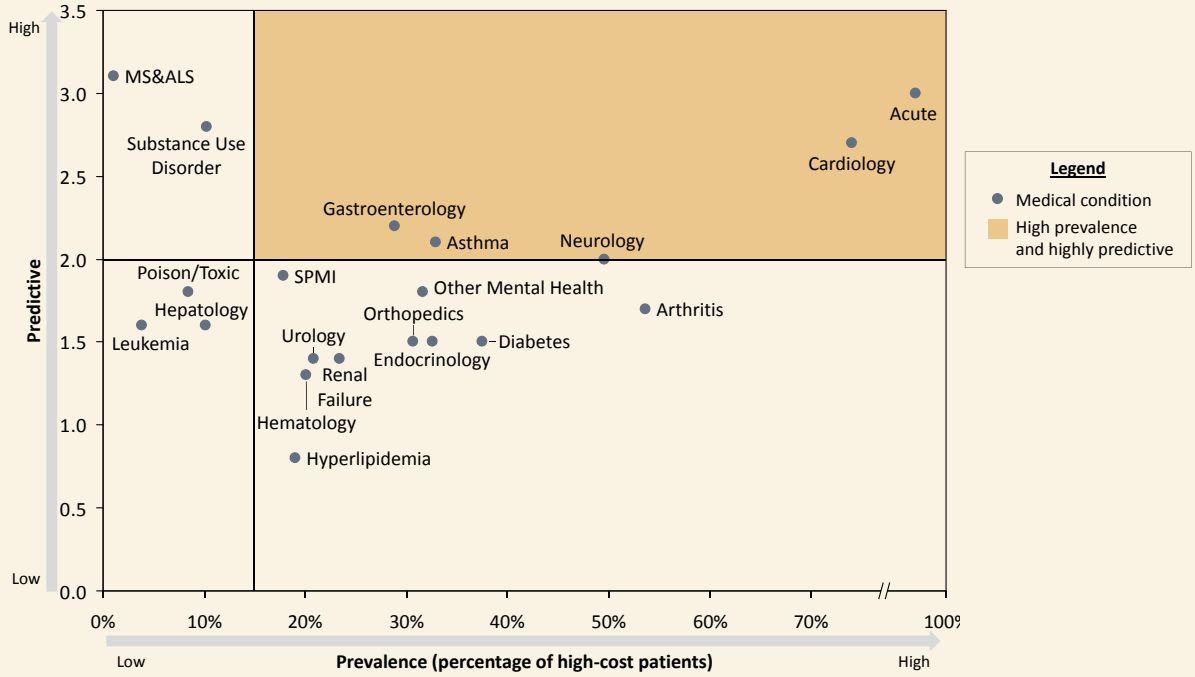


Figure 6.4: Key clinical conditions, Medicare† patients with persistently high ED costs

Prevalence (%) of high cost patients with a given medical condition versus predictive ability of the medical condition (Odds Ratio), base year 2010



*Commercial adult population is limited to ages 19-64 in 2010 base year.

†Medicare population is limited to ages >=65 in 2010 base year.

NOTE: Persistently high cost patients (HCP) are defined as the 5% of patients with highest claims-based medical expenditures (excluding pharmacy spending) over three consecutive years (2010-2012). The sample was limited to patients who had full years of enrollment for 2010-2012 and costs greater than or equal to $0 in each year. Figures do not capture pharmacy costs, payments outside the claims system, Medicare cost-sharing, or end-of-life care for patients who died during the study period. All medical conditions presented are statistically significant; SPMI=Severe and Persistent Mental Illness.

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, Tufts Health Plan, and Medicare fee-for-service), 2010-2012

then that patient was 11.4 times as likely to have persistently high costs over the three year period than another patient with similar characteristics but without MS or ALS (see **Figure 6.1**). At the same time, although highly predictive of persistently high costs, as rare conditions, MS and ALS were not common among high-cost patients. Only four percent of persistently HCPs had one of these conditions. An intervention for patients with MS or ALS would be a relatively efficient way to specifically target high-cost patients (due to the high predictive power) but would reach only a small segment of the population and hence absolute total savings potential may be more limited than for a prevalent condition.

In contrast, hypertension was less predictive of persistently high costs (odds ratio of 1.4), but relatively prevalent among high-cost patients, affecting close to 30 percent of them. As a result, an intervention focused on patients with hypertension would not be an efficient way to target high-cost patients but would touch a relatively large share of them. For chronic conditions more generally, each additional condition was associated with a 50 to 60 percent increase in the odds of being a persistent HCP (or 1.5 for commercial and 1.6 for Medicare). At the same time, 75 percent of commercial persistent HCPs had at least one chronic medical or behavioral health condition, while nearly all Medicare persistent HCPs did.

Like hypertension, the behavioral health conditions of 1) substance use disorder, 2) SPMI, and 3) other mental health (including anxiety and mood disorders) were each moderately predictive of persistently high costs (odds ratios of about 2) and prevalent in the persistently high-cost population (10 to 20 percent). Collectively, these three conditions were highly prevalent, affecting 44 percent of high-cost patients.

Balancing the criteria of predictive power and prevalence, gastroenterology, SPMI, arthritis, cardiology, other mental health, and asthma were found to be both highly predictive and prevalent conditions among commercial persistent HCPs (see **Figure 6.1**). For persistent Medicare HCPs, equivalent analyses support renal failure, cardiology, hematology and infectious diseases as areas for focus (**Figure 6.2**). Therefore, while patients with "catastrophic" illnesses may have the highest likelihood of persistently high costs, substantial savings may arise from targeting patients with more prevalent chronic medical and behavioral health conditions that are also associated with increased odds of becoming a persistent HCP.

Persistently high-cost ED patients

Patients with very high ED spending may represent an opportunity to provide care differently and thereby to improve both quality and efficiency. This is the case if some of their utilization stems from clinical acuity and sub-optimal treatment, leading to frequent crises, or from a lack of access to primary care, resulting in ED use for low-acuity or non-emergent conditions (see **Chapter 5: "Wasteful Spending: Readmissions and Avoidable Emergency Department Use"** for a fuller discussion of avoidable ED use). High ED medical spending may be driven by frequent ED use and/or by the intensity of services used in a given visit.

To better understand HCPs with persistently high ED costs, the HPC studied patients who were in the top 5 percent of ED spending for three consecutive years. In both the commercial and Medicare populations, persistent ED HCPs represent about 0.3 percent of the total population for each, but 7.9 percent of APCD commercial ED spending (average ED spending of $3,807 per HCP) and 5.3 percent of Medicare ED spending (average ED spending of $2,653 per HCP) in Massachusetts over the three years. The total medical spending for these high-cost ED patients equates to 1.9 percent of all commercial medical spending and 1.5 percent of all Medicare spending.

When both predictive power and prevalence were considered, gastroenterology, other mental health,[vii] asthma, cardiology, orthopedics, neurology, SPMI and substance use disorder were found to be key conditions for commercial patients, with persistently high ED spending (see **Figure 6.3**). For Medicare patients, cardiology, neurology, asthma, and gastroenterology emerged as areas for focus (see **Figure 6.4**).

Relative to the finding for high-cost patients in total medical spending, the presence of catastrophic illnesses were less predictive of high ED spending. The presence of each additional chronic condition was associated with a higher likelihood of being persistent ED HCPs among both commercial and Medicare populations (odds ratios of 1.4 and 1.6 respectively).

Cluster analysis of persistently high-cost patients

While the results presented above identify individual clinical conditions for focus, it may be more useful to define segments within the broad population of high-cost patients in total medical spending based on multiple characteristics and then develop targeted interventions

[vii] Other mental health conditions refer to non-SPMI conditions in Figure 6.1-6.4.

for each segment. To that end, the HPC employed an advanced statistical technique, known as cluster analysis, to identify segments of persistently high-cost patients within APCD commercial data. Cluster analysis groups patients that are relatively similar along the dimensions of study. The HPC's analysis was based on similarity of spending, clinical, regional, and demographic characteristics.

Of the clusters uncovered, five seem particularly relevant for clinical intervention or management:

- **Young females (under 18) from low-income communities with behavioral health conditions**. This cluster cost an average of $49,000 per person per year. Relative to other high-cost patients, this group was prone to acute conditions, other mental health conditions, and obstetrical and gynecological conditions.[viii] Annual average professional service spending for this group was $24,200, inpatient spending was $5,700, and ED spending was $200.[ix] Overall, this cluster had a pattern of intermittent spending, defined as higher spending in the first and third year and lower spending in the second.
- **Middle-aged females (34-45) from high-income communities with behavioral health conditions**. Patients in this cluster cost an average of $46,300 per person per year. Common conditions included acute conditions, substance use disorder, SPMI, and asthma. Average annual inpatient spending was $19,200, professional service spending was $12,700, and ED spending was $2,900.
- **Behavioral health and kidney disease**. Patients in this cluster were very costly, $131,100 per person per year over the three-year study period. While there were no demographic predictors for this segment, associated diseases included SPMI, substance-use disorder, and renal failure. This group had high annual average ED spending ($5,800) and high inpatient spending ($70,000).
- **Asthma patients**. Asthma patients emerged as a unique cluster with average costs of $58,600 per person per year, including ED spending of $1,200, professional service spending of $23,200 and inpatient spending of $11,200. The pattern of this spending was intermittent (high in years 1 and 3, lower in year 2).[x]
- **Transplants/renal failure patients**. Patients in this cluster were also very costly, $119,300 per person per year.[xi] Key clinical characteristics consisted of transplants, infectious disease, toxic drug effects, and renal failure. Annual ED spending was $600, professional service spending was $21,500, and inpatient spending was $69,800. While it may be difficult to reverse course at late stages of renal disease, improved care leading to early prevention and treatment could lead to considerable savings.

Conclusion

This analysis of persistent HCPs in both total and ED medical spending reinforces several key areas of focus for providers, payers and policymakers.

Behavioral Health

Among all persistent HCPs, behavioral health conditions stand out strongly, indicating that treatment for behavioral health conditions should be a central feature of any strategy to address high-cost patients. The cluster results also support this focus (see **Chapter 7: "Behavioral health"**).

Chronic Conditions

Conditions in gastroenterology, cardiology, hematology, orthopedics, and neurology as well as conditions such as arthritis and asthma are key medical conditions of interest based on their high prevalence and associated predictive ability. The cluster results further support a particular focus on asthma patients. These results suggest a role for improved care management protocols, improved patient education, and a continued focus on population health improvement for all chronic conditions, both medical and behavioral. Shifting care to lower cost settings may also be an important strategy to improve ED cost savings for patients with chronic conditions (see **Chapter 5: "Wasteful Spending: Readmissions and Avoidable Emergency Department"** for further discussion). One promising program in this arena is MassHealth's pilot, which offers targeted interventions to children with high-risk asthma to improve health and reduce costs of care and focuses on children who are considered most likely to require hospital treatment for their asthma in the absence of intervention.

[viii] Acute conditions are defined as low-cost conditions across a variety of disease categories, including infectious disease, endocrinology, psychiatry, neurology, ENT, pulmonology, gastroenterology, nephrology, urology, dermatology, and orthopedics.

[ix] Due to the structure of the HPC's analytic file, inpatient spending includes medical and surgical spending but not inpatient maternity or inpatient psychiatry.

[x] In the previous analysis, asthma emerged as predictive and prevalent for commercial persistent HCPs, commercial persistent ED HCPs, and Medicare persistent ED HCPs.

[xi] Patients with end-stage renal failure are frequently also eligible for Medicare, with coverage beginning in the fourth month of dialysis treatment.

Catastrophic conditions

It is important to note that many persistent HCPs generate high costs because of severe and complex medical illnesses (cancers, renal failure), for which spending may not amenable to current case-management techniques, which largely focus on reducing hospitalizations and ED visits through enhanced outpatient services.[2] HCPs with catastrophic illnesses often require high intensity hospitalization and ED services—making these interventions a poor match to catastrophic patients' needs. However, ignoring catastrophic patients misses a tremendous opportunity to lower costs and improve quality of life.

Specifically, while it may not be possible to reduce the utilization of high intensity services among catastrophic HCPs, it may be possible to affect spending on high intensity services. Research suggests that costs associated with renal failure may have the potential for lower spending and higher quality of care may be achieved through adopting therapeutic innovations and specialized care coordination.[3,4] Furthermore, these may be areas for increased medical research and public health focus. Even with considerations to manage risk (e.g. outlier caps), providers involved in alternative payment methods (APMs) may find that they need to address both preventable readmissions and the costs of catastrophic hospitalizations, if true savings are to be achieved.[4]

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Opportunities to Increase Quality and Efficiency

7. Behavioral Health

Chapter 224 sets a broad vision for a more affordable, effective and accountable healthcare system in Massachusetts. Given the prevalence of mental illnesses and substance use disorders (collectively referred to as behavioral health), the successful integration of appropriate and timely identification of, and treatment for, these conditions into the broader healthcare system is essential for realizing the Commonwealth's goals of improving outcomes and containing overall long-term cost growth. Prior research from the Health Policy Commission (HPC) indicates that patients with one or more behavioral health conditions have higher average physical healthcare (referred to throughout as medical care) costs. Not surprisingly, the current Report finds that patients with comorbid behavioral health and medical conditions are over represented among the highest cost patients, including in the emergency department (ED) (see **Chapter 6: "Persistently High-Cost Patients in Total and ED Spending"** for more discussion).

In this chapter, we further examine the relationship between behavioral health conditions and high medical-care costs. We point to the importance of integration of behavioral health into the healthcare system more broadly, and particularly into the primary-care setting, both to improve efficiencies in care delivery as well as better manage patient health. In-depth discussions may be found in the July, 2013 "Report to the Legislature and the Health Policy Commission of the Behavioral Health Integration Task Force" and the "Report of the Mental Health Advisory Committee in accordance with Section 186 of Chapter 139 of the Acts of 2012 and Chapter 38 of the Acts of 2013.

The relationship of behavioral health conditions and medical spending

Building on previous work, which found large differences in per-person spending on treatment for medical conditions between people with and without behavioral health conditions, we analyzed differences in per-episode spending for specific medical conditions, between people with and without behavioral health conditions.[1,i] **Figure 7.1** displays the 10 conditions with the highest aggregate difference[ii] in spending between patients with no behavioral health conditions versus those with at least one.

For some conditions, average spending differences per case are high, but there are relatively few total cases. For example, the estimated 300 cases of leukemia observed in commercially insured people with at least one behavioral health condition cost an average of $55,000 more than the cases observed in people without behavioral health conditions, multiplying to an aggregate difference of $16 million. This points to an opportunity for further study on the care provided to patients with leukemia and behavioral health conditions, and other targeted populations with a relatively small number of high-cost patients. Other conditions show a moderate difference in spending between patients with and without behavioral health conditions, but very high numbers of cases overall (such as Medicare spending on hypertension or localized joint degeneration). For example, the 67,900 cases of hypertension among Medicare fee-for-service (FFS) patients with at least one behavioral health condition cost an average of $500 more compared to cases in beneficiaries with no behavioral health conditions, resulting in a total spending difference of $34 million.[iii]

The large aggregate spending differences underscore that efforts to curb growth in healthcare spending in Massachusetts must include ongoing focus on behavioral health integration.

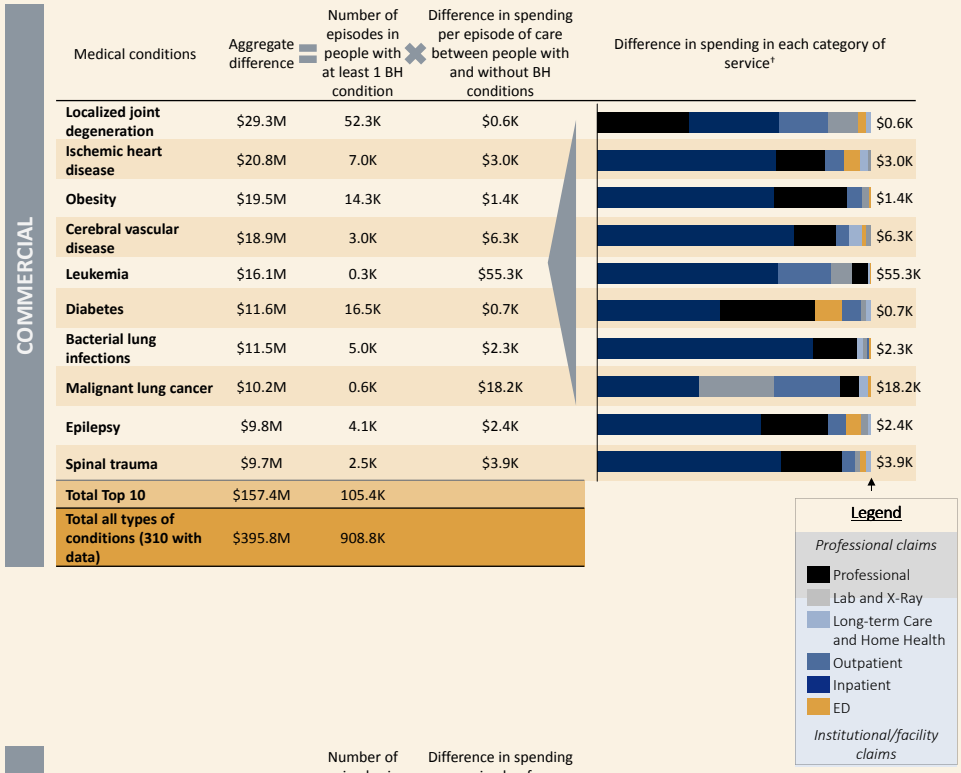
[i] Analyses of commercial spending included patients with coverage from the three largest commercial carriers, while analyses of Medicare spending included patients over 65 with fee-for-service Medicare. In both cases, spending included medical spending but not pharmacy spending or payments outside the claims system. See Technical Appendix C for details.

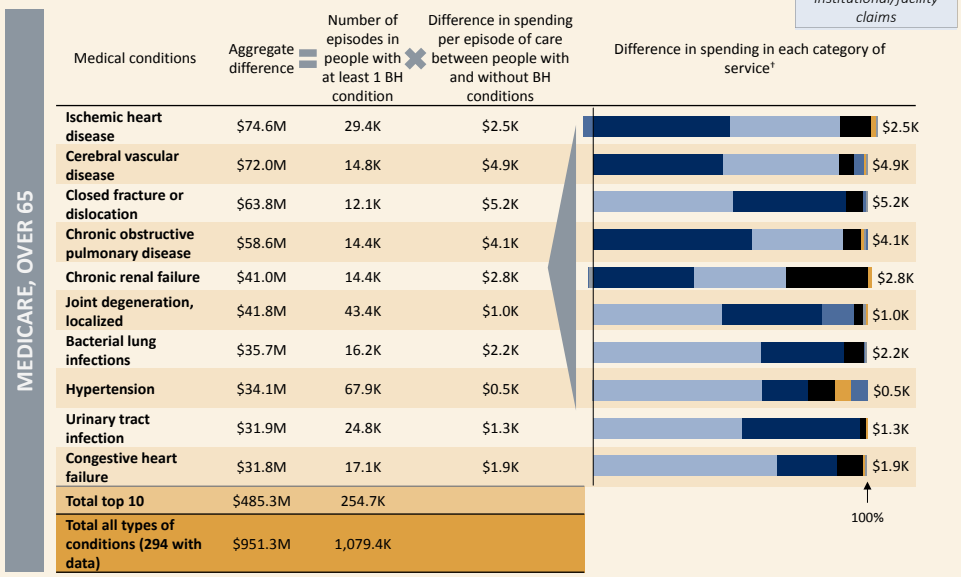
[ii] Difference in spending is defined here as the difference in average spending per episode between people with and without behavioral health conditions, multiplied by the number of cases observed in people with behavioral health conditions.

[iii] Relationships described here are correlations only, and do not represent causal links between conditions and expenditures.

Figure 7.1: Medical conditions with large spending difference between patients with and without BH conditions

Average claims-based spending per episode of care for select medical conditions with high aggregate difference (calculated as number of cases for people with at least 1 behavioral health condition* average difference in spending per episode of care) between people with and without behavioral health (BH) conditions, among patients with at least one chronic medical condition, for top three commercial payers, 2012 and Medicare Fee-for-service, 2011





*Presence of behavioral health and chronic medical conditions determined by episode risk flags from Optum (see technical appendix for more information)

†For detailed definitions of categories of service, see CHIA and HPC publication, "Massachusetts Commercial Medicare Spending: Findings from the All-Payer Claims Database." Lab/x-ray category includes professional services associated with laboratory and imaging.

NOTE: ED = Emergency Department

SOURCE: HPC analysis of Massachusetts All Payers Claims Database (payers include Blue Cross Blue Shield, Harvard Pilgrim Health Care, Tufts Health Plan, and Medicare fee-for-service), 2011 and 2012

Need for a coordinated behavioral health policy agenda

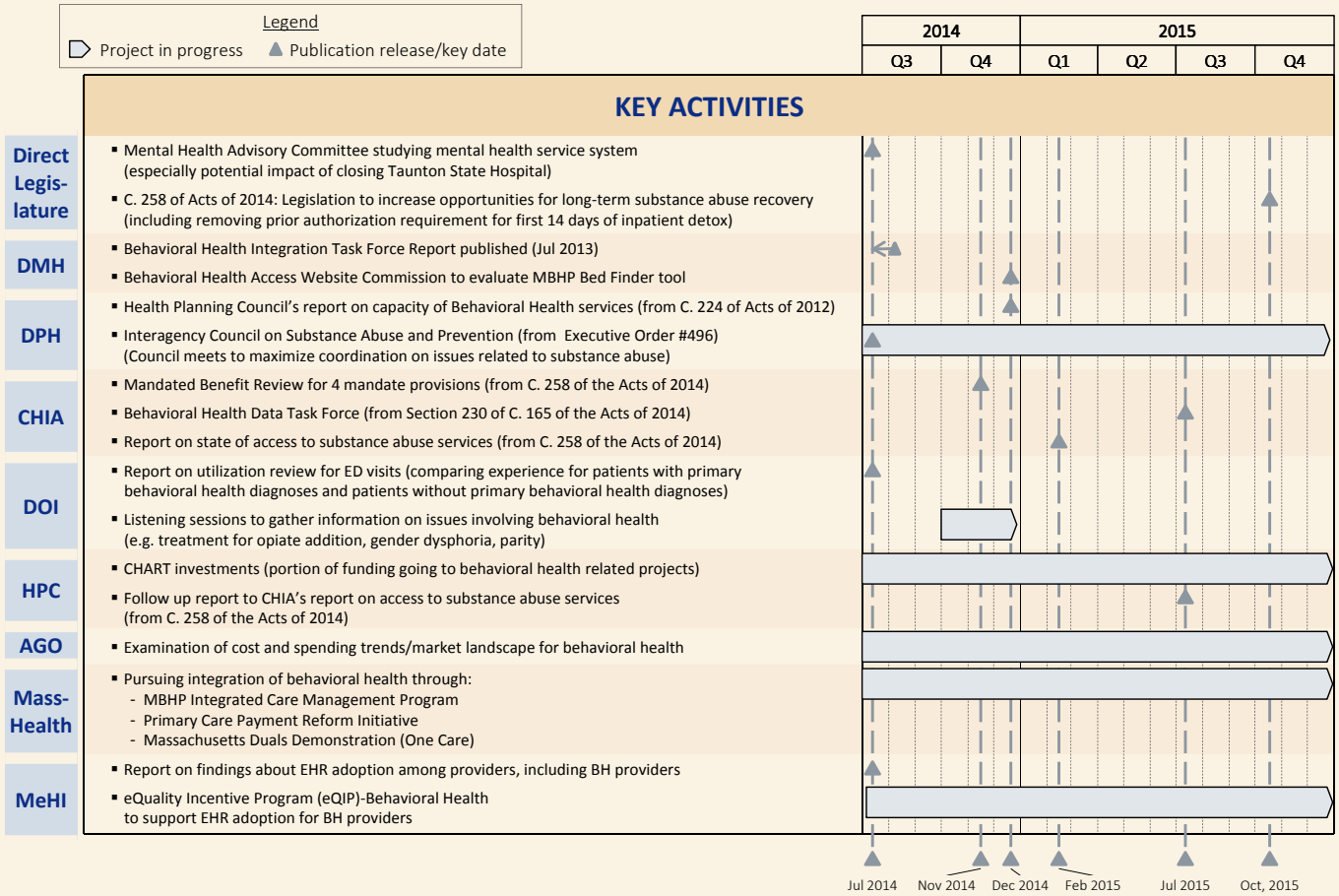
Many state agencies in Massachusetts are statutorily charged with different aspects of behavioral health care (see **Figure 7.2**). The state does not yet have a sustained and coordinated strategy and a single point of leadership for achieving integration of behavioral health and medical care. Of particular concern is the ability to make and track progress toward integration goals. The HPC is committed to working with other state agencies and stakeholders to develop this common policy agenda and ensure a sustained effort to implement it.

In particular, we highlight the following areas where progress should be prioritized for 2015: the advancement of integrated care models within patient-centered medical homes (PCMHs) and Accountable Care Organizations (ACOs), the alignment of financial incentives to support behavioral health integration, and improved transparency through the collection and public reporting of comprehensive data according to standardized definitions.

Priority areas: Integrate behavioral health and medical care

To promote integration of behavioral health and medical care, the HPC is developing criteria for certification as a PCMH and/or ACO that incentivize attention to behavioral health, and several providers around the state are already implementing pilot integration projects,

Figure 7.2: Selected activities related to behavioral health by Massachusetts state government agency



NOTE: DMH = Department of Mental Health; MBHP = Massachusetts Behavioral Health Partnership; DPH = Massachusetts Department of Public Health; CHIA = Center for Health Information and Analysis; DOI = Department of Insurance; HPC = Health Policy Commission; AGO = Office of the Attorney General; MeHI = Massachusetts eHealth Institute; EHR = Electronic Health Record

Figure may not include all ongoing projects related to behavioral health in state agencies

often funded by the Substance Abuse and Mental Health Services Administration (SAMHSA), which will inform PCMH and ACO design.

HPC is considering requiring providers who seek PCMH and/or ACO certification to demonstrate capacity to: (1) use evidence-based diagnostic tools to screen for mood and substance use disorders; (2) coordinate care across multiple providers, community services and treatment plans; and (3) track quality measures related to behavioral health management. To facilitate certification, the HPC will seek to provide technical assistance.

As PCMHs and ACOs are implemented, evaluation of integration efficacy will be critical. Data supporting the use of best practices is limited.[2] Randomized-control trials demonstrate that adding care management services to primary care, in collaboration with psychiatric consultation, results in cost-offsets of 20 to 40 percent for patients with specific behavioral health conditions (that is, total healthcare expenditures decline even when the cost of behavioral health services are added to the services obtained through a primary care physician [PCP]).[3] Yet it is likely that patients with different needs will function best in different models of integration (e.g., some will require an onsite behavioral health provider, while others can be appropriately treated by a PCP using remote psychiatric consults, a concept that the four quadrant clinical integration model illustrates).[4,5] Therefore, assessment of integration efficacy must take into account the differences in various patient populations, and true integration may require uptake of a variety of means of behavioral health coordination. All integration must be informed by the use of evidence-based behavioral health interventions, many of which are reviewed by and available in the SAMHSA's National Registry of Evidence-Based Practices. The HPC's PCMH and ACO certification processes will result in information on various integration models, at least at pilot levels, which the HPC will analyze and disseminate.

Seamless sharing of medical records between behavioral health and other providers, as appropriate, will be critical to successful integration. Behavioral health providers lag significantly behind PCPs in adopting health information technology: a 2014 survey conducted by the Massachusetts eHealth Institute (MeHI) found that only 50 percent of independent behavioral health providers have adopted electronic health records (EHRs), compared to 95 percent of independent PCPs.[6] To facilitate uptake of interoperable EHRs and connection to the state's health information exchange, MeHI is currently awarding incentive payments from $33,000 to $82,500 over two years (scaled based on practice size).[7] Given the disparity in EHR capability and penetration, further investment—both private and public—will be necessary to close the nearly 50 percent gap in EHR adoption.

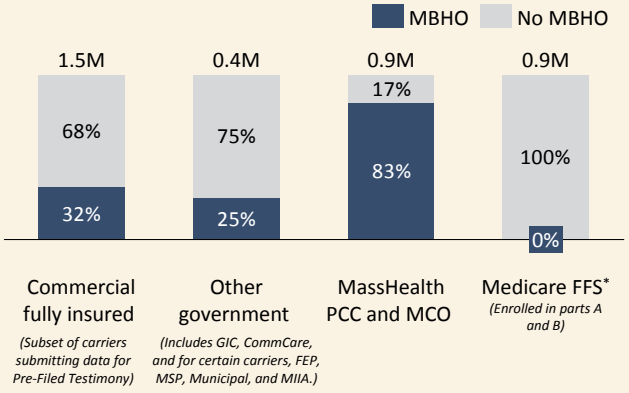
Priority areas: Advance effective alternative-payment methods that include behavioral health services

Sustainable and scalable adoption of integrated care delivery models requires continued development and implementation of alternative payment methods (APMs) that effectively align financial incentives. Some APMs include behavioral health within a global or bundled payment, such as the BCBS Alternative Quality Contract (AQC) and the MassHealth Primary Care Payment Reform Initiative (PCPRI). Emerging health homes are also integrating behavioral and medical health care in a novel way that moves Medicaid reimbursement models toward covering all types of health care services, rather than medical care alone. With integrated payments, provider organizations have greater flexibility to distribute resources in a manner that supports quality, efficiency and population health than they might have under FFS contracts.

A large portion of behavioral health services are administered and/or paid for by Managed Behavioral Health Organizations (MBHO) or "carve outs," entities that insurance carriers contract with to manage behavioral health services separately from medical services. For example, MBHOs manage the behavioral health benefits for more than 80 percent of MassHealth enrollees in the Primary Care Clinician and Managed Care Organization programs (see **Figure 7.3**). To ensure all patients have access to medically necessary care, it is important to assess how carve-out payer arrangements result in coverage of evidence-based treatment compared to other arrangements.

Figure 7.3: Percentage of members covered by managed behavioral health organizations (MBHOs), by payer

Percentage of enrollees with behavioral health benefits managed by MBHOs, 2013



*Includes dual eligibles who are also enrolled in MassHealth fee-for-service

NOTE: Information presented by the Attorney General Office (AGO) at the 2014 Cost Trends Hearings was used to classify whether plans do or do not engage an MBHO for behavioral health benefits. Total enrollment in commercial fully-insured plans includes only commercial carriers that submitted enrollment information for pre-filed testimony. See Technical Appendix B7 for details. GIC = Group Insurance Commission; FEP = Federal Employee Program; MSP = Medicare Supplemental Plan; Municipal = local government; MIIA = Massachusetts Interlocal Insurance Association, the insurance arm of the Massachusetts Municipal Association; FFS = Fee for service; MCO = Managed care organizations; PCC = Primary Care Clinician

SOURCE: Pre-filed Testimony submitted to the HPC for the 2014 Cost Trends Hearings and AGO presentation at Oct 2014 Cost Trends Hearing

At the same time, APM budgets must be calculated to adequately account for all medically necessary utilization of medical and behavioral health services. Global budgets are often based on historical spending, which does not necessarily account for clinically appropriate behavioral health care, since these services have been historically under-available and underutilized. Moreover, access to adequate behavioral health care may result in increased medical expenditures for patients with serious mental illness; these patients often do not access appropriate medical services when suffering from untreated mental illness. It is critical that APM budgets are risk-adjusted so as not to incentivize withholding of medically necessary physical or behavioral health care. For example, Minnesota's per patient rate for PCMHs is adjusted upward for patients with serious mental illness to account for the added care coordination services necessary to adequately treat these patients.[8] Finally, APMs must include appropriate quality and outcome measures and must be paired with an ongoing assessment of payment adequacy.

Potential areas of focus for the Behavioral Health Data Task Force

Capacity and Need

The Commonwealth's Departments of Mental and Public Health assess the capacity of the behavioral health system to meet residents' needs, but the data evaluated are not sufficiently comprehensive. A statewide inventory of licensed behavioral health providers, developed in 2014 by the Health Planning Council, is an important resource, but must be supplemented with additional information on staff size and specific services provided, as well as information on which providers are accepting new patients and which insurance plans they accept.[9] Patients and providers are otherwise left to make countless attempts to identify an available provider. For example, a 2014 study found that only 25 percent of callers to psychiatrists in the Boston-area Blue Cross Blue Shield network were able to schedule appointments within two call attempts.[10] Availability of information on all types of providers and treatment modalities is critical (e.g., outpatient prescribers and therapists, detoxification facilities, partial and full hospitalization and community-based support services). The state-managed "bed finder" tool allows providers to search for available acute inpatient treatment. Expanding this tool to allow for assessment of the availability of a treatment option that is most appropriate for a given patient would facilitate more timely access to care (e.g., stratifying by level of security or geographic proximity to family). This tool should facilitate searching community-based care options for services that: (1) help patients with stabilization; (2) divert patients from emergency and inpatient care when appropriate; and (3) provide post-discharge supports and follow-up care.

Comprehensive capacity information must also be paired with further data on the underlying incidence and prevalence of, and the treatment- seeking patterns of persons living with, behavioral health conditions. The Commonwealth should also explore ways to capture appointment attempts and waitlist time across providers as alternative ways to measure unmet needs.

Total spending

Comprehensive spending data are also required to track the progress of cost-containment efforts and the impact of new programs. This includes claims datasets that indicate how much is spent, on what, for whom, as well as data on self-pay, which is more common in behavioral health than other areas of the healthcare sector. The All-Payer Claims Database (APCD) needs to be supplemented with data from the Bureau of Substance Abuse Services of the Department of Public Health (BSAS) and Department of Mental Health (DMH) to account for all spending on behavioral health care. In addition, the Commonwealth should explore potential ways to capture self-pay data (such as that from provider reporting) as well as encounter data or other payments that may not be captured in claims reporting.

Parity coverage and compliance

Federal parity law supports access to behavioral health services by requiring health plans to cover behavioral health services in a comparable way to medical services, including in the application of both quantitative treatment limits (copayment levels and number of visits) and non-quantitative treatment limits (utilization review procedures and practices). Though parity laws are complex and do not cover all types of insurance policies, we estimate that around 85 percent of Massachusetts' residents who have health insurance are covered by at least one parity law for their primary insurance, based on the distribution of the population in Massachusetts by payer and the laws applying to each.

Ensuring compliance with state and federal parity laws is an important step towards improving consumer access to behavioral health treatment. The Department of Insurance (DOI), the agency charged with enforcing parity laws for Massachusetts commercial carriers, issued a preliminary report in 2014 citing the need for more specific information to better evaluate carrier compliance, such as the number of adverse determinations made in response to prior authorization requests and other utilization-review techniques. While the Office of Patient Protection (OPP) collects certain information regarding the nature of member grievances (enhanced pursuant to recent updates to its regulation) and adverse determinations sent to external review, the HPC supports additional transparency of denied claims. For example, Massachusetts should require carrier reporting of all adverse determinations (i.e., requests for prior authorization as well as retroactive claim denials) by category of service, including behavioral health (as is required under Vermont law).[11] Statutory mandates (e.g., coverage of abuse-deterrent opioids and alcohol and drug treatment counselors) may also advance progress in parity.

Priority areas: Collect comprehensive data and information

The policy, payment, and care delivery integration efforts integral to a successful state strategy for improving behavioral health care all require the comprehensive collection of robust data to inform key decisions. This information is critical to set baselines, track progress, assess system performance, and evaluate options for further improvements based on initial results.

In 2014, in recognition of the importance of behavioral health data collection, the legislature established the Behavioral Health Data Task Force, chaired by the Executive Director of the Center for Health Information and Analysis (CHIA). This task force is charged in part with conducting "a review and analysis of existing state and industry policies regarding access to behavioral health services data and information, including recommendations to encourage increased coordination and improved access to relevant data among providers, hospitals and state agencies."

The recommendations of this task force are key for advancing this issue in 2015. The HPC suggests a non-exhaustive list of potential focus areas for the task force to inform ongoing policy development and system-performance evaluation (see **Sidebar "Potential areas of focus for the Behavioral Health Data Task Force"**).

Conclusion

Patients with one or more behavioral health diagnoses have higher medical care expenditures and greater care needs, highlighting the need for increased attention to the way behavioral health conditions are identified and treated. Effective integration can create efficiencies in care delivery and improve outcomes. The HPC will work to advance the goals outlined in this report by advancing behavioral health integration, defining PCMH and ACO certification criteria to incentivize attention to behavioral health, and providing technical assistance to providers who seek to be improve behavioral health integration across the care continuum.

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Progress in Aligning Incentives

8. Alternative Payment Methods

Chapter 224 calls for a transition to alternative payment methods (APMs) as a key strategy to promote high-quality, efficient care and reduce healthcare costs. Broadly speaking, APMs aim to change incentives so that providers benefit financially from keeping patients healthy, rather than from maximizing services rendered. APMs are intended to encourage providers to both reduce unnecessary services and compensate providers for activities that promote effective, coordinated care, such as care transition management, longer patient visits, and between-visit communications.

Statutory targets for alternative payment methods in Massachusetts

Chapter 224 requires commercial health plans to implement APMs wherever feasible, and health plans are required to report annually to the Center for Health Information and Analysis (CHIA) information about use of APMs, including the product types, specific payment methods, member months, and percent of spending represented by APMs. Chapter 224 requires provider organizations that take on downside risk to obtain a risk certificate from the Division of Insurance by demonstrating that their risk-based contracts do not jeopardize their financial solvency.

The Health Connector, the Group Insurance Commission (GIC), and MassHealth are also required to implement APMs to the maximum extent possible. The law establishes benchmarks for the percentage of MassHealth members to be covered under APMs: 25 percent by July, 2013, 50 percent by July, 2014, and 80 percent by July, 2015. Through its Integrated Risk-Bearing Organizations (IRBO) model, the GIC requires its plans to meet specific targets for the percentage of members covered under risk-based contracts by fiscal year 2016. Further, state-funded insurance programs are required to give priority to providers in accountable care organizations (ACOs)[i] or patient-centered medical homes (PCMHs) meeting standards set by the Health Policy Commission (HPC).

Levels and trends of APMs

In 2013, 35 percent of plan members across all public and private payers in Massachusetts were covered under APMs, an increase from 29 percent in 2012 (see **Figure 8.1**). Despite this overall increase, growth of APMs in the commercial sector was relatively flat from 2012 to 2013, increasing marginally from 33 to 34 percent (see **Figure 8.2**). Virtually all of the patients covered under APMs in both the commercial and public sectors were covered by global payment contracts, and the available data do not indicate either the extent to which other payment methods (limited budget or bundled payments) occurred in conjunction with the global payment or how the incentives in these contracts reached the individual provider level.

Commercial Payers[ii]

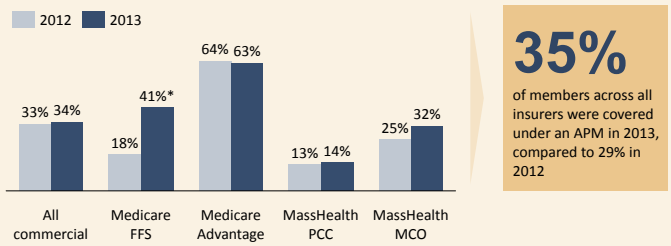
Approximately one-third of the commercially-insured population in Massachusetts is covered by APMs. Currently, APMs are largely confined to health maintenance organization (HMO) insurance products, covering 61 percent

[i] An ACO is a type of care delivery model that includes some form of alternative payment method, usually a global budget. An ACO alone is not an APM, but ACOs are highly compatible with APMs, as they entail providing comprehensive services, including care coordination, to a defined patient population for whom the ACO assumes some level of financial risk. An ACO may operate with several different APM arrangements.

[ii] The APM data presented here is based on APM data that payers submit annually to CHIA. These data differ from the data on risk-based contracts that payers submitted to the AGO as part of pre-filed testimony for the Annual Cost Trends Hearings, because the AGO and CHIA included or excluded certain subpopulations (particularly those covered via federal, state, and local government payers) based on different calculations. Note also that data in the pre-filed testimony has not been verified. See Technical Appendix B8 for information on methods.

Figure 8.1: Alternative payment method (APM) coverage, by payer type

Percent of members covered under an APM, 2012 versus 2013



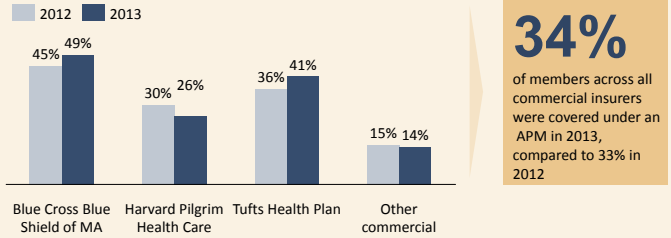
*In Medicare Fee-for-Service (FFS), enrollment figures are slightly overestimated because several of the Accountable Care Organizations (ACOs) include residents of neighboring states that we are unable to exclude from data calculations.

Notes: For MassHealth's PCC program, APM enrollment figures include members who were enrolled in the Patient-Centered Medical Home Initiative (PCMHI) only. MassHealth pays for inpatient stays and outpatient encounters via bundled rates, (the SPAD and APAD, formerly PAPE). The HPC does not include these payment methods in our estimates of APM coverage, although MassHealth may consider them APMs for certain reporting purposes.

SOURCE: Center for Health Information and Analysis 2014 Annual Report Alternative Payment Methods Data Book, 2013; Center for Health Information and Analysis 2013 Alternative Payment Methods Baseline Report Data Appendix, 2012; Centers for Medicare & Medicaid Services Shared Savings Program Performance Year 1 Results; Other publicly-available Centers for Medicare & Medicaid Services data; MassHealth personal communication

Figure 8.2: Alternative payment method (APM) coverage, by major commercial payer

Percent of commercially-enrolled member lives covered under an APM, 2012 versus 2013



SOURCE: Center for Health Information and Analysis 2014 Annual Report Alternative Payment Methods Data Book, 2013 and Center for Health Information and Analysis 2013 Alternative Payment Methods Baseline Report, 2012

of HMO members.[iii] Blue Cross Blue Shield (BCBS) leads the market, with 90 percent of HMO members in an APM (see **Table 8.1**). HMOs require members to select a primary care provider (PCP), which enables payers and providers to clearly define the patient population for whose spending the provider is responsible.

Employing APMs in preferred provider organization (PPO) products can be more complex, in part because PCPs may be reluctant to assume responsibility for patients for whom PCP designation and care management are not required. This reluctance stems from the fact that a patient enrolled in a PPO does not have to choose a PCP and therefore there is no provider who has a formalized relationship with that patient and subsequent responsibility for directing that patient's care. In Massachusetts, PPO enrollment is increasing, in part due to employers shifting from fully-insured to self-insured plans. This growing share of members in PPOs, combined with the fact that the vast majority of non-HMO commercial members are not covered under an APM, underscores the importance of continued progress in extending APMs to non-HMO commercial products.

Medicare

The HPC's assessment of APM use within the Medicare fee-for-service (FFS) population is based on enrollment in the Medicare Shared Savings Program (MSSP) and the Pioneer ACO program. Massachusetts has relatively high participation in both programs compared to other states. In particular, Massachusetts has five of the 19 Pioneer ACOs in the U.S., and the number of MSSP ACOs in the Commonwealth increased from five to 14 from 2012 to 2013, resulting in an increase in ACO enrollment in the state's Medicare FFS population from roughly 18 percent to 41 percent.[iv] Among Medicare Advantage members, APM coverage was steady from 2012 to 2013: approximately 63 percent were covered under an APM in 2013, compared to 64 percent in 2012.

Table 8.1: Health Maintenance Organization (HMO) members covered by Alternative Payment Methods (APMs)

Members covered by APMs, 2013

	Percent of HMO members covered by APMs	HMO members as percent of total members	Percent of members covered by APMs
BCBS	90%	54%	49%
HPHC	36%	73%	26%
THP	60%	66%	41%
All other	33%	43%	13%
Total	61%	55%	34%

NOTE: Data was calculated based on an earlier version of the data source, which was the most recently available at the time of publication. Exact percentages may vary slightly.

SOURCE: HPC Analysis of CHIA 2014 Annual Report APM Data Book, 2013

[iii] As described in the Alternative Payment Methods Supplement of the Center for Health Information and Analysis' 2014 Annual Report on the Performance of the Massachusetts Health Care System, Tufts Health Plan did report the use of global payments for 3 percent of their PPO members in 2013. All of those members were enrolled in a GIC plan.

[iv] The full list of participating ACOs for this 2012-2013 period can be viewed at https://data.cms.gov/ACO/Medicare-Shared-Savings-Program-Accountable-Care-O/yuq5-65xt.

MassHealth

In 2012, approximately 13 percent of MassHealth Primary Care Clinician (PCC) Plan members were enrolled with a PCP who participated in the Patient-Centered Medical Home Initiative (PCMHI). PCMHI was a multi-payer care delivery and payment model, spearheaded by MassHealth and the Executive Office of Health and Human Services (EOHHS), designed to promote comprehensive, patient-centered, primary care delivered in a medical home. The payment model included a small per-member per-month infrastructure payment combined with the opportunity to earn shared savings and quality payments. The percentage of PCC Plan members covered by PCMHI increased to 14 percent in 2013 (the demonstration ended in March 2014).[v] A number of commercial payers also participated in the model.

In 2014, MassHealth launched the Primary Care Payment Reform Initiative (PCPRI), a new delivery and payment model oriented toward comprehensive, patient-centered care. PCPRI combines a capitated payment for primary care with shared savings based on total cost of care and places a particular emphasis on behavioral health integration with primary care. As of March 2014, 28 practices were enrolled in PCPRI, with eight opting to include some outpatient behavioral health services in the capitated payment; approximately 22 percent of the PCC population was covered by this initiative.

In MassHealth's commercially-managed managed care organizations (MCOs), APM coverage increased to 32 percent of members in 2013, up from 25 percent in 2012, based on data reported by the plans to the CHIA.

Extending APMs

Extending APMs to PPO products and within HMO products

Two important steps towards extending APMs are to increase the levels of APM coverage in the commercial HMO market and to extend APMs to members enrolled in PPO products. We estimate that APM coverage in Massachusetts would grow from 35 percent to 42 percent if all commercial payers increased their use of APMs for their HMO members such that they closed two-thirds of the gap between their current coverage and that of BCBS' coverage (90 percent). (See **Figure 8.3**.)

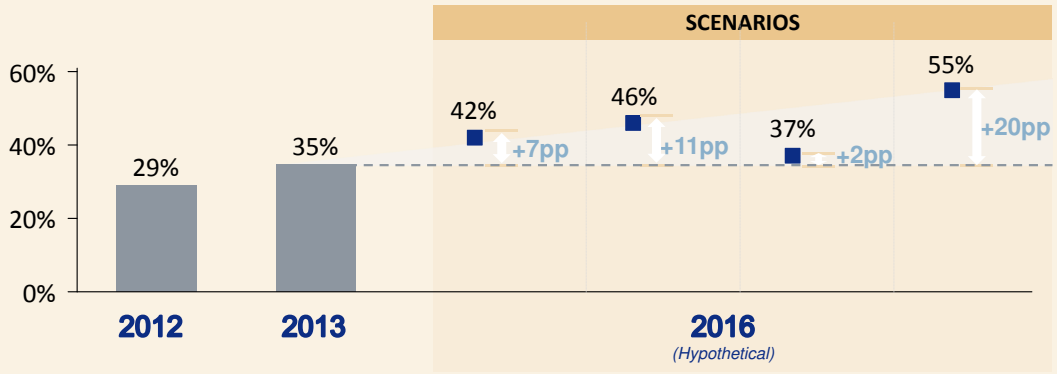
As noted, in cases where members have not formally identified a PCP (as with many PPO products), extending APMs to PPO products requires a method for attributing patients to providers, drawing upon the patients' historical use of services and other characteristics, as captured in claims and enrollment data. While developing such methods is complex and has been controversial, a coalition of the Commonwealth's major payers and providers has recently agreed on a set of shared principles around a universal PPO attribution method. In order to include this methodology in provider contracts in 2016, BCBS plans to begin discussions with providers in 2015 (see **Figure 8.4**). Payers have noted that successful expansion of this attribution model and of APMs hinges on provider readiness to understand and accept the model, employer and member acceptance of the model, and positive results in terms of quality, efficiency, and patient experience. In order to complement these efforts, payers and employers can promote products that require or encourage members to select or designate a PCP (even if that PCP does not function as a "gatekeeper" for the patient's care). If commercial payers were to further extend APMs to their PPO populations to half of the extent to which they were extended to HMOs in the scenario above, total APM coverage in Massachusetts could increase about 11 percentage points (from 35 percent to 46 percent) (see **Figure 8.3**).[vi]

Other states have begun to develop new PPO products to adapt payment reform and ACO principles to their PPO populations. In California, some health plans are developing new PPO products to encourage members to select an ACO and receive care from physicians and hospitals associated with that ACO.[1] These new products typically have low consumer cost sharing when the member obtains care within the ACO network and high cost sharing for care outside the network, creating financial incentives for consumers to choose care within the network (see **Chapter 9: "Demand-Side Incentives"** for a discussion of demand-side incentives, including the importance of alignment with APMs).

[v] For the MassHealth PCC plan, APM enrollment figures include members who were enrolled in the Patient-Centered Medical Home Initiative (PCMHI) only. MassHealth pays for inpatient stays and outpatient encounters via bundled rates (the SPAD and APAD, formerly PAPE). The HPC does not include these rates in our estimates of APM coverage, although MassHealth may consider them APMs for certain reporting purposes.

[vi] The projections in this section are based on an internal HPC analysis, which applied current HMO APM coverage levels to project potential expanded coverage.

Figure 8.3: Statewide use of APMs and projected growth under four scenarios
Percentage adoption of APMs across all payers, 2012 and 2013 (actual), 2016 (hypothetical)



SCENARIO DESCRIPTIONS

	HMO	PPO	ACO	Additive
Assumptions	All payers expand APMS in HMOs to close 2/3 of gap between 2013 coverage and 90% (BCBS rate)	All payers expand APMs in PPOs to half of their projected HMO rate	MassHealth expands APMs (via ACO) to close 1/3 of gap between 2014 coverage and 100%	HMO +PPO +ACO
Projected impact	+7pp	+11pp	+2pp	+20pp

NOTE: See Technical Appendix B8.

SOURCE: Center for Health Information and Analysis 2014 Annual Report Alternative Payment Methods Data Book, 2013; Center for Health Information and Analysis 2013 Alternative Payment Methods Baseline Report Data Appendix, 2012; Centers for Medicare & Medicaid Services Shared Savings Program Performance Year 1 Results; Other Centers for Medicare & Medicaid Services data; MassHealth personal communication

Extending APMs in MassHealth via development of an ACO

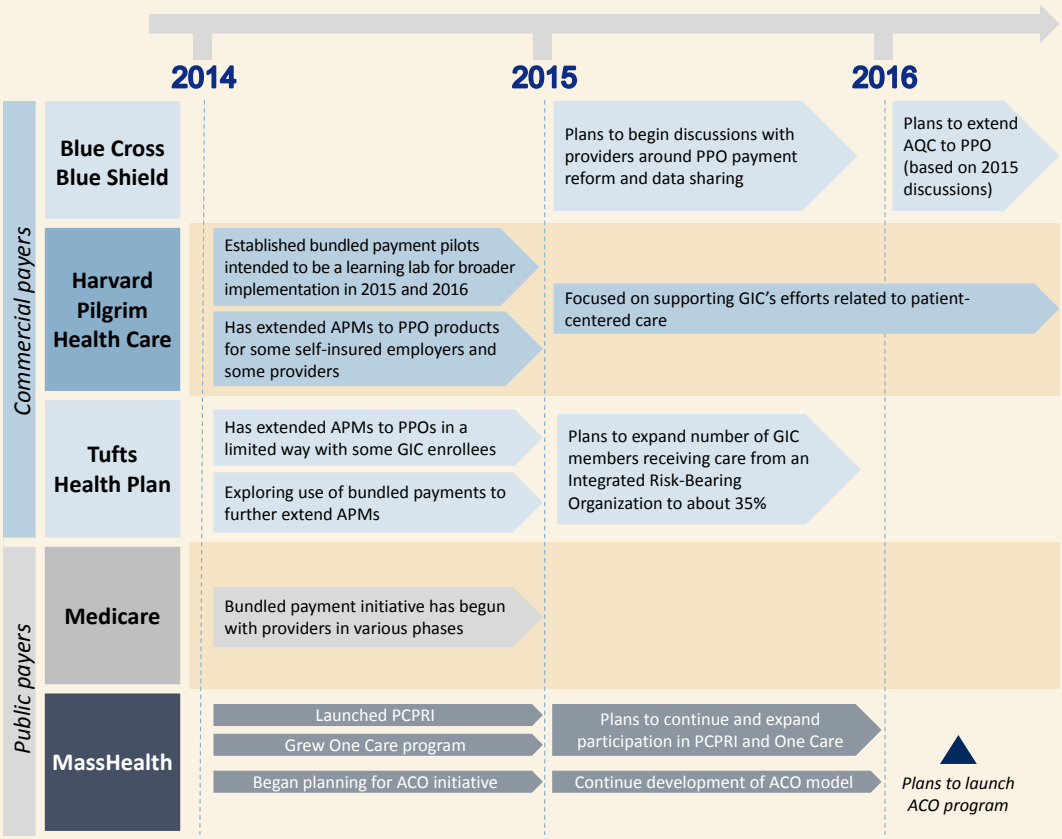
A second important step for Massachusetts to extend the reach and impact of APMs statewide would be for MassHealth to continue increasing the share of its members covered by APMs, ideally comprehensive APMs that span the full spectrum of a patient's care. In response to APMs' potential benefits and to the targets set in Chapter 224, MassHealth is developing an ACO program to be supported by global payment and has been engaged in an intensive stakeholder input process with the aim to finalize its proposed ACO model in 2015.[vii] A MassHealth ACO with a global payment covering all aspects of patient care and providing more robust financial incentives for participants has the potential to attract providers, including large providers, who have opted not to participate in PCPRI. Greater participation in an ACO would extend the direct benefits of APMs to additional members as well as bring more providers to a point where a sufficient proportion of their patients would be covered by APMs, leading to APMs truly affecting care delivery practices. If the ACO program were to be implemented to the extent that it covered one-third of PCC members not currently covered under the PCPRI program, total APM coverage in Massachusetts across all sectors would grow an additional two percentage points (see **Figure 8.3**).[viii]

Other states have already begun to successfully implement ACOs in their Medicaid programs. For example, in Minnesota's Health Care Delivery Systems Demonstration, which encourages the creation of ACOs within Minnesota's Medicaid program, providers participate in a shared savings/risk program based on a total cost of care (TCOC) calculation as well as quality metrics, and receive monthly patient-level admissions and care management data and quarterly reports on TCOC performance.[2] In Oregon's Coordinated Care Organizations (CCOs) program, CCOs provide integrated healthcare services to a defined group of Medicaid enrollees within a specified budget and are held accountable for the health outcomes of their patient population.[2] Initial results of the CCO program have demonstrated a 17 percent reduction in emergency department (ED) visits and a 19 percent decrease in ED costs as well as an 11 percent increase in primary care visits. Enrollment in Oregon's patient-centered primary care home program increased 52 percent. As of 2013, 59 percent of participating CCOs had adopted electronic health records (EHRs), up from 28 percent in 2011.[3]

[vii] Chapter 224 requires 50 percent of MassHealth members to be covered by APMs by July 2014 and 80 percent by July 2015, but does not require global APMs or otherwise specify the nature of the APMs.

[viii] This additional two percent applies current PCPR coverage levels to project potential expanded APM coverage under an ACO program.

Figure 8.4: Plans to extend APMs, by payer



SOURCE: HPC communications with payers; Medicare website

Exploring bundled payment methods to extend the reach of APMs

Bundled payments, also called episode payments, offer a single payment for all services associated with an episode of care across multiple providers and an opportunity to further extend the reach of APMs – both to patients who are not yet part of global arrangements as well as to patients in global arrangements who receive care from providers outside these arrangements. Bundled payments create a direct financial incentive for the providers who manage the episode (often specialists or hospitals rather than PCPs) to deliver care efficiently, regardless of whether a patient is covered by global payment or whether the PCP or primary risk holder is in a position to exert strong influence over the specialist. Thus, bundled payments address the concerns that global APMs alone may not be sufficient to alter the incentives facing many hospitals and specialists and that change in these two sectors is essential to health system transformation and cost containment. Bundled payments are typically employed in specialties such as oncology, cardiology, and orthopedics. Certain types of care, such as joint replacements, lend themselves more easily to implementing bundled payments because they have more easily identifiable beginning and end points of care (see **Chapter 3: "Hospital-Level Variation in Spending Per Episode of Care" and Chapter 4: "Maximizing Value in Post-Acute Care"**). However, Arkansas' Health Care Payment Improvement Initiative has implemented bundled payments in five diverse areas: perinatal, attention deficit hyperactivity disorder, upper respiratory infection, total joint replacement for both hips and knees, and congestive heart failure.[4]

There are some relatively recent bundled payment efforts in Massachusetts, such as the CMS Bundled Payments for Care Improvement (BPCI) initiative, joined by Steward, Baystate, University of Massachusetts Memorial Medical Center, Beth Israel Deaconess Medical Center, Massachusetts General Hospital, and many other Massachusetts providers.[ix] Harvard Pilgrim Health Care is also experimenting with bundled payments in pilot programs for three procedures (tonsillectomy, coronary artery bypass graft [CABG], and colonoscopy) as well as two chronic diseases (diabetes and ventilator-dependent pediatric conditions). The Harvard Pilgrim pilots typically include quality reporting and pay-for-performance. Early results from these pilots show savings of up to 10 percent over FFS as well as achievement of quality goals.[5] MassHealth also recently began implementation of its pediatric asthma bundled payment pilot program.

[ix] The full list of all participating facilities, including those in Massachusetts, can be found at http://innovation.cms.gov/initiatives/Bundled-Payments/Participating-Health-Care-Facilities/index.html.

While bundled payments are not currently widespread in the Commonwealth, they have been a cornerstone of some other states' health reform efforts, such as Arkansas and Ohio, and have featured prominently in the strategies of some leading organizations, such as Geisinger Health System.[2,4,6]

Supporting provider transformation

Some providers may be willing to participate in APMs but may require support to undertake the necessary transformation. To the extent that these providers are already affiliated with larger systems, these systems should make every effort to make the necessary investments to enable all their affiliates to participate in APM contracts.

To supplement private sector initiatives, the HPC, EOHHS, and other public agencies and foundations also endeavor to support providers in their efforts to transform care delivery, prepare for new forms of payment, and develop the necessary data capabilities and infrastructure. The HPC's Community Hospital Acceleration, Revitalization, and Transformation (CHART) grants, forthcoming PCMH and ACO certification programs and associated technical assistance programs, and other behavioral health initiatives all represent efforts to marshal resources and support for providers.

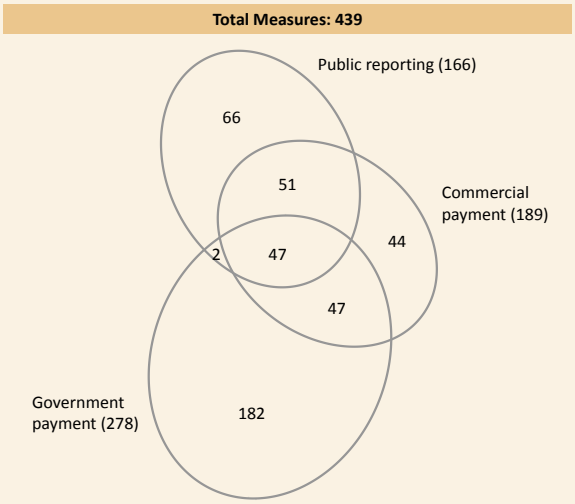
Fostering alignment and data

Cross-payer alignment

In the current environment, a provider's patient panel is typically insured by a range of payers, each of whom may take a different approach to APMs regarding technical elements such as attribution, clinical risk adjustment, and performance measures. Providers consistently call for greater cross-payer alignment and highlight the savings to be gained from simplified administration. In particular, providers underscore the burden created by the significant number of quality measures they are required to report. Although payers' APMs are typically based on nationally accepted process, outcome, and patient experience measures, the specific measures and performance thresholds vary by payer and provider. Even for relatively common or widespread practices, such as depression screenings, different payers may have different measure specifications or reporting requirements. In 2012, CHIA conducted a census of quality measures used by a selection of commercial insurers and state and federal programs and found that Massachusetts providers are held accountable to about 373 measures in commercial and government payment programs (see **Figure 8.5**). When public reporting measures were included, the number of measures rose to 439. Across all measures, only 11 percent were shared across all of the accountability programs surveyed.[7] Moreover, providing data for many metrics still also entails chart abstractions by clinicians, further compounding provider burden. In addition, all these variations are considered confidential as part of the negotiation process between payers and providers. This lack of transparency creates challenges for the Commonwealth in identifying best practices and promoting alignment.

Figure 8.5: Number of quality measures used for payment and public reporting in Massachusetts

Number of quality measures used by commercial insurers and government programs for incentive programs and public reporting activities, 2012



NOTE: Data is based on a survey of a selection of commercial insurers and state and federal programs and does not represent all possible measures in use at the time the survey was administered.

SOURCE: Center for Health Information and Analysis, 2012 and 2013 AcademyHealth Poster Presentation "Misalignment in quality measurement: how are providers held accountable across health care sectors?"

Although acknowledging the importance of multi-payer alignment, payers argue that flexibility is critical to facilitate innovation, and seek flexibility both to draw a contrast with other payers and to take different approaches with different provider groups. Moreover, payers express concerns that achieving alignment could slow down individual payer progress in areas such as PPO attribution.

While it is challenging to balance standardization with the need for flexibility, examples from other states show that alignment around quality metrics can be achieved at the state level. Wisconsin and Vermont are both working

to align performance metrics among commercial and public payers.[8] Wisconsin's Statewide Value Committee (SVC) is working to align ambulatory and hospital performance measures across commercial and public payers, as well as developing a baseline for the measures and specifications for public reporting. As part of their State Innovation Model (SIM) initiative, Vermont's Quality and Performance Measures Workgroup has identified about 30 nationally recognized measures (narrowed down from over 200) for use in the commercial and Medicaid ACO programs. Vermont also plans to develop measure sets for their Episodes of Care and Pay for Performance initiatives.[8]

Data and transparency in care delivery and reporting

While APMs further the goals of coordination and efficiency, they are most effective when coupled with supportive infrastructure. While large sophisticated systems may already have access to the data and analysis they need to succeed, the impact of APMs over the next several years may be greater if APM expansion is accompanied by continuous improvements in the availability and usability of data. Moreover, with access to improved data, more providers might be willing to participate in APMs.

Chapter 224 makes providers' access to data a priority and requires payers to share price, utilization and demographic data of patients with providers. The law gives the Division of Insurance, as the insurance industry's regulator, authority to promulgate regulations related to the dissemination of that information. The law also suggests that CHIA could play a key role in distributing claims-based information to providers, perhaps via a provider portal on the All-Payer Claims Database (APCD), although this may be impractical until the time lags between time of service and APCD release are reduced. To support the exchange of data among providers, the Massachusetts eHealth Institute (MeHI) is charged with administering a fund that helps support EHR implementation and provider connectivity to the Massachusetts Health Information Highway (Mass HIway).

Real-time data for care coordination

For PCPs and other providers to coordinate care effectively, they must be aware of any sudden changes in a patient's condition. An important first step is ADT (admission, discharge, transfer) feeds, in which hospitals or other facilities actively notify a repository when patients are admitted, discharged, and transferred. Mass HIway offers promise as a mechanism to transmit such data securely to a central repository, which other providers can then query as long as the appropriate patient consent is in place. Even in existing ACOs or integrated systems, where providers may already be notified of in-system ADT events, a statewide system is beneficial because it adds information about events that occur outside of the provider system.

Mass HIway use has been limited up to this point, with barriers to entry including both clinical workflow reengineering in the provider setting (in the interest of privacy, patients must provide consent to both the sending and receiving provider), and technical challenges and associated costs to connecting various EHRs to the HIway. Requirements for connection to the Mass HIway were created in Chapter 224 and will come into effect over the next three years. Additionally, investment programs such as CHART and MassHealth's Infrastructure and Capacity Building (ICB) fund and Delivery System Transformation Initiatives have made connection to the HIway a contingency of funding.

Regular reports on spending and utilization

Provider organizations and individual providers need a clear and up-to-date picture of population risk factors, utilization, and spending in order to manage the health of their populations. While data from providers' own EHRs may offer a solid foundation in this arena, reports from payers provide an important supplementary source, particularly for information on actual spending and out-of-network utilization. Payer reports are especially helpful to smaller organizations whose EHRs and the ability to use them are less sophisticated and/or whose in-house information is less comprehensive.

Providers agree that payer reports are most useful when they are based on timely and complete data, when they contain actionable metrics, and when the underlying data are valid and well-understood. In designing reports, payers must address a variety of operational challenges, including the claims lag and attending to patients' privacy. Payer reports that combine medical, pharmacy, and behavioral health data are particularly helpful. In its prefiled testimony for the 2014 Annual Cost Trends Hearing, the University of Massachusetts Memorial Medical Center noted: "Access to timely, reliable, and actionable data and information remains key to facilitating high-value care for [our] patients and to performing successfully under new alternative payment methodologies." Many other provider organizations made similar points at the hearings and in other forums. Some providers with sophisticated analytic

capabilities have also indicated an interest in receiving raw claims so that they may analyze data in the manner they find most useful. However, even while providers call for more data, some state that they are overwhelmed by the number of payer reports, particularly when such reports differ in content and structure, suggesting that streamlining and alignment in this area would also be beneficial.

Transparency

For APMs and data standards to be widely adopted, both must be perceived as valid and fair. Payers, providers, and the health policy community must be able to examine, replicate, and understand the algorithms that payers use for attribution, risk adjustment, quality measurement, payer reports, and the calculation of performance payments. These goals are supported when payers release and explain their data, and analytic vendors are willing to share information with affected parties and make reasonable efforts to support providers' understanding of such information.

Conclusion

Between 2012 and 2013, APM coverage stalled in the commercial sector, but grew substantially in Medicare due to the spread of Pioneer ACOs and the Medicare Shared Savings Program. APM coverage also increased for the commercial MCOs that serve MassHealth members. Specific opportunities exist to expand APM coverage and strengthen implementation, including expanding APMs to cover PPO members and launching ACOs in Medicaid. Market participants could also work together to explore bundled payments, align quality measures and other technical elements across payers, and improve access to the data necessary for care coordination.

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Progress in Aligning Incentives

9. Demand-Side Incentives

Chapter 224 recognized that purchaser incentives are important to the functioning of the healthcare system. Employers and individuals ultimately bear the burden of high healthcare costs—in premium payments as well as copayments and cost sharing paid at the time of receipt of services. There are opportunities to foster value-based purchasing in both areas.[i]

For this to happen, consumers need comparable options and information about those choices, which healthcare markets and insurance products are not always designed to provide. However, known mechanisms exist to improve both 1) the design of insurance products to optimize consumer value-based decision making and 2) the design of the marketplace for health insurance to increase the adoption of value-based insurance products in the first place.

Design of value-based health insurance products

There are a number of ways to design health insurance products to encourage the choice of higher value care on the part of members (and to therefore encourage production of such care by providers), while avoiding unintended adverse consequences.[1] Several of the most widely used strategies are described below, followed by a discussion of their current use in Massachusetts.

Tiered and limited network design

Under an insurance product with conventional network design, consumers face a fixed-benefit schedule (for example, a $20 copayment for an office visit) regardless of which network provider they select. In Massachusetts, carrier networks for both preferred provider organization (PPO) and health maintenance organization (HMO) products have typically included the vast majority of providers in their area. Under tiered network plans, by contrast, payers sort providers and/or facilities into tiers, typically based on some combination of cost and quality measures. Consumers then face lower cost sharing amounts if they see a provider or receive services at a facility that is in a higher performing tier. In fact, some product innovations have allowed for consumers to receive direct cash rewards in exchange for selecting low-cost service providers.[2] Limited network plans typically use a significantly smaller network of available providers and provide no coverage for out-of-network providers.

Both tiered and limited network plans are defined specifically in Massachusetts. Chapter 288 of the Acts of 2010 set forth specific requirements to promote use of both strategies by insurers in the Commonwealth.[3] Chapter 288 required that insurers offer such plans in the small group market at a price that is 12 percent lower than general network plans; Chapter 224 increased this requirement to 14 percent (discussed later in this chapter).

These innovative network strategies aim to lower spending by directing patients to lower cost, high quality providers, and, ultimately, to encourage higher cost providers to lower their prices to seek to obtain more favorable placement. In New Hampshire, these strategies have resulted in significant cost savings to individuals at the point of service (for example, much lower copays for using independent labs rather than hospital outpatient departments) and ultimately, reductions in premiums.[4] In Massachusetts, these strategies could lead more patients to seek care at their local community hospitals, for example, rather than travel to higher-priced academic medical centers (AMCs).[5] A recent study of enrollment in such plans in Massachusetts found that individuals in limited network plans with the Group Insurance Commission (GIC) incurred 36 percent less overall healthcare spending than those in broad network plans, with no appreciable difference in quality of care.[6]

Differential cost-sharing by service

In traditional insurance products, consumer cost-sharing amounts, such as copayments, are generally fixed regardless of the value or benefit the service may provide. This can be problematic, as studies have shown that higher copayments can reduce the use of both high and low

[i] Although employers typically pay the majority of the healthcare premium for their employees, those payments represent part of employees' compensation package. As a general rule, the more compensation that goes to health care, the less that is available for wages or other compensation.

value clinical services. As a solution, cost sharing can be set differentially by service. This strategy is sometimes referred to as value-based insurance design (VBID).[7] Low cost sharing for high-value services has been shown in some studies to increase medication adherence for chronic disease. A 2009 study by the RAND Corporation found that if Massachusetts' insurers employed low copayments for high-value chronic medications, the state could save $1.2 billion in 10 years.[8] There is also evidence that value-based insurance plans can improve health outcomes.[9,10]

Implementing these strategies can be challenging, particularly because the clinical value of services, which encompasses both the benefits and costs, is hard to measure. Even within a particular service, the value may differ for different patients. As a result, plans have tended to focus this strategy on services for which there is a strong evidence base of high clinical benefit for even broad use of the product or service and relatively low costs—such as beta-blockers for congestive heart failure (CHF) or inhaled steroids for asthma.

Reference pricing

Reference pricing is a consumer cost-sharing strategy applied to a particular service, rather than a provider. Under reference pricing, the employer or insurer pays a predetermined amount for a particular service or procedure and the consumer is generally responsible for the remainder of the cost (in addition to any copayments or coinsurance amounts). The predetermined amount, or "reference price," is often based on a preidentified low cost provider or a median price in a market area. Reference pricing is most applicable in situations where consumers seek a well-defined, discrete service that is planned in advance and offered by a number of providers in a region at varying prices. Reference pricing is especially pertinent for PPO products, where members are offered a wide range of providers to choose from rather than being strongly directed by a primary care physician (PCP). However, reference pricing programs may be complex to administer.

As an example, the California Public Employees' Retirement System (CalPERS) implemented a reference pricing initiative for knee and hip replacement surgeries in 2011 for members of its PPO product, Anthem Blue Cross. Knee and hip replacement surgeries are two types of procedures that exhibit notable price variability but limited variability in quality.[ii] In the initiative, 41 hospitals were selected as value-based purchasing design (VBPD) facilities based on cost, quality, and geographic location. Employees who chose one of those hospitals were subject to the usual 20 percent coinsurance charge, while employees who selected a non-VBPD facility were subject to the 20 percent coinsurance as well as the difference between the reference price and the allowed charge of the procedure. As a result of the initiative, average amounts paid for hip and knee procedures dropped dramatically both because non-VBPD facilities lowered their prices by over a third (from $42,000 to $27,000) and because patient volume shifted toward VBPD facilities (from 48 percent of CalPERS procedures performed in 2010 to 63 percent in 2011).[11] CalPERS has since expanded their program to include arthroscopy procedures, colonoscopies, and outpatient elective cataract surgeries.[12]

High deductible health plans

High deductible health plans (HDHP) typically require the consumer to pay for most or all of the cost for services up to a deductible amount that is higher than that of typical plans. HDHPs increase consumer exposure to the full price of care to encourage more efficient use across a broad range of healthcare services. HDHPs are relatively straightforward to administer (deductibles can be adjusted annually without changing other features of networks or benefit design) and generate readily calculable premium reductions for employers, which is perhaps one reason why they have been increasingly adopted across the nation and in Massachusetts.[13,14]

These plans are sometimes paired with a tax advantaged savings account from which consumers can fund their share of out-of-pocket costs, and employers sometimes contribute to the account (the combination of the high deductible and the savings account is called a consumer-directed health plan). Specific features of the arrangements and the size of deductibles are often limited by state and federal laws that seek to protect consumers.[15] The plans also generally incorporate features of value-based design by, for example, exempting preventive or primary care services from the deductible.

Adoption of value-oriented insurance products in Massachusetts

Adoption of some of the above products and strategies in Massachusetts was encouraged by recent legislation. For example, under current Massachusetts law, health plans with at least 5,000 members must offer to all eligible

[ii] Joint replacements are discussed more extensively in Chapter 3, on hospital-level variation in episode spending.

individuals and small businesses in at least one geographic area at least one plan with either:

1. A reduced or selective network of providers (limited network products)
2. A smart tiering plan in which health services are tiered and member cost sharing is based on the tier placement of services[iii]
3. A plan in which providers are tiered and member cost sharing is based on the tier placement of the provider

Also, as set forth in Chapter 288 and modified in Chapter 224, limited network plans are required to be offered with premiums at least 14 percent below comparable general (broad) network plans from the same carrier.

Adoption of tiered network and HDHPs among consumers enrolled in fully insured commercial health plans increased from 2010-2013 but remains relatively low (see **Figure 9.1**).[iv] Reference pricing, which is a strategy payers could use alongside any of the others, has not been employed in the Commonwealth to date. HDHPs have become particularly prevalent among smaller employers seeking to reduce premium increases. A majority of employers in the state pair them with a savings account to which employers and/or employees can contribute to help offset out-of-pocket expenses.[16] Adoption of limited network plans has been slower, with the notable exceptions of Fallon products, and government employees and their dependents, who obtain insurance through the GIC.

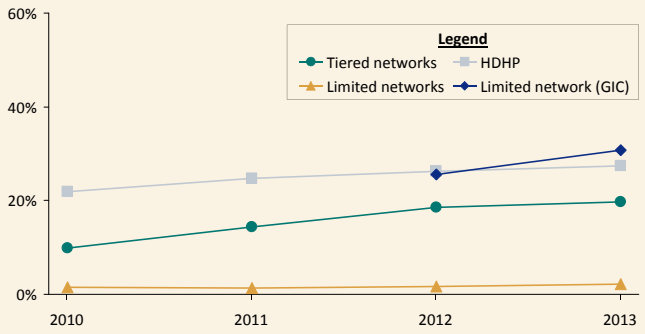
Increasing the adoption of value-based insurance products

A competitive marketplace in which consumers are offered comparable insurance choices (some of which contain value-based designs and some of which do not) and are able to reap the financial savings from making efficient choices, can encourage adoption of value-based products. Most employer-insurance markets do not operate in this way, but there are exceptions.

For example, the Massachusetts Health Connector (Connector) is carefully constructed as a competitive marketplace in which consumers are presented with a wide array of plan options with extensive comparable information about each plan. One key aspect that can drive adoption of high value plans is the fact that, like other Affordable Care Act (ACA) exchanges, individuals choosing less expensive plans pocket the full premium savings.[v] As of 2014, more than 30 percent of plans offered on the Connector could be considered a narrow or ultra narrow network plan (see **Figure 9.2**).[vi]

Figure 9.1: Enrollment in tiered and limited network and high deductible plans

Percentage adoption by network type across commercial payers and GIC, 2010-2013



Notes: Tiered network product as defined by payer. Some variation may exist in included product lines, for instance, between products with hospital tiering versus primary care physician (PCP)/specialist tiering only (included for Harvard Pilgrim Health Care (HPHC)). Blue Cross Blue Shield (BCBS) and Tufts Health Plan (THP) did not include Group Insurance Commission (GIC) members in commercial tiered product enrollment. Aetna includes Designated Provider Organization (DPO) in tiered network enrollment. Does not include self-insured plans, which may have higher update of these products.

A high deductible health plan (HDHP) was defined in the AGO pre-filed testimony questions as any plan in which an individual deductible or copayment of $1,000 or more may apply to any in-network benefit at any tier level.

SOURCE: Pre-filed Testimony submitted to the HPC for the 2014 Cost Trends Hearing

Based on analysis of plan premiums and the inclusiveness of networks, we found that narrow-network plans on the Connector are offered at premiums 13 to 18 percent lower than otherwise similar broad-network plans within the same "metal" group (defined based on plan actuarial value) (see **Figure 9.3**).

[iii] Currently there are no health plans in Massachusetts that offer a smart-tiering plan.

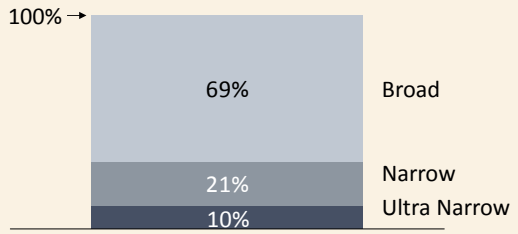
[iv] We do not have data on HDHP and limited-network enrollment among employees of employers who self-insure. Employees of self-insuring employers are two to three percentage points more likely to be enrolled in tiered network plans those of employers who are fully insured (as are shown in the figure), according to data reported by the Center for Health Information and Analysis for the years 2011-2013. See Technical Appendix B9.

[v] If an individual chooses a plan with a premium of $3,000 versus $4,000, he/she saves the full $1,000. Individuals receiving income-based subsidies receive a fixed-dollar subsidy regardless of plan chosen, so still retain the full savings from choosing lower-cost plans. In contrast, many employers require employees to pay 20 percent of the premium regardless of the plan chosen. Thus, in the above case, the employee would pay $600 for the $3,000 plan and $800 for the $4,000 plan, and thus only save $200 in choosing the lower-cost plan.

[vi] Here, a broad plan is defined as one in which there is more than 70 percent participation of acute-care facilities in a region; narrow and ultra-narrow plans have 30 to 70 percent participation and less than 30 percent, respectively.

Figure 9.2: Distribution of networks by breadth for plans available

Percentage adoption by network type across all commercial payers participating in the MA Health Connector, 2010- 2013



NOTE: Network types are defined based on inclusion of acute care hospitals (see Technical Appendix B9).

SOURCE: Massachusetts Health Connector, 2014

Another marketplace that offers a wide choice of plans that includes narrow network plans is the GIC, which presents an array of roughly a dozen plans to state employees with standardized benefits, plan quality information, and limited deductibles and cost-sharing amounts. Although the GIC typically pays 75-80 percent of all premiums regardless of which plan is chosen, in 2014, roughly 30 percent of individuals covered by the GIC selected narrow network plans. To help drive employees toward high value plans, GIC required employees to affirmatively reenroll in 2012 and offered a three-month premium "holiday" in which employees enrolling in narrow network plans did not have to make a premium payment. Fallon's relatively high enrollment in narrow network products may be partly due to similar efforts it has made to encourage such enrollment, including education and outreach to large employers and working with them to offer similar premium holidays.[17]

In contrast, employers generally do not offer employees a wide array of choices and incentives to choose value-based insurance products. A 2014 survey of more than 200 mid-to-large Massachusetts employers found that only slightly more than half of employers offered any choice at all, and among those that did, most subsidized the offered plans at the same rate, not giving employees a strong incentive to choose the lower cost plan.[16]

Offering choices of plans is cumbersome and administratively costly, especially for smaller employers, who typically do not have dedicated human resources professionals to vet and help employees navigate the different choices.[vii] Most employers surveyed (89 percent) relied on brokers to help them select plan options for their employees. Small employers (those with up to 50 employees until 2016, and 100 thereafter) do have the option of purchasing coverage through the Connector and thereby availing themselves of the resources and structure therein to drive consumers toward high value plans.[18] However, few have taken advantage of this option to date (roughly 5,000 of more than 100,000 small firms in the state).[19]

Practical aspects of value-based insurance

Even in a redesigned marketplace that actively fosters efficient insurance products, a number of practical considerations remain that are critical to ensuring effective use of these strategies and minimizing potential pitfalls or adverse outcomes for consumers.

Consumer education

Ensuring that consumers receive adequate information on their cost-sharing requirements and consequences of particular healthcare choices is critical to value-based product design. Yet there are challenges in providing this information in a way that is easy to navigate and understand. Though there is some evidence that tiered networks influence patients' choice of providers, consumer choice is also influenced by personal recommendations and desire to remain with a known provider.[20] Because of inertia, engaging consumers with network design before they actually choose a provider is important; and, as noted before, requiring employees to actively re-enroll in plans rather than continue with a default can help move them to value-based products. In addition, the multitude of factors involved in consumer choices suggest that price differentials may need to be somewhat large so that consumers can enjoy significant savings to offset inertia and other factors leading them to remain with existing products and providers.[viii]

Price information

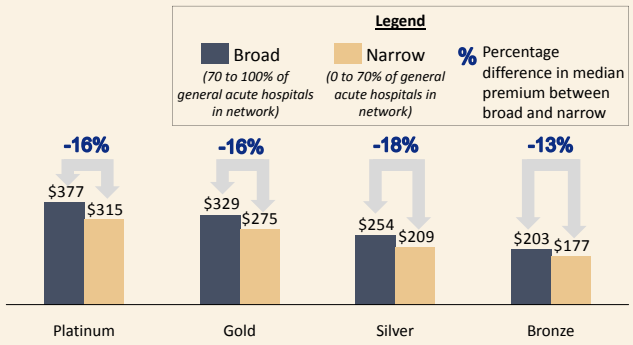
An important component of consumer cost-sharing is price transparency and the ability of consumers to receive timely, accurate information on prices of procedures and services, particularly the cost to the consumer for the procedure or service. There are challenges in providing this

[vii] Employers offering multiple plan choices also must be aware of the potential for adverse selection—in which more generous plans that attract sicker employees may become unsustainable if they then must raise premiums to cover the costs of those employees.

[viii] There is certainly a value to continuity of care with the same provider – particularly primary care physicians. Yet this is less likely to be the case for services such as labs and imaging, and the same primary care providers typically belong to multiple plans and could thus be retained even in the event of a shift to a narrow network plan, for example.

Figure 9.3: Premium differences between broad and narrow network products

Median premium of Connector plans by metal tier by narrow and broad network, and percent difference, 2014



NOTE: Narrow signifies either a narrow or an ultra-narrow network. Bars show median premium by network type within a metal tier. Network types are defined based on inclusion of acute care hospitals.

SOURCE: Private communication with MA Health Connector

information to consumers along several dimensions, including:

- Ensuring that consumers have cost-sharing information that depends on their own insurance plan design, which could include their current level of deductible at the time they are seeking price data.
- Basing data on actual current provider fee schedules rather than derived from previous claims data.
- Displaying information beyond just a single care transaction (such as an office visit) to include full-care episodes that could result following the visit (for example subsequent tests, procedures, and specialist visits that typically occur once a decision has been made to treat a given ailment). Providing such broader information is particularly difficult given the uncertainty in a patient's true health condition, but critical in that the initial contact with the healthcare system made by the patient often determines the entire course of treatment.
- Offering quality information in conjunction with price information in a manner that is valid and useful to consumers.

Previous research suggests that price transparency can reduce healthcare costs: consumers with access to timely and reliable data on cost and quality are more likely to choose lower cost facilities and providers, particularly for non-urgent procedures, when there is sufficient time between selecting the facility and provider and actually having the procedure. In a study in which a set of consumers had price information about MRI facilities and locations, average prices paid for MRIs dropped 19 percent.[21]

With regard to price transparency in Massachusetts, Chapter 224 requires (as of October 1, 2014) all health plans and third-party administrators to offer a toll-free number and website with healthcare price information. The law requires providers to disclose the allowed or charge amount for procedures and services within two business days. Payers report varying degrees of progress in developing price transparency tools but acknowledge that continued efforts are required.[ix] Consumers have begun to use price transparency tools to a limited extent. Types of procedures highlighted by payers included lab tests and imaging, pregnancy-related procedures, colonoscopies, mammography, and shoulder and knee arthroscopies.

It is also important that providers have access to price information when they are referring patients to further care such as from specialist physicians or ancillary services such as labs and imaging. Several studies have found that when providers were displayed prices at the time of making such referrals, they tended to order fewer services. Researchers have suggested requiring such price displays to be incorporated in the electronic health records (EHRs) meaningful use requirements and estimated large savings nationally from such a requirement.[2]

Adverse selection

Another important consideration when employers or exchanges offer widely varying choices to consumers is the problem of adverse selection. Individuals that tend to use a large amount of health care due to their health status are typically more likely to choose broad network plans. Any employer or exchange offering choices is prone to such employees disproportionately selecting broad network plans, or low deductible plans. If those plan options are to be self sufficient by charging premiums that cover costs, they may become unsustainable, because the costs will reflect both the more generous coverage and the lower health status of the membership.[22] To counter this possibility, employers or marketplaces often use tools such as cross-subsidization (risk-adjustment) from plans that enroll a healthier mix of individuals. These tools are imperfect, in that risk adjustment cannot perfectly segregate

[ix] United Health Care, a large national insurer with a relatively small state presence, has developed consumer transparency and pricing tools that include more than 630 services and 365 separate care pathways. The pricing data accounts for consumers' current level of spending relative to their own deductible and plan design, and incorporates actual provider fees charged, rather than estimated fees based on claims utilized by some tools.

how much of a given plan's higher cost is due to a sicker population versus a less efficient plan design, but they increase the chance of a plan remaining sustainable.

Interactions with other parts of the healthcare system

Successfully shifting consumer behavior in health care toward value has implications for multiple parties in the healthcare system beyond the individual. Importantly, these strategies may work in concert with, or be at odds with, care management and care coordination efforts and alternative payment models (APMs). A provider may want to refer a patient to a specialist with whom he or she has a clinical relationships as part of an accountable care organization (ACO), but that specialist may be in a higher tier or otherwise unfavorable for the patient in terms of out of pocket costs. To improve alignment, a payer might design value-based products that support APMs by giving preferential tiering to providers that are part of an ACO or an HPC-certified patient-centered medical home (PCMH).

Conclusion

There is considerable evidence that proper use of efficient insurance design and markets can leverage the power of consumer decision making to drive lower costs without sacrificing quality. These strategies can create a useful complement to provider-focused (payment) strategies by providing a mechanism whereby consumers reward efficient providers with higher volume, thus encouraging price competition among providers.

As suggested with the GIC and Connector examples, when consumers are faced with a transparent array of plan choices and when savings arise from choosing lower cost products, they are indeed more likely to choose those designs. Yet most employees currently are not presented with those choices. It may be possible to generate significant savings and promote consumer choice by encouraging the development of public and private exchanges that enable employers and employees to easily review a range of products and make value-oriented choices. HPC plans to work with stakeholders to further explore this opportunity in 2015.

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Recommendations

The HPC is required by law to publish an annual report tracking the healthcare industry's efforts to meet the statewide growth benchmark while identifying opportunities for improvement in cost, quality, and access. In light of the findings presented in this 2014 Annual Report, as well as our other analytic and policy work throughout the year, the HPC has developed recommendations for market participants and other government agencies. In addition, the HPC is committing to certain activities in 2015 to advance these recommendations and to foster innovative healthcare delivery and payment models, consistent with our statutory mission. This concluding section presents those recommendations and commitments.

The recommendations and commitments are organized into four primary areas of opportunity for improving the healthcare system in Massachusetts:

1. **Fostering a value-based market** in which payers and providers openly compete to provide services and in which consumers and employers have the appropriate information and incentives to make high-value choices for their care and coverage options
2. **Promoting an efficient, high-quality healthcare delivery system** in which providers efficiently deliver coordinated, patient-centered, high-quality health care that integrates behavioral and physical health and produces better outcomes and improved health status
3. **Advancing alternative payment methods** that support and equitably reward providers for delivering high-quality care while holding them accountable for slowing future healthcare spending increases
4. **Enhancing transparency and data availability** necessary for providers, payers, purchasers, and policymakers to successfully implement reforms and evaluate performance over time

Fostering a value-based market

Over the past few years, consumers have seen the growth of insurance products that encourage them to make value-based choices about their care. While take-up of tiered and limited network plans has been limited, the enrollment patterns in some market segments (Group Insurance Commission [GIC], the Connector) suggest that consumers do choose these plans when presented with choice, incentives, and comparative information. Similarly, in order to empower patients as informed consumers of healthcare services, they must have access to meaningful information on provider prices and quality.

These demand-side incentives rely on a competitive health care market that offers high-value provider options. As documented by the HPC, Massachusetts provider organizations are increasingly consolidating and forming new contracting and clinical alignments. These types of changes have been shown to impact healthcare market functioning, and thus the performance of our healthcare system.

To advance the goal of a more value-based market 2015, the HPC recommends:

1. **Massachusetts should lead the nation in direct-to-consumer transparency, enabling access to detailed information on the prospective cost and quality of services.** Payers should enhance price transparency tools by incorporating up-to-date contracted prices and meaningful measures of quality. Providers should make prices and performance information for common procedures and episodes of care publicly available. Prices for follow-on services (such as labs, tests and referrals to other healthcare professionals) should also be available and considered at the time providers recommend such care to their patients. Price query capabilities should be built into electronic health records.

2. **Payers should continue to develop and promote value-oriented products and enhance information provided to employers.** Payers should develop and promote products that reward consumers financially for making efficient choices, incorporating tools like aligned cost sharing, narrower networks products (potentially tied to accountable care organizations [ACOs]) and reference pricing. Payers and employers should continue to promote products that require or encourage members to select a primary care provider (PCP). Payers should also provide summary health claims reports and other actionable information to employers to enable employers to select products and benefits designs that will optimally incentivize employees to make value-based decisions, to inform employee wellness programs, and to address inappropriate utilization trends among employees such as avoidable emergency department (ED) use.
3. **Employers, including the state, should offer their employees plan choices that include value-oriented products, or embed value-based concepts into their chosen plan offerings.** Specifically, employers should consider insurance products or add-on services that offer cash benefits or "shared savings" for employees that choose providers that are lower cost or are paid using APMs. As the state's largest purchaser, the GIC should continue its innovative efforts to engage state employees in value-based decision-making by establishing incentives for employees to choose lower-cost/high-performing plans and providers, and to encourage enrollment in products that require members to select a PCP. The GIC should consider piloting other value-based benefit design elements such as reference pricing for certain elective low-risk procedures such as hip and knee replacements.
4. **Providers should present measurable indicators of how proposed material changes, such as mergers, acquisitions, or other contracting or clinical alignments, are likely to result in improved performance and demonstrate that benefits outweigh potential detriments to the Commonwealth.** Providers proposing material changes—particularly changes not already subject to law enforcement action but which may negatively impact the healthcare system—should demonstrate to the HPC how such changes will generate specific, measurable improvements that will be passed along to payers and purchasers, in areas such as in total medical expenses (TME) and quality. Providers should demonstrate that those measureable benefits outweigh potential detriments to the Commonwealth and commit to a process and targets for ongoing measurement and evaluation of progress.
5. **The HPC will examine past transactions to assess their impacts.** As part of its ongoing research and analyses, the HPC will examine past transactions to assess the extent to which commitments made by parties engaging in significant changes have been fulfilled, such as commitments for improved efficiency, quality, or access. The HPC will consider whether additional legislative authority is necessary for it to ensure that such commitments have been fulfilled.

Promoting an efficient, high-quality care delivery system

The HPC's research has highlighted variation among providers in spending for selected episodes of care and use of post-acute care (PAC) and opportunities to reduce readmission rates and ED utilization. Moreover, we have identified additional opportunities to improve quality and efficiency in the areas of care coordination and clinical integration across settings, identifying and managing high-cost patients (HCPs), caring for patients in community settings, and screening and treatment of behavioral health conditions, especially through integrated behavioral health models. The increased adoption of effective APMs will align incentives around quality and efficiency in care delivery. To this end, specific recommendations to increase the use and effectiveness of APMs are detailed in the next section.

Ongoing progress in the care delivery system will contribute to meeting the statewide cost growth benchmark, improve patient care, and enable providers to succeed under new forms of payment. To advance the goal of an efficient, high-quality care delivery system in 2015, the HPC recommends:

1. **Providers should adopt appropriate tools and share best practices to improve quality and efficiency in the specific priority areas noted above,** drawing from their own experience, the work of other organizations, and the HPC in these efforts. In addition to work in all these priority areas, in response to the state's relatively high use of PAC, the following specific actions are recommended:

a. *Acute hospitals should develop and adopt standard approaches to discharge planning to inform PAC site of care, and to optimize patient outcomes, patient experience, and value of care.* Acute hospitals should engage across the care continuum with PAC providers and PCPs to determine optimal approaches to managing site of care selection with the goal of reducing inappropriate and costly practice pattern variation.

b. *PAC providers should collect standardized patient assessment and quality information.* PAC providers should accelerate implementation of federally standardized approaches for collection of patient assessment data and quality measures and use this information for care delivery improvement activities, including facilitating improvement in discharge planning by hospitals.

2. **To support providers and complement efforts elsewhere in the market, the HPC will convene providers and offer technical assistance in these priority areas and will emphasize these areas in our investment programs and model payment approaches.** In 2015, the HPC will convene providers for the identification, dissemination, and evaluation of best practices in the priority areas and will also seek to provide direct technical assistance to provider organizations, through the CHART investment program, the innovation investment program, and through the PCMH and ACO certification programs. Technical-assistance efforts will be coordinated with other state, federal, and private sector organizations engaged in similar work.

3. **The Commonwealth should develop a coordinated behavioral health strategy that is aligned across agencies.** In 2015, the Commonwealth should develop a coordinated behavioral health payment, care delivery, and data strategy. Specifically:

   a. *Behavioral Health Data Task Force activities.* Given the importance of increasing data capabilities to improving access, quality, efficiency, parity, and integration in behavioral health care, in 2015, the Center for Health information and Analysis (CHIA), should begin collecting data in priority areas including:

      - Incorporating Massachusetts Behavioral Health Partnership and commercial managed behavioral health organizations claims into the All-Payer Claims Database (APCD)
      - Collecting discharge data from freestanding psychiatric and substance use disorder hospitals
      - In collaboration with HPC, the Department of Public Health (DPH), and the Department of Mental Health (DMH), enhancing the availability of behavioral health quality data and promoting behavioral health outcome measure development.

      Through the Behavioral Health Data Task Force, CHIA should identify any additional data gaps and develop a plan for closing such gaps over the next year.

   b. *DPH, DMH, MassHealth and HPC should coordinate to adapt policies to promote behavioral health integration efforts.* DPH, DMH, MassHealth and HPC should coordinate policies and efforts to promote behavioral health integration, including review of state licensure regulations and payment policies to reduce barriers, especially to co-location of medical and behavioral health care services.

Advancing Alternative Payment Methodologies

Effective APMs offer incentives that support value and patient-centered care, but between 2012 and 2013, expansion of APM coverage stalled in the commercial sector. In addition, global budgets alone may not be sufficient to alter the incentives facing many hospitals and specialists, sectors which are essential to health system transformation and cost containment. To advance the goal of expanded adoption of effective APMs in 2015, the HPC recommends:

1. **Payers and providers should continue to focus on increasing adoption of APMs and on increasing the effectiveness of APMs in promoting high quality, efficient care.**

   Market participants should advance the following:

   a. *APMs for HMO patients*. All commercial payers should increase the use of global APMs to pay for at least 60 percent of their HMO-covered lives in 2016.

   b. *APMs for PPO patients.* The coalition of payers and providers that developed consensus

guidelines for PPO attribution should seek to involve other market participants in the coalition, and all members of this expanded coalition should begin introducing APMs for PPO covered lives in 2016 with the goal of reaching at least one-third of their PPO lives that year.

c. *Behavioral health in APM budgets*. Exclusion of behavioral health spending from APM budgets may further fragment an already fragmented system for patients with mental health and substance use disorder needs. Payers and providers should evaluate how best to include behavioral health spending in APM budgets to support integrated, whole-person care and should work to adopt such arrangements starting in 2015.

d. *Market-wide alignment on risk-adjustment.* In 2015, payers and providers should agree on a common methodology for risk-adjustment to be used across all payer contracts in Massachusetts beginning in 2016. Payers and providers should assess the potential gains from incorporating socio-economic measures in the risk-adjustment methodology.

2. **The state should prioritize efforts to define a standard set of provider quality measures to be used for purposes of public and private payer contracts, provider tiering, and establishing goals for statewide improvement.** The current process for developing the Standard Quality Measure Set should be strengthened and the Statewide Quality Advisory Committee (SQAC) focused so that, in addition to ensuring that the measures are statistically valid and clinically relevant, the process results in a standard quality measure set with a limited number of priority measures that payers, providers and the Commonwealth use for the purposes listed above. CHIA should collect and publish the Standard Quality Measure Set, and should also report on all-payer patient experience data and pilot patient-reported outcome measures.

3. **The HPC will convene stakeholders to explore episode-based payment models.** In 2015 and 2016, the HPC will convene stakeholders, including payers, providers, purchasers and researchers, to explore opportunities to extend episode-based payment models across payers in Massachusetts, including both stand-alone episode-based payment and episode-based payment used in conjunction with global budgets. The HPC will conceptualize, design and describe opportunities to implement episode-based payment models for relevant conditions and specialties.

4. **MassHealth should continue progress towards developing and launching an ACO.** MassHealth should maintain its effort to develop an ACO program with goals of developing a proposed model in early 2015 and launch in early 2016. The HPC and MassHealth should work together to ensure alignment between the MassHealth ACO and the HPC ACO certification program. MassHealth should continue to invest in the necessary data analytics and infrastructure necessary to offer support to providers in taking on risk for patients, including through reports in the following domains:
   - raw claims data
   - regular reporting on budget and quality performance compared to benchmarks
   - real-time information regarding admissions, transfers and discharges

Enhancing transparency and data availability

The importance of transparency and availability of data surfaces throughout our discussions of spending trends, care delivery, APMs, and demand-side incentives. Data are essential to all aspects of system transformation, including setting priorities, strengthening care delivery, designing and succeeding in new payment models, harnessing the power of consumer choice, and monitoring progress. To advance the goal of greater transparency and data availability, the HPC recommends:

1. **The HPC will develop a set of measures to track health system performance.** In 2015, the HPC will develop a set of health system performance measures, or "dashboard," to enable the Commonwealth to set concrete goals for advancement. This dashboard will be publicly available, updated regularly, and will include metrics regarding the level and rate of growth of total spending, provider-level spending and prices as well as APM coverage, prevalence of ACOs and other indicators of payment and care delivery reform. It will also include measures of waste, inefficiency, and quality—such as hospital readmissions, avoidable ED and testing use, medical harm, and areas of practice-pattern variation, such as PAC.

2. **CHIA should improve APCD capabilities and transparency and develop key spending measures.** In addition to the work to improve behavioral health data noted above, CHIA should accelerate the full implementation of several key functions described in Chapter 224 to support market participants in achieving transformation goals and work to develop additional spending measures critical to the goals of that legislation:
   a. *APCD is a critical tool for evaluating and monitoring system performance.* By the end of 2015, CHIA should:
      i. Expedite processing of requests from other state agencies, researchers and policymakers for access to APCD so that such requests are filled within one month
      ii. Work with payers to improve the usefulness and quality of the data by requiring aligned field specifications, especially for key services and fields
      iii. Implement a master provider index in collaboration with the HPC's registered provider organization (RPO) program to allow analysis of individual providers across systems
      iv. Expedite release of APCD updates to maximize timeliness of data
      v. Work with MassHealth to establish and publish a credible method to use APCD data to calculate enrollment, spending and other essential measures for the MassHealth population as a whole and for key segments within it.
   b. *Total Medical Expenditures for PPO populations (recommendation repeated from July 2014 supplement).* To monitor and understand cost trends in the significant and growing PPO segment, CHIA should extend its reporting to include a TME measure for PPO populations that uses the consensus attribution algorithm to identify accountable provider organizations.
   c. *Provider-level measures of spending growth (recommendation repeated from July 2014 supplement).* In 2015, CHIA should work with the HPC and other stakeholders to design and examine measures for evaluating contribution to health care spending growth for provider types such as hospitals, specialist physician groups, and others not captured by the TME measure. Where feasible, these measures should be aligned with those used by other states to facilitate meaningful benchmarking.
3. **Government agencies should coordinate on APM data collection and continue health resource planning.**
   a. *APM data collection.* CHIA, the Attorney General's Office, the Department of Insurance, the HPC, and other state agencies should coordinate the collection of APM data in order to reduce the burden on payers and better enable the health policy community to track progress towards greater adoption of meaningful APMs. This approach should provide the necessary level of detail both on the extent of risk associated with each APM and on the use of episode-based payment or other complementary approaches in conjunction with global payment.
   b. *Health resource planning.* The HPC and other agencies should collaborate to develop a plan to strengthen the work of the Health Resource Planning Council to develop a robust, sustainable State Health Plan that drives prioritization of health care resources and informs public and private investments. The HPC will work with agency partners to assess and ensure sufficient access to essential health services in the commonwealth.

In the coming year, the HPC will pursue the activities noted above and work collaboratively with the Baker/Polito Administration, the Massachusetts health care industry, employers, consumers, and other stakeholders on advancing the goals of a more affordable, effective, accountable, and transparent healthcare system in Massachusetts.

Appendix A: Acute Hospitals in MA, by Type of Hospital, FY 2014

Major Teaching Hospitals (15)

Academic Medical Centers (6)

- Beth Israel Deaconess Medical Center
- Boston Medical Center
- Brigham and Women's Hospital
- Massachusetts General Hospital
- Tufts Medical Center
- UMass Memorial Medical Center

Teaching Hospitals (9)

- Baystate Medical Center
- Berkshire Medical Center
- Brigham and Women's Faulkner Hospital
- Cambridge Health Alliance
- Lahey Clinic
- Mount Auburn Hospital
- Saint Vincent Hospital
- Steward Carney Hospital
- Steward St. Elizabeth's Medical Center

Specialty Hospitals (6)

- Boston Children's Hospital
- Dana-Farber Cancer Institute
- Kindred Hospital- Boston
- Kindred Hospital- Boston North Shore
- Massachusetts Eye and Ear Infirmary
- New England Baptist Hospital

Community Hospitals (46)

- Anna Jaques Hospital
- Athol Memorial Hospital
- Baystate Franklin Medical Center
- Baystate Mary Lane Hospital
- Beth Israel Deaconess Hospital- Milton
- Beth Israel Deaconess Hospital- Needham
- Jordan Hospital
- Cape Cod Hospital
- Clinton Hospital
- Cooley Dickinson Hospital
- Emerson Hospital
- Fairview Hospital
- Falmouth Hospital
- Hallmark Health
- Harrington Memorial Hospital
- HealthAlliance Hospital
- Heywood Hospital
- Holyoke Medical Center
- Lawrence General Hospital
- Lowell General Hospital
- Marlborough Hospital
- Martha's Vineyard Hospital
- Mercy Medical Center
- Merrimack Valley Hospital
- MetroWest Medical Center
- Milford Regional Medical Center
- Morton Hospital
- Nantucket Cottage Hospital
- Nashoba Valley Medical Center
- Newton-Wellesley Hospital
- Noble Hospital
- North Adams Regional Hospital
- North Shore Medical Center
- Northeast Hospital
- Quincy Medical Center
- Saints Medical Center
- Signature Healthcare Brockton Hospital
- South Shore Hospital
- Southcoast Hospitals Group
- Steward Good Samaritan Medical Center
- Steward Holy Family Hospital
- Steward Norwood Hospital
- Steward Saint Anne's Hospital
- Sturdy Memorial Hospital
- Winchester Hospital
- Wing Memorial Hospital

Notes: (A) Academic Medical Centers (AMC's) are a subset of Major Teaching Hospitals. AMCs are characterized by (1) extensive research and teaching programs and (2) extensive resources for tertiary and quaternary care, and are (3) principal teaching hospitals for their respective medical schools and (4) full service hospitals with case mix intensity greater than 5% above the statewide average. (B) Teaching Hospitals are those hospitals that report at least 25 full-time equivalent medical school residents per 100 inpatient beds in accordance with Medicare Payment Advisory Commission (MedPAC), and are not classified as AMCs. (C) "Community Hospitals" are not Major Teaching Hospitals and include hospitals with public payer mix of less than 63%, as well as "Disproportionate Share Hospitals (DSH) that have a public payer mix greater than 63%.

Source: Center for Health Information and Analysis

List of Technical Appendices

A: Acute Cohort Hospital Profiles in Massachusetts, FY 2014
B2: Trends in Spending and Care Delivery
B3: Hospital-level Variation in Spending per Episode of Care
B4: Maximizing Value in Post-Acute Care
B5: Wasteful Spending: Readmissions and Emergency Department Use
B6: High-Cost Patients
B7: Behavioral Health
B8: Alternative Payment Methods
B9: Demand-Side Incentives
C: Data Sources

NOTE: In Technical Appendix B, appendix numbers correspond to chapter numbers with the result that there is no Technical Appendix B1

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