Technical Notes

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For the Report:

Massachusetts Commercial Medical Care Spending: Findings from the All-Payer Claims Database 2010 – 2012
Medical Claims Payments for the Three Largest Commercial Plans

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Background

In light of our shared responsibility to monitor the Massachusetts health care system, the Center for Health Information and Analysis (CHIA) and the Health Policy Commission (HPC) have conducted a joint project to document trends in medical spending for the state's largest commercial payers, using data from the state's all-payer claims database (APCD) that CHIA maintains. The Lewin Group (Lewin) conducted this project under contract to the HPC.

Lewin analyzed data from the APCD for calendar years 2010, 2011, and 2012 for the state's three largest commercial payers: Blue Cross Blue Shield of Massachusetts (BCBS), Harvard Pilgrim Health Care (Harvard Pilgrim), and Tufts Health Plan (Tufts). Specifically, Lewin used Version 2.0 of the APCD released in January 2014. Due to data limitations, pharmacy claims were excluded from the project.

Construction of Analytic File

In the initial phase of the project, Lewin evaluated the accuracy, completeness and quality of the APCD data, including medical claims, enrollee eligibility, and health care provider data. Upon completion of the data validation, Lewin identified the final version of each claim transaction and developed a methodology for determining the total spending on medical claims for each payer.

To compute the total medical claims spending for comprehensive commercial insurance in Massachusetts, it was also necessary to remove from the APCD data claims and eligibility for Medicare Advantage, Medicare supplemental insurance, other partial products, and claims for enrollees that reside outside of Massachusetts. In some cases products were clearly identified as Medicare HMO and could easily be removed. To identify other partial products, all variables in the product table were evaluated for any indication of partial coverage, and per member per month (PMPM) health services costs were evaluated by product for reasonableness. To maintain a larger sample, Lewin retained claims data for individuals enrolled in plans that did not include behavioral health services, typically because employers may carve out the behavioral health benefit. The percentage of individuals without behavioral health coverage is less than 10% of the final sample.

The final sample for analyses of total spending included medical claims data from the three major commercial payers and from comprehensive medical products (including managed care) where claims are paid to providers via fee-for-service. The beneficiaries studied were Massachusetts residents during calendar years 2010, 2011, and 2012. The 2012 sample represented approximately 36 percent of the entire commonwealth population and 67% of the commercially insured population.

- The 2010 sample contained **30.62** million member months, or **2.55** million member years, and claims for **3,026,186** individuals.
- The 2011 sample contained **29.76** million member months, or **2.48** million member years, and claims for **2,935,376** individuals.

- The 2012 sample contained **28.95** million member months, or **2.41** million member years, and claims for **2,828,680** individuals.

Analyses of risk scores were limited to individuals who were enrolled with a single carrier for at least six months in one calendar year; this limitation is necessary for accurate individual scores but leads to a disproportionate exclusion of individuals who move out of the Commonwealth, switch payers or products, or die during the year.

Analytic Approach and Methods

Total Medical Claims Spending

To measure the total cost of commercial insurance medical claims in Massachusetts, Lewin summarized both plan and member payments to providers. This information was obtained directly from the final version of the claim and does not include any additional adjustment for completion or inflation. All services recorded in the claims data were included in the analysis.

Change in Quantity and Prices Paid

To factor changes in per member per month (PMPM) spending into changes in the quantity of services and changes in the prices paid for these services, Lewin re-priced all commercial claims using Optum Normalized Pricing. This software assigns each claim a new, nationally representative price calibrated to 2011. As a result, changes in the normalized PMPM are a measure of quantity that reflects changes in the volume and intensity of services but not changes in contracted rates, provider mix, or time period. The residual change in PMPM spending is presented as a composite measure of the changes in the prices, as reflected in the paid claims. [1]

To re-price claims, Optum Normalized Pricing uses a methodology specific to each type of claim. Physician and ancillary services are re-priced using values from the Medicare fee schedule that are adjusted to be comparable to commercial rates. Relative values for services not valued by the Medicare fee schedule are derived from national averages computed from Optum's benchmark database. Inpatient claims are priced using the diagnosis information present on the claim to assign a rate per day from an internal reference database. The rate is specific to the diagnosis category (e.g., central nervous system, cardiac, maternity, trauma, etc.), presence of major surgery, rehabilitation facility or Skilled Nursing Facility (SNF) admission, and length of stay. Outpatient claims were re-priced using a multi-step process that assigns national averages using first the procedure code then, if no match is found, the average price per revenue code. All claims were re-priced using the same methodology so that normalized spending yields a measure of resource use that is comparable across payers.

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[1] Changes in price may be due to a number of factors including changes in insurance product mix, provider mix and contractual price changes, calculated as follows: (1+change in PMPM spending)=(1+change in quantity)*(1+change in prices paid)

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Health Status: Patient Risk Scores

To determine whether observed differences in costs between time periods or patient groups were due to differences in the health status of enrollees, Lewin processed the APCD claims data through the Symmetry Episode Risk Group (ERG) risk adjustment grouper. The ERG grouper evaluates diagnosis codes on medical claims to identify the chronic and acute conditions present for each enrollee that may have a material impact on health care costs. The ERG risk scores were developed using a national database of commercial health care claims and were calibrated so the average risk score equals 1.0. Condition specific risk scores and an age/gender risk score are then summed for each enrollee.

To support the likelihood that observed risk scores were truly reflective of enrollee health status, the analyses limited the sample to enrollees with at least six months of eligibility. Claims data for new enrollees with one or two months of eligibility may not accurately capture relevant clinical conditions that have not been diagnosed or treated in that short timeframe. These data may incorrectly yield risk scores that understate the health status of new enrollees. Risk scores were computed for all commercial plan enrollees who met the six month minimum eligibility period for the years 2010, 2011, and 2012.

Categories of Service

To classify claims by category of service, Lewin used logic that classifies claims using the revenue codes and procedure codes reported on a claim. All lines on a claim are assigned to a single category listed in **Exhibit 1**.

Exhibit 1. Category of Service Classification

Institutional	Professional
Institutional Inpatient Services	**Professional Services**
Inpatient Maternity	Office/Home Visits
Inpatient Medical/Surgical Care	Delivery
	Surgery
Inpatient Psychiatric Services	Oncology
Inpatient Psychiatric	Ophthalmology
	Anesthesiology
Long Term Care Services	Therapy
Institutional Long Term Care	Alternative Medicine
	Diagnostic
Institutional Outpatient Services	Vision
Outpatient Ambulatory Surgery	Dental
Outpatient Dialysis	Hearing
Outpatient Clinic	Orthotics
Outpatient Professional Surgery	
Outpatient Diagnostic Testing	**Behavioral Health Services**
Outpatient Therapy	Professional Behavioral Health
Outpatient Behavioral Health	
Other Outpatient Services	**Other Professional Services**
	Emergency Transportation
Outpatient Emergency Room	Non-Emergency Transportation
Emergency Room	DME Supplies
	Injections/Infusions
Lab/X-Ray	Office Drugs
Outpatient X-Ray	Medical Supplies
Outpatient Laboratory	Case Management
Professional Laboratory and X-Ray	Telehealth
	Other Professional
Other Institutional Services	
Crossover	**Institutional Services**
Drugs and Supplies	Professional Institutional
Blood Products	
	Home Care Services (if submitted as
Home Care Services (if submitted as	**professional claim)**
institutional claim)	Home Health Aide Services
Home Health Aide Services	Home and Community Based Services
Home and Community Based Services	

The quantity of services was measured by counting distinct claims. The category of service logic classifies an entire claim into a single category so that there is a 1:1 relationship between how claims are counted and categorized. While this approach lacks precision for some services like durable medical equipment, it provides a consistent view of the data that is unaffected by service specific differences in how units are reported. For example, an ambulance claim is counted once rather than for both the ambulance Healthcare Common Procedure Coding System (HCPCS) code and the associated mileage charges included on ambulance claims.

NOTE: In the report chartpack, the HPC and CHIA combined Categories of Service into broader categories (professional, lab/X-ray, inpatient, outpatient, and other institutional). The category mapping is provided in the Databook, Exhibit 6.

Regional Analysis

The Commonwealth of Massachusetts was divided geographically using the Hospital Service Areas (HSA) developed by The Dartmouth Institute for Health Policy and Clinical Practice. These geographical boundaries reflect local hospital service areas and are created by combining zip codes into areas where Medicare beneficiaries are most often hospitalized. As a result, they reflect travel patterns for hospital use. Consequently, HSAs in the eastern, more urbanized areas of Massachusetts tend to be smaller than those in the western part of the Commonwealth.

NOTE: In the report chartpack, the HPC and CHIA combined Hospital Service Areas (HSAs) into eight standard regional categories. The regional mapping is provided in the Databook, Exhibit 7.

Episodes of Care

To identify the largest variances in health care costs across specific episodes of care, the Symmetry Episode Treatment Grouper was used to group claims into unique episodes of care. Episode Treatment Groups (ETGs) are a medically meaningful statistical unit representing a complete episode of care. These episodes describe a recipient's observed mix of diseases and conditions, and any underlying co-morbidities and complications. ETGs are an illness classification methodology that combines medical and pharmacy service data to produce mutually exclusive and clinically homogenous categories. Because the available pharmacy dataset is incomplete, these analyses did not include pharmacy claims, which limit the results.

For chronic conditions, the time period for an episode of care is defined as the full calendar year (i.e., the begin date is January 1 and the end date is December 31). For other conditions, the begin date is the first day of care after a clean period, and the end date is the last day of care before a clean period. A clean period is defined as one with no indication of treatment for the condition. As a result, some episodes span calendar years, in which case total spending includes spending that occurs during the calendar year only, and the episode count includes partial episodes.

Limitations of these Analyses

These analyses are based on the available dataset, which had some limitations. The spending variables do not capture pharmacy costs or any payments outside the claims system.

Lewin, CHIA, and the HPC took a number of steps to ensure the validity of these results, including following Lewin's standard protocols for data examination and quality assurance. The data examination included validating claim version criteria and evaluating control totals for member counts and spending. CHIA, the HPC, and Lewin discussed its methods and PMPM results with representatives from the three major commercial carriers. Despite these efforts, it is possible that some of the analyses reported here contain errors due to irregularities

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or limitations of the source data that were unknown to Lewin at the time this work was performed.

CHIA, the HPC, and Lewin are engaged in ongoing efforts to refine our analytic approach and validate our results. Results shown here may be updated as a result of these efforts.