

**COMMONWEALTH OF MASSACHUSETTS  
HEALTH POLICY COMMISSION**

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**TECHNICAL APPENDIX B5  
COMMERCIAL PRICE TRENDS AND COMPARISON TO  
MEDICARE PRICES**

**ADDENDUM TO 2018 COST TRENDS REPORT**

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## 1 Summary

This section describes the Health Policy Commission's (HPC) approach to the analyses contained in Chapter 6: “**Comparison of average commercial prices to Medicare, and commercial price trends**” of the 2018 Cost Trends Report.

## 2 Data

To calculate commercial prices, the HPC used the Massachusetts All Payer Claims Database (APCD) for calendar years 2014-2016, which included data from the three largest commercial payers in Massachusetts, Blue Cross Blue Shield, Harvard Pilgrim Health Plan, and Tufts Health Plan. Corresponding Medicare prices were calculated using Medicare public use files and Medicare payment rules tables described in corresponding analysis sections below.

## 3 Definitions and Dataset Construction

### 3.1 Definition of price

In this chapter commercial price is defined as the allowed amount for claims associated with a given procedure or service.

### 3.2 Exclusions applicable to all hospital data

Since 2016 and most of 2015 claims in APCD datasets lacked self-insured members, data for all years was restricted to only fully-insured and GIC members to keep the sample consistent for the entire 2014-2016 period. Analyses included only non-senior adults (ages 18 through 65). Hospital price analysis is focused on general acute care hospitals, and thus excludes non-acute hospitals and most specialty hospitals as defined in the CHIA Hospital Profiles 2018 (see the Hospital Profiles Technical Appendix). New England Baptist Hospital is included in applicable analyses due to its high proportion of statewide discharges for orthopedic care. Two hospitals that closed during the 2014-2016 period, North Adams Regional Hospital and Quincy Medical Center, are excluded from all analyses.

### 3.3 Construction of the inpatient data set

The HPC constructed a dataset of inpatient discharges in the APCD in which all claims for each inpatient discharge were combined. The price of each discharge was defined as the total of allowed amounts for facility claims associated with the discharge.

Each discharge had one or more Medicare Severity Diagnosis Related Groups (DRG) associated with it in the claims data. The HPC excluded discharges that had multiple associated DRGs, except for discharges with DRG 795 (normal newborn) or a maternity DRG (765-775), in which case only the maternity DRG was assigned to that discharge. To avoid counting payments for incomplete treatment of conditions, the HPC excluded claims made by hospitals from which a patient was transferred out, as identified by the variable discharge status = 2. Discharges with a length of stay exceeding the Medicare median for a particular DRG by a factor of 3, based on the Medicare Acute Inpatient Prospective Payment System (PPS) final rule, Table 5, were also dropped.

The HPC excluded some additional discharges with unreliable price information. These included discharges for which 10% or more of total allowed amount was from claims identified by Mathematica Policy Research as being unreliable (zero-pay claims, claims for which another carrier covered a portion of the reimbursement, capitated encounter records, and services paid under global payment

arrangements). Discharges with facility prices that were equal or less than 0 were excluded as improbable, and discharges with allowed amounts in the top and bottom 1% of DRG-adjusted facility allowed amounts were excluded as outliers.

The following table illustrates the sample selection process:

Inclusions and exclusions	Discharges (n)
Total discharges identified based on APCD 6.0 2014-2016	245,492
Exclude hospitals that closed during the period, non-acute, and specialty hospitals other than New England Baptist Hospital	235,648
Exclude discharges with multiple or missing DRGs, other than DRG 765	209,692
Limit to only fully-insured or GIC members	149,690
Limit to adult, non-senior patients (ages 18-65)	120,370
Exclude transfers-out	118,377
Exclude outliers in length of stay (>3 times Medicare median)	114,135
Exclude discharges where >10% of payment came from claims identified by Mathematica as having unreliable price data	112,981
Exclude discharges with facility price <=\$0	112,905
Exclude discharges with allowed amounts at top and bottom 1% of DRG-adjusted facility price	94,930

### 3.4 Construction of the ED data sets

#### 3.4.1 ED E&M claims datasets

The HPC constructed two datasets of emergency department (ED) evaluation and management (E&M) claims: one with ED facility claims for E&M services and one with ED professional E&M claims. E&M ED claims were defined as those with current procedural terminology (CPT) code of 99281 through 99285. Professional claims were limited to those with a site of service equal to “23” (emergency room), while facility claims were limited to outpatient claims with an emergency room code (otp\_code=1, as identified by Mathematica). The facility E&M dataset was further limited to services rendered at Massachusetts acute care hospitals; the APCD did not include data sufficient to apply a similar limitation to professional claims. Claims with unreliable prices, as identified by Mathematica, were excluded, as were facility claims with \$0 allowed amounts and claims with allowed amounts in the top and bottom 1% within each E&M code (99281-99285).

#### 3.4.2 ED E&M visits dataset

The HPC also constructed a dataset of ED E&M “visits” in which all physician and facility claims in the same hospital ED on the same date for the same patient were combined. This included claims for CPT

codes other than E&M services (e.g., laboratory services, radiology). The HPC excluded visits with no facility E&M claim, those with a professional or facility E&M claim that were identified by Mathematica as having an unreliable price, those with a price of less than \$0, or which had allowed amounts in the top or bottom 1% within each CPT. For visits that included a valid facility E&M claim and no professional E&M claim, the HPC considered the professional E&M allowed amount to be \$0. The resulting dataset included approximately 35% of all ED E&M claims.

### **3.5 Construction of clinic E&M data set**

The HPC constructed a dataset of clinic E&M claims. Clinic E&M claims were defined as professional claims with a site of service equal to “11” (office) and a CPT code of 99201-99205 for new and 99211-99215 for established patients. The claims were further limited to primary care provider (PCP) claims by matching service provider national provider number (NPI) with PCP codes in the HPC’s Registration of Provider Organization Program data, SK&A data, or in provider taxonomy (e.g., Family Practitioner, Internist and Internal Medicine, etc.); E&M claims by non-PCPs were dropped from a dataset. Claims identified by Mathematica as having unreliable prices (see section 3.3 above) were excluded, as were claims with allowed amounts less than or equal to zero, and those with allowed amounts in the top or bottom 1% of each CPT code.

### **3.6 Construction of outpatient hospital procedures data set**

The HPC created a dataset of select procedures conducted in hospital outpatient departments. Facility claims for colonoscopy with polypectomy (CPT 45385) and brain MRI with and without contrast (CPT 70553) in the outpatient claims category (claimcat=OTP, as identified by Mathematica) were included in the dataset; professional claims with the same CPT code for the same patient and service date and a site of service equal to 22 (hospital outpatient) were also included and added to corresponding facility claims to create total allowed amounts for a given procedure. Claims identified by Mathematica as having unreliable prices (see section 3.3 above) were excluded, as were claims with allowed amounts in the top or bottom 1% of each CPT code.

## **4 Analyses**

### **4.1 Comparison of commercial prices to would-be Medicare prices**

The HPC conducted comparison of actual commercial prices to estimated corresponding prices that would have been paid by Medicare for the same service by the same provider.

#### **4.1.1 Inpatient comparison analyses**

The HPC calculated 2016 commercial inpatient price per discharge by adding allowed amounts for claims associated with each discharge identified in the inpatient discharge dataset described in section 3.3. For each commercial discharge, the HPC then calculated a corresponding “would-be” Medicare facility payment using the Medicare FY 2016 Final Rule Tables, Tables 1A-1E for a given DRG, applying adjustments from the Medicare FY16 Impact File based on the applicable wage index, Medicare disproportionate share hospital status, and teaching hospital status. These analyses exclude hospitals that are not paid under Medicare’s PPS, namely Athol Memorial Hospital, Fairview Hospital and Martha’s Vineyard Hospital.

The HPC calculated average commercial and “would-be” Medicare facility prices for each Massachusetts hospital in the dataset. Average commercial allowed amounts and “would be” Medicare payments per

discharge were case-mix adjusted by dividing by the case weight of the associated DRGs, using 2015 DRG weights as set forth in the Medicare Inpatient PPS Table 5- List of Medicare Severity Diagnosis-Related Groups FY2015 Correction Notice and then multiplying by the average DRG weight across entire commercial population. Exhibit 1 presents the distribution of average hospital prices. Exhibit 2 presents facility prices for four selected DRGs, which did not require case-mix adjustment.

#### **4.1.2 Hospital outpatient procedure comparison analysis**

The HPC calculated 2016 commercial prices for hospital outpatient procedures using the hospital outpatient procedure dataset described in section 3.6. The HPC calculated the average allowed amount for each CPT code (45385 and 70553) for facility and professional services. The HPC constructed comparable Medicare prices for facility claims based on the Medicare Outpatient Prospective Payment Addendum B for October 2016, applying adjustments from the Medicare FY16 Impact File based on the applicable wage index. The professional Medicare payment amount for each CPT code came from the Medicare State HCPCS Aggregate Summary Table CY16, which provided average Medicare payments in Massachusetts for each CPT.

#### **4.1.3 ED E&M comparison analysis**

The HPC calculated 2016 commercial ED E&M prices using the ED E&M claims datasets described in section 3.4.1. The HPC calculated the average allowed amount for each ED E&M CPT code separately for facility and professional claims, then weighted these average values by the volume of each code to create a weighted average ED E&M price for facility and professional services. The HPC constructed comparable Medicare prices for facility ED E&M claims based on the Medicare Outpatient Prospective Payment Addendum B for October 2016, applying adjustments from the Medicare FY16 Public Impact File based on the applicable wage index. The professional Medicare payment amount for each CPT code came from the Medicare State HCPCS Aggregate Summary Table CY16, which provided average Medicare payments in Massachusetts for each CPT; the HPC weighted the average Medicare payments for each ED E&M CPT by the volume of commercial codes to calculate a weighted average professional Medicare price for these services.

#### **4.1.4 Clinic E&M comparison analysis**

The HPC calculated 2016 weighted average prices for clinic E&M visits using the clinic E&M dataset described in section 3.5. The HPC calculated average allowed amounts for each CPT code in the dataset and then weighted these payments by volume of codes to calculate a average weighted price of a new patient visit (CPTs 99201-99205), an established patient visit (CPTs 99211-99215), and overall. Comparable Medicare composite prices were calculated using the Medicare State HCPCS Aggregate Summary Table CY16, which provided average Medicare payments in Massachusetts for each CPT; the HPC weighted the average Medicare payments for each clinic CPT by the volume of commercial codes to calculate a weighted average professional Medicare price for these services.

### **4.2 Analyses of Trends**

To calculate trends in commercial prices, the HPC calculated 2014 prices using the methods described above. The HPC then calculated 2015 and 2016 prices using the 2014 average DRG weight for inpatient prices and the 2014 distribution of CPT codes for ED E&M and clinic E&M prices.

For inpatient price trends, the HPC examined statewide average prices per discharge as well as average prices in 3 major categories of DRGs: maternity, which included all DRGs in major diagnostic category 14, other medical stays, and other surgical stays, according to the “Type” variable in the Medicare Inpatient PPS Table 5- List of Medicare Severity Diagnosis-Related Groups FY2016 Correction Notice. Average price per case-mix adjusted discharge statewide and in each category was calculated for each year, holding the number of patient discharges at each hospital constant at 2014 levels to adjust for changes in provider mix over time.

Trends in ED prices were calculated using the dataset of ED E&M visits described in section 3.4.2. The HPC held the mix of facility E&M codes associated with each visit constant at 2014 levels; the low volume of each CPT code at each hospital in each year precluded holding the number of visits at each hospital constant at 2014 levels. As sensitivity, HPC calculated the trends in average prices for facility ED E&M claims and professional ED E&M claims using the separate facility and professional ED E&M claims datasets and found that the trends were similar to the trend in prices for visits.