

COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION



TECHNICAL APPENDIX B4
HOSPITAL OUTPATIENT SPENDING GROWTH

ADDENDUM TO 2019 COST TRENDS REPORT

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1 Summary

This appendix describes the Health Policy Commission’s (HPC) approach to the analyses contained in **Chapter 4: “Hospital outpatient spending growth”** of the 2019 Cost Trends Report.

2 Data sources

The HPC used the 2015 and 2017 Massachusetts All-Payer Claims Database v7.0 (APCD) for the outpatient spending growth analyses. The HPC’s APCD analytic files contain five of the largest commercial payers in the state: Blue Cross Blue Shield, Tufts Health Plan, and Harvard Pilgrim Health Care, Unicare, and AllWays (formerly known as Neighborhood Health Plan). For more information for these and other data sources, please see **Technical Appendix D: Data sources**.

3 HCCI outpatient spending categories

Claim lines in the HPC APCD analytic files contain a flag that indicates the claim type (e.g., facility inpatient, facility outpatient, or professional claim). In turn, facility outpatient claims are further classified into a specific outpatient category based on revenue code and CPT, according to Health Care Cost Institute (HCCI) methodology¹. The outpatient classification categories include: emergency room, outpatient surgery, observation, ambulance, radiology services, lab/pathology, home health, administration of drugs, administered drugs, DME/prosthetics / supplies, as well as miscellaneous outpatient procedures.

3 Defining hospital outpatient surgical encounters

3.1 Exclusions

The analyses in this chapter focus on outpatient surgeries performed in acute care hospitals in Massachusetts, so claims from non-Massachusetts hospitals and non-acute care hospital facilities were excluded from the dataset. Claims from acute hospitals in Massachusetts represent 94.6 percent of outpatient surgery facility claim spending.

	Claim lines	Payment (\$ millions & %)	
Acute-care MA hospitals	1,491,545	\$767	94.6%
Other	46,021	\$22.9	2.8%
Out-of-state hospitals	35,891	\$20.8	2.6%
Total	1,573,457	\$810.7	

Facility claims that occurred in relation to an Emergency Department (ED) visit on the same day for the same patient were excluded from analysis.

3.2 Creating outpatient surgical encounters

After eliminating exclusions, non-ED professional claims that occurred on the same day as an outpatient surgery facility claim for the same patient were appended to the dataset. This included all encounters where at least one of the facility claims was identified as an outpatient surgery claim, according to HCCI classification, and combined them with the professional claims that happened on the same day in a hospital on-campus facility (22), hospital off-campus facility (19), or an ambulatory surgical center (24). Encounters had to have at least one facility claim as a requirement for inclusion.

The HPC used the Surgery Flags from AHRQ’s Healthcare Cost and Utilization Project (HCUP) to identify if each procedure was major (“narrow” definition in AHRQ terms), minor surgery (“broad” definition) or neither. All previously identified encounters that didn’t have either a major or minor surgery among its procedures were eliminated (24 percent of the spending in previously identified claims).

A main surgical procedure was identified for each encounter using the following logic:

- If an encounter had only one “major” surgical procedure, this was determined to be the main procedure for that encounter.
- If an encounter had more than one “major” surgical procedure among the claim lines in the encounter, the procedure with the highest payment amount was identified as the main procedure for that encounter.
- If an encounter had no “major” surgical procedure, the procedure with the highest payment amount among the “minor” surgical procedures was identified as the main procedure for that encounter.

Each surgical encounter was designated as either a major or minor surgery based on the classification of the main procedure in the encounter. Surgical encounters were classified into clinical groups (such as hysterectomy or breast biopsy) based on the main procedure of the encounter using the HCUP Clinical Classification Software (CCS) from AHRQ.

Payments for all claims in the encounter were added to determine total professional payment and total facility payment for the entire encounter. Combining the total professional payment and total facility payment would reflect the total payment for the encounter. Work relative value units (RVUs) based on the main procedure of the surgical encounter were linked to approximate complexity of the entire surgical encounter.

4 Analysis

4.1 Volume trends

All volume measures were calculated on a per member per month basis to calculate volume trends, as total membership changed across the study period. For children's outpatient surgeries detailed in the call-out box, only member months for children (age 16 and younger) were used as the denominator.

4.2 Payment per procedure

Average professional and facility payments for a given surgical encounter (e.g. hysterectomy) were calculated using encounters that had total spending of at least \$100 and had claims with reliable payments (unreliable payments include zero-pay claims, claims for which another carrier covered a portion of the reimbursement, capitated encounter records, and services paid under global payment arrangements). Applying the preceding definition, 91 percent of claims have reliable price information and are used to represent average payment per encounter. Calculating average payments without exclusion yielded very similar results (less than 1 percent difference).

4.3 Hysterectomy: Inpatient to outpatient shift

Outpatient hysterectomies by hospital were identified in the same manner as other outpatient surgeries previously mentioned, and volume along with average payment were calculated at the hospital level.

Inpatient hysterectomy volume and average payment were established using the following approach:

1. All hospital inpatient procedures (claim-line level) were merged with CCS procedure categories to identify all hysterectomy procedures
2. Inpatient stays with an identified hysterectomy procedure and MS-DRGs 740 through 743 were included (ovarian cancer procedures or procedures with major complications/comorbidities were excluded):
 - a. 740: Uterine, adnexa procedures for non-ovarian and non-adnexal malignancy with complications/comorbidities (cc)
 - b. 741: Uterine, adnexa procedures for non-ovarian and non-adnexal malignancy without cc/major complications/comorbidities (mcc)
 - c. 742: Uterine and adnexa procedures for non-malignancy with cc/mcc
 - d. 743: Uterine and adnexa procedures for non-malignancy without cc/mcc

Volume estimates included all inpatient hysterectomies for these 4 DRGs. To obtain reliable price estimates for inpatient hysterectomies at a hospital level, the HPC excluded inpatient hysterectomy encounters that had a length of stay of 6 days or more, and unreliable prices (as mentioned above and outliers).

HPC estimated the average combined price of inpatient and outpatient hysterectomies at hospitals that gained volume and at those that lost volume from 2015 to 2017. The hospitals that lost total hysterectomy volume often experienced decline in both inpatient and outpatient settings. To calculate average hysterectomy price at the hospitals that lost hysterectomy volume, HPC calculated weighted inpatient-outpatient price in each hospital with 5 or more total hysterectomy volume decline. The second step was to calculate the weighted average payment across hospitals that lost volume by summing the change in payments by hospital (net change * weighted hysterectomy price) and dividing by the total net change across all hospitals that lost at least 5 hysterectomies. The weighted price for hospitals with net gains in hysterectomy volume (at least 5 hysterectomies gained) was calculated in a similar manner: most hospitals gained more outpatient volume than they lost inpatient, so only their outpatient prices were used for calculation.

4.4 Percent increase in payments due to movement across hospital outpatient facilities

This calculation is based on a counterfactual scenario in which the distribution in volume of these procedures across hospitals remained the same from 2015 to 2017. To calculate hypothetical average payment per surgery in 2017, we used actual 2017 prices at a hospital level and weighted them by assuming the same hospital distribution of those surgeries in 2015. The percent increase in payment due to change in distribution across hospitals was calculated by subtracting the percent increase in hypothetical payments (if volume did not shift between hospitals) from the percent increase in actual payments per surgery.

ⁱ https://www.healthcostinstitute.org/images/pdfs/HCCI_2017_Methodology_public_v20.pdf