

COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION



TECHNICAL APPENDIX B3
CHANGES IN COMMERCIAL INPATIENT VOLUME

ADDENDUM TO 2019 COST TRENDS REPORT

Table of Contents

- 1 Summary 3
- 2 Data sources 3
 - 2.1 Data sources 3
- 3 Exclusions 3
 - 3.1 HIDD-based analysis 3
 - 3.1 APCD-based analysis..... 3
- 4 Groupers..... 3
 - 4.1 All Patient Refined Diagnosis Related Groups 3
 - 4.1 Major Diagnostic Category 4
 - 4.2 Clinical Classifications Software 4
- 5 Analysis 4
 - 5.1 Inpatient decline analysis 4
 - 5.1.1 Discharge categories 4
 - 5.1.2 Hospital cohorts 4
 - 5.1.3 Case study procedures..... 4
 - 5.2 Inpatient cross-over analysis..... 5
 - 5.2.1 Procedure grouping..... 5
 - 5.2.2 Case study procedures..... 5
 - 5.2.3 Hysterectomy shift analysis 5

1 Summary

This appendix describes the Health Policy Commission’s (HPC) approach to the analyses contained in **Chapter 3.2: “Changes in commercial inpatient volume”** of the 2019 Cost Trends Report.

2 Data sources

2.1 Data sources

The HPC used the CHIA Hospital Inpatient Discharge Database (HIDD) for longer term analyses (FY2013 through FY2018). This dataset contains discharge-level data covering socio-demographic characteristics of the patient and other details of their visit or admission, including reason for, duration of, and services and procedures provided during the visit or admission. For analyses that required looking at both inpatient and outpatient utilization, the HPC used the Massachusetts All-payer Claims Database v7.0 (APCD) for calendar years 2015 to 2017. For more information for these and other data sources, please see **Technical Appendix D: “Data sources.”**

3 Exclusions

3.1 HIDD-based analysis

For all HIDD-based analyses, HPC made the following exclusions:

- Non-commercial payers
- Rehabilitation discharges (APR-DRG 860)
- Patients with length of stay above 180 days
- Transfers out of the hospital (to avoid double-counting discharges)
- Out-of-state residents

3.1 APCD-based analysis

There were no exclusions made for APCD-based analyses.

4 Groupers

4.1 All Patient Refined Diagnosis Related Groups

3M APRTMDRG is a classification system that classifies patients according to their reason of admission, severity of illness and risk of mortality. Please see https://www.3m.com/3M/en_US/health-information-systems-us/providers/grouping-and-classification/apr-drgs/ for more information on APR DRG methodology. 3M APRTMDRG v30.0 was used in this analysis.

4.1 Major Diagnostic Category

The Major Diagnostic Categories (MDC) group DRGs into 25 mutually exclusive diagnosis areas. The diagnoses in each MDC correspond to a single organ system or etiology and in general are associated with a particular medical specialty. Please see https://www.3m.com/3M/en_US/health-information-systems-us/providers/grouping-and-classification/apr-drgs/ for more information on MDC methodology.

4.2 Clinical Classifications Software

Clinical Classification Software (CCS) was used to group procedures and diagnoses into smaller groupings of similar procedures. Please see <https://hcup-us.ahrq.gov/toolssoftware/ccs10/ccs10.jsp> for more information on CCS methodology.

5 Analysis

5.1 Inpatient decline analysis

5.1.1 Discharge categories

For Exhibit 5.2, discharges were grouped into the following categories:

- Behavioral health-related (MDC 19 and 20)
- Maternity-related (MDC 14 and 15)
- Admissions from the emergency department (ED flag 1 and 2; admission source code “R”; and ED revenue codes 0450, 0451, 0456, 0459 and 0981)
- Scheduled admissions (all remaining discharges)

5.1.2 Hospital cohorts

For Exhibit 5.3, maternity discharges were grouped according to the following cohorts:

- Academic Medical Center
- Community High Public Payer Hospital
- Community Hospital
- Teaching Hospital

For more information on these cohorts and a listing of hospitals, please refer to the Center for Information and Analysis’ FY17 Hospital Profiles Technical Appendix

(<http://www.chiamass.gov/assets/docs/r/hospital-profiles/2017/FY17-Massachusetts-Hospital-Profiles-Technical-Appendix.pdf>)

5.1.3 Case study procedures

For Exhibit 5.4, discharges were grouped according to the following CCS **procedure** categories:

- 10—Thyroidectomy, partial or complete

- 45—Percutaneous transluminal coronary angioplasty (PTCA)
- 47—Diagnostic cardiac catheterization, coronary arteriography
- 54—Other vascular catheterization, not heart
- 80—Appendectomy
- 84—Cholecystectomy and common duct exploration
- 85—Inguinal and femoral hernia repair
- 86—Other hernia repair
- 124—Hysterectomy, abdominal and vaginal
- 158—Spinal fusion
- 167—Mastectomy

5.2 Inpatient cross-over analysis

For analyses that examined inpatient to outpatient cross-over, the HPC used APCD v7.0 for 2015 through 2017. Information for these and more data sources is available in **Technical Appendix D: “Data sources.”**

5.2.1 Procedure grouping

For Exhibit 5.5, unique procedures were grouped according to the following logic: same person (memberlinkid), same day (dateofservicefrom), same procedure category (CCS number).

5.2.2 Case study procedures

For Exhibit 5.5, procedures were grouped according to the following CCS categories:

- 10—Thyroidectomy, partial or complete
- 45—Percutaneous transluminal coronary angioplasty (PTCA)
- 47—Diagnostic cardiac catheterization, coronary arteriography
- 54—Other vascular catheterization, not heart
- 80—Appendectomy
- 84—Cholecystectomy and common duct exploration
- 85—Inguinal and femoral hernia repair
- 86—Other hernia repair
- 124—Hysterectomy, abdominal and vaginal
- 158—Spinal fusion
- 167—Mastectomy

5.2.3 Hysterectomy shift analysis

Inpatient hysterectomy volume was identified in the APCD using the following approach:

1. All hospital inpatient procedures (claim-line level) were merged with CCS 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.

Outpatient hysterectomy volume was identified in the APCD using same patient, same day, and in a hospital on-campus facility (22), hospital off-campus facility (19), or an ambulatory surgical center (24) to identify a surgery. Encounters had to have at least one facility claim as a requirement for inclusion. These 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.

For Exhibit 3.2.6: Change in volume of hysterectomy procedures by hospital system 2015-2017 only hospital systems that had greater than 11 hysterectomies inpatient and greater than 11 outpatient in both years were included in the exhibit.