COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION

TECHNICAL APPENDIX B1
TRENDS IN SPENDING AND CARE DELIVERY
TRENDS IN PROVIDER MARKETS

ADDENDUM TO 2015 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 2: Overview of Trends in Spending and Care Delivery and Chapter 3: Trends in the Provider Market.

1.1 Data

We used the following datasets for Trends in Spending and Care Delivery in the 2015 CTR

- Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey (MEPS), 2010-2014
- Center for Health Information and Analysis (CHIA)
  - Annual Report on the Performance of the Massachusetts Healthcare System, 2015
  - All-Payer Claims Database, 2011-2013
  - A Focus on Provider Quality, 2015
  - Massachusetts Health Insurance Survey, 2014-5
  - Enrollment Trends, 2012-2015
- Centers for Medicare and Medicaid Services (CMS)
  - National Health Expenditure Accounts (2009-2014)
  - Medicare Geographic Variation: Public Use File

We used the following datasets for Trends in Provider Markets Chapter in the 2015 CTR

- Massachusetts Health Quality Partners (MHQP) for calendar years 2008, 2009, 2010, 2012, 2014
- Center for Health Information and Analysis' (CHIA) Relative Price data for 2010-2014
- CHIA's All Payer Claims Database (APCD) for 2012

2 Out of pocket expenses

2.1 Sample

We used the Massachusetts All Payer Claims Database (APCD) for calendar year 2013 for our analysis. Our sample included commercially-insured Massachusetts residents enrolled in a comprehensive individual or group medical plan offered by one the three major commercial payers, Blue Cross Blue Shield, Harvard Pilgrim Health Plan, and Tufts Health Plan. Expenditures do not capture pharmacy costs or payments outside the claims system.

2.2 Analysis

2.2.1 Definition of out of pocket expenses

Out of pocket expense includes copays, coinsurance and deductibles.

2.2.2 Definition of clinical conditions

We used the Johns Hopkins Adjusted Clinical Groups Case-Mix System (ACG) software to measure the cost associated with treatment of certain conditions, using the expanded diagnosis

clusters (EDCs) that the ACG system assigns, based on diagnoses reported in medical claims during the year. The specific EDCs used to identify individuals with each condition are shown in Table 1. Only members continuously enrolled for at least four months in the calendar year were included, with inclusion determined separately for each year.

Table 1. Identification of Individuals with High-Cost Conditions Based on EDCs

High-cost condition	EDC values	EDC description
HIV/AIDS	INF04	HIV, AIDS
Asthma	ALL04	Asthma, without status asthmaticus
	ALL05	Asthma, with status asthmaticus
Arthritis (including rheumatoid arthritis)	RHU05	Rheumatoid arthritis
	MUS03	Degenerative joint disease
	RHU02	Gout
	RHU03	Arthropathy
Cardiovascular (excluding hypertension without complications)	CAR01	Cardiovascular signs and symptoms
	CAR03	Ischemic heart disease (excluding myocardial infarction)
	CAR04	Congenital heart disease
	CAR05	Congestive heart failure
	CAR06	Cardiac valve disorders
	CAR07	Cardiomyopathy
	CAR08	Heart murmur
	CAR09	Cardiac arrhythmia
	CAR10	Generalized atherosclerosis
	CAR12	Acute myocardial infarction
	CAR13	Cardiac arrest, shock
	CAR15	Hypertension, with major complications
	CAR16	Cardiovascular disorders, other
Cancer (including all malignancies)	MAL01	Malignant neoplasms of the skin
	MAL02	Low impact malignant neoplasms
	MAL03	High impact malignant neoplasms
	MAL04	Malignant neoplasms, breast
	MAL05	Malignant neoplasms, cervix, uterus
	MAL06	Malignant neoplasms, ovary
	MAL07	Malignant neoplasms, esophagus
	MAL08	Malignant neoplasms, kidney
	MAL09	Malignant neoplasms, liver and biliary tract
	MAL10	Malignant neoplasms, lung
	MAL11	Malignant neoplasms, lymphomas
	MAL12	Malignant neoplasms, colorectal
	MAL13	Malignant neoplasms, pancreas
	MAL14	Malignant neoplasms, prostate
	MAL15	Malignant neoplasms, stomach
	MAL16	Acute leukemia
	MAL18	Malignant neoplasms, bladder
Diabetes	END06	Type 2 diabetes, w/o complication
	END07	Type 2 diabetes, w/ complication
	END08	Type 1 diabetes, w/o complication
	END09	Type 2 diabetes, w/ complication
Epilepsy	NUR07	Seizure disorder
Hypertension (with or without major complications)	CAR14	Hypertension, w/o major complication
	CAR15	Hypertension, w/ major complication
Multiple sclerosis	NUR08	Multiple sclerosis
Renal disease	REN01	Chronic renal failure
	REN02	Fluid/electrolyte disturbances
	REN03	Acute renal failure
	REN04	Nephritis, nephrosis

High-cost condition	EDC values	EDC description
	REN05	Renal disorders, other
	REN06	End stage renal disease
Mood disorders (including anxiety, depression and bipolar disorder)	PSY09	Depression
	PSY12	Bipolar Disorder
	PSY20	Major depression
Psychosis	PSY07	Schizophrenia and affective psychosis
Substance use disorder	PSY02	Substance use

3 Growth in MassHealth enrollment and spending

3.1 Enrollment analysis

For the analysis of MassHealth enrollment from January 2012 to August 2015 (Exhibit 2.8), we used MassHealth's Monthly Snapshot Report 18408, submitted by MassHealth to the Center for Health Information and Analysis (CHIA) for the 2014 Enrollment Trends Report. The Snapshot shows enrollment data for the last day of each month. The increase in members from November 2014 to March 2015 was estimated using the October 31st and March 31st enrollment figures. We believe that the October 31st enrollment snapshot better represents enrollment on September 1st and that by using the end of the month enrollment estimate we would exclude everyone who enrolled during the month of September.

Estimates of the declines in other programs that offset MassHealth enrollment increases are based on data from Health Management Associate's *Implementing the Affordable Care Act in Massachusetts: Changes in Subsidized Coverage Programs,* published August 2015.

3.2 Spending analysis

The analysis of MassHealth spending by program from 2012-2014 (Exhibit 2.9) was based on CHIA's 2015 Annual Report Total Health Care Expenditures (THCE) Databook. The MassHealth Snapshot Report 18408, discussed above, and CHIA's THCE Databook define MassHealth enrollment differently. Approximately 2.4 million member months for individuals enrolled in the Health Safety Net, Children's Medical Security Plan, and Department of Mental Health (DMH) only, as well as CommCare-unenrolled are included in the THCE enrollment, but not the Enrollment Snapshot. These definitional differences mainly affect estimates relating to the fee-for-service (FFS) program.

The 2015 discussion of long-term services and supports (LTSS) is from Manatt Health Solutions' *Long-term services & supports (LTSS): Opportunities for MassHealth* [chartpack] prepared for the Massachusetts Medicaid Policy Institute (MMPI) and presented at Blue Cross Blue Shield of Massachusetts' MassHealth Matter's II conference in Boston, MA on December 2, 2015. The 2014 LTSS discussion is based on HPC's analysis of a CHIA analysis of the All-Payer Claims Database. While the underlying data is the same, definitions may differ between the MMPI and CHIA analysis.

3.3 Discussion on Massachusetts' uninsured population

Our discussion on the drop in emergency department (ED) visits by uninsured patients is based on HPC analysis of CHIA's Emergency Department Database, FY2013 and FY2014. The calculation assumes that uninsured individuals visit the ED at the same rate as they did in 2013, and that therefore, the 22% reduction in ED visits by the uninsured in 2014 represents a 22% reduction in the number of uninsured in Massachusetts. The number of uninsured (250,000) was approximated based on the 3.7% of the Massachusetts population reported as uninsured in 2014 in CHIA's 2015 Massachusetts Health Insurance Survey times the state population of 6.745 million. We note that the U.S. Current Population Survey also reports a drop in the number of uninsured in Massachusetts between 2013 and 2014, from 247,000 to 219,000. For more information, please see https://www.census.gov/content/dam/Census/library/publications/2015/demo/p60-253.pdf

4 Percentage of primary care physicians affiliated with large provider systems, 2008-2014

We used the 2008, 2010, 2012, and 2014 MHQP Master Provider Database (MPD) to determine the percent of primary care physicians (PCPs) affiliated with large provider systems in each of these years. We defined PCPs as those physicians with one of the following listed as their primary specialty in the MHQP MPD: Family Practice, Family/General Practice, General Practice, General Preventive Medicine, or Internal Medicine. We defined PCPs affiliated with large provider systems as those listed under one or more of the following networks in the MHQP MPD: Atrius, Baycare, BIDCO, Lahey, NEQCA, PCHI, Steward, and UMass. PCPs listed under more than one network were counted only once.

5 Percentage of primary care physicians revenue and visits by affiliation status, 2012

We used claims-level BCBS and HPHC data from the 2012 All-Payer Claims Database (APCD) and affiliations in the 2012 MHQP Master Provider Database (MPD) to determine, for PCP visits, the percent of revenue and percent of visits by PCP affiliation status in 2012.

We defined PCPs as those physicians who in 2012 had:

(1) one of the following as their primary specialty in either MHQP, BCBS APCD claims, or HPHC APCD claims: Family Practice, Family/General Practice, General Practice, General Preventive Medicine, or Internal Medicine; and

(2) significant revenue from primary care visits (based on CPT codes reflecting evaluation and management and preventative care procedures).

We then identified PCPs who had significant revenue from patients aged 18 and above, limiting our sample of claims to those of PCPs who primarily cared for adults.

We defined PCPs affiliated with large provider systems as those PCPs who were listed under one or more of the following networks in the MHQP MPD: Atrius, Baycare, BIDCO, Lahey, NEQCA, PCHI, Steward, and UMass. We defined PCPs affiliated with a hospital as those listed in the MHQP MPD under a medical group affiliated with a hospital. We defined independent PCPs as those appearing in the MHQP MPD but not listed under the eight networks listed above or under a medical group affiliated with a hospital. We defined unknown PCPs as those in the APCD but not in the MHQP MPD.

We defined a PCP visit as including all professional claims for the same patient on the same date with the same PCP. To calculate percent of PCP visits by affiliation status, we summed the number of visits by PCP affiliation status, and divided by the total number of PCP visits. To calculate percent of PCP revenue by affiliation status, we summed the allowed amounts for PCP visits by PCP affiliation status, and divided by the total of allowed amounts for all PCP visits.