COMMONWEALTH OF MASSACHUSETTS

HEALTH POLICY COMMISSION

TECHNICAL APPENDIX B7

VARIATION IN SPENDING BY PRIMARY CARE PROVIDER GROUP

ADDENDUM TO 2016 COST TRENDS REPORT

Contents

1 Summary

This appendix describes the Health Policy Commission's (HPC) approach to the analyses contained in **Chapter 7: "Variation in Spending by Primary care Provider Group"** of the 2016 Cost Trends Report.

2 Blended health status-adjusted total medical expenses

2.1 Data

HPC used the Center for Health Information and Analysis's (CHIA) Annual Report TME Databooks for 2012 to 2015. This analysis only includes the three largest payers in Massachusetts: Tufts Health Plan (Tufts), Blue Cross Blue Shield of Massachusetts (BCBS), and Harvard Pilgrim Health Care (HPHC).

2.2 Definitions

TME= Total medical expenses. TME includes all categories of medical expenses, including patient copays and deductibles, and all non-claims payments to providers, including payments based on spending and quality performance. TME figures reported encompass spending only for members of health maintenance organizations (HMOs) and point of service (POS) plans.

HSA TME= Health status-adjusted TME. HSA TME is TME that has been adjusted to account for the acuity of a patient population.

2.3 Analysis

The average risk scores for each payer, parent provide group, and year (e.g. BCBS, Atrius, 2012) were derived from CHIA's reported unadjusted and health status-adjusted TME. The risk score is the unadjusted TME divided by the health status-adjusted TME.

For each year, all three payer's risk scores were first averaged across all provider groups, weighted by that provider's member months. In 2012, average risk scores for each payer were within a few percent of each other (approximately 1.46). These risk scores were then normalized to 1.0 for each payer (across their full book of business, which is all providers in the TME data). The new blended TME was arrived at by dividing the unadjusted TME by the new normalized risk score for each provider group. Each provider group's TME for the year was then the member-month-weighted average of TME for each of the three payers.

For subsequent payer years, the process is repeated – risk scores are continually expressed relative to their normalized 2012 values.

3 Annual HSA TME growth rate by primary care provider group

3.1 Data

HPC used the Center for Health Information and Analysis's (CHIA) Annual Report TME Databooks for 2012 to 2015.

3.2 Analysis

For Exhibit 7.2, HPC compared aggregate growth in HSA TME as described in section 2.3 with growth in unadjusted TME across the noted provider groups.

4 Non-recommended care in Massachusetts

4.1 Data

The HPC used the Massachusetts All-Payer Claims Database (APCD) for calendar years 2013 (provider group analysis) and 2013 and 2014 (regional analysis). When necessary, claims data from 2012 and 2011 were also used to construct a relevant medical history. The APCD includes commercially-insured Massachusetts residents enrolled in a comprehensive individual or group medical plan offered by one of the three major commercial payers: BCBS, HPHC, and Tufts Health Plan. Expenditures calculated using the APCD do not capture payments outside the claims system. For more information on the APCD, see **Technical Appendix C: "Data Sources."**

The HPC also used the Registration of Provider Organizations (RPO) data for 2015. The RPO dataset includes data from Massachusetts provider organizations that either receive $25 million in Net Patient Service Revenue from commercial payers or that participate in payer contracts with downside risk. The dataset captures each provider organization's internal corporate structure, including information on its corporate affiliates, licensed facilities, and physicians, as well as information on its external contracting and clinical relationships with other providers. For more on this data set, see **Technical Appendix C: "Data Sources**".

4.2 Analysis

4.2.1 Measures of non-recommended care services

The measures chosen for this analysis were based on measures established by the Choosing Wisely initiative, as well as existing literature on low-value care. The specific diagnosis and procedure codes used for identifying relevant patient populations were borrowed from the work of Schwartz et al., Charlesworth et al., and the Washington Health Alliance. Since past research primarily focused on Medicare data, HPC limited measures to those applicable to a commercially-insured population. Below is the list of measures HPC identified as relevant to this

population. The number below each measure is the combined number of non-recommended services identified in 2013 and 2014.

Screenings	Surgeries and invasive procedures	Imaging and lab tests
Cervical cancer screening for women under 21 (n=12,261)	Arthoscopic surgery for knee osteroarthritis (n=1,010)	Neuroimaging for child febrile seizure (n=122)
HPV testing in women under 30 (n=24,493)	Inferior vena cava filters for pulmonary embolism (n=480)	Homocysteine testing for cardiovascular disease (n=175,813)
Echography for adnexal cysts (n=7,459)	Renal artery stenting (n=100)	CT for appendicitis (n=98)
	Spinal injection for lower back pain (n=7,451)	Head imaging for syncope (n=4,830)
	Vertebroplasty for osteoporotic vertebral fractures (n=110)	Imaging for diagnosis of plantar fasciitis (n=20,024)
		EEG for uncomplicated headache (n=1,683)
		Head imaging for uncomplicated headache (n=27,250)
		Back imaging for non-specific low back pain (n=89,999)

4.2.2 Rates of non-recommended care by provider organization

Provider attribution required several steps. Each claim has three main provider flags: a service provider number, a referring provider number, and a billing provider number. These are identifiers internal to the APCD. To attribute a claim to a provider, the HPC used a hierarchy of: a) the referring provider, b) the service provider if there was no referring provider, and c) the billing provider if there were neither of the other two listed on the claim. The match rate in 2013 for this step was over 99%. A crosswalk file within the APCD was used to match the provider ID recorded by CHIA to each provider's national provider ID (NPI). Using the NPI, providers were then matched to larger groups using the Registration of Provider Organizations dataset, which contains information on physician affiliations.. In some cases a claim did not match with a physician or organization and was marked as unattributed. Depending on the measure, approximately 20-40% of patients eligible to receive a procedure were not attributed to a specific organization. These patients were excluded from the analysis. Some measures were not included for each provider group due to sample-size limitations.

HPC also restricted reporting to provider groups with over 100 patients in the denominator for measures with restrictive eligibility criteria, such as HPV testing in women under 30 and back imaging for non-specific lower back pain. For measures whose eligible population included all patients, HPC restricted reporting to groups with over 10,000 patients in the denominator.

4.2.3 Rates of non-recommended care by geography

In order to attribute services to designated HPC Regions, HPC used the patient ZIP code associated with the medical claim.