COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION

TECHNICAL APPENDIX 3
OPPORTUNITIES TO REDUCE EXCESS SPENDING: PRICES

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1 Summary

This appendix describes the Health Policy Commission's (HPC) approach to examining opportunities to reduce excess spending by analyzing commercial prices and price variation in the Commonwealth at the service category level and in aggregate using several different "price benchmarks" as points of comparison, including Medicare (e.g., for analyses of clinical laboratory services, specialty services, imaging, endoscopy and colonoscopy and clinician-administered drugs), MassHealth rates (e.g., for analyses of inpatient stay prices), and international drug prices (retail and administered drugs).

2 Data sources

The HPC used the Center for Health Information and Analysis All-Payer Claims Database v2021 (APCD) to measure commercial prices. The HPC's APCD analytic files include data from six commercial payers in the state: Blue Cross Blue Shield of Massachusetts, Tufts Health Plan, Harvard Pilgrim Health Care,[i] Mass General Brigham Health Plan (formerly AllWays and Neighborhood Health Plan),[ii] Health New England, and Anthem (including Unicare, a GIC offering).

3 Analyses

3.1 Summary of analyses

For each category of care in this chapter (except for prescription drugs, see section 3.9), the HPC followed a similar analytic structure. Briefly:

1. Define the appropriate unit of analysis (e.g., procedure code encounter for ambulatory care services)
2. Define relevant sites of care (e.g., office, hospital outpatient department 'HOPD', ambulatory surgical center 'ASC', etc)
3. Establish a reference price ("price benchmark") using an external source, and declare a threshold that will serve as the limit, above which prices are deemed 'excessive' (e.g., 200% of the Medicare office price)
4. Identify the portion of spending for each encounter that exceeds the threshold
5. Aggregate these portions for the given care category to determine total excessive spending
6. Extrapolate findings to the entire commercial market to form summary estimates

[i] Tufts Health Plan and Harvard Pilgrim Health Care merged under a new parent company, Point32 Health, in January 2021, but continue to report data to the APCD under separate payer identifiers. As such, any analyses by payer are performed using all available payer identifiers.
[ii] AllWays rebranded to "MGB Health Plan" in January, 2023.

The general approach is described here in full detail, and applies to all analyses, unless specific details included below indicate context-specific details for individual service categories which necessitated a distinct approach.

Each service price estimate relies on a procedure code encounter-level analytic file, which was defined by summing allowed amounts for claim lines billed for the same person (patient), on the same date of service, with the same procedure code for ambulatory/outpatient settings. In service-specific settings, the input dataset is first limited to claim lines meeting specific place of service criteria (recorded on professional claims), and all facility claims initially. To compare service prices across care settings, encounters were constructed by collapsing claim lines and summing the allowed amounts across multiple claim lines (most often, two distinct claim lines, composed of one facility and one professional claim if they are present) for each encounter. Claim lines billed by out of state providers were excluded. Claim lines billed indicating emergency department, observation, and inpatient utilization (in all categories except for inpatient) were excluded.

To exclude claims with potentially erroneous price information, HPC excluded encounters that were more than 10 times, or less than 20% of, the statewide median for a given procedure code or where the price is less than or equal to zero. Additionally, prices for services paid under non-fee-for-service methods are not included in the calculation of prices.

For service categories where there are multiple potential care delivery sites (e.g., office, hospital outpatient department 'HOPD', ambulatory surgical center 'ASC', etc.) the place of service recorded on professional claims was the primary identifier for the care delivery site.

In analyses using reference prices, the HPC relied on external data sources from Medicare (e.g., Medicare Physician Fee Schedule 'MPFS', Outpatient Prospective Payment System 'OPPS', etc.) and MassHealth – the use of these sources is described in greater detail below within each service category. Generally, payment amounts in the Medicare Physician Fee Schedule were adjusted to reflect variation in practice costs between geographic areas. Medicare establishes a geographic practice cost index (GPCI) for individual areas, which are then applied in the calculation of a fee schedule payment amount by multiplying a procedure's relative value units (RVU) for work, practice expense, and malpractice by the GPCI for that component. Within Massachusetts, there are only two distinct geographic areas defined by Medicare: "Metropolitan Boston" and "Rest of Massachusetts" are assigned separate GPCIs. Detailed formulas for calculations are provided in the Endoscopy section (3.5.2). For analysis using Medicare facility prices, the HPC applied a wage index of 1.2673, which was the Medicare wage index for most hospitals in Massachusetts in 2021. Thus, to simplify, the HPC used a common wage index.

For all analyses describing the distribution of prices relative to the comparison price (e.g., Medicare), encounters were categorized into bins (as seen in the exhibits) based on the price of the service divided by the price benchmark, expressed as a percentage. If the allowed amount of a procedure code encounter was on the border between two bins, it was placed in the upper group (i.e., left inclusive). The total number encounters were summed within each bin and setting to yield the number of encounters that were provided within each price bin. The portion of spending

above the price benchmark was also summed for each category. For example, if a service was paid 2.5 times what Medicare would have paid, that service's payment is defined as 250% of Medicare. If the excessive price benchmark in the example were set at 200% of Medicare, only the spending between 200% and 250% for the given service, i.e., one-fifth of the spending on the service, was deemed excessive.

Excessive spending calculated from the APCD data was then extrapolated to the entire Massachusetts commercial population. The APCD data examined account for 37% of the Massachusetts commercial market in 2021.

3.2 Growth in hospital prices and costs per capita

3.2.1 Analytic file creation

For exhibit **"Growth in hospital prices and costs per capita in Rhode Island and Massachusetts",** the HPC used the National Academy for State Health Policy (NASHP) hospital cost tool to obtain hospital costs and revenues for the 2011-2019 period, using the calendar year of the reporting period end to assign the year. "Hospital operating costs" was chosen to represent hospital costs and "net patient revenue" was chosen to represent hospital revenue. In the presence of duplicate records per hospital, the HPC chose the record with the larger number of days per reported period. The hospital-level data was added together to derive statewide totals for Rhode Island and Massachusetts.

3.2.2 Analyses

Statewide total hospital revenues and costs were divided by the state level population statistics from the U.S. Census Bureau for the 2011-2019 period.

3.3 Clinical laboratory services

3.3.1 Analytic file creation

To evaluate lab service prices across a range of services in different ambulatory settings (HOPDs, offices, and independent laboratories), the HPC constructed an encounter-level file that allows for evaluation of prices using a uniform definition of a procedure code encounter across ambulatory settings.

To create an ambulatory lab service encounter file for analysis, the HPC began with all professional claims billed in ambulatory sites of service (for the purpose of these analyses: Office (11), Hospital Outpatient Department (19, 22), and Independent Laboratory (81)) and all facility claims. Lab services were identified using Restructured Berenson-Eggers Type of Service (BETOS) Classification System. Claim lines with procedure codes classified as "test" with subcategories of "general lab", "molecular test", and "miscellaneous test" were included for analysis except venipuncture (CPT 36415) claims which were excluded. Encounters that were comprised of 3 or more claims were excluded from analysis (less than 1% of encounters).

3.3.2 Analyses

Unless otherwise noted, the following analyses used data from the previously described lab service encounter file for analysis of the distribution of lab service prices compared to Medicare.

Medicare prices were gathered from the Centers for Medicare and Medicaid Services, Clinical Laboratory Fee Schedule (CLFS), 2021.

The data is comprised of laboratory service encounters divided into mutually exclusive care settings including HOPDs, provider offices, and independent laboratories for Massachusetts residents. Encounters furnished at Shriner's Hospital for Children and Veterans Affairs Facilities or were billed with a professional component procedure code modifier (26) are excluded from price analyses. Encounters with a procedure code that is paid on the CLFS are included, except procedure codes where the CLFS indicates prices vary by geography (indicator L). The Medicare rate for a General Health Panel (CPT 80050) is manually constructed by summing rates for a comprehensive metabolic panel (CPT 80053), thyroid stimulating hormone test (CPT 84443), and a complete blood count (CPT 85025). The total number of unique procedure codes included in the analysis is 1,132 codes.

For the exhibit "**Percentage of lab services paid at shown ranges relative to Medicare price, by setting of care, 2021"**, encounters were categorized into bins based on the price of the lab service compared to a multiple of Medicare's price and reported as a percentage of the total number of lab encounters falling in each relative price range furnished by each setting.

3.4 Imaging

3.4.1 Analytic file creation

An imaging encounter file was created from the range of encounters captured by the range of procedure codes defined by the American Academy of Professional Coders (AAPC) for radiological services (CPT 70000-79999) and services categorized as "Imaging" by BETOS.

Indicators for professional and technical components were created based on claim-line level procedure modifiers prior to constructing procedure code encounters. Billing conventions differ based on the site of care. For example, imaging services delivered in an office-setting are generally expected to have a professional component ("PC" i.e., reading the imaging service) and a technical component ("TC" i.e., providing the imaging service) for an encounter to be complete.

In Massachusetts, imaging services for commercially-insured residents most commonly occurred in either the office or HOPD setting, collectively accounting for 90% of total ambulatory imaging encounters in 2021. There are other miscellaneous ambulatory care settings (e.g., mobile) that had relatively low volumes. As such, the HPC restricted analyses to imaging services provided in office or HOPD settings. Logic to categorize encounters to the appropriate care setting was as follows, in order:

1. Office if place of service indicated office ("11"), and there was no associated facility claim spending.
2. HOPD if place of service indicated HOPD ("19", "22") and there was an associated facility claim spending, and it was not otherwise labelled.

3. HOPD if there was a HOPD facility claim included in the encounter and no procedure modifiers for either a professional or technical component (suggestive of a single payment for the service), and it was not otherwise labelled.
4. HOPD if place of service indicated HOPD ("19", "22") on the professional claim and the presence of both a professional and technical modifier were included in the encounter, and it was not otherwise labelled.

3.4.2 Analyses

The analysis used data from the imaging encounter file to compare commercial prices to Medicare prices. Medicare prices were gathered from the Centers for Medicare and Medicaid Services, Medicare Physician Fee Schedule (MPFS) and Outpatient Prospective Payment System (OPPS).

The Medicare Physician Fee Schedule (MPFS), adjusted based on whether the service was provided in either of the two Massachusetts geographic areas, was used to associate a global professional payment amount (i.e., a single payment for the entire encounter in an office setting, equal to the sum of the professional and technical components when billed separately in an office setting) with each procedure code. Services were excluded if the MPFS did not have a matching procedure code.

For most services delivered in a HOPD, the total payment is a combination of a professional payment (MPFS) and a facility payment (OPPS). The OPPS provides facility payment amounts according to ambulatory payment classifications (APCs), which are groups of procedure codes which share a common payment for expected facility resource use. OPPS payments for imaging APCs were extracted for the corresponding fiscal year payment schedule and adjusted for the wage index in 2021, as described in section 3.1. The following is an example formula for calculating the Medicare price for the facility component of an imaging procedure performed at a HOPD:

*Facility price for an imaging procedure performed in a HOPD = APC payment*0.4 + APC payment*0.6*1.2673*

Only the labor portion (60%) is adjusted for the wage index, which was 1.2673 in Massachusetts in 2021 for most hospitals.

The total HOPD payment was calculated as the sum of both the professional (MPFS) and facility (OPPS) components for each procedure encounter.

Note on multiple procedures: For many ambulatory services, it is common among commercial payers and Medicare that payment amounts would be reduced for multiple services delivered same day, same patient. For example, if imaging of the leg occurs both above and below the knee on the same day (requiring 2 or more x-rays), the most expensive service would be reimbursed at 100 percent while subsequent services would be reimbursed at some percentage less than 100 percent. This is often referred to as the "Multiple Procedures Rule". [1] The HPC did not make this

additional adjustment given that these analyses are already using a higher benchmark (200%) and many imaging encounters had multiple procedures occurring on the same day.

For the exhibit **"Percentage of imaging services paid at shown ranges relative to what Medicare would pay a HOPD, by setting of care, 2021",** benchmarks are applied at the level of a procedure code and reflect the total Medicare payment (professional component from MPFS and facility component from OPPS). For services where there is no corresponding OPPS payment (e.g., mammography), the global MPFS payment amount (which corresponds to the entire payment for relevant professional and technical components of an when delivered in an office setting) was applied. Percentages are calculated as the aggregate utilization in each bin divided by total utilization for each care setting.

For the exhibit **"Mammography price (CPT code 77067) relative to Medicare (office rate), by provider and provider type, 2021",** claim lines for the same person on the same date are combined to capture total spending inclusive of professional and technical components which may be billed separately. The Medicare price is the global payment for office-based services and is assigned based on the appropriate locality in Massachusetts. Providers with at least 300 mammography encounters are included in the figure, and then are sorted by price relative to Medicare.

3.5 Endoscopy and colonoscopy

3.5.1 Analytic file creation

To create an endoscopy encounter file for analysis, the HPC began with all facility claims and professional claims billed for services rendered in offices, HOPDs, or ASCs. Endoscopy and colonoscopy services were identified using Restructured Berenson-Eggers Type of Service (BETOS) Classification System, Clinical Classification System Refined (CCSR) and Medicare Ambulatory Payment Classifications (APC) category information. Claim lines were only included if they had procedure codes classified as upper endoscopy or lower endoscopy by BETOs and/or CCSR, were in level 1 or level 2 upper or lower gastrointestinal Medicare APC categories, and were not marked as incomplete (modifier 52). HCPCS procedure codes G0105 and G0121 were manually recoded to CPT 45378 for consistency across professional and facility claims.

Endoscopy procedures that happened on the same day for the same member were combined into encounters. When there were multiple endoscopy procedures in the same encounter (e.g. both upper and lower endoscopy) only the highest priced procedure was retained in the encounter. The combination of professional and facility payment for the main procedure on the encounter constituted the total cost of the encounter.

These encounters were labelled as occurring in office, HOPDs, or ASCs based on the following:

1. Office if place of service indicated office ("11"), and there was no associated facility claim spending.
2. HOPD if place of service indicated HOPD ("19", "22") and there was an associated facility claim spending.

3. ASCs if the facility code had a revenue code "0490", taxonomy code 261QA1903X or 261QE0800X, or a procedure modifier of SG.
4. For encounters at ASCs that appeared to have professional claims and no facility claims, encounters were identified by one claim line was identified as a probable facility claim using the following hierarchy:
    1. Presence of SG modifier
    2. Name of provider that is suggestive of an ASC facility (e.g., "surgery", "surgical", "endoscopy", "ASC", or other relevant keywords)
    3. Highest allowed amount

If an encounter contained only two facility claim lines, the claim line with the lowest allowed amount was identified as a probable professional claim. Encounters covered by Mass General Brigham Health Plan that included only one facility claim line were assumed to contain the entire price for the encounter.

For the final encounter file, only the highest-priced professional claim and the highest-priced facility claims were retained for each encounter, and, of these encounters, only those with matching procedure codes on both claim lines were used for the analysis. The total price for the encounter was calculated by summing the allowed amount on the facility claim and the allowed amount on the professional claim.

To facilitate comparisons to Medicare prices, this analysis focuses only on endoscopy procedures. This is because anesthesia, pathology, and other larger items charged during an endoscopy encounter are paid separately from the endoscopy itself by both commercial payers and Medicare. Additionally, not included in the calculation of commercial prices are minor charges for sedation medications or injections, which commercial payers sometimes pay separately for, but Medicare does not.

3.5.2 Analyses

Unless otherwise noted, the following analyses used data from the previously described endoscopy encounter file for analysis of the distribution of endoscopy prices compared to Medicare. Medicare prices for endoscopies are based on Medicare fee schedules, depending on the site of care. The professional component of endoscopies is priced according to the Medicare Physician Fee Schedule (MPFS), while the facility component of endoscopies performed at HOPDs is priced according to the Outpatient Prospective Payment System (OPPS) and the facility component of endoscopies performed at ASCs is priced according to the ASC Payment System. Medicare prices for the professional and facility components of endoscopy encounters were assigned using the 2021 versions of these fee schedules, incorporating information on provider location.

Example formula for calculating the Medicare price for the professional component of an endoscopy encounter in a facility setting (i.e., ASC or HOPD):

*Professional price for an encounter in a facility setting in Boston = (Work RVU*1.049 + Practice expense RVU Facility*1.203 + Malpractice RVU*0.842) * Conversion Factor*

Multipliers are the GPCIs for the geographic area where an endoscopy encounter took place (i.e., "Metropolitan Boston" or "Rest of Massachusetts").

Example formula for calculating the Medicare price for the facility component of an endoscopy encounter performed at a HOPD:

*Facility price for a HOPD encounter = APC payment*0.4 + APC payment*0.6*1.2673*

Only the labor portion (60%) is adjusted for the wage index, which was 1.2673 in Massachusetts in 2021 for most hospitals.

Example formula for calculating the Medicare price for the facility component of an endoscopy encounter performed at an ASC:

*Facility price for an ASC encounter = ASC payment rate*0.5 + ASC payment rate*0.5*1.2673*

As in the HOPD case, the labor portion (50%) is adjusted for the hospital wage index in 2021.

For the exhibit **"Percentage of endoscopies paid at shown ranges relative to what Medicare would pay, by setting of care, 2021"**, encounters were categorized into bins based on the price of the endoscopy service divided by Medicare's price and reported as a percentage of the total number of endoscopy encounters falling in each relative price range furnished by each setting.

For the exhibit **"Estimated percentage of endoscopy spending over 200% of what Medicare would pay, by payer, 2021"**, amount of spending over 200% of what Medicare would pay is the difference between the allowed amount and 200% of what Medicare would pay, calculated for each encounter.

3.6 Specialty services

3.6.1 Procedures

MedPAC has published a list of procedure categories for which it deems site-neutral payment appropriate, meaning services for which care can be safely provided in either office or facility (e.g., hospital outpatient department) settings and for which payment should not vary by setting. The HPC used this list of APCs (Medicare outpatient payment grouper categories, as described above) to identify procedure codes to use in this analysis.[2] These were then matched to procedure codes in the medical claims data of the APCD v2021. The HPC excluded from this list codes that are covered in other portions of this chapter or codes which are billed with low frequency. Excluding codes for imaging, labs, molecular testing, nuclear testing, chemotherapy, drug injections, administered drugs, E&M Codes, fertility and contraception related codes, and codes with less than 800 office visits, the HPC identified a list of 149 procedure codes listed here:

10005 10060 10061 10120 11042 11056 11102 11104 11200 11300 11301 11400 11401 11402 11403 11602 11719 11720 11721 11730 11750 11900 11901 11980 11981 11982 12001 12011 12031 12032 13121 13132 17000 17004 17110 17111 17250 17261 17262 17311 20526 20550 20551 20552 20553 20600 20605 20610 20611 25600 29075 29125 29130 29405 29540 29580 30901 31231 31237 31575 31579 46600 51700 51701 51741 51784 52000 52310 54056 55700 56605 57454 57456 57500 58100 62323 64400 64405 64450 64455 64483 64493 64615 64616 64650 67028 68761 69209 69210 77336 86580 88112 88302 88304 88305 88312 88313 92025 92060 92081 92082 92083 92260 92511 92550 92552 92555 92556 92557 92567 92579 92583 92587 92588 93005 93225 93226 93229 93270 93271 93296 94010 94060 94668 94726 95004 95018 95024 95044 95076 95115 95117 95165 95180 95806 95909 95910 95911 96900 96910 96920 97597 98927 98928 98929 98940 98941 98942 G0127

3.6.2 Analytic file creation

After identifying the relevant procedure codes in the step above, 3.5.1, in the APCD v2021, the HPC then identified where the services were taking place and kept services occurring in an office or HOPD.

Logic to categorize encounters to the appropriate care setting was as follows, in order:

1. Office if place of service on the professional claim indicated office ("11"), and there was no associated facility claim spending.
2. HOPD if place of service on the professional claim indicated HOPD ("19", "22") and there was an associated facility claim spending, and it was not otherwise labelled.
3. HOPD if there is a HOPD facility claim included in the encounter.

After identifying office and HOPD sites of service, analytic file was created where the medical claim lines and procedure codes were collapsed onto an encounter level. Each group of claim lines was assigned to one encounter based on the same personal identifier, same date of service, and same procedure code.

3.6.3 Analyses

For the exhibit "**Percentage of specialty services paid at shown ranges relative to Medicare price in an office, by setting of care, 2021"** the HPC used Medicare office payments (non-facility price) from the Medicare Physician Fee Schedule for each of these services as the basis for the price benchmark with which to compare against observed commercial prices (in both HOPD and office settings), accounting for geographic differences between Metropolitan Boston and other Massachusetts locations using Medicare's area geographic adjustment factor.

Using a 200% of Medicare price benchmark, the HPC calculated what spending would be if all prices for these 149 procedures were paid at a maximum of 200% of the Medicare office price.

3.7 Inpatient

3.7.1 Analytic file creation

As part of the HPC's analytic file creation, the HPC assigned MS-DRGs by applying DRG classification software (diagnosis related groups) to the diagnoses and procedures on inpatient claims in the APCD. Additionally, CHIA provided the HPC with a list of APR-DRGs that they created (e.g., not payer submitted DRGs). To create the analytic files for the analysis, the HPC first rolled inpatient facility claims into inpatient stays based on the dates of admission and discharge, facility id and member id. The inpatient stays were subsequently merged to their APR- and MS-DRGs for the corresponding inpatient claims, selecting the DRG with the highest weight if DRGs on multiple claims during the same stay didn't match exactly on stay. Based on DRGs on the facility claims, the HPC identified newborn claims and rolled those into separate stays even when the corresponding member identifier was for the mother. In cases where the mother identifier was used on a claim, all professional payments were assigned to a mother, while facility payments were split into separate stays between a mother and a baby based on the DRG on a facility claim.

To calculate Medicare base payment, HPC applied the Medicare Inpatient Prospective Payment System (IPPS) formula to the inpatient stays, omitting disproportionate share hospital (DSH) and indirect medical education (IME) payments and including appropriate hospital wage indices and capital adjustment factors for the fiscal year 2021. Medicare outlier payment amounts are also ignored as those calculations rely on DSH and IME payments that aren't part of the base payment. However, the HPC dropped price outliers to minimize potential bias of not including outlier payments.

To calculate MassHealth inpatient hospital payment HPC applied the MassHealth inpatient base adjudicated hospital payment amounts[iii] to the APR-DRGs on inpatient stays using the latest version of APR-DRG weights (2023) [iv]. In addition, the HPC also applied extra payments that MassHealth pays for the cost outliers and to pediatric stays of high complexity treated in pediatric hospital.

Inpatient stays that are outliers in their corresponding DRG category in terms of estimated cost are being paid extra outlier payments according to formulas that are specific for different payers and contracts. HPC approximated the definition of outliers based on outlier length of stay in a corresponding APR-DRG group and dropped these from the analysis. Outliers in length of stay were identified as greater than 3 times the median Medicare length of stay according to the Medicare IPPS formula. The HPC also dropped extreme outliers in payment to avoid incorporating potential data errors or extreme cost outliers, dropping inpatient stays if the payment was less than 50% of MassHealth payment or greater than 10 times MassHealth payment. In addition, HPC also dropped hospital transfers, which are not typically paid a complete DRG rate.

[iii] See "Notice of Final Agency Action: MassHealth: Payment for In-State Acute Hospital Services and Out-of-State Acute Hospital Services, effective November 1, 2020" Available at https://www.mass.gov/doc/notice-of-final-agency-action-masshealth-payment-for-in-state-acute-hospital-services-and-19/download

[iv] APCD version 2017-2021 has APR-DRGs assigned as of latest version, which requires the use of a matching version of APR-DRG weights.

3.7.2 Analyses

Analyses presented in this analysis used the analytic file created as described in the preceding sections, but relied only on facility inpatient payments.

For the exhibit *"***Distribution of inpatient facility commercial prices relative to MassHealth and Medicare prices, 2021***",* inpatient stays were categorized into bins based on the ratio of commercial price to the base Medicare payment (without DSH and IME payments) and the ratio of commercial price to MassHealth payments.

The calculation of excessive spending was based on the MassHealth threshold since the APR-DRG system is a more accurate representation of severity and complexity for maternity and pediatric inpatient stays. These stays make up the majority of the inpatient stays for the commercial population.

3.8 Clinician-administered drugs

3.8.1 Analytic file creation

To create the analytic file for analysis, the HPC began with all professional claims billed in ambulatory sites of service (for these analyses: Office (11), and Hospital Outpatient Departments (19, 22)) and all facility claims. Clinician-administered drugs were identified using the Restructured BETOS Classification System. Claim lines with procedure codes classified as "Treatment" with subcategories of "Chemotherapy" and "Injections" were included for analysis. Claims were categorized into medical drugs, vaccines, and the administration of the drug based on procedure codes.

Encounters were constructed by collapsing claim lines and summing spending amounts and number of units administered (quantity) across multiple claim lines for each encounter. The HPC identified the 15 administered drugs with the highest spending in the APCD v2021 in 2021 among HOPDs and physician offices. The 15 drugs for analysis include: Ocrevus (J2350), Keytruda (J9271), Entyvio (J3380), Opdivo (J9299), Remicade (J1745), Neulasta (J2505), Inflectra (Q5103), Tysabri (J2323), Perjeta (J9306), Xolair (J2357), Rituxan (J9312), Darzalex Faspro (J9144), Mvasi (Q5107), Alimta (J9305), and Yervoy (J9228).

3.8.1.1 Calculating standardized prices

To allow for direct comparison of prices across ambulatory settings, unit prices were calculated for each of the 15 clinician-administered drugs. The HPC defined unit price as the total spending divided by the total units billed for each encounter defined above. The HPC excluded encounters where the units billed were less than the 5th percentile or greater than the 95th percentile of the distribution of units by drug and setting of care. Further, to compute average prices, the HPC excluded unit prices that were more than 10 times the statewide median or less than 20% of the statewide median for a given procedure code or if the price is less than or equal to zero. Additionally, prices for services paid under non-fee-for-service methods are not included in the calculation of average prices.

3.8.1.2 Estimating Medicare payment rates

Medicare rates were estimated using ASP Drug Pricing Files from the Centers for Medicare and Medicaid Services, which report payment limits as average sales price (ASP) plus 6%. To account for possible time lag in implementing new payment limits, the HPC calculated an average payment limit for 2021 across quarterly updates between January 2020 through January 2021.

Regardless of an entity's participation in the 340B Drug Pricing Program, the HPC defined all entities' Medicare reimbursement as the average payment limit in accordance with a court ruling effective in 2023 that requires all providers be reimbursed equivalently by Medicare.

3.8.2 Analyses

Unless otherwise noted, the following analyses used the data from the previously described clinician-administered drug encounter file for analysis of the distribution of drug unit prices compared to the Medicare price.

The data is comprised of clinician-administered drug encounters divided into mutually exclusive care settings including HOPDs and physician offices for Massachusetts residents. Encounters furnished at Shriner's Hospital for Children and Veterans Affairs Facilities are excluded from price analyses. Encounters with a procedure code for one of the top 15 drugs with the highest spending were included.

For the exhibit "**Percentage of encounters for 15 administered drugs paid at shown ranges relative to Medicare price, by setting of care, 2021**", encounters were categorized into bins based on the unit price of the drug compared to a multiple of the furnishing entity's estimated Medicare rate and reported as a percentage of the total number of encounters falling in each relative price range in each setting.

For the calculation of excessive spending based on international prices, international prices were estimated for the top spending drugs, excluding Darzalex, Faspro, and Mvasi, using unadjusted OECD average price ratios. Price ratios were gathered from an issue brief by the Office of the Assistant Secretary for Planning and Evaluation,[3] and represent the ratio of the Medicare Part B payment limit to the average OECD unit price for 19 countries for a given drug. International prices were estimated by dividing the Medicare average payment limit described above by the price ratio. Excess spending was the sum of the difference between the unit price for an encounter and the estimated international price multiplied by the quantity of the drug administered. Excess spending was zero if the unit price for an encounter was less than the estimated international price.

3.9 Prescription drugs

As with other analyses, the retail prescription drug analyses use HPC's analysis of CHIA's APCD v2021; however, the following analyses exclude Anthem due to the lack of pharmacy claims.

3.9.1 Compare Massachusetts prices to international prices of selected branded drugs

To illustrate the difference between prices in the U.S. and other countries, the HPC first identified a set of high-cost branded prescription drugs. Drugs were considered high cost if they were either in the top 25 highest spending drugs and/or were in the top 100 highest spending drugs with a cost greater than $10k per claim for at least 2 of the 3 major payer types (commercial, Medicare, and Medicaid). The sources for the initial consideration are: CMS Website: Medicare Part D Spending by Drug (2020); Medicaid Spending by Drug (2020); CHIA Prescription Drug Dashboard (2017). The full list of drugs considered can be found in the presentation for HPC's Market Oversight and Transparency committee meeting in February 2023.[4]

From this list, the HPC focused on drugs that had available rebate information and prices for four comparator countries, which resulted in eight drugs for the final exhibit. For Massachusetts prices, the HPC calculated gross prices in the APCD and applied drug-specific rebates from SSR Health.[5] In addition, drug prices in Australia, Canada, France and UK were obtained from relevant international government websites, listed below. The HPC gratefully acknowledges the assistance of its contractor PORTAL in obtaining rebate data from SSR Health and international prices for this analysis.

Australia: https://www.pbs.gov.au/info/publication/schedule/archive
Canada (Quebec): https://www.ramq.gouv.qc.ca/en/about-us/list-medications
United Kingdom: https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/drug-tariff/back-copies-drug-tariff
France: https://base-donnees-publique.medicaments.gouv.fr/

3.9.2 Modeling excessive spending for Massachusetts branded drugs

To model excessive spending on all branded drugs, the HPC used 120 percent of average prices from six comparator countries (Australia, Canada, France, Germany, Japan, and the UK) as a benchmark, as has been proposed in recent national legislation.[v] Using data published in a RAND Corporation Study, the HPC estimated the U.S. branded prices were on average 328.615 percent of those in the six comparator countries.[6] To estimate excessive spending, the HPC calculated Massachusetts spending on branded drugs in 2021 using the APCD and estimated what spending would have been if prices were benchmarked at 120 percent of the average prices from those six comparator countries. A rebate of 24.0 percent was applied, which was the average commercial rebate for Massachusetts in 2021.[7]The formula for the calculation is as follows:

$$\textit{Excessive spending} = \textit{gross spending} * (1-0.24) - \textit{gross spending}/3.28615*1.2$$

[v] In December 2019, the U.S. House of Representatives passed H.R.3, the Elijah E. Cummings Lower Drug Costs Now Act, which included a provision to limit drug prices at 120% of the average list price across Australia, Canada, France, Germany, Japan, and the UK.

[1] Duszak Jr, R., Silva III, E., Kim, A. J., Barr, R. M., Donovan, W. D., Kassing, P., ... & Allen Jr, B. (2013). Professional efficiencies for diagnostic imaging services rendered by different physicians: analysis of recent Medicare multiple procedure payment reduction policy. Journal of the American College of Radiology, 10(9), 682-688.
[2] The Medicare Payment Advisory Committee (MedPAC). (2022). Report to the Congress: Medicare and the Health Care Delivery System. United States Congress. https://www.medpac.gov/wp-content/uploads/2022/06/Jun22_MedPAC_Report_to_Congress_v2_SEC.pdf
[3] Office of the Assistant Secretary for Planning and Evaluation. Medicare FFS Part B and International Drug Prices: A Comparison of the Top 50 Drugs. November 20, 2021. Available at: https://aspe.hhs.gov/reports/medicare-ffs-part-b-international-drug-prices-comparison-top-50-drugs
[4] Health Policy Commission. Market Oversight and Transparency Committee meeting, Feb, 2023. Available at: https://www.mass.gov/doc/presentation-02152023-moat-meeting/download
[5] SSR Health. https://www.ssrhealth.com/
[6] RAND Corporation. International prescription drug price comparisons, current empirical estimates and comparisons with previous studies. 2021. Available at: https://www.rand.org/pubs/research_reports/RR2956.html
[7] Center for Health Information and Analysis. Performance of the Massachusetts Health Care System, Annual Report. Mar 2023. Available at: http://www.chiamass.gov/annual-report/