Part D Drug Spending Dashboard
Methodology
November 2019

Background

The Part D Drug Spending Dashboard is an interactive, web-based tool that presents spending information for Medicare Part D drugs - drugs patients generally administer themselves and that are paid through the Medicare Part D Prescription Drug program. Part D drug information is available from the Part D Prescription Drug Event (PDE) data, which are available for a subset of Medicare beneficiaries who choose to enroll in Part D (which represents approximately 70% of Medicare beneficiaries). The Dashboard focuses on average spending per dosage unit and change in average spending per dosage unit over time. The tool also displays spending information for manufacturer(s) of the drugs as well consumer-friendly information of drug uses and clinical indications.

Part D PDE records were summarized by drug by linking National Drug Codes (NDCs) available in the PDE data to a commercially available database and aggregated across all strengths, dosage forms, and routes of administration to the drug brand name and generic name. All Part D organization and plan types are included, although over-the-counter drugs in the PDE data are excluded as well as drugs with fewer than 11 claims[1] in 2018. In addition, drugs with large variations in unit price within a year are flagged as being potential outliers in terms of unit price changes. Since 5-year trend information is presented, any drug information in years prior to 2018 with fewer than 11 claims have been redacted.

Drug Metrics

Drug spending metrics for Part D drugs are based on the gross drug cost, which includes ingredient cost, dispensing fees, sales tax, and applicable vaccine administration fees. Part D drug spending represents total spending for the prescription claim, including amounts paid by the Medicare Part D plan and beneficiary payments. The Part D spending metrics do not reflect any manufacturers' rebates or other price concessions as CMS is prohibited from publicly disclosing such information. However, high-level rebate summary information is available for 2014.

The Part D Drug Spending Dashboard focuses on average spending per dosage unit and change in average spending per dosage unit over time. Dosage units refer to the drug products in the form in which they are marketed for use, e.g. number of tablets, grams, milliliters or other units. Units include the specific mixture of active ingredients and inactive components, the particular configuration (such as a capsule shell), and the method/route of administration for a particular

[1] Drugs defined at the brand name, generic name, and manufacturer level.

dose. Multiple dosage units may exist for a particular drug, since different medical conditions can warrant different routes of administration.

Since drugs are available in multiple strengths and dosage forms, the average spending per dosage unit at the brand name and generic name level is weighted to account for variation in claims volume for specific brand name, generic name, strength, dosage form, routes of administration, and manufacturer levels. The overall brand name/generic name claim weighted spending per unit is calculated by first summarizing each drug to specific strength, form, route of administration, and manufacturer levels. For each unique level, spending is divided by the number of units and multiplied by its proportion of total claims, so that claims volume becomes the weight. The claim weighted average spending per dosage unit at the overall brand name/generic name level is then calculated by summarizing across the strength, form, route, and manufacturer levels. A similar approach was used to calculate average spending per unit for specific manufacturers.

The following example demonstrates how the various forms, strengths and routes were aggregated and a weighted average cost per unit calculated for a sample drug. The intravenous route of the drug is ~$90 per unit whereas the subcutaneous route of the drug is $333 per unit. The final weighted average cost per unit for the sample drug is $290.

Calculating Weighted Average Cost Per Unit

Form	Strength	Route	Claim Count	Unit Count	Total Drug Cost	Cost Per Unit	Weighted Cost Per Unit
VIAL (ML)	80 MG/4 ML	INTRAVENOUS	1,300	14,000	$1,250,000	$89.29	$116,071
VIAL (ML)	200MG/10ML	INTRAVENOUS	1,000	15,000	$1,350,000	$90.00	$90,000
VIAL (ML)	400MG/20ML	INTRAVENOUS	2,000	60,000	$5,500,000	$91.67	$183,333
SYRINGE (ML)	162 MG/0.9	SUBCUTANEOUS	20,000	60,000	$20,000,000	$333.33	$6,666,667
Overall			**24,300**	**149,000**	**$28,100,000**		**$7,056,071**
Final Drug Weighted Average Cost Per Unit							**$290.37**

a) Calculate the cost per unit for each form, strength, route by dividing total drug cost by unit count.

b) Calculate a weighted cost per unit for each form, strength, route by multiplying the number of claims by the cost per unit to account for the variation in claim count.

c) Summarize form, strength, route level data to arrive at overall drug level totals.

d) Calculate the final weighted average cost per unit by dividing summarized weighted cost per unit by summarized claim count.

Drug Metric Definitions

- Average Spending per Dosage Unit: Part D drug spending divided by the number of dosage units, which is weighted by the proportion of total claims.
- Change in Average Spending per Dosage Unit: the percent change in average spending per dosage unit from the prior year.

- Annual Growth Rate in Average Spending per Dosage Unit: the constant average change in spending per dosage unit over the most recent five years of data availability, calculated using the compound annual growth rate (CAGR).
- Total Spending: aggregate drug spending for the Part D program during the benefit year.
- Total Beneficiaries: number of Medicare Part D beneficiaries utilizing the drug during the benefit year.
- Average Spending per Beneficiary: total Part D drug spending divided by the number of unique beneficiaries utilizing the drug during the benefit year.

Outlier Flags

Average Spending per Dosage Unit is a key measure in the Part D Drug Spending Dashboard. Incorrect dosage unit values reported on a small percentage of records may result in a misrepresentation of the overall "Average Spending per Dosage Unit" and "Change in Average Spending per Dosage Unit". To address this concern, potentially anomalous drugs are identified as outliers so that users can exercise caution when interpreting results.

In the full underlying data file, potentially anomalous drugs are identified using a yearly outlier flag variable, which is set to "1" when a drug's Average Spending per Dosage Unit is substantially impacted by outlier records in a given year.

In the dashboard, drugs are annotated with a "^" to identify that the drug is an outlier in any of the 5 years of data included in the release.

The method by which drugs are identified as outliers is described below:

a. For each NDC in the PDE-level data, lower and upper bounds for average cost per dosage unit are defined as:
    i. Lower Bound: 25th percentile – 1.5*Interquartile Range
    ii. Upper Bound: 75th percentile + 1.5*Interquartile range
b. PDE records that fall outside of these bounds are flagged. Additionally, records associated with NDCs for which there are fewer than 30 records in total are flagged.
c. Average Spending per Dosage Unit is calculated with and without flagged records at both the Brand/Generic and Brand/Generic/Manufacturer levels; if these values differ by over 10% and $1, the drug is identified as an outlier.

Additional drug metrics, with their definitions, are available in the data tables that are available for download.

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